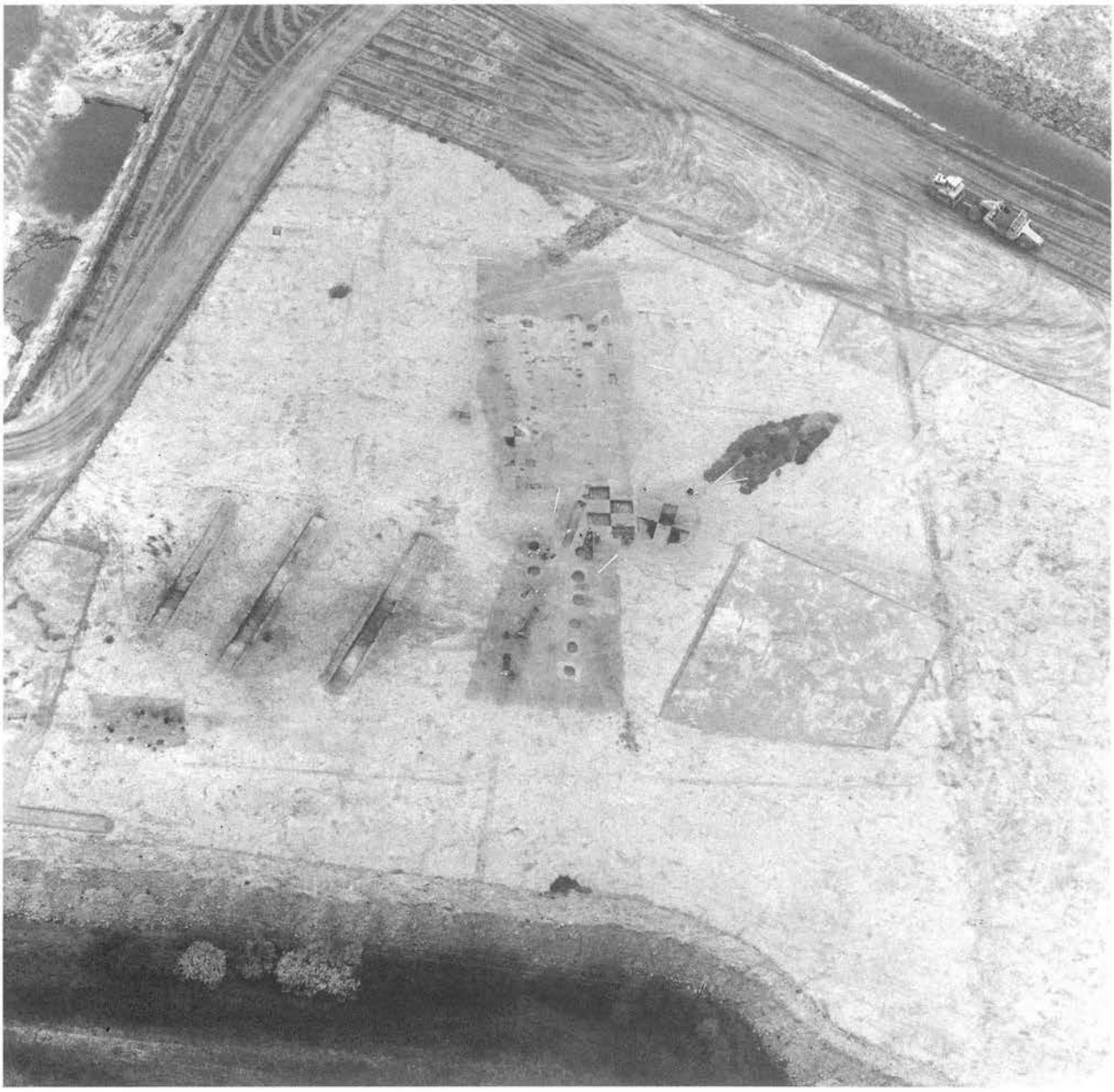
Excavations at Great Holts Farm, Boreham, Essex, 1992-94

East Anglian Archaeology 105

Heritage Conservation
Essex County Council

EAST ANGLIAN ARCHAEOLOGY



Frontispiece:
Aerial shot of the site, showing the two main buildings and the bath-house during excavation.
Photograph: Maria Medlycott, Heritage Conservation, Essex County Council

Excavations at Great Holts Farm, Boreham, Essex, 1992–94

by Mark Germany

with contributions by
Umberto Albarella, Nigel Brown, Richard Darrah, Brenda Dickinson, Thomas Finney, Diana Friendship-Taylor, Alison Locker, Graham Lott, Hilary Major, Scott Martin, Hazel Martingell, Simon Mays, Peter Murphy, Katherine Reidy, Mark Robinson, John Shepherd, Sasha Smith, R. Stevenson, Wendy Toomey, Sue Tyler, Ros Tyrrell, Helen Walker, David Williams and Patricia E.J. Wiltshire

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Cover photo
Work in progress on the site. *Photographer: Owen Bedwin, Essex County Council*

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The excavation of the south half of the site, stage I, was directed by Chris Scull, and the north half, stage II, by Maria Medlycott. Both stages were supervised by Mark

Germany. The excavation of the bottom part of the well was paid for by Essex County Council and English Heritage. Site assistants from stage I included Rachel Clarke, Su Dolinay, Stuart Foreman, Adam Garwood, Ellen Heppell, Dave Kenny, Gillian Schofield and Dave Smith. Site assistants from the stage II excavation included Louise Bashford, Thomas Bradley-Lovekin, Jessica Cowley, Mike Edwards, Jonathan Godfrey, Mark Ingram, John McNeish and Greg Speed. The finds were processed by Phil McMichael and the soil samples sieved by Craig Forrest. The co-ordination of the post-excavation work and sub-editing of the draft report were carried out by Patrick Allen. Plates I to V were taken by Mark Germany, VI to X by Umberto Albarella, and XI to XIV by Peter Murphy. Figures 67 and 68 were drawn by Hazel Martingell.

The Roman pottery from the first stage of the excavation was analysed by Colin Wallace, and the worked flint by Louise Austin. Cathy Groves from the University of Sheffield is thanked for her work on the dendrochronological dating of the well timbers. The finds were conserved by Nerina de Silva, formerly of the Institute of Archaeology, University College, London, and Amanda Sutherland of the Ancient Monuments Laboratory, Savile Row, London.

Summary

Excavation in advance of gravel extraction revealed a Roman villa in a ditched compound within a regular network of fields and enclosures. It was probably established in the early 2nd century, and then modified and expanded in the early/mid 3rd to early 4th century. At its peak, in the late 3rd/early 4th to mid 4th century, it was distinguished by four or more timber buildings. The two main buildings were an aisled villa and an aisled house. Both structures were adjoined by a small bath-house with two or more rooms. Two ancillary buildings were a granary and a possible workshop and/or storehouse.

Ecofactual and artefactual material from a wealthy household was discovered in a well on the front face of the villa. Among the more notable items were imported and local food remains, such as pine kernels, olive stones, chestnuts, walnuts and cherries. A small assemblage of bird bones from local species such as sparrowhawk, plover, woodcock and thrush was also discovered. The sparrowhawk may have been associated with hunting. Storage arrangements inside the granary at the time of its destruction were indicated by the distribution pattern of a large assemblage of carbonised macrofossils. A breed of unusually large imported cattle was used to facilitate the ploughing of the heavy clay soils of the surrounding fields. Both aspects, the cattle and the granary, indicate an emphasis on arable production. Large, well-stratified assemblages of late Roman pottery and tile will augment local finds synthesis.

Other discoveries were two Neolithic placed deposits, two Early to Middle Bronze Age ring-ditches, a small unenclosed Late Bronze Age settlement, an Early Iron Age building, and a medieval long-house. A hiatus in activity, from *c.* 300 BC to *c.* 120/30 AD, was demonstrated by a dearth of Middle Iron Age and Late Pre-Roman Iron Age/Early Roman features. The Roman villa was abandoned in the final years of the 4th century or the early part of the 5th century but the close association between Roman and post-medieval ditches implies some form of continuity with the landscape.

Résumé

Des fouilles entreprises avant l'extraction de gravier ont révélé l'existence d'une villa romaine située dans un enclos délimité par un fossé et intégrée à un ensemble régulier de champs et d'enclosures. Cette villa fut probablement construite au début du deuxième siècle, avant d'être modifiée et agrandie pendant une période comprise entre le début ou le milieu du troisième siècle et le quatrième siècle. Au plus fort moment de son développement, qui se situe vers la fin du troisième et le début du quatrième siècle, la villa comprenait au minimum quatre bâtiments en bois, dont les plus importants étaient constitués par une résidence principale et une maison complétées par des ailes. Attenant à ces deux bâtiments, se trouvaient des bains de taille réduite, dotés d'un minimum de deux pièces. Deux annexes venaient s'ajouter à l'ensemble: un grenier à blé ainsi qu'un autre bâtiment qui pouvait être un atelier et/ou un magasin.

Des fouilles entreprises dans un puits situé en face de la villa ont permis de mettre à jour des écofacts et des artefacts provenant d'un foyer aisé. Parmi les découvertes les plus intéressantes, on remarque des restes de nourritures produites localement ou importées, telles que des pignons de pins, des noyaux d'olives, des châtaignes, des noix et des cerises. Quelques os provenant d'oiseaux d'espèces locales ont également été mis à jour. Citons par exemple l'épervier, le pluvier, la bécasse et la grive. La présence de l'épervier est peut-être liée à la chasse. La répartition des stocks dans le grenier à blé était indiquée, au moment de sa destruction, par la façon dont était disposé un grand nombre de macrofossiles carbonisés. Pour faciliter le labourage des champs avoisinants, constitués d'une argile lourde, les habitants utilisèrent un troupeau de bétail importé dont l'importance était inhabituelle. La présence d'un grenier à blé et le recours à du bétail montrent que les habitants accordaient une

grande importance à la culture de la terre. Des ensembles de poterie et de tuiles romaines de la période tardive, disposés en grandes strates régulières permettront d'enrichir la synthèse tirée des découvertes effectuées sur le site.

Deux dépôts de la période néolithique furent également mis à jour ainsi que deux fossés circulaires de l'âge du bronze ancien et moyen, une petite implantation qui n'était pas close datant de l'âge du bronze récent, un bâtiment de l'âge du bronze ancien et une longue maison de l'époque médiévale. La période comprise approximativement entre 300 av. J-C. et 120/130 ap. J-C. fut marquée par une interruption de l'activité, comme le révèle la rareté des dépôts datant de l'âge du fer moyen et récent, de l'âge du fer pré-romain et de la première période romaine. La villa romaine fut abandonnée à la fin du quatrième ou au début du cinquième siècle. Toutefois, la liaison étroite entre les fossés de l'époque romaine et ceux de l'époque post-médiévale se traduit par l'existence d'une forme permanente dans le paysage.

(Traduction: Didier Don)

Zusammenfassung

Eine Grabung vor Aufnahme von Kiesgewinnungsarbeiten förderte auf einem von Gräben umgebenen Areal inmitten einer regelmäßigen Struktur aus Feldern und Einhegungen ein römisches Landgut zutage. Das Gut wurde wahrscheinlich im frühen 2. Jahrhundert angelegt und dann ab Anfang/Mitte des 3. Jahrhunderts bis ins frühe 4. Jahrhundert modifiziert und erweitert. Auf seinem Höhepunkt Ende des 3./Anfang des 4. Jahrhunderts bis Mitte des 4. Jahrhunderts wies es mindestens vier Holzbauten auf. Die beiden Hauptgebäude waren eine 'aisled villa' und ein 'aisled house' (beides Gebäude mit Seitenschiffen). An beide Bauten grenzte eine kleine Badeanlage aus zwei oder mehr Räumen. Es gab zwei Nebengebäude: einen Kornspeicher und ein Haus, das möglicherweise als Werkstatt und/oder Lagerhaus diente.

In einem Brunnen an der Vorderseite der Villa wurden Ökofakte und Artefakte aus einem wohlhabenden Haushalt gefunden. Zu den auffallenderen Stücken zählten Reste importierter und lokaler Nahrungsmittel, darunter Pinien- und Olivenkerne, Kastanien, Walnüsse und Kirschen. Darüber hinaus wurde ein kleiner Fundkomplex aus Knochen örtlicher Vogelarten wie Sperber, Regenpfeifer, Waldschnepfe und Drossel entdeckt. Der Sperber wurde möglicherweise zur Jagd benutzt. Das Verteilungsmuster eines umfangreichen Fundkomplexes aus verkohlten Makrofossilien ließ Rückschlüsse auf die Lageranordnung innerhalb des Kornspeichers zur Zeit seiner Zerstörung zu. Um das Pflügen der schweren Lehmböden auf den umliegenden Feldern zu erleichtern, wurde eine ungewöhnlich große, importierte Viehrasse eingesetzt. Sowohl das Vieh als auch der Kornspeicher deuten auf Ackerbau als Schwerpunkt hin. Große, gut stratifizierte Fundkomplexe aus spätrömischer Keramik und Ziegeln bereichern die Synthese des örtlichen Fundmaterials.

Zu den weiteren Entdeckungen zählen zwei intentionelle Deponierungen aus der Jungsteinzeit, zwei Ringgräben aus der frühen bis mittleren Bronzezeit, eine kleine offene Siedlung aus der späten Bronzezeit, ein Gebäude aus der frühen Eisenzeit und ein mittelalterliches Langhaus. Der Mangel an Strukturen aus der mittleren Eisenzeit sowie der späten vorrömischen Eisenzeit/frührömischen Periode deutet auf eine Aktivitätslücke von etwa 300 v. Chr. bis etwa 120/130 n. Chr. hin. Das Landgut wurde gegen Ende des 4. oder zu Anfang des 5. Jahrhunderts aufgegeben. Allerdings impliziert die enge Verbindung zwischen römischen und nachmittelalterlichen Gräben eine gewisse landschaftliche Kontinuitat.

(Übersetzung: Gerlinde Krug)

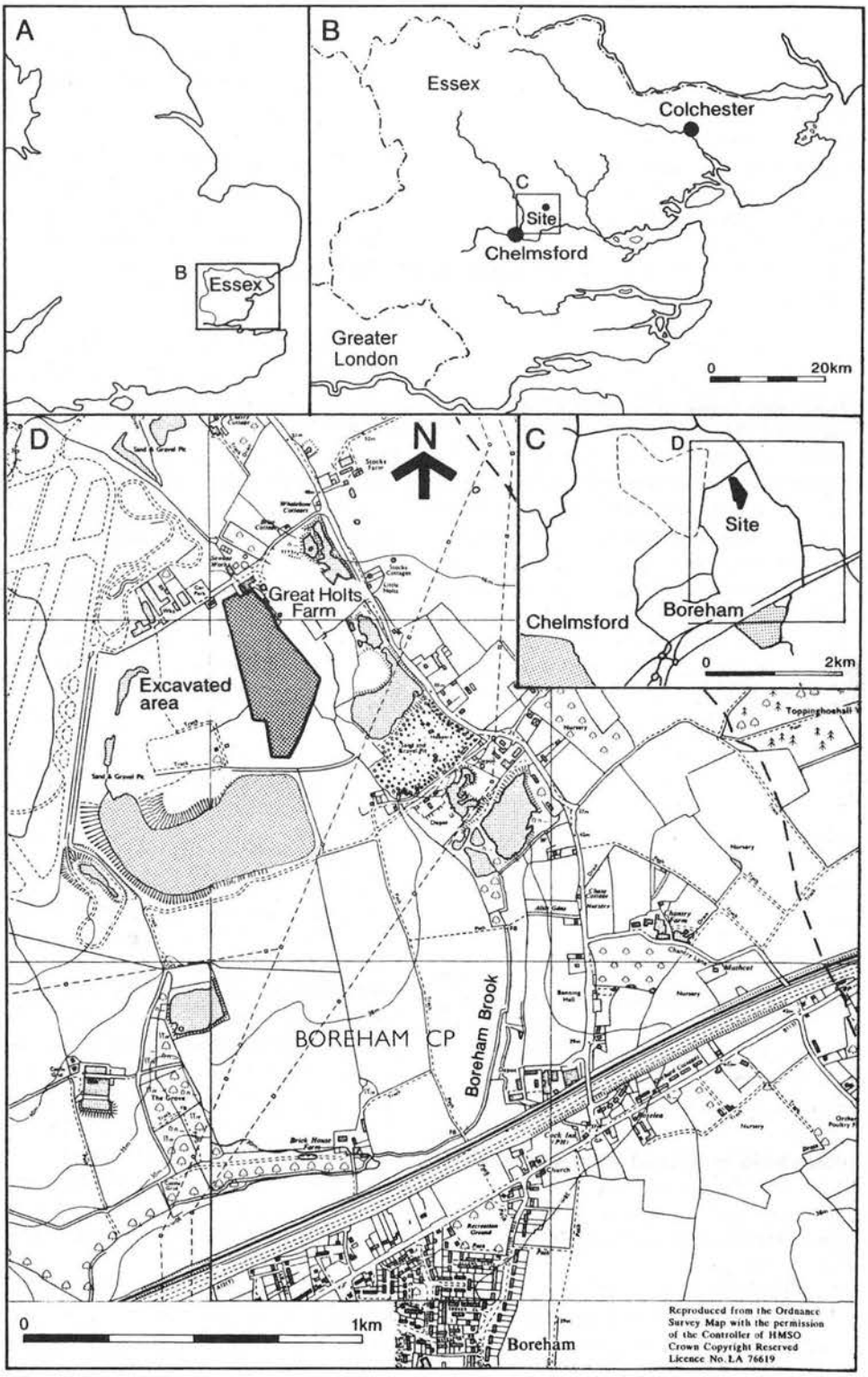


Figure 1 Location plan

Part 1. Introduction

I. Background

(Fig. 1)

Great Holts Farm is situated in the north-east corner of the parish of Boreham, on the north slope of the River Chelmer, *c.* 8km north-east of Chelmsford (NGR TL 7520 1205). The nearest main roads are the Boreham to Great Leighs road to the east, the A12 to the south, the A130 to the west, and the A131 to the north-west. The village of Boreham is situated to the south of the A12.

The excavation of the Roman villa at Great Holts Farm was undertaken in advance of gravel extraction. It was preceded by fieldwalking and geophysical surveys (ECC 1991a; Oxford Archaeotechnics 1992) and was carried out by the Essex County Council Planning Division Field Archaeology Unit. The work was carried out in accordance with the operational demands of the quarry, from November 1992 to June 1993 and from September 1994 to November 1994. A four-month period of access after topsoil stripping was guaranteed by an archaeological condition in the planning consent, which dated back to 1972 (CHR/736/72). The work was financed by English Heritage, as the archaeological condition in the planning consent was not concomitant with archaeological funding. The four-month period of access in the planning condition was extended by the gravel company, St Albans Sand and Gravel Limited (formerly Hall Aggregates Limited).

II. Wider setting

(Fig. 2)

Prehistoric

Ritual monuments represent the Neolithic and the Early to Middle Bronze Age in the Chelmer Valley and the Blackwater Estuary. Notable examples include a long barrow or mortuary enclosure at Colemans Farm, Rivenhall, a cursus at Springfield, and a short arc of discontinuous ditches from a causewayed enclosure at Springfield Lyons (Hedges and Buckley 1981; Buckley *et al.* 1988; Gilman 1991). Middle Bronze Age post-holes with placed deposits have been found at the A12 Boreham interchange (Lavender 1999), and ring-ditches from Late Neolithic and Bronze Age barrows at Heybridge and Langford Reservoir, Maldon (Atkinson and Preston 2001; Cooper-Reade pers. comm.).

Finds spots and enclosed and unenclosed settlements largely comprise the archaeological record for the Late Bronze Age. A high status settlement at Springfield Lyons is indicated by a post-built structure and four large round-houses in a large deep-ditched enclosure (Buckley and Hedges 1987). A 'Springfield Lyons type settlement' is also present at Great Baddow, on the opposite side of the River Chelmer (Brown and Lavender 1994). Farmsteads from the lower end of the settlement hierarchy have been found at Broomfield and Maldon. The first of these is comprised of a single round-house in a D-shaped enclosure; the second by round and rectangular structures in a rectangular enclosure (Atkinson 1995; Brown 1988a). Small shrines are present at Broads Green, Little Waltham, and the A12 Boreham Interchange (Brown 1988b; Lavender 1999).

Round-houses and post-built structures at Little Waltham, and Chigborough Farm and Slough House Farm, Maldon, represent the Iron Age (Drury 1978; Wallis and Waughman 1998). The former of these is associated with an extensive network of rectilinear fields; the latter with enclosures and trackways.

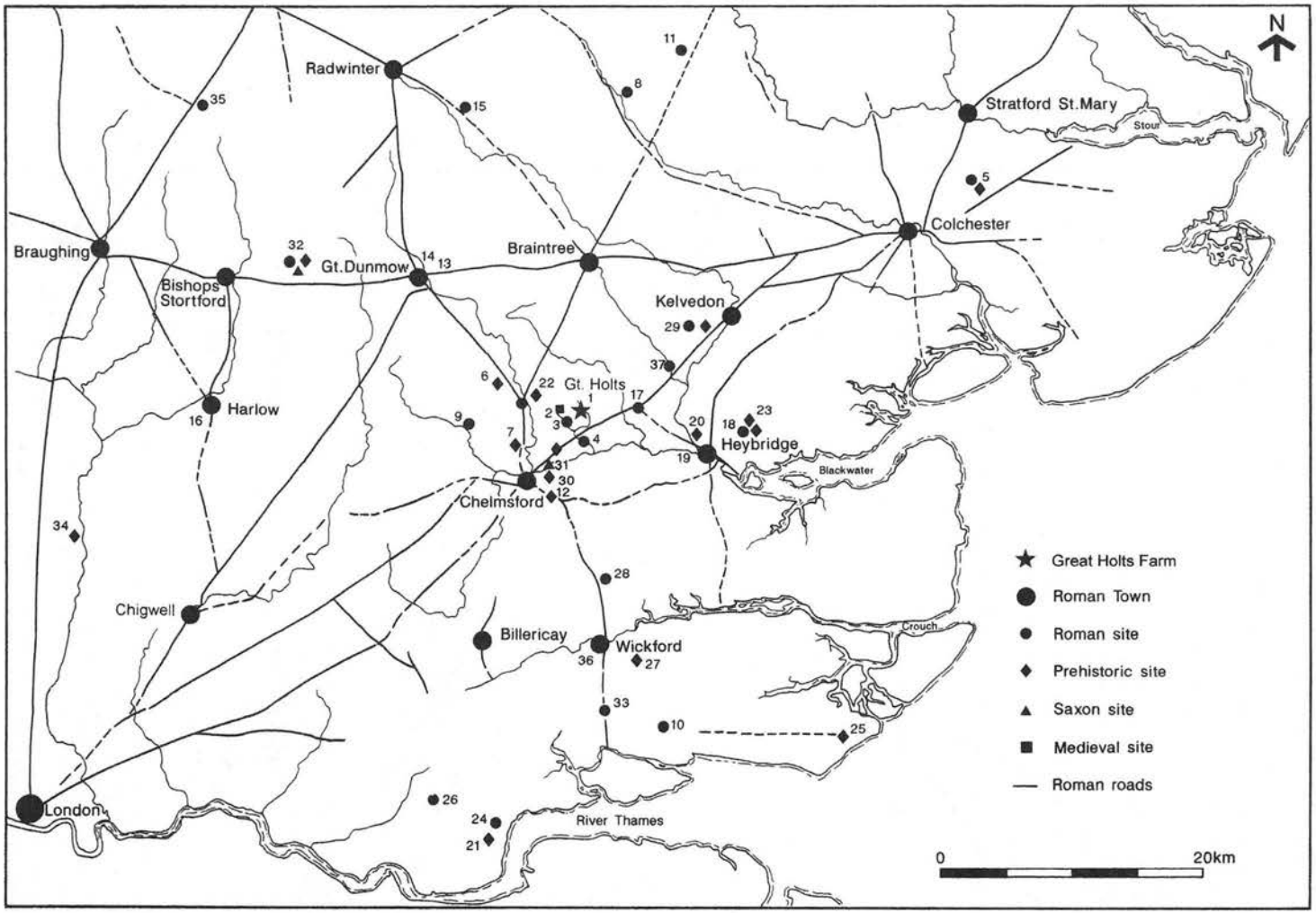
Roman

The Chelmer Valley and the Blackwater Estuary are situated in the *civitas*/tribal area of the Trinovantes. The villa at Great Holts Farm is located *c.* 1.5km to the north of the Roman forerunner of the A12, which is the main road from the provincial capital at London to the *civitas* capital at Colchester. The nearby town of *Caesaromagus* (Chelmsford), to the south-west, is distinguished by a substantial *mansio* (Drury 1988). Roman small towns are in attendance at Braintree and Great Dunmow on Stane Street — the A120 — which runs in an east–west direction from Braughing to Colchester (Drury 1976, Havis 1993). Another 'small town', Heybridge, on the Blackwater Estuary, is possibly related to North Sea trade, although this is unsubstantiated by the results of large-scale excavations (Atkinson and Preston 1998).

Rural settlement is represented by high status settlements at Chignall St James and Rivenhall (Clarke, C.P. 1998; Rodwell and Rodwell 1985). The courtyard villa at Chignall St James is fronted by a working area of enclosures and timber buildings. It went through four different phases and was in use until *c.* 370. The villa at Rivenhall was comprised of two large houses, one of which was linked by a covered walkway to an adjacent bath-house. Both houses were set in a trapezoidal precinct, which was integrated with a surrounding network of fields and a nearby road. Other near neighbours are indicated by find spots at Boreham church, to the south, and Roman features and structural remains at Little Waltham, to the west (Rodwell 1978; Drury 1978).

Rural centres and shrines have been excavated at two different places: a religious complex at Ivy Chimneys was comprised of a large pond and a sequence of timber-built temples (Turner 1999); a temple was found in the approximate centre of the 'market village' at Heybridge (Atkinson and Preston 1998). The use of the former as a site of pilgrimage has been suggested by its location, outside a town, close to the main Roman road from London to Colchester.

The surrounding landscape has been investigated in very few places, although recent and extant landscape features at Braintree, Little Waltham and Chelmsford, however, are derived from Roman and Iron Age antecedents (Drury 1978; Drury and Rodwell 1980). Three or more phases of small rectilinear enclosures have been excavated at Buildings Farm, Dunmow (Lavender 1997). It is also possible that a state-run estate is represented by a *principia* at Bulls Lodge Dairy, *c.* 1.25km to the south-west of Great Holts Farm (Lavender 1993).



1. Boreham (Great Holts Farm)
2. Boreham (Airfield)
3. Boreham (Bulls Lodge Dairy)
4. Boreham (Village)
5. Ardleigh
6. Broads Green, Great Waltham
7. Broomfield
8. Castle Hedingham
9. Chignall St James
10. Daws Heath
11. Gestingthorpe
12. Great Baddow
13. Great Dunmow (Buildings Farm)
14. Great Dunmow (Stebbing Green)
15. Great Sampford (Shillingstone Field)
16. Harlow (Old House, Church Langley)
17. Hatfield Peverel
18. Goldhanger (Slough House Farm and Chigborough Farm)
19. Heybridge (Elms Farm)
20. Langford (Reservoir)
21. Linford
22. Little Waltham
23. Lofts Farm, Maldon
24. Mucking
25. North Shoebury
26. Orsett (Orsett Cock)
27. Rawreth
28. Rettendon
29. Rivenhall
30. Springfield
31. Springfield Lyons
32. Stansted Airport
33. Thundersley
34. Waltham Abbey
35. Wendons Ambo
36. Wickford
37. Witham (Ivy Chimneys)

Figure 2 Archaeological sites in the vicinity of Great Holts Farm

An alternative explanation for this structure, *i.e.* a rural shrine, has been posited (Wallace 1995).

Post-Roman

The continuation of an open landscape and the retention of a pre-existing Iron Age/Roman field pattern in some areas at least is supported by environmental data from Slough House Farm and the Sandon Brook (Murphy 1996a). It is also supported by the aforementioned work of Drury and Rodwell (Drury 1978; Drury and Rodwell 1980).

Saxon sites have been dug at Springfield Lyons, Heybridge and Rook Hall on the Blackwater Estuary, and Downhouse Farm, West Hanningfield, on the A130 (Drury and Wickenden 1982; Wallis and Waughman 1998; ECC 1996a). The Late Bronze Age Springfield-type enclosure at Springfield Lyons was reoccupied by an Early Saxon cemetery and a Late Saxon settlement.

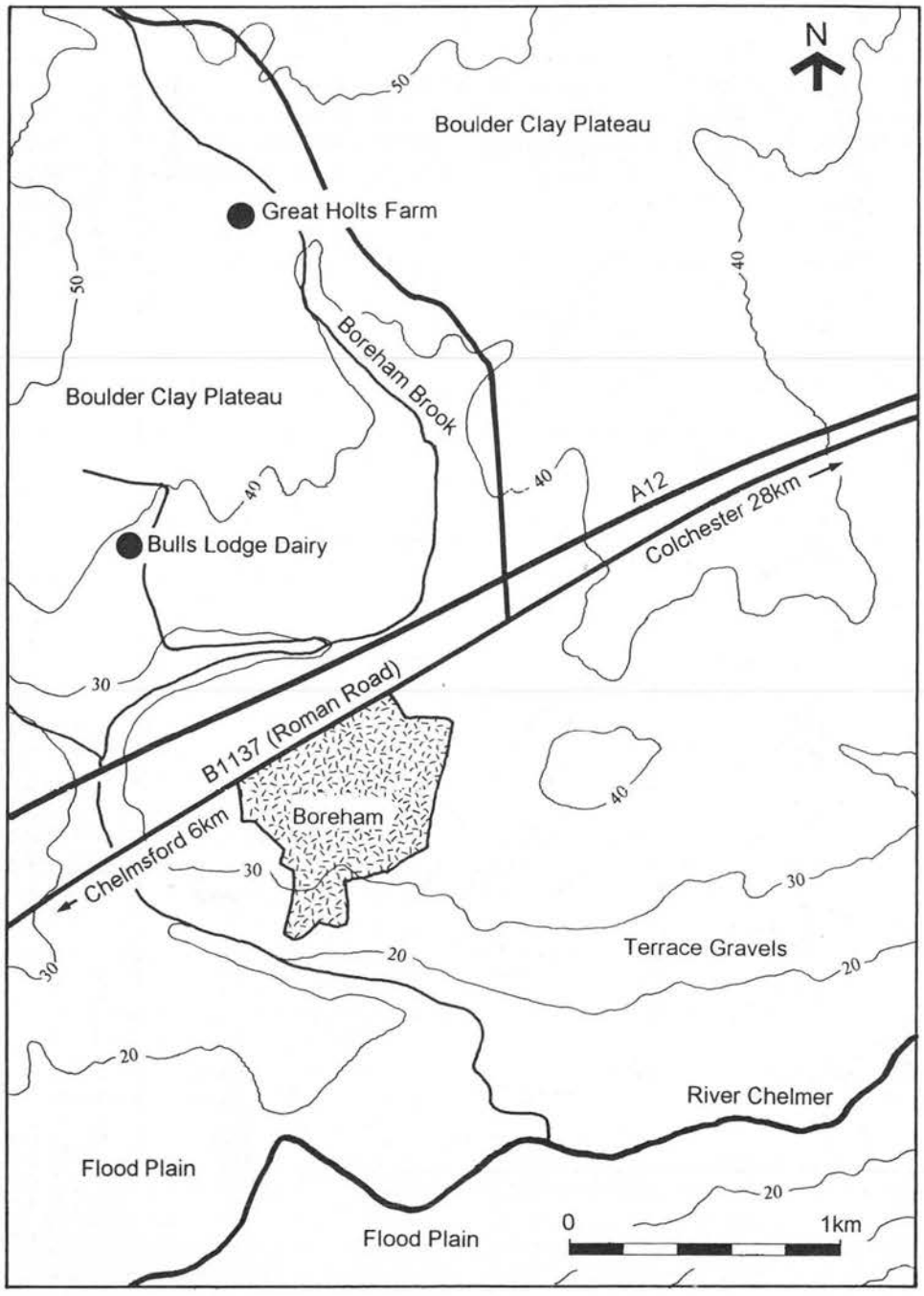


Figure 3 Local topography

A dispersed pattern of settlement in the medieval period is represented by excavated farms at Stebbingford and the A12 Boreham Interchange, and a late 12th/13th-century windmill at Boreham Airfield (Medlycott 1996; Lavender 1999; Clarke, R. forthcoming). The north-west part of the parish of Boreham, in particular, is known to have been occupied by a large manor (New Hall) and an extensive deer park.

III. Geology and topography

(Fig. 3)

The site is located on the south-east edge of the Boulder Clay plateau of north-west Essex. The Boulder Clay at Great Holts Farm is *c.* 1.8m to 2m thick. It overlies a deep deposit of Kesgrave Sands and Chelmsford Gravels and is interspersed with large, irregular patches of sand and gravel, clay sand and gravel, and brickearth. The alluvium in the flood plain of the River Chelmer to the south is bordered by Terrace Gravels (Bristow 1985). Deposits of alluvium are also present along the nearest known source of water, the Boreham Brook. The nearest known spring is *c.* 450m to the north-west, although several springs are possibly present in the fore-yard of the former farm at Great Holts Farm (pers. comm. T. Fewel).

The lie of the land falls from *c.* 45m OD at Great Holts Farm to *c.* 20m at the River Chelmer. There are no steep falls or prominent hills in the near vicinity. The lowest and highest parts of the site respectively are in the south-east and north-west corners. The surface water runs from west to east.

The surrounding landscape is largely comprised of arable fields. Most grassland is restricted to the flood plains of the River Chelmer and the Boreham Brook. Great Holts Farm is situated in one of the driest parts of the country, with a mean annual rainfall of 559mm per annum. A low level of summer rainfall often restricts the production of grass, and hence pastoral farming.

Due to the high clay content, the surrounding land is difficult to plough without some form of heavy traction. Because the fields are often waterlogged in the winter months, some form of artificial drainage, such as mole drains or land drains, is also often needed. The clay soil is very fertile, however, and when properly drained makes valuable corn land (Allen and Sturdy 1980).

The present day pattern of land division is dominated by large regular fields from the medieval/post-medieval disemparkment of New Hall deer park. Very little of the pre-medieval/post-medieval pattern of land division can be identified in the surrounding landscape, although two possible exceptions are the north part of the site, and the borders of the Boreham to Great Leighs road.

IV. Local archaeological discoveries

(Fig. 4)

The excavation was preceded by the following discoveries, most of which were seen as evidence for a Roman 'low status, non-villa settlement', *i.e.* a farmstead.

1. Roman cremations were discovered in the fore-yard of Great Holts Farm in *c.* 1900. The cremations were accompanied by flagons, urns, samian platters and square glass bottles (Richmond 1963; Essex Heritage Conservation Record 6048, hereafter EHCR).
2. Roman, medieval and post-medieval sherds were discovered in and around the farm buildings in 1971 (pers. comm. Mr T. Fewel; EHCR 6098 to 6100).
3. In 1975, a Roman feature was found in the vicinity of the south-east silt pond during topsoil stripping. It was shaped like a figure of eight and was accompanied by a large amount of tile (Couchman 1976).
4. Linear features and ring-ditches were recorded by aerial photography in 1980 and 1986 (National Monuments Record TL 7511-20-263, TL 7511-2-253, and TL 7411-1-204).
5. A human skeleton was found on the north edge of the south-east silt pond in the late 1980s. A metal bracelet, which was found with the burial, was sold to a nearby resident. The inhumation was re-interred (pers. comm. Patrick Wigg, St Albans Sand and Gravel).
6. A Late Bronze Age spearhead was found in the vicinity of Great Holts Farm by a metal detectorist in *c.* 1990 (Gilman and Bennett 1991).
7. Two large concentrations of Roman tile were found by fieldwalking assessment in October 1991 (ECC 1991a; EHCR 14127 to 14129).
8. Significant archaeological deposits, including two or more buildings, were detected by geophysical survey in the same area as the Roman tile in March 1992 (Oxford Archaeotechnics 1992).

V. Aims and objectives

The following aims were based on the evidence in section IV. They were presented to English Heritage in November 1992, and then reiterated, largely unchanged, in September 1994 (ECC 1992; 1994). Aims 1 and 6 were based on the incorrect assumption that the site was a 'low status non-villa Roman settlement'.

1. to investigate a low status non-villa settlement, to offset the existing emphasis in the published record on the foci of high status villas.
2. to excavate the settlement in conjunction with its main means of production, its surrounding network of fields and enclosures, to facilitate the investigation of neglected, large-scale aspects such as Roman farm morphology and organisation.
3. to relate the relict field system at Great Holts Farm to the development of the surrounding landscape.
4. to explore the pattern of burial and settlement, to investigate the relationship of boundaries and burials.
5. to target large, well-stratified assemblages of pottery and tile, to facilitate the production of county-wide finds syntheses.
6. to examine the local and regional context of the site through comparative analysis, to use the 'low status rural site' as a counterpoint to nearby sites; *i.e.* the small town at Chelmsford, the *principia* at Bulls Lodge Dairy and the high status villa at Chignall St James.
7. to relate the two cropmark ring-ditches to the local pattern of prehistoric settlement.

Aims 1 and 6 were compromised by the status of the settlement, which was slightly higher than expected. Aim 4 was downgraded, due to a paucity of well-dated burials. Two notable successes were aims 2 and 5, which were both exceeded. A further aim (8), to investigate the expression of status, was added in the light of 1 and 6.

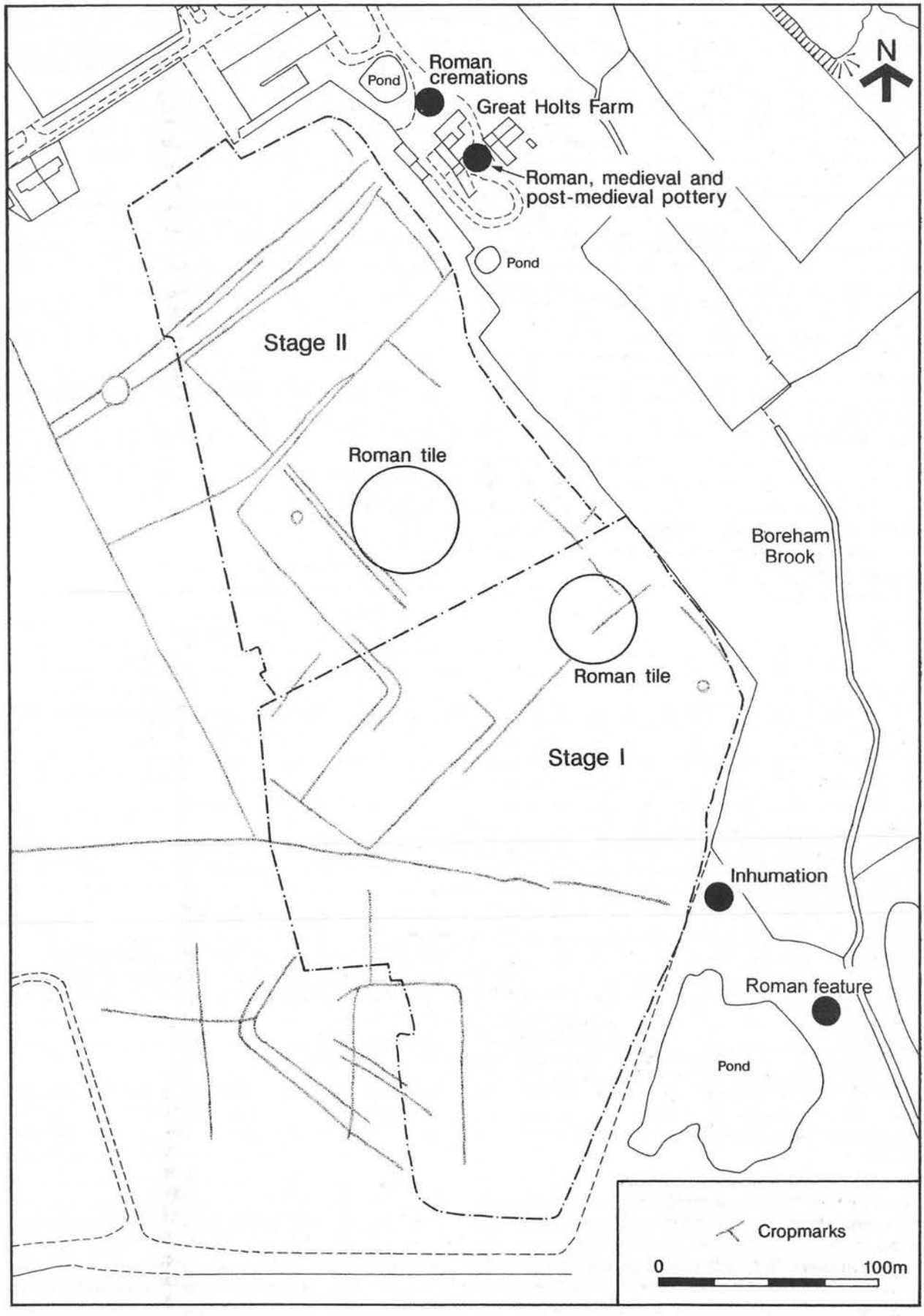


Figure 4 Cropmarks and local archaeological discoveries

VI. Excavation policy and method

(Fig. 5)

The project began with the excavation of the south half of the site (stage I) and the trial-trenching (trenches A to F) of the north half, from November 1992 to June 1993. This was then succeeded by the excavation of the north half (stage II), from September 1994 to November 1994. The investigation of a 6m deep well (567) was undertaken in February 1995. In each stage, the stripping of the topsoil was undertaken by the developer under the supervision of the Field Archaeology Unit. Stage I covered 4.3ha and stage II 3.5ha.

The excavation strategy was affected by the condition of the archaeology. Everything above the level of the subsoil had been disturbed by ploughing; there was no overlying stratigraphy. The remaining archaeology was mainly restricted to the more substantial negative features such as ponds, ditches and pits and some of the deeper post-holes; there were no upstanding features, such as mounds, floors, banks and walls. 'Insubstantial features' such as fence-lines, beam slots and hearths were notably rare or absent.

The removal of the topsoil in the stage II area was succeeded by the machine excavation of five trenches in the north (G to K). The purpose of these was to investigate a series of parallel ditches, which could be seen on the aerial photographs, but not on the ground. The features in this part of the site were difficult to see because they were covered by an area of plough-disturbed subsoil, *c.* 0.2m thick.

The excavation strategy was conditioned by the aims and objectives, as described in the stage I and II project designs (see section V above). On both occasions, the need to determine the morphology of the Roman settlement was the over-riding factor. This was mainly achieved by concentrating on the stratigraphic relationships between field ditches, and by concentrating on the Roman buildings. A small number of possible discrete features, such as pits and post-holes, in the stage I and II areas were planned, but not dug, partly due to a lack of time and partly due to their archaeological value, which was deemed to be less. None of these unexcavated features are shown on the published phase plans. The other main objective, of inter- and intra-site comparison, and the production of local syntheses, was facilitated by the targeting of large assemblages of Roman finds, such as tile and pottery. Environmental and economic objectives were assisted by an extensive policy of soil sampling.

Site cleaning was restricted to ditch intersections and the more important feature groups, such as buildings and ring-ditches. This was partly due to a lack of time and partly due to the large size of the site, which made large-scale cleaning impractical. All individual segments and features were cleaned as a matter of course before excavation.

A greater proportion of each linear feature was dug during the first half of the excavation, mostly due to the extra time. Each ditch in stage I was investigated by a series of segments between 1.5m and 2m long. Each segment was placed between 2m to 40m apart, according to circumstances such as the length of the ditch. Ditch intersections and terminals were also targeted. Most of the linear features in stage II, in contrast, were sampled by one segment apiece. Dating and intra-site comparisons, however, do not appear to have been affected by this sampling discrepancy.

Most of the buildings were fully excavated. The exceptions were building 416, bath-house 414, and annex 786, which were not fully dug due to a lack of time. Most discrete features, such as pits and post-holes, were excavated to half-section only. Pits with large assemblages of finds and all burials and placed deposits were fully dug. A large depression (350) and pond (776) were sampled by one and three machine-dug trenches respectively. All features were examined by a metal-detector as a matter of course.

The central portion of the well (567) in the stage II excavation was not dug or recorded (Fig. 33). This part of the well was destroyed during the removal of the natural overburden by the gravel company. The only part of the well to be dug by hand was the top 1.2m. The bottom part of the well, which was waterlogged, was pulled up out of the ground in spits by a mechanical excavator with a broad toothless bucket. The surrounding sand and gravel was too wet and unstable for the bottom part of the feature to be dug safely to archaeological standards. The well timbers, finds and soil samples were recovered from the extracted deposits.

The archaeology was recorded using the Essex County Council Field Archaeology Unit recording system (ECC 1991b).

All features were drawn at a scale of 1:50. The more important feature groups, such as ring-ditches and buildings, were also planned at a scale of 1:20. All sections were drawn at a scale of 1:10.

All cuts and features were numbered from 1 to 4999, most excavated segments of ditches from 4000, and all deposits from 5000 onwards. The same sequence of numbers was used for both stages. All contexts were individually recorded on pro forma sheets. Colour transparencies and black and white prints were taken of every feature and feature group. Soil samples, photographs, plans, small finds and sections were recorded in individual registers.

VII. Location of archive

The finds and archival material, *i.e.* field plans, finds registers, photographic records, context sheets, *etc.*, are stored at the Chelmsford and Essex Museum, under the site code and museum accession number 1991:192.

VIII. Site phasing

Nearly all features could only be phased/dated in terms of last use/disuse. There were no datable construction deposits. This was partly due to a dearth of datable finds in primary and intermediate fills and partly due to a paucity of stratigraphic relationships. The most difficult features to date were the ditches, which had been cleaned out on a regular basis. In many cases, it was suspected that the earlier parts of their sequences were no longer present because they had been removed by a larger recut or 'clear-out' in the same location. One notable side effect of this was that the longer-lived ditches were (as a general rule) either broader and/or deeper than their shorter-lived counterparts.

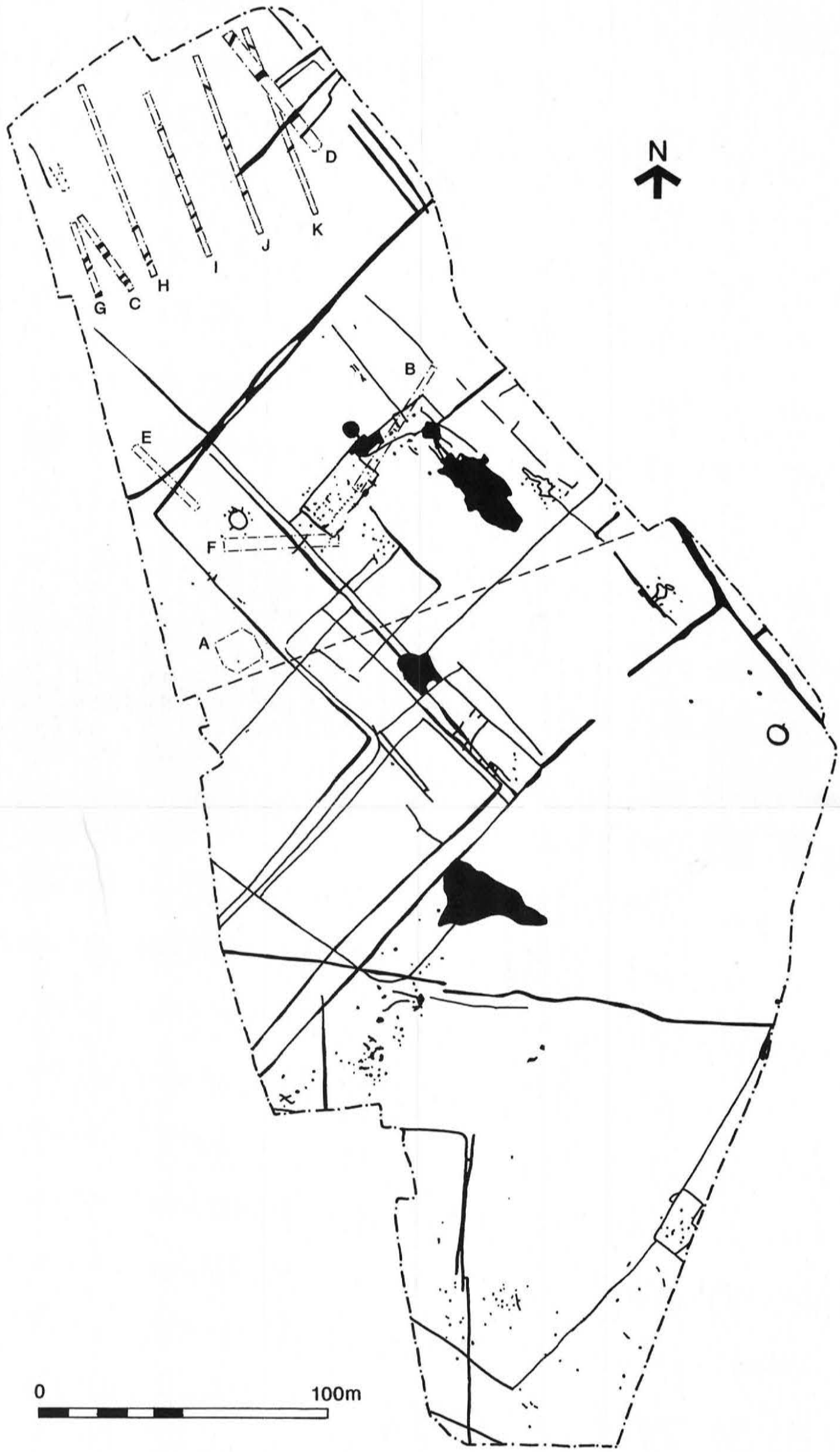


Figure 5 Site plan

Some of the phasing problems were partly resolved by relating the ceramically and/or stratigraphically poorly datable features to their ceramically and/or stratigraphically more well-dated counterparts. A large number of features which could not be phased by their finds and/or their stratigraphy alone were phased (albeit less securely) from their morphology and/or their spatial arrangement — *i.e.* from their size, shape or form or from their location in relation to other, more well-dated features. The dating of the initial, extrapolated cutting of the 'cleared-out' ditches, in particular, was dependent upon the interpretation of their implied relationship with well-dated features from succeeding phases.

These phasing difficulties were reflected in the site-wide phase plans (Figs 12, 13, 17, 48, 49 and 50). The ceramically and/or stratigraphically well-dated features were shown in black and the extrapolated, physically associated or poorly-dated features in grey. The degree of evidence for each feature and for each phase plan in general, and the extrapolated features in particular, could then be taken at face value.

IX. Outline chronology

The calendar dates for most of the phases outlined below are based on current assessments of the British sequence. The phasing of the Roman period, in particular, is based on the Chelmsford pottery type series established by Going (1987).

Period I Prehistoric

Phase I.1 Neolithic (c. 4000 to 2000 BC)
Placed deposits.

Phase I.2 Late Neolithic/Early and Middle Bronze Age (c. 2000 to 1000 BC)
Ring-ditches 313 and 452.

Phase I.3 Late Bronze Age (c. 1000 to 600 BC)
Small, unenclosed settlement. Placed deposits.

Phase I.4 Early Iron Age (c. 600 to 300 BC)
Structure 146.

Phase I.5 Middle Iron Age to Early Roman (c. 300 BC to c. 120/30 AD)
Pottery.

Period II Roman

Phase II.1 Mid Roman (c. 120/25 to c. 250/60)
Field system laid out and modified. Ovens. Iron smithing. Cremation. Well 567 cut *c.* 220. ?Pond.

Phase II.2 Late Roman (c. 250/60 to c. 360/70)
Field system expanded and modified. Droveway added. Pond recut. Aisled villa 416, bath-house 414, aisled-house 368, buildings 417 and ?786, and ?granary 294 possibly constructed. Well 567 infilled *c.* 320. Bath-house out of operation *c.* 350.

Phase II.3 Latest Roman (c. 360/70 to c. 410)
Droveway redefined. Holding pens added. Cremations. Buildings 416 and 368 maintained. Surviving ponds and ditches infilled. ?Granary 294 destroyed by fire. Bath-house 414, villa 416 and house 368 demolished and robbed, *c.* 400.

Period III Post-Roman

Phase III.1 Saxon (c. 410 to c. 1066)
Finds. ?Robbing in bath-house.

Phase III.2 Medieval (c. 1066 to c. 1450)
Building 440. ?Robbing in bath-house.

Phase III.3 Post-Medieval (c. 1450 to present)
Ditches.

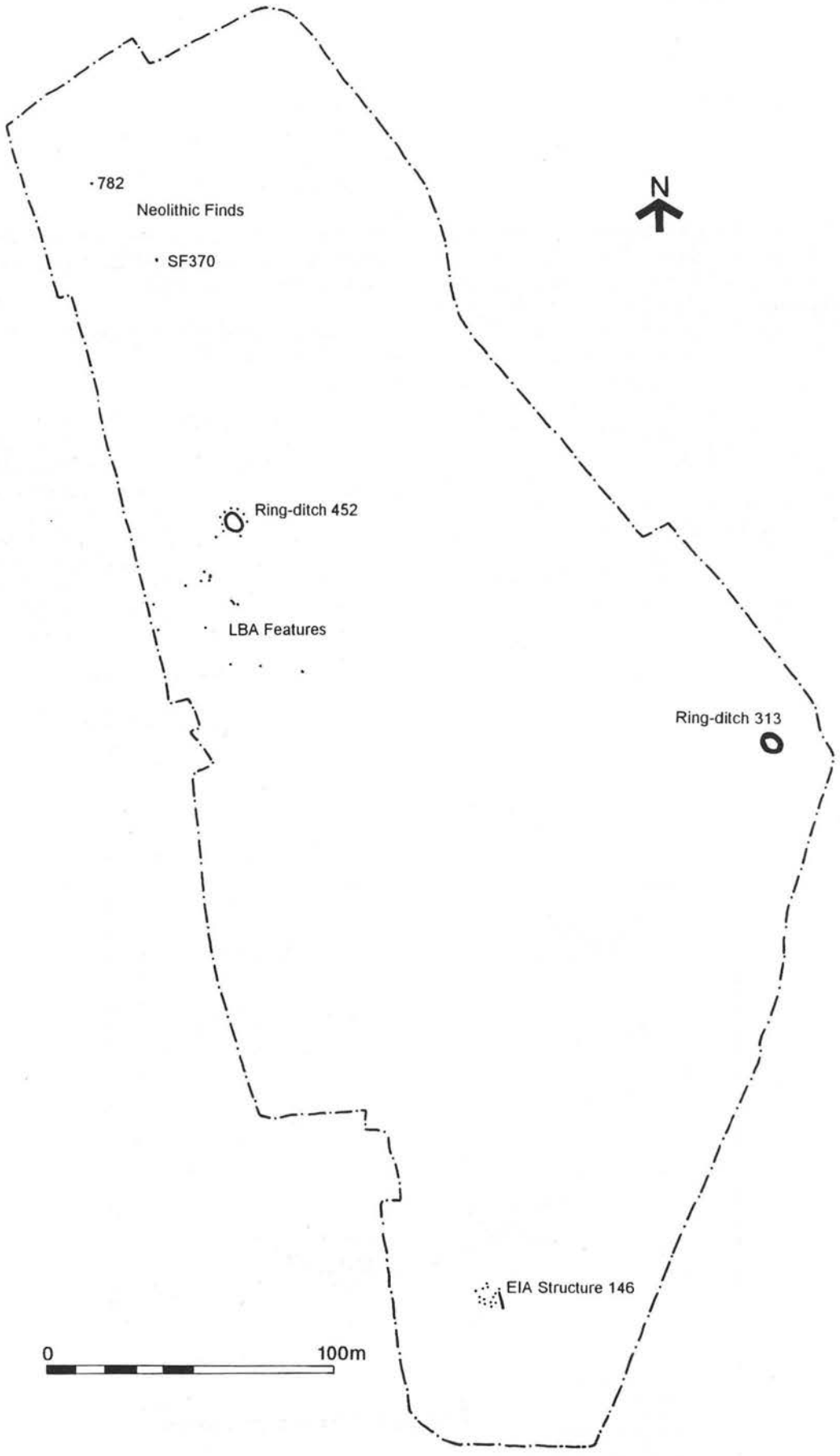


Figure 6 Period I Prehistoric

Part 2. The Excavation

I. Period I Prehistoric

Summary
(Fig. 6)

The prehistoric period was represented by features and/or finds from five different phases. The Neolithic (I.1) was indicated by artefacts from two plough-disturbed pits in the north-west corner, and the Late Neolithic/Early and Middle Bronze Age (I.2) by two small ring-ditches. One of the ring-ditches was recut on two or more occasions; the second ring-ditch was surrounded by a small ring of post-holes. In the Late Bronze Age (I.3), the north-west part of the site was occupied by an unenclosed settlement, as defined by pits and slots. A small number of placed deposits in the same area were possibly part of the same settlement. The Early Iron Age (I.4) and Middle and Late Iron Ages (I.5) were marked by an Early Iron Age structure, of indeterminate size and form, and a small quantity of residual Late Iron Age sherds. No Middle or Late pre-Roman Iron Age/early Roman features were identified.

Phase I.1 Neolithic
(Fig. 6)

Finds spots
A flint axe head (SF370) and a small cluster of Peterborough Ware (782) were found in disturbed subsoil. The finds were possibly derived from small pits that had been disturbed recently by ploughing; the axehead was near complete and unabraded.

Phase I.2 Late Neolithic/Early and Middle Bronze Age
(Figs 7–9; Plates I and II)

Ring-ditch 313
This elliptical feature (max. width *c.* 5.6m) was sampled by eight segments (4066 to 4073). The ditch (*c.* 1.6m wide and 0.8m deep) had a varied profile, from a steep-sided slot in 4067 to steep to even sides and concave base in 4068, 4071 and 4072. In some places, such as 4067, the top half of the feature was highly irregular, possibly due to the erosion of the loose gravel sides. Two to three deposits of pale silt sand and gravel were found in each segment. No evidence was detected in the sequence of silting for an internal mound or internal/external bank. The

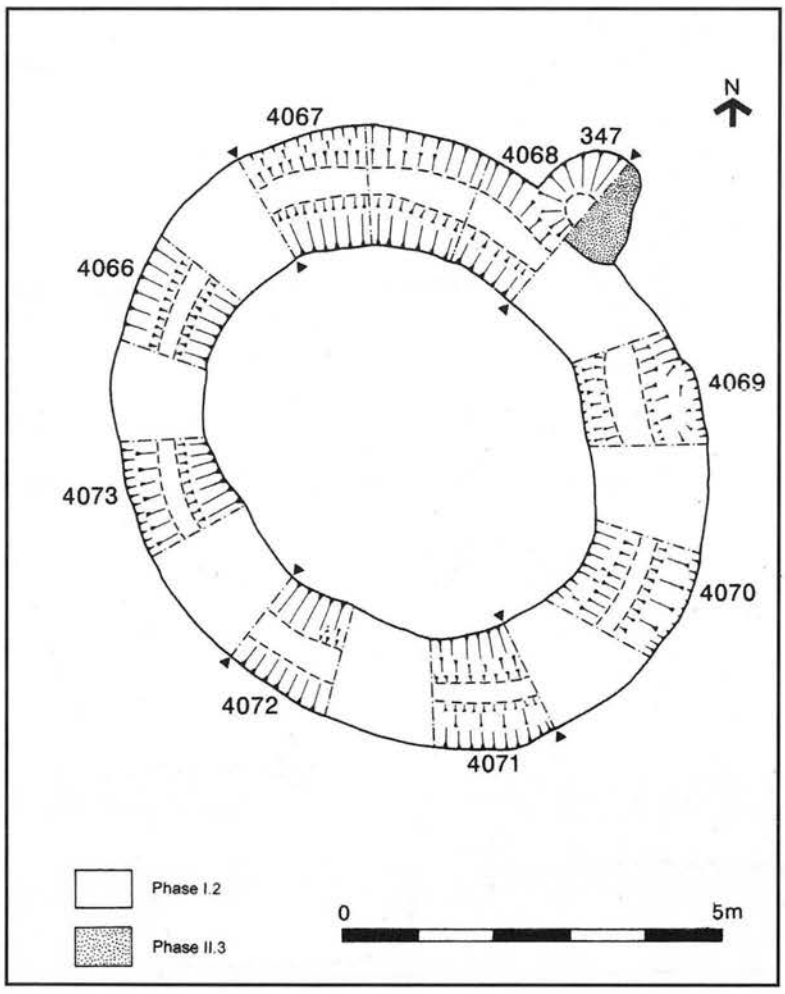


Figure 7 Phase I.2 ring-ditch 313

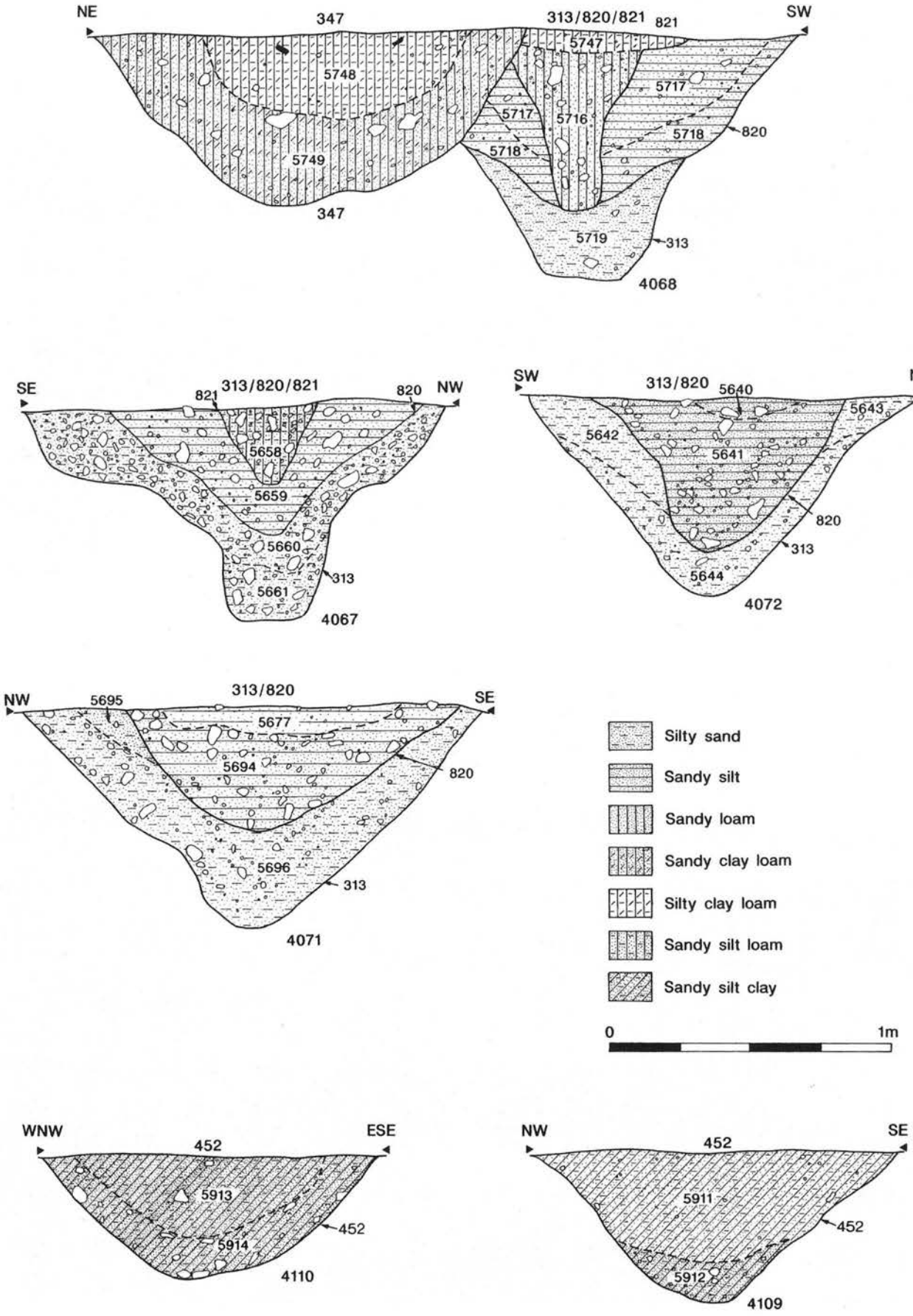


Figure 8 Phase I.2 ring-ditches 313 and 452 — sections

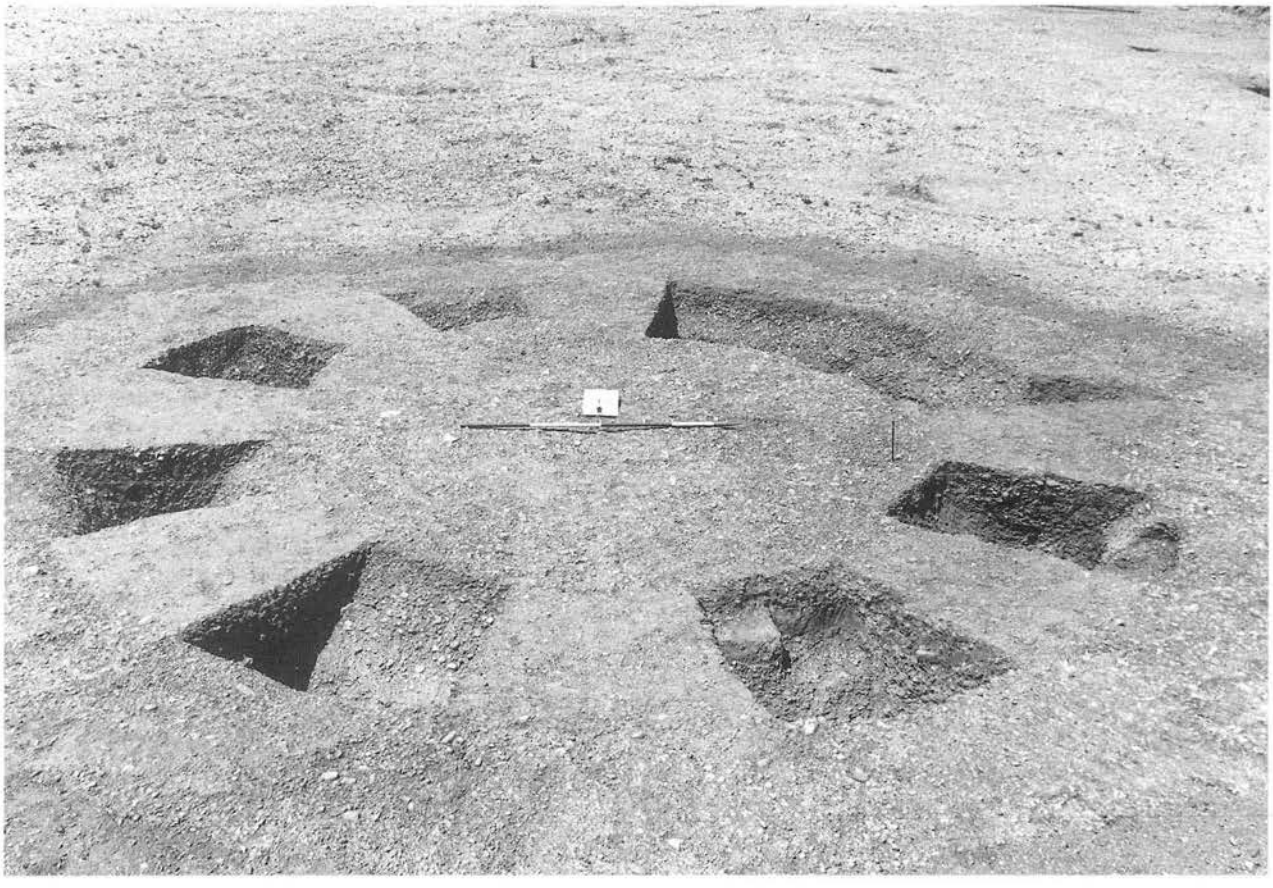


Plate I Ring-ditch 313

Plate II Ring-ditch 452

deposits were devoid of datable finds. The ring-ditch was dated by morphology and its relationship with recut 820.

Ring-ditch 313 recut 820
This recut, which followed the central line of 313, was seen in section, in all eight segments. The V-shaped profile varied in depth and width from section to section (1.2m–1.5m wide and 0.4m– 0.6m deep). In each segment the recut was filled by a maximum of three fills, some of which were contiguous with fills from other segments. Very little variation was found in the deposit sequence, which was probably due to gradual silting. A small assemblage of cores, flakes and blades was retrieved from the deposits in segments 4066 and 4070 to 4073, although none of the flint was intrinsically datable. Two sherds of Late Neolithic Grooved Ware were found in 4073 and a small group of sherds from an ?Iron Age jar in 4070.

Ring-ditch 313 recut 821
This short recut was seen in section only, in segments 4067 to 4069. It had a narrow, slot-like profile (*c.* 0.45m wide) which became progressively deeper from west to east (0.27m–0.63m). The two terminals were not located, but the feature was at least 4m long. The recut was filled by one deposit in 4067 and two deposits in 4068 and 4069. No datable finds were found in the deposits. The top fill in segment 4068 was cut by phase II.3 pit 347.

Ring-ditch 452
This circular feature (diameter *c.* 5.3m) was sampled by two segments (4109 and 4110). The post-holes in the surrounding ring were half-sectioned, except for 512 which was not excavated.

The ditch (*c.* 1.1m wide and 0.46m deep) had a shallower profile than 313. It had even sides and a concave base, with two fills per segment. The majority of post-holes were on the north-east side, possibly due to uneven truncation by erosion or ploughing. The south side of the ditch was also slightly narrower, possibly for the same reason. The excavated post-holes were less than *c.* 1m wide and 0.22m deep. The post in unexcavated post-hole 512 was possibly replaced on two or more occasions (489 and 490). Two sherds of Roman pottery in 482 were intrusive. No other finds were found. The feature was phased by morphology alone.

Phase I.3 Late Bronze Age
(Fig. 10)

Pits
Late Bronze Age sherds were found in seven small oval and sub-circular pits (386 (not on plan), 426, 430 to 432, 434 and 437), one sub-circular fire-pit (401) and one small gully or slot (436). All seven pits were less than 0.85m wide and 0.2m deep, with one fill apiece. The fire-pit, which had been scorched by heat (*c.* 0.85m wide and

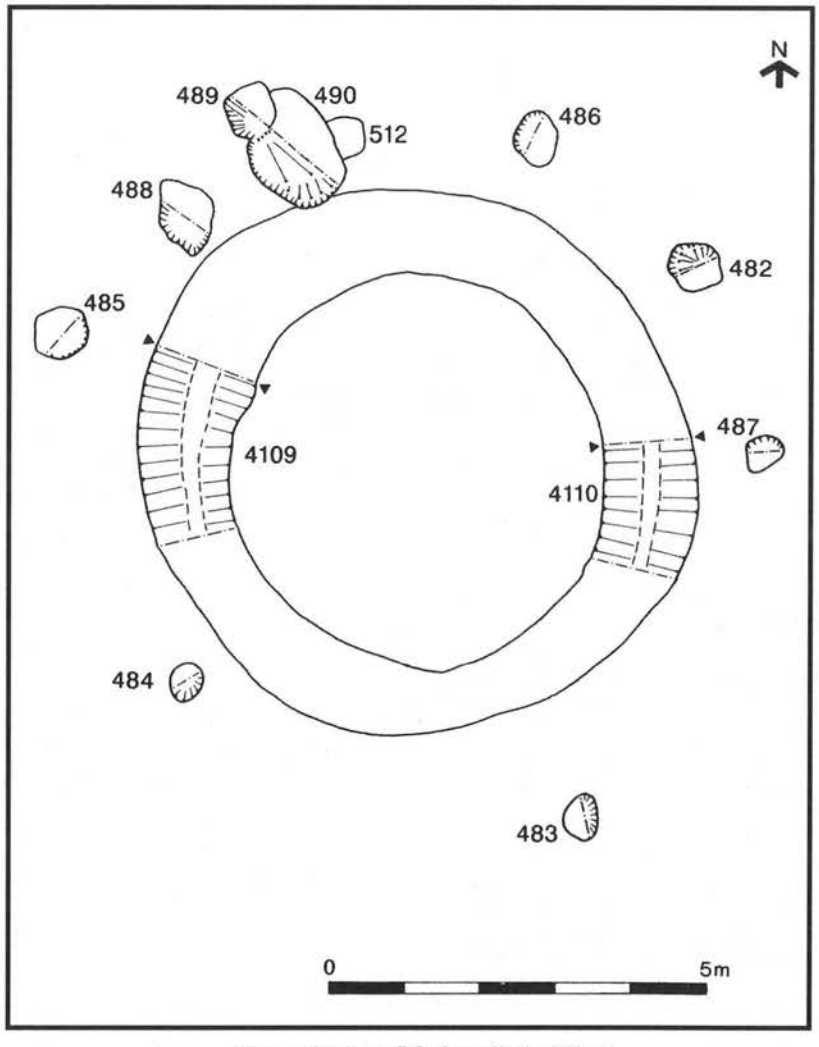


Figure 9 Phase I.2 ring-ditch 452

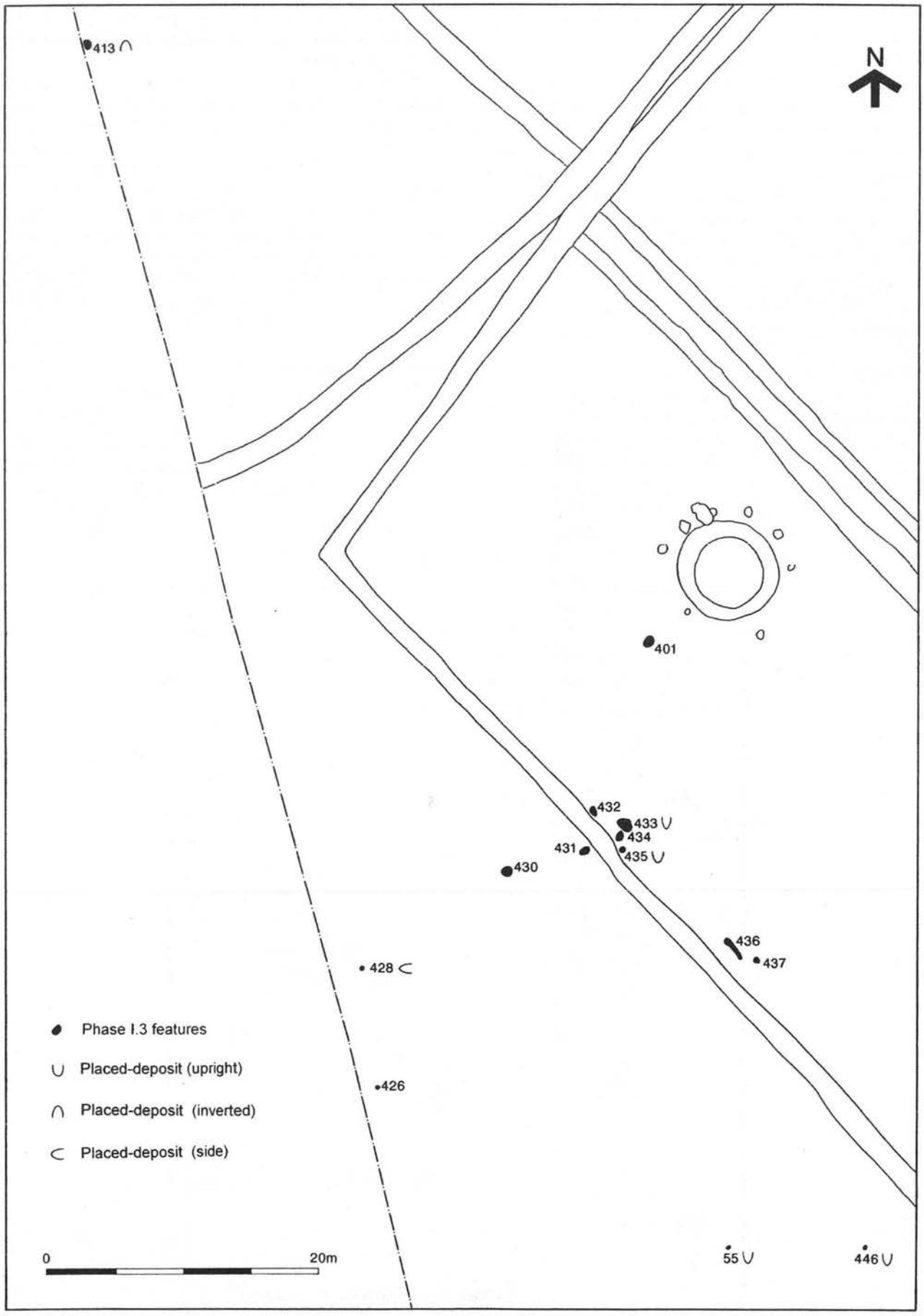


Figure 10 Phase I.3 Late Bronze Age pits with placed deposits

0.18m deep) was filled by two deposits, one of which, the primary, was comprised largely of carbonised wood. The slot, which had a slight curve and a V-shaped profile, was *c.* 1.55m long, 0.24m wide and 0.12m deep.

Placed deposits

Late Bronze Age pots, of different size, type and aspect, were found in six small pits. In four pits the single vessels were upright (55, 433, 435 and 446), in one sideways (428), and in one inverted (413). The mouth of the pot in 428 faced south-west. All six features had been backfilled with one fill apiece. Each pit was just large enough to take the pot it contained, from 0.2m to 0.9m wide and from 0.07m to 0.35m deep. A few sherds from other pots were found inside the vessels in 433 and 435. Two other finds in 435 were a flint piercer and a block-shaped loomweight.

Phase I.4 Early Iron Age

(Fig. 11)

Structure 146

This structure was defined by seventeen sub-circular post-holes, possibly from more than one phase of construction (131–4, 136–7, 139–40, 142–5, 147–8, 156–7 and 164). All seventeen post-holes were between 0.25m and 0.5m wide and 0.12m and 0.45m deep. A vertical post-pipe (141), *c.* 0.1m wide, was seen in section in 139. A small gully (163) from the same phase, *c.* 0.25m deep, was cut by post-holes 142 and 164. Sherds of Early Iron Age Darmsden-Linton Ware were found in 140, 144, 147, 157 and 163. Flint flakes and chippings were discovered in some of the post-holes. A large piercer with a broad Neolithic to Early Iron Age date range was found in 142. Seventy-two pieces of baked clay, including some with wattle impressions, were found in associated contexts.

Phase I.5 Middle Iron Age to Late pre-Roman Iron Age/Early Roman

No Middle Iron Age to Late pre-Roman Iron Age/early Roman features were located. Small amounts of residual pottery from that period, however, were found in later features.

Discussion

The prehistoric features represent two or more episodes of ritual activity and/or settlement. The Late Bronze Age pits and the Early Iron Age structure(s) are probably related to two, small, unenclosed settlements, and the Neolithic find spots and the Late Bronze Age placed deposits to ritual deposition. The pits for the Late Bronze Age placed deposits were probably custom-dug, because of the tight fit between pots and pits.

The morphology of the two ring-ditches and the ring-ditch recuts is suggestive of Neolithic/Early Bronze Age or Middle Bronze Age barrows. Ring-ditch 313 is possibly a long-lived feature because of the two recuts and the broad date range of pottery, from Late Neolithic to ?Iron Age. A short curve of timber wall or an arc of timber posts is possibly represented by the narrow, slot-like profile in the second recut.

A long hiatus in on-site occupation in phase I.5 is suggested by the absence of Middle Iron Age and Late Pre-Roman Iron Age/early Roman features. One or more, nearby (unlocated) settlements, however, are suggested by the residual sherds of Late pre-Roman Iron Age pottery.

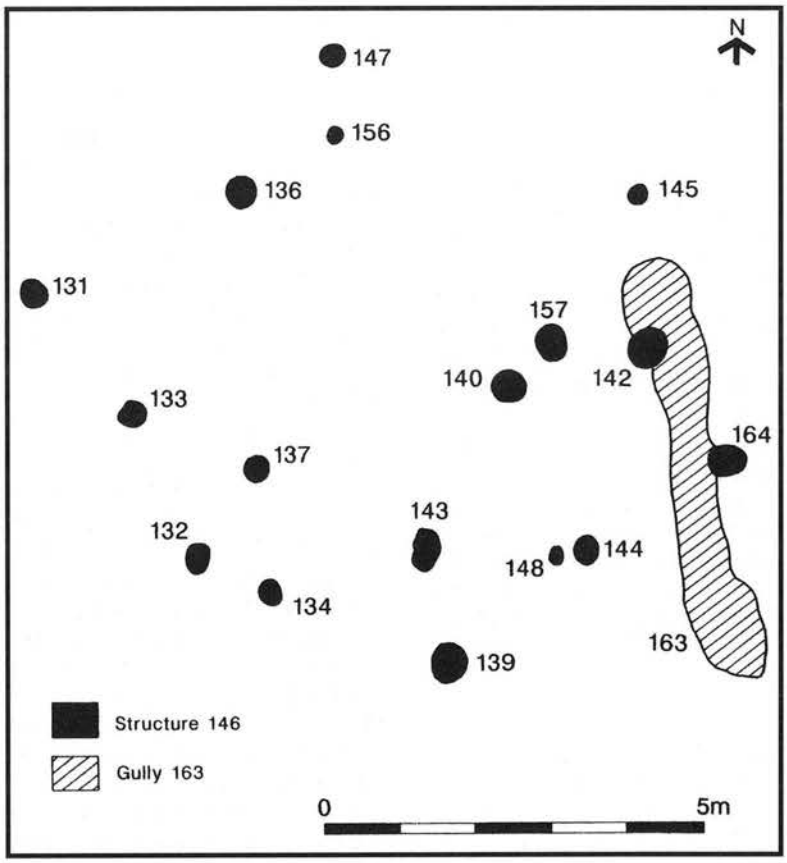


Figure 11 Phase I.4 Early Iron Age structure 146

II. Period II Roman

Phase II.1 Mid Roman (*c.* 120/25 to *c.* 250/60)

Summary

(Figs 12 and 13)

The phasing of the II.1a layout was based on a combination of pottery dates, stratigraphic relationships and structural analysis. The mainstays in the determination of the layout were long-lived ditch 198, well-dated ditches 382, 402 and 441 and well-dated enclosures E1, E2 and E3.

Enclosures E1 to E9 were defined by ditches in the early 2nd century; E5 to E9 were set out in a symmetrical block of five, and E1 to E2 in a narrow block of two; the south-east side of E8 was distinguished by a large entranceway and the north-east end of E2 by a small enclosure (E3).

The II.1a layout was then developed as the phase progressed. Ditch 382 on the north-west side of E8 was infilled, to make way for E11 in the south-east corner. Enclosures E12 and E13, on the south-west side of combined area E5/E7/E8 (E10), were constructed, and ditch 441 scrapped to make way for pond 421. One box cremation was interred, fifteen ovens constructed, and two pits and one short section of ditch cut.

The final events in II.1 were the construction of well 567 and the infilling of the E1 to E3 enclosure ditches in the early to mid 3rd century.

Enclosures E1 to E9

(Fig. 12)

Enclosures E1, E2 and E3

Enclosures E1 to E3 were defined by well-dated ditches 52, 310–11 and 370–72. The south-east side of E1 was defined by ditch 198, which was extrapolated back from II.3. The presence of 198 in II.1 was implied by II.1 ditches 29 and 52, which butted up against its north-west side. Ditch 52 was cut by II.3 ditch 229, 310 by II.3 ditch 314, 311 by II.3 ditches 314 and 323, 370 by II.2 ditch 373 and II.3 ditches 314 and 337, and 372 by II.2 ditch 377 and II.2 depression 318. Two ditches were sampled by one segment apiece (370–72), one by two segments (402) and three by three segments (52, 310–11). All six ditches, which were all less than 1m wide and 0.4m deep, had even sides and concave bases, with one to three fills per segment. When present, the primary fills were largely comprised of material eroded from the feature sides. The higher fills were more mixed, possibly due to silting, or the deliberate infilling with topsoil. The assemblages in 310 and 311 were particularly large, probably due to deliberate dumping. Sherds of mid to late 2nd and 2nd-century date were found in 52, 310–11 and 370–72. Very few finds were discovered in primary fills, with one exception, 310. Pieces of iron smithing debris were found in 52, 310–11 and 371.

Dating evidence

52	5786 (top 4105)	*Samian:* f31 (East Gaulish). *Misc. pot:* dish B1.3 (BSW); jar G24 (BSW). Late 2nd to early 3rd c.
310	5624 (primary)	*Misc. pot:* dishes B4.2 (BSW & BB2), B3.2 (BB2); jars G5.4 (GRS), G9 (BB2), G23 (BSW), G45.1 (STOR); beakers H6.3 (NKG); Fabric COLC. Mid to late 2nd c.
	5613 (second)	*Misc. pot:* dish B4.2 (BB2); beaker H20.1 (COLC); Fabric NKG. Mid to late 2nd c.
	5612 (top)	*Samian:* f33 (East Gaulish), f37 (Central Gaulish). *Misc. pot:* dishes B2.1 (BSW & OBB), B2.2 (GRS), B2.3 (BB2), B4.2 (OBB & BSW); bowl C1.2 (BSW); jars G (GRS & BSW), G5.4 (GRS), G9.1 (BB2), G22.1 (BSW); flagon J neck (RED); beaker H20.1 (COLC), H6.3 (NKG). Mid to late 2nd c.
	5604 (top 4064)	*Misc. pot:* dishes B4.2 (GRF & GRS); mortarium D [b/s] (COLB); jars G5.4 (BSW) G9.2 (BSW). Mid to late 2nd c.
	5608 (top 4065)	*Samian:* f33 (Central Gaulish), f31 (Central Gaulish). *Misc. pot:* jar G45.1 (GRS & BSW). Mid to late 2nd c.
311	5616 (top 4074)	*Samian:* f31 (Central Gaulish), f31 or 31R (Central Gaulish). *Misc. pot:* dish B4.2 (GRS); jar G5.5 (GRS). Mid to late 2nd c.
	5073 (single 54)	*Samian:* Curle 21 (Central Gaulish). *Misc. pot:* dish B2.1 (GRS). Mid to late 2nd c.
	5030 (single 4001)	*Misc. pot:* dishes B1.3 (BSW), B2.1 (BSW), B4.2 (GRS); jar G22.1 (GRS), Fabrics NKG & BB2. Mid to late 2nd c.
	5638 (single 4076)	*Misc. pot:* jars G5.4 (GRS), G22.1 (BSW); beaker H6.2 (GRF). Mid to late 2nd c.
370	5874 (second)	*Misc. pot:* dish B4.2 (BB2). Mid to late 2nd c.
371	5801 (top)	*Misc. pot:* beaker H6.2 (NKG); jar G22.1 (GRS). Mid to late 2nd c.
372	5802 (single)	*Samian:* chip (Central Gaulish). *Misc. pot:* jar G23/G24 (GRS). 2nd c.

Enclosures E5 to E9

Enclosures E5 to E9 to the north-east of E1 to E3 were represented by three well-dated (382, 402 and 441) and ten poorly dated ditches (29, 62, 63, 198, 272, 365, 378, 399, 408 and 445). The assignation of the poorly dated ditches was partly decided by the symmetry and the overall coherence of the II.1a layout, the modular forms and the set dimensions (Fig. 16), and the role of long-lived ditch 198, which was shared by blocks E1 to E3 and E5 to E9.

Well-dated ditches 382 (*c.* 1.2m wide and 0.28m deep) and 402 (*c.* 0.65m wide and 0.2m deep) were cut by II.1b ditch 390 and II.2 to II.3 drain 100 respectively. The greater part of ditch 441 (*c.* 1m wide and 0.2m deep), which was apparently cut by II.1b pond 421, was no longer present. All three features were sampled in two locations each. Two fills were identified in segment 4107 across 382. The other five segments were filled by one deposit apiece. Shallow to even sides and concave bases were found in all six segments. Late 1st to early 2nd-century pottery was discovered in 382, mid to late 2nd-century in 402, and mid 2nd-century in 441. The finds in 402 included an unbroken samian f72 beaker, and fragments of glass from a bulbous-bodied flask or bottle.

Three of the ten poorly dated ditches were cut by well-dated features. Ditch 29 was cut by II.1b recut 27, 272 by II.3 recut 273, and 378 by II.2/II.3 structure 786 and II.3 ditch 376. The stratigraphic relationship between 378 and II.1b ditch 381 was not determined. All three features were ceramically undatable. The north-west and south-east ends of 378 were not detected. Ditch 29 was sampled in three locations and 378 in two locations. Single deposits were discovered in all five segments. A U-shaped profile was uncovered in 29 (*c.* 1.1m wide and 0.32m deep) and an even-sided, concave-based profile in 378 (*c.* 1.1m wide and 0.28m deep). Ditch 29 was inadvertently contaminated with finds from recut 27 during the excavation.

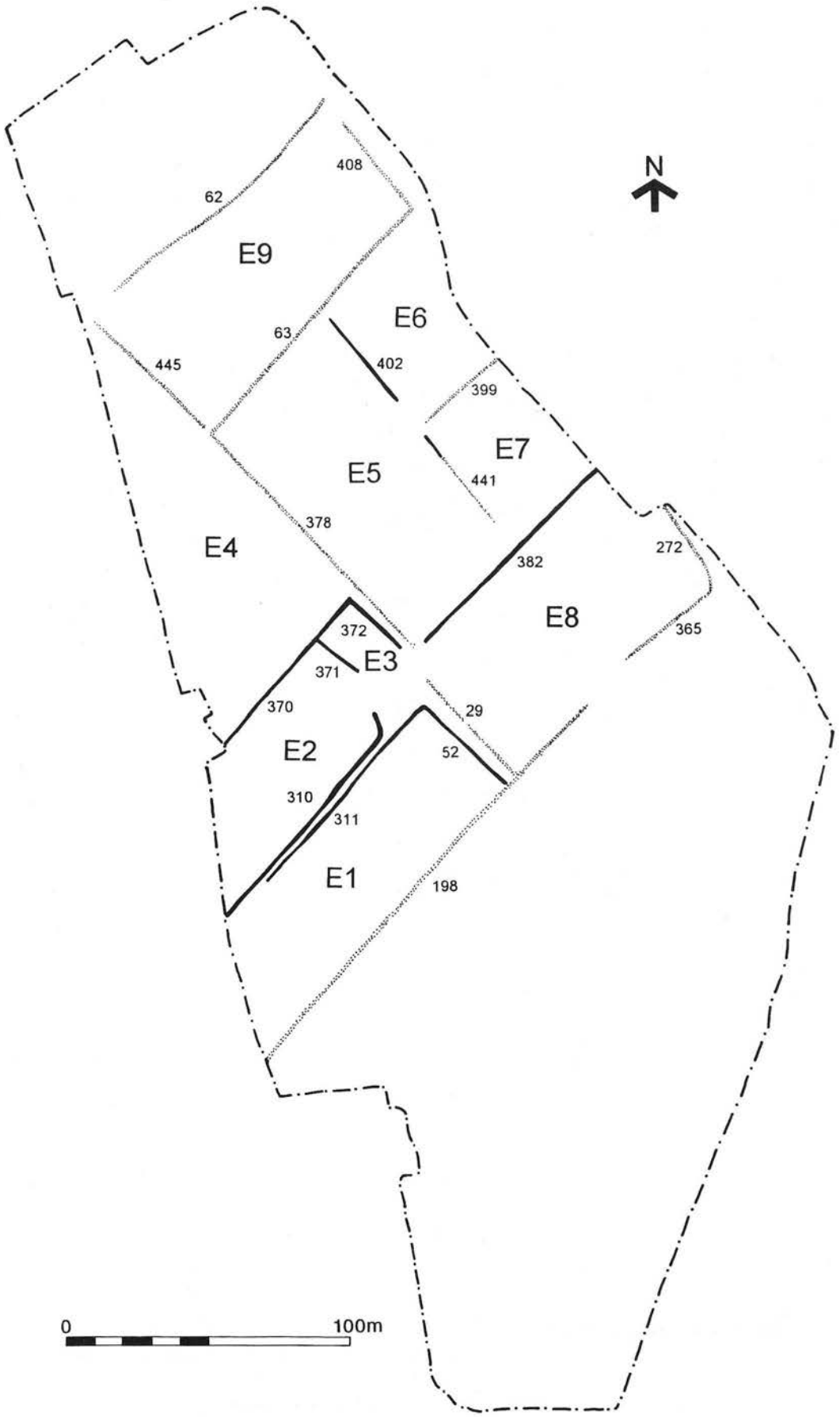


Figure 12 Phase II.1a Mid Roman

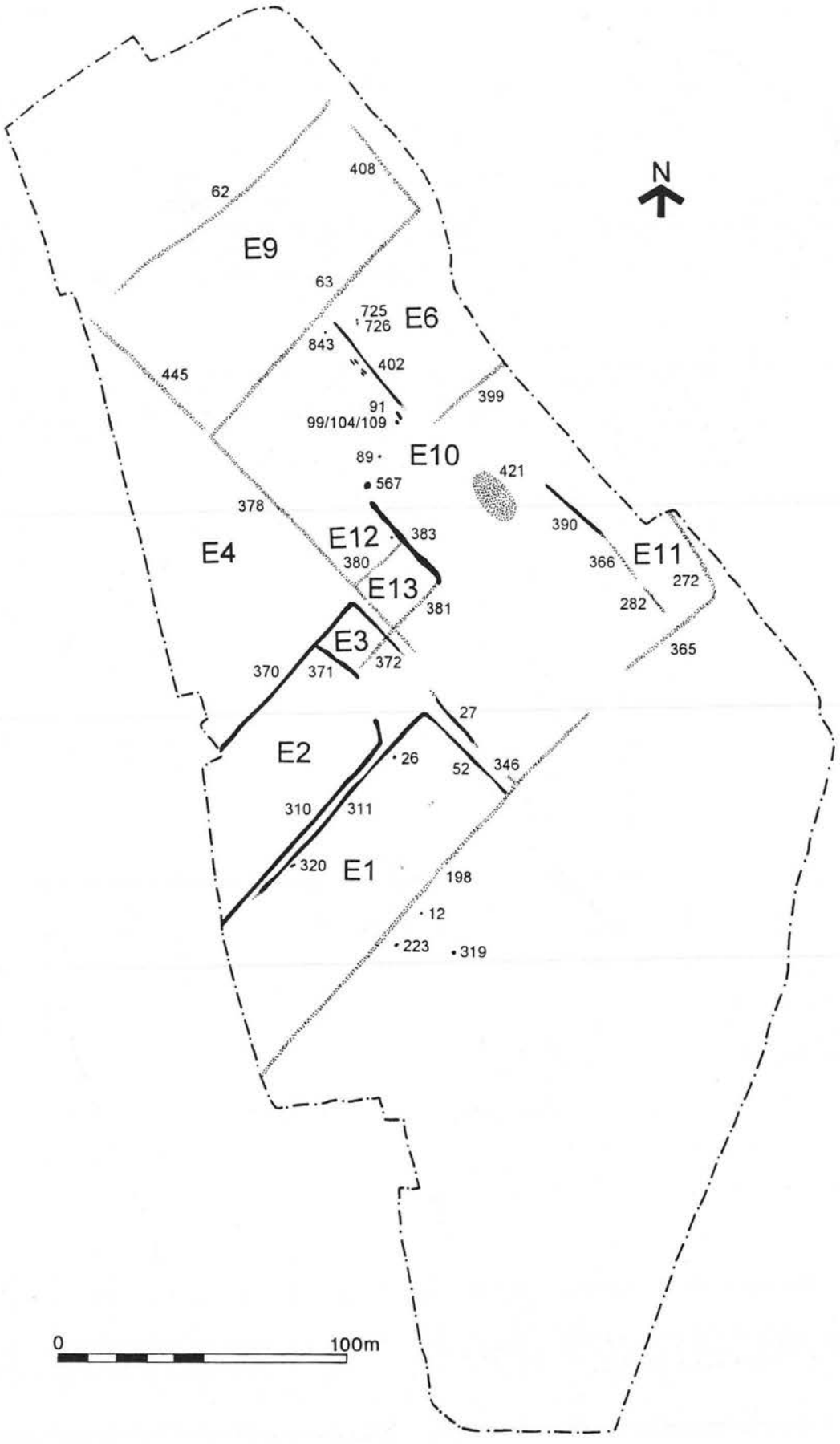


Figure 13 Phase II.1b Mid Roman

Ditches 408, 445 and 62, in E9, which were ceramically undatable, were sampled by one, one and three segments respectively. 408 (*c.* 1m wide and 0.48m deep) and 445 (over 0.7m wide and 0.31m deep) were filled by one fill per segment and 62 (*c.* 1.2m wide and 0.58m deep) by two to three fills per segment. All three features had steep (408) or even (62 and 445) sides and flat (445) or concave (62 and 408) bases. The central section of ditch 62, which was poorly defined, was detected by aerial photography. Ditch 445, which was ceramically undatable like 62 and 408, was cut by poorly dated recut 405 from phase II.2.

The remaining ditches were extrapolated back from phase II.2 (272) and II.3 (63, 198, 365 and 399).

Dating evidence

29	5742 (single 345)	*Misc. pot:* Fabric BSW. Roman
	5779 (single 4101)	*Misc. pot:* Fabrics STOR & BSW. Roman
378	6214 (single 4107)	*Misc. pot:* Fabric STOR. Roman
382	5812 (top 4107)	*Misc. pot:* jar G17 (BSW). Late 1st to early 2nd c.
	5880 (single 4108)	*Misc. pot:* jars G20 (BSW), G44.1 (STOR). Late 1st to early 2nd c.
402	6275 (single 4140)	*Samian:* f33 (Central Gaulish), f72 (Central Gaulish). *Misc. pot:* dishes B2/B4 (BB2); jars G23 (GRS), G23.2 (GRS), G23.3 (GRS), G23-24 (GRS), G40 (GRS). Mid to late 2nd c.
	6338 (single 4166)	*Misc. pot:* dishes B7.1 (BSW), B10.1 (RED); jars G23 (MCW), G23.2 (GRS), G23.3 (GRS), G23–24 (GRS), G40 (GRS). Mid to late 2nd c.
441	6304 (single 4153)	*Misc. pot*: G9.1 (BB2), jar G23 (GRS). Mid 2nd c.
	6396 (single 4174)	*Samian:* f27 (Central Gaulish). *Misc. pot:* jar G11.1 (GRS); beaker H6 (NKG). Mid 2nd c.

Enclosures E10 to E13

(Fig. 13)

The setting out of the II.1a layout was succeeded shortly thereafter by the removal of ditch 382 to form new area E10. This was then followed at some unknown point in phase II.1 by the construction of E11 in the south-east corner, and E12 and E13 on the inside south-west side of former area E5. The enclosure E3 at the north-east end of E2 was diminished by new ditch 381. Enclosure E7 and ditch 441 in the centre were removed to make way for new pond 421. Pre-existing ditch 29 on the south-west side of old area E8 was recut by 27 and 346.

Enclosure E11 was defined by well-dated ditch 390 (*c.* 1m wide and 0.33m to 0.5m deep) and poorly dated ditches 282 (over 0.65m wide, and 0.3m deep) and 366 (over 0.85m wide and 0.42m deep). 390 and 282 were sampled by two segments apiece and 366 by one segment. The number of fills in each segment varied, from two per segment in 282 and 366 to three per segment in 390. The primary deposits were largely comprised of eroded subsoil from the features sides; the upper fills, in contrast, were more organic, possibly due to silting or deliberate backfilling. No datable finds were found in the primary fills. Ditches 366 and 282 were cut by well-dated ditch 269 from phase II.2. Ditch 390 cut II.1a ditch 382 and was cut by II.2 ditch 385 and II.2 building 417. 366 and 390 were possibly contiguous, but the intervening 5m wide gap was too badly disturbed to confirm this. All three features had steep to even sides and concave bases, except 366 which had a flat base. Roman sherds of indeterminate date were found in 282 and 366. A small assemblage of late 2nd-century pottery in 390 was possibly deliberately dumped because it was found in a tight cluster.

Areas E12 and E13 were formed by well-dated ditch 383 and poorly dated ditches 380 and 381. All three ditches were sampled in one location each. Two deposits were found in 383 and one apiece in 380 and 381. The stratigraphic relationships between 381 and II.1 ditches 378 and 372 were not determined. The well-dated ditch 383 was distinguished by steep sides and an uneven base (*c.* 1.1m wide and 0.28m deep). Ditch 380 was small and shallow (*c.* 0.68m wide and 0.12m deep). Pieces of late 2nd to early 3rd-century pottery were discovered in the top fill of 383 and pieces of not closely datable Roman pottery in 380. Ditch 381, which was contiguous with ditch 383, was extrapolated back from phase II.2.

Recut 346, at the south-east end of ditch 29, was *c.* 4m long. It abutted ditch 198 and was ceramically undatable. Recut 27, which was *c.* 17 or more metres long, was situated on the north-east side of the central section of ditch 29. It was cut by phase II.3 ditch 354, and contained a large assemblage of late 2nd to early 3rd-century pottery. Both recuts were sampled by one segment apiece, with one fill per segment. Recut 27 had even sides and a broad concave base (*c.* 0.86m wide and 0.26m deep) and recut 346 even sides and a narrow concave base (*c.* 0.6m wide and 0.2m deep).

Dating evidence

27	5029 (sing. 4003)	*Misc. pot:* dish B3.2 variant (BB2), B2 type (GRS); jars G24 (GRS), G35.1 (BSW), G (GRS); beaker H20 (COLC). Late 2nd to early 3rd c.
380	6233 (single 4137)	*Misc. pot:* Fabrics GRF & BSW. Roman
383	5813 (top)	*Misc. pot:* dish B2.3 (BB2); jar G5.4 (GRS & BSW), Fabrics COLC, COLB & ASS. Late 2nd to early 3rd c.
390	6189 (sec. 4132)	*Misc. pot:* Mortarium D1.3 (COLB); jars G9.1 (BB2), G17.1 (BSW). Late 2nd c.

Discrete features

Ovens

(Figs 13, 14, 18 and 21)

Thirteen possible ovens were found at the north-west end of E10 (89, 99, 104, 109, 609, 613, 626–28, 631, 725–26, and 843). Two more possible ovens were discovered in the vicinity of E1 (319–20). Six of the features were arranged in a small group, with some in pairs, to the south-west of ditch 402 (Fig. 14). Oven 109 was cut by oven 99, which was cut in turn by oven 104. 626 was cut by 628.

Four different types of oven were identified:

A. Bowl-shaped pits: 89, 109, 725–26 and 843 (0.55m to 0.9m diameter., 0.2m to 0.3m deep)

B. Rectangular box-like pits with rounded corners: 99, 319 and 626 (1.35 to 1.5m long, 0.7 to 0.85m wide, and 0.18m to 0.4m deep)

C. Narrow slots with steep, near vertical sides and rounded ends: 104, 320 and 609 (1.45m to 2.2m long, 0.31m to 0.55m wide, and 0.17m to 0.34m deep)

D. Squat, linear pits with pinched waists, even sides and concave bases: 613, 627–28 and 631 (1.1m to 1.64m long, 0.34m to 0.6m wide, and 0.08m to 0.15m deep)

The base and sides of 89, 99, 104, 109, 613, 626–28 and 631 were scorched in places, in contrast to 319–20, 609, 725–26 and 843. All fifteen ovens were occupied by

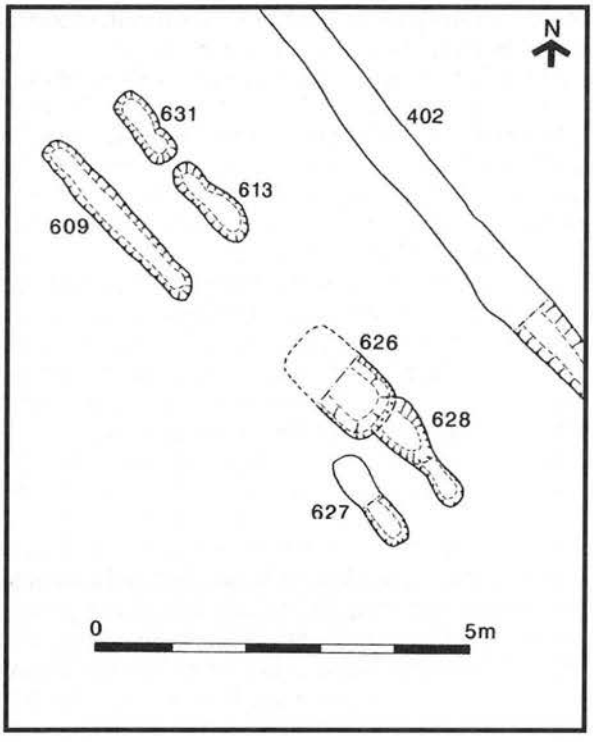


Figure 14 Phase II.1 ovens 609, 613, 627 to 628 and 631

deposits of black or very dark greyish brown silt with frequent pieces of charcoal. Iron-smithing debris was found in 89 and baked clay fragments in 99, 319 and 320. The upper edges of 104 were lined with fragments of scorched tile. Very few carbonised macrofossils were found in sampled ovens 89, 609, 613, 626–28, 631 and 726.

Most of the features were either undatable or poorly dated. Small assemblages of late 1st to 3rd-century pottery were found in 89, 104, 609 and 626. A piece of Rettendon ware in 631 was possibly intrusive. It is possible that the ceramically undated ovens were mid Roman by analogy with their nearby counterparts. A date in phase II.2 or II.3, however, is easily possible.

Dating evidence

89	5139 (top)	*Misc. pot:* Fabric HAWO. Mid 2nd c. +
104	5162 (primary)	*Misc. pot:* Fabric GRS. Roman
	5159 (top)	*Misc. pot:* dish ?B7 (GRF); Fabrics RED, GRS & BSW. ?Late 1st to early 2nd c.
109	5184 (top)	*Misc. pot:* Fabric GRS. Roman
609	6150 (single)	*Misc. pot:* jar ?G24 (GRS); Fabric BB2. 2nd to 3rd c.
626	6200 (primary)	*Misc. pot:* jar G24 (GRS); dish B2/B4 (GRS). 2nd to 4th c.
	6191 (top)	*Misc. pot:* Fabrics BUF, BB2. 2nd c.
631	6168 (single)	*Misc. pot:* Fabric RET. ?Intrusive. Late 3rd c. +
725	6341 (single)	*Misc. pot:* Fabric GRS. Roman
726	6342 (single)	*Misc. pot:* Fabrics STOR, BSW & GRS. Roman

Pond 421

(Figs 13 and 18)

This shallow-sided feature, of indeterminate shape and size, was possibly present in the centre of the E10 area from the second half of the 2nd century onwards, following the demise of ditch 441, which it appears to have cut. It was truncated by II.2 pond 776 and was seen in section only, in machine-trenches 450 and 451. The pond was not bottomed (*c.* 8m wide and at least 6m long and 1m deep), but was definitely filled by two deposits of sandy gravel and a top deposit of redeposited natural.

Dating evidence

421	5898 (primary)	*Samian:* f45 (Central Gaulish). Late 2nd c.

Cremations 12 and 223

(Figs 13 and 21)

Un-urned cremation 12 and boxed cremation 223 were discovered in a small group to the immediate south-east of ditch 198. Cremation 12 was represented by a small, tightly packed cluster of cremated bone and burnt flint in a small, elongated pit, *c.* 0.12m deep. A small assemblage of metalwork and mid ?nd-century pottery was retrieved by hand from the surface of 223, which had been badly disturbed by ploughing. The rest of the cremation was lifted as a block for conservation at the A.M. Laboratory in London. The box fittings included two or more iron corner brackets with mineralised wood on the back, an iron ring, fragments of copper alloy sheet, and a possible lock plate. A small gold terminal, which may have been used as a box decoration, was also discovered. The few surviving scraps of cremated bone from the feature were not extracted for analysis.

Dating evidence

12	5013 (primary)	*Misc. pot:* Fabric GRS. Roman
223	5426 (single)	*Misc. pot:* Fabric EGRHN. Late 2nd to early 3rd c.

Metalwork (cremation 223)

by H. Major

The cremation was badly disturbed by ploughing, and the metalwork was in poor condition. A few fragments of box fittings were retrieved on site (SF121–29 and 131), which are the remains of at least two iron corner brackets, now fragmentary, with mineralised wood on the back, an iron nail and a copper alloy sheet fragment.

Most of the cremation was lifted as a block, and conservation work undertaken by C. Slack (English Heritage) at the A.M. Laboratory. Most of the box fittings were not excavated from the block, and identification of the components was from the X-rays. They include a possible lock plate, perhaps with part of the mechanism, an iron ring, and fragments of copper alloy sheet, presumably used to decorate the box. A small gold terminal was also found, possibly a decorative feature on the box.

1. Gold; hollow terminal in sheet metal, with an onion-shaped head on a short tube. There is no evidence for what it was attached to; it may have been a decorative feature from the box, in which case there may have been more than one of these objects originally present (Fig. 15)
2. (Not illustrated) Iron; two pieces which probably join to form a tapering, right-angled binding, broken at the angle. SF124 is a strip L. 34mm, W. 12–13mm; SF131 is a strip L. 18mm, W. 8–6mm, terminal missing. SF 124/131

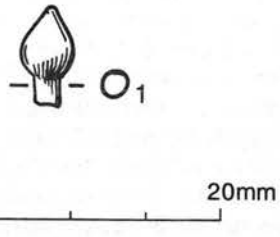


Figure 15 Gold terminal

3. (Not illustrated) Iron; two pieces which probably join to form a tapering, right-angled binding, broken at the angle. SF122 is a strip 39 × 11mm, with one rivet hole towards the terminal. SF126 is a strip L. 31mm, W. 8–22mm, possibly with two rivet holes at the terminal. SF122/126
4. (Not illustrated) Two pieces of flat, tapering strip. L. 44mm, W. 8–14mm and L. 23mm, W. 4–8mm. SF 121/123 and SF125.
5. (Not illustrated) Objects in the soil block. Iron; rectangular plate, assumed to be a lock plate, with mineralised wood on the back. There is no clear keyhole, although parts of the object are obscured. There is one clear perforation in the corner. Associated with the plate are a ring and a rod, perhaps with a knobbed end, which the side view suggests are possibly part of the lock mechanism. There are small fragments of copper alloy on the plate, possibly plating, and other small fragments of copper alloy scattered through the block, probably the remains of decorative sheeting. Plate 54 × 33mm, ring external diam. 17mm
6. (Not illustrated) Copper alloy; irregular sheet fragment, all edges broken. *c.* 70 × 30mm. SF129
7. (Not illustrated) Iron; ring, diam. 27mm. This was on the opposite side of the box to the 'lock' plate, although this was not necessarily its original position.
8. (Not illustrated) Iron; fragments of at least two nails.

Well 567

(Figs 13, 18, 26, 28, 33 and 114)

This *c.* 6m deep well, in the centre of E10, was only partly investigated. The top 1.4m was dug by hand; the bottom 1.8m, including the surviving well lining, were pulled up out of the ground by a mechanical excavator. The well lining was reconstructed from the extracted timbers. The majority of the central part of the well, which was removed by machine stripping of the quarry surface, was not recorded. The bottom 1.5m was waterlogged.

The well lining was the only part of the feature that could be related to this phase, and was dated by a combination of estimated tree-ring loss and dendrochronology to *c.* AD 220 (p. 188). A few 4th-century sherds in the redeposited natural (6460) behind the lining were probably derived inadvertently from phase II.2 deposit 6459 during excavation. A small amount of 3rd-century silting was possibly not recognised due to the heavy-handed way in which the lower part of the feature was lifted. The reconstruction of the well lining indicated that the surviving structure had been 1m to 1.12m square. A series of five or more box frames with dovetail joints and diagonal cross-braces had been stacked to a minimum height of *c.* 1.66m. There was no evidence to indicate that any of the well timbers had been previously used.

Dating evidence

567	6460 (single)	*Misc. pot:* H — slit-folded (NVC). 4th c. ?Intrusive from II.2 context 6459
	6472 (well timber)	*Dendro:* AD 188+
	6473 (well timber)	*Dendro:* AD 182+
	6475 (well timber)	*Dendro:* AD 155+
	6478 (well timber)	*Dendro:* AD 172+

Miscellaneous

(Figs 18 and 20)

Two discrete features (26 and 668) were assigned to this phase. Both features contained mid to late 2nd or early 2nd to early/mid 3rd-century pottery. Post-hole 668 was situated to the immediate south-west of ditch 383, in the same area as a small cluster of undatable pits or post-holes, of similar size and form (660–67, 669, 673–74 and 849 (feature group 418)). Pit 26 was located on the south-east side of ditch 311, on the north-west edge of area E1. It contained three large pieces of lava quern, a small fragment of millstone grit quern, and a block of quartzitic sandstone, possibly from a re-used saddle quern.

One other feature, which may have been in use during this phase, was a broad, shallow ditch (91; Fig. 18), with two deposits, to the immediate west of ditches 402 and 441 (*c.* 1.6m wide, 0.2m deep). Its full length was not determined, as it was not seen outside trial trench B in the stage II area. It contained a large assemblage of tile and a small assemblage of 2nd-century pottery. A sherd of late 3rd/4th-century Rettendon ware in its top fill was probably inadvertently derived from phase II.2 to II.3 post-pit 573, which cut its south-east end.

Dating evidence

26	5028 (single)	*Misc. pot:* dish B2/B4 flange (BSW); mortarium D13.2 (COLB); jars G5.4 (GRS), G necked type (GRF); Fabric STOR. Mid to late 2nd c.
91	5169 (top)	*Samian:* f33 (Central Gaulish). *Misc. pot:* dish B2 (GRS); jar G18 (BSW); Fabrics COLC, GRF. STOR, RET & GROG. 2nd c. with ?intrusive RET
668	6238 (single)	*Misc. pot:* dish B2/B4 (BB2); jar G5.5 (GRS); Fabrics COLC & STOR. Early 2nd to early/mid 3rd c.

Discussion

Layout and phasing

The II.1 phase of the Roman settlement is the least understood. This is partly due to the low number of feature types, such as structural remains, and partly due to the difficulties in phasing the ditches, six of which were ceramically undatable and four of which were extrapolated back from later phases. The phasing of the II.1a phase plan is better understood when it is seen in relation to its phase II.2 and II.3 counterparts, as the phasing of the site, through necessity, has had to work backwards, from the well-known (*i.e.* II.2 and II.3, when most things go out of use) to the lesser known, when the underlying framework is founded. The phasing of the most subjective element, the E5 to E9 block, is based on a combination of symmetry and site-wide consistency, in terms of repeated forms and set dimensions, between it and its much more securely dated counterpart the E1 to E3 block (Fig. 16; on the basis that one Roman foot or *pes monetalis* (pM) equals 0.295m, and that one *actus* (ac) equals 14400pM square (Duncan-Jones 1982)). The inherent danger in this approach — that the assignation is self-serving — has been minimised by the low number of choices and the relatively high number of stratigraphic relationships.

The setting out of the II.1a enclosures is probably related to a new foundation or to the expansion and/or shifting of an adjacent, but unlocated, pre-existing settlement; it is highly likely that the E1 to E9 enclosures were set out in a single pre-planned episode on undeveloped ground due to the structural integrity of the II.1a layout. This is supported by the absence of features from phase I.5, which possibly indicates that the site was unoccupied at the end of that phase. The ninety degree angles and the fixed dimensions (*i.e.* 60pM, 144pM, 180pM, 360pM and 720pM) are significant as they imply that the setting out was undertaken by a surveyor with a *groma* and a duodecimal length of pole, rope or chain. The conjecture in Figure 16 that the II.1a block E5 to E7 was *c.* 360pM square is supported by closely related II.1b, II.2

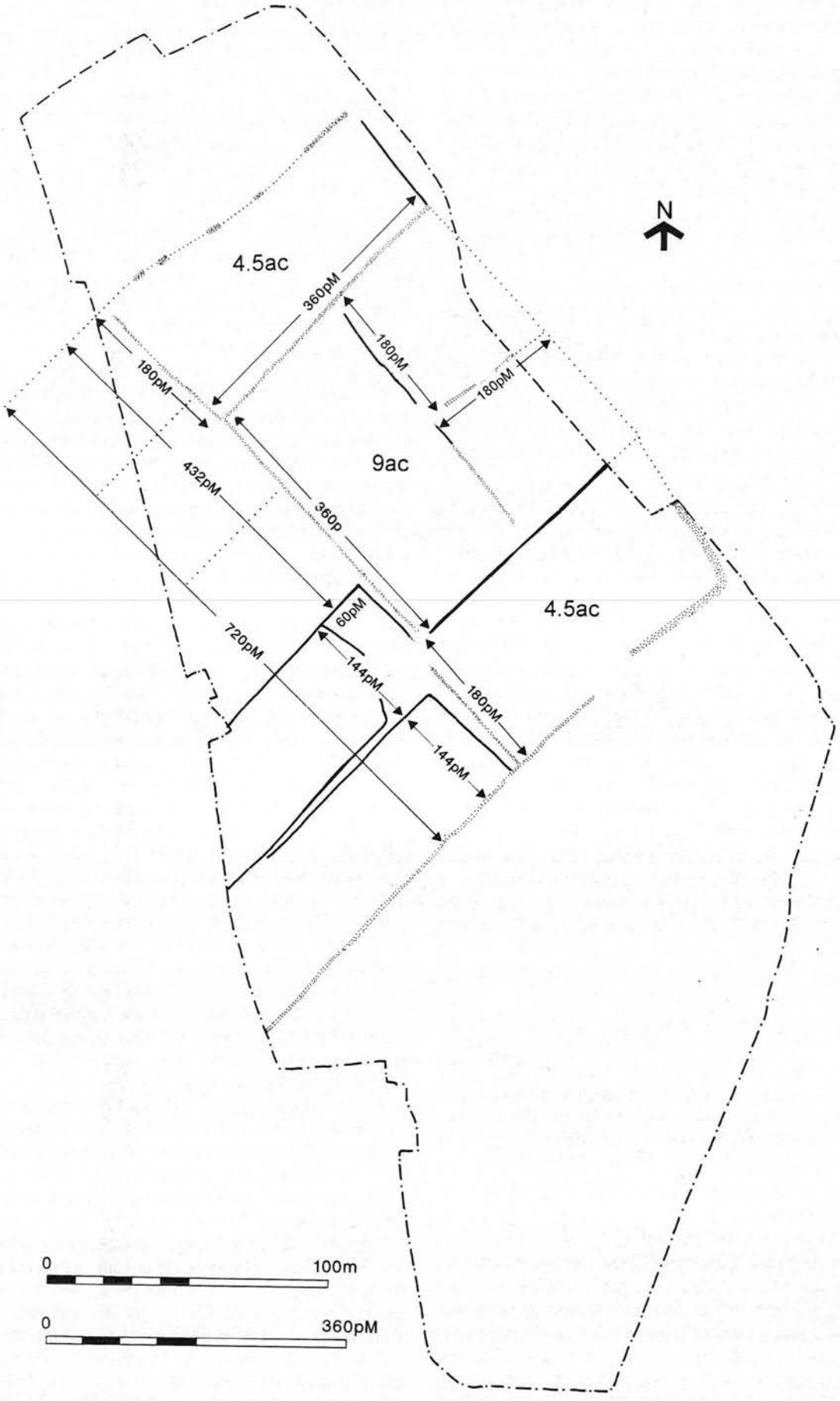


Figure 16 Phase II.1a Mid Roman, showing enclosure dimensions in Roman feet

and III.3 developments. The clearest example of this is the kink in the line of ditches 282/366/390 on the south-west side of enclosure E11, which appears to be related to a probable kink in the course of the conjectured off-site boundary. It is suggested that an 18ac block (E5 to E9) was flanked by a 36ac, 720pM by 600pM block of two 144pM by 600pM and one 432pM by 600pM enclosures (E1 to E4). The main piece of evidence for this is the cropmark continuation of ditch 198 (Fig. 4), which appears to imply that the E1 enclosure was in the area of *c.* 600pM long. Further evidence to this effect comes from the E3 enclosure, which at *c.* 60pM long, would have been one tenth of the conjectured 600pM length or one fiftieth of the conjectured 36ac block.

Settlement outside the excavated area is implied by the absence of II.1 structural remains. This is supported by the low number of feature types, and the general character of the mid Roman pottery, which appears to have been dumped from an off-site source. The well and the ovens, however, and the small attendant areas E11 to E13, possibly indicate that the central E5 to E7 area was retained for some other function other than the growing of crops or the herding of animals.

A breakdown in the initial integrity of the II.1a layout and the start of a less rigid, more pragmatic approach can be seen in the infilling of ditch 382 and the introduction of the II.1b enclosures E11 to E13.

Economy

The investigation of the economy of the associated (unlocated) settlement is hindered by the low number of feature types and the dearth of ecofactual material from the mid Roman contexts; the investigation of the phase II.1 economy is dependent upon the layout, the available finds, *i.e.* glass, iron smithing debris and pottery, and the small number of discrete features, including cremations.

It is possible that the most significant element, the high degree of regimentation, was related to the efficient management of stocks and crops and other farm-related activities; some form of inter-related or alternating use between different enclosures is suggested by the modular forms and the pairing of the E1 and E2 areas. It is also possible that the regimentation was related to accepted best practice or to official procedure, or to the careful allocation of space between different parties.

A high degree of initial investment is implicit in the large size of the II.1a development, the full extent of which was not determined. If the cremations are related to the associated settlement, then some of its occupants must have been relatively well-to-do, on the evidence of the well-to-do grave goods. These include the samian platters and the square glass bottles from the cremations from the fore-yard of the present day farm, and the gold terminal from the box burial.

Due to the shallow depth of the well-dated II.1 ditches, which are less than 0.3m deep, the exclusion or retention of livestock, if present, was probably assisted by additional barriers such as ditch-side banks or hedgerows. The production and/or consumption of cattle and pig is indicated by the small number of phase II.1 animal bones. Economic sidelines or the production of items for private use are possibly represented by the ovens and the iron smithing debris.

Phase II.2 Late Roman (*c.* 250/60 to *c.* 350/60)

Summary

(Fig. 17)

The phase II.1b layout was enlarged and enhanced at some point between the construction of well 567 and the infilling of the E1 to E3 enclosure ditches in the early to mid 3rd century, and the demise of II.2 ditches 312 and 377/819 in the early to mid 4th century. The enhancement of the central area E10 was accompanied by the construction of two new ponds and four to six buildings.

The enhancement of the II.1b layout was marked by new enclosures E15, and E16 to E18 on the outside south-west and inside north-east sides of E10 respectively. Ditch 378 on the south-west side of E10 was replaced by parallel ditch 377 and its recut 819. The entranceway on the south-east side of former area E8, now E14, was re-emphasised by the enlargement of the north-east end of ditch 198. Ditch 198 is thought to have been in use in II.1 as well as II.2 as it was butted by II.1a ditches 29 and 52. The E11 enclosure in the south-east corner of E10 was redefined and the south-east side of II.1b area E13 retained. The E1 to E3 enclosures on the north-west side of 198 were replaced by a droveway and new enclosures E19 and E20.

The open land to the south-east was enclosed by ditched areas E21 to E25. Pre-existing area E9, to the north-west, was possibly redefined and new area E26 set out.

The four to six buildings were 416, 368, 414 and 417, and possibly 294 and 786. Structures 416, 414 and 368 were situated in the north half of the redefined E10 area, and 417 on the north-east side of pond 776, a recut of II.1b pond 421. Building 294 was located in redefined enclosure E11and structure 786 on the south-west end of 416.

Building 416, which is thought to be an aisled villa, was in use as the main residence during this and the following phase. The front, south-east face of the structure was distinguished by well 567, which was carried on over from the preceding phase, and a portico between two short wings.

Building 414, a small bath-house, was located between aisled villa 416 and aisled house 368. The *frigidarium* and the *caldarium* in the central part of the building were linked to the adjacent villa by a doorway in the south-west wall. The *praefurnium* in the north-east part of the structure was encompassed by the north-west corner of aisled house 368.

Structure 294 was accompanied by a large assemblage of carbonised macrofossils. It was probably used as a granary for oats, pulses and grain and was destroyed by fire during this or the following phase.

Buildings 417 and 786 were ancillary buildings. Structure 786, which was added to the south-west end of 416, was in use in the second half of II.2 and/or part or whole of II.3, following the demise of ditch 377/819 in the first half of the 4th century. Building 417, which is thought to be a storehouse and/or workshop, was out of use by the mid 4th century.

Three of the six buildings were definitely modified or repaired on one or more occasions during their lifetimes. Building 368, which was flanked by drains, was reduced in size when one of the drains flooded; the internal arrangement of 416 was rearranged, and the flue in the *preafurnium* reorganised. A large quantity of household material, including food residues and straw from floors, was deposited in the bottom part of the well in the early 4th century.

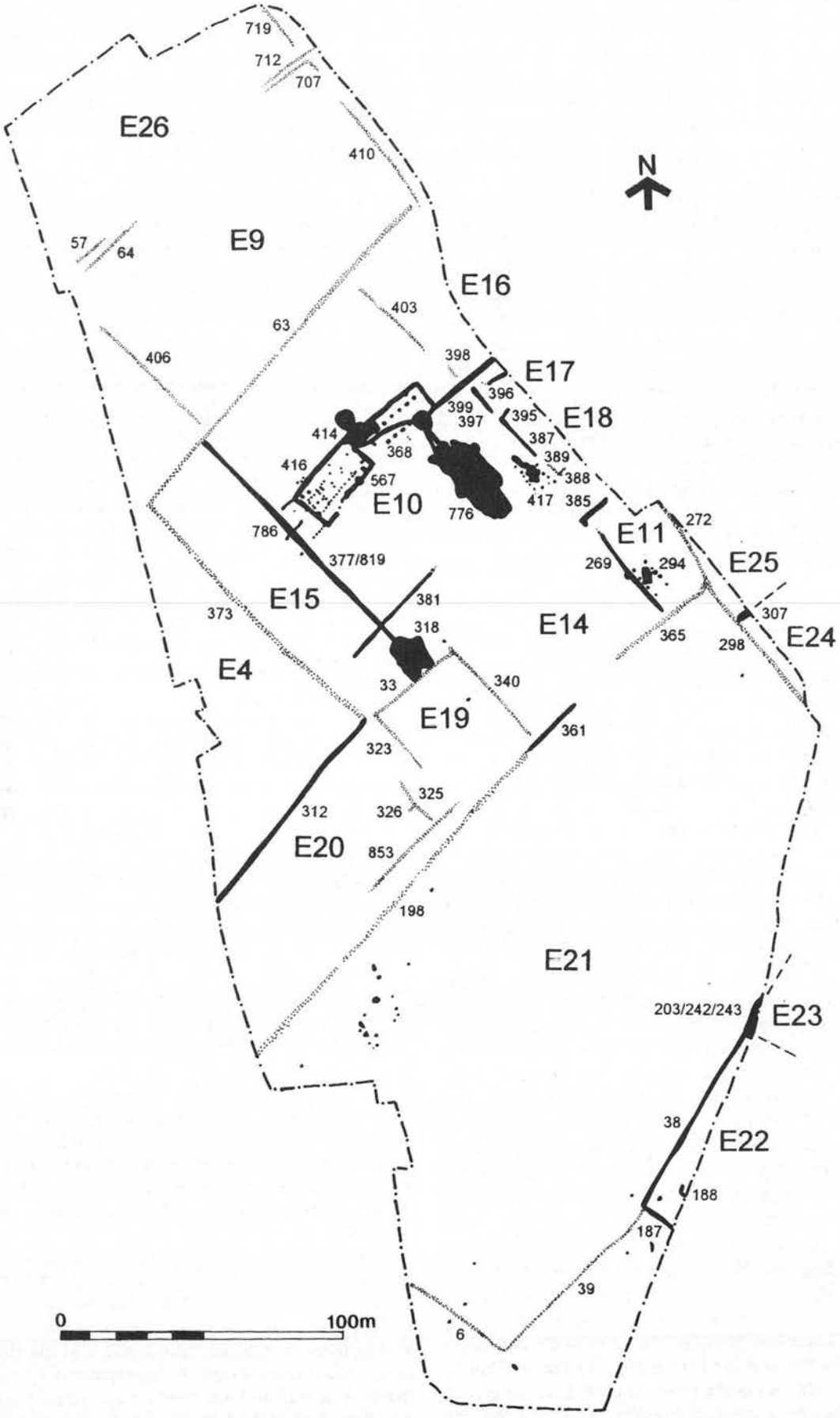


Figure 17 Phase II.2 – Late Roman

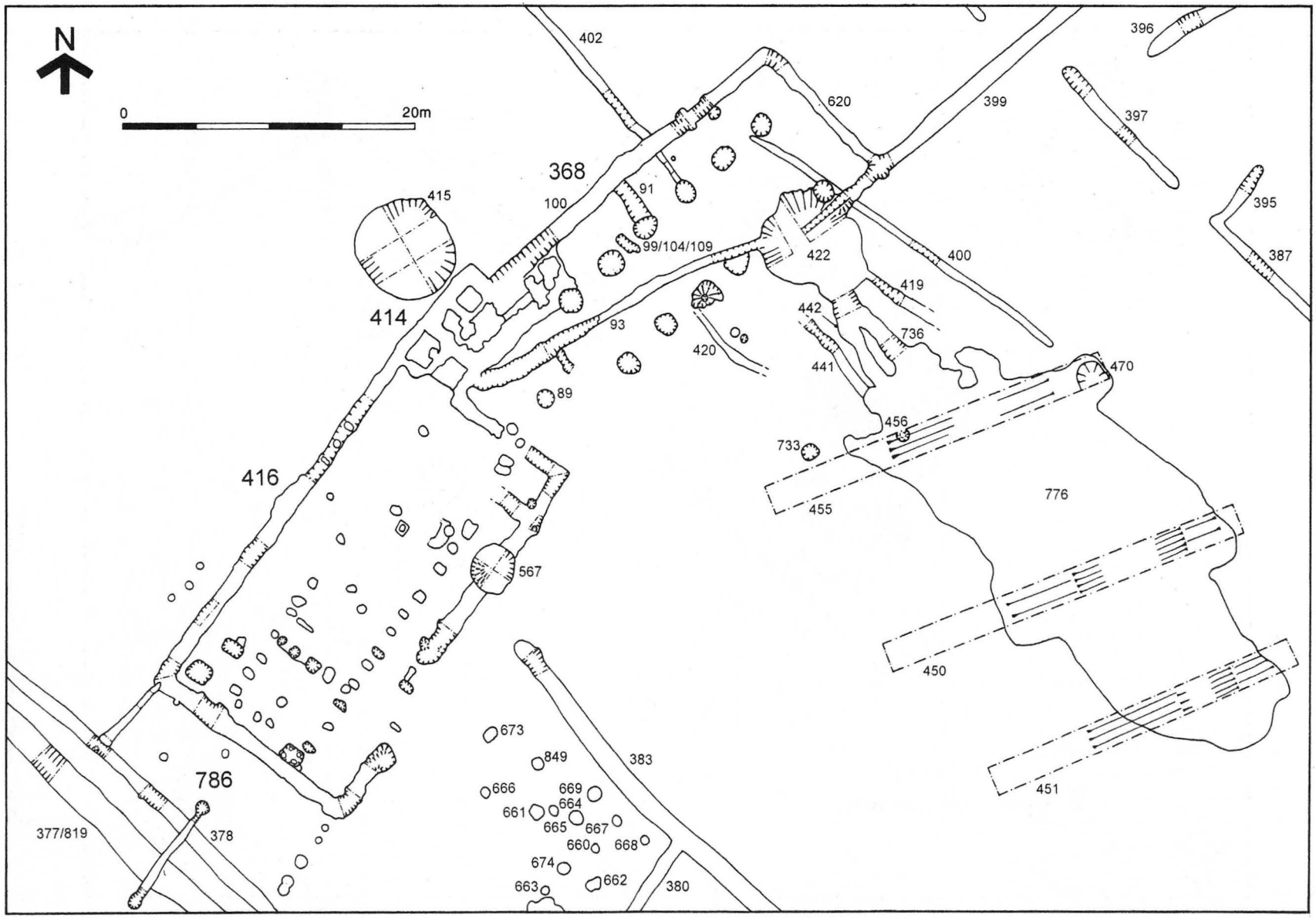


Figure 18 All features – centre (north)

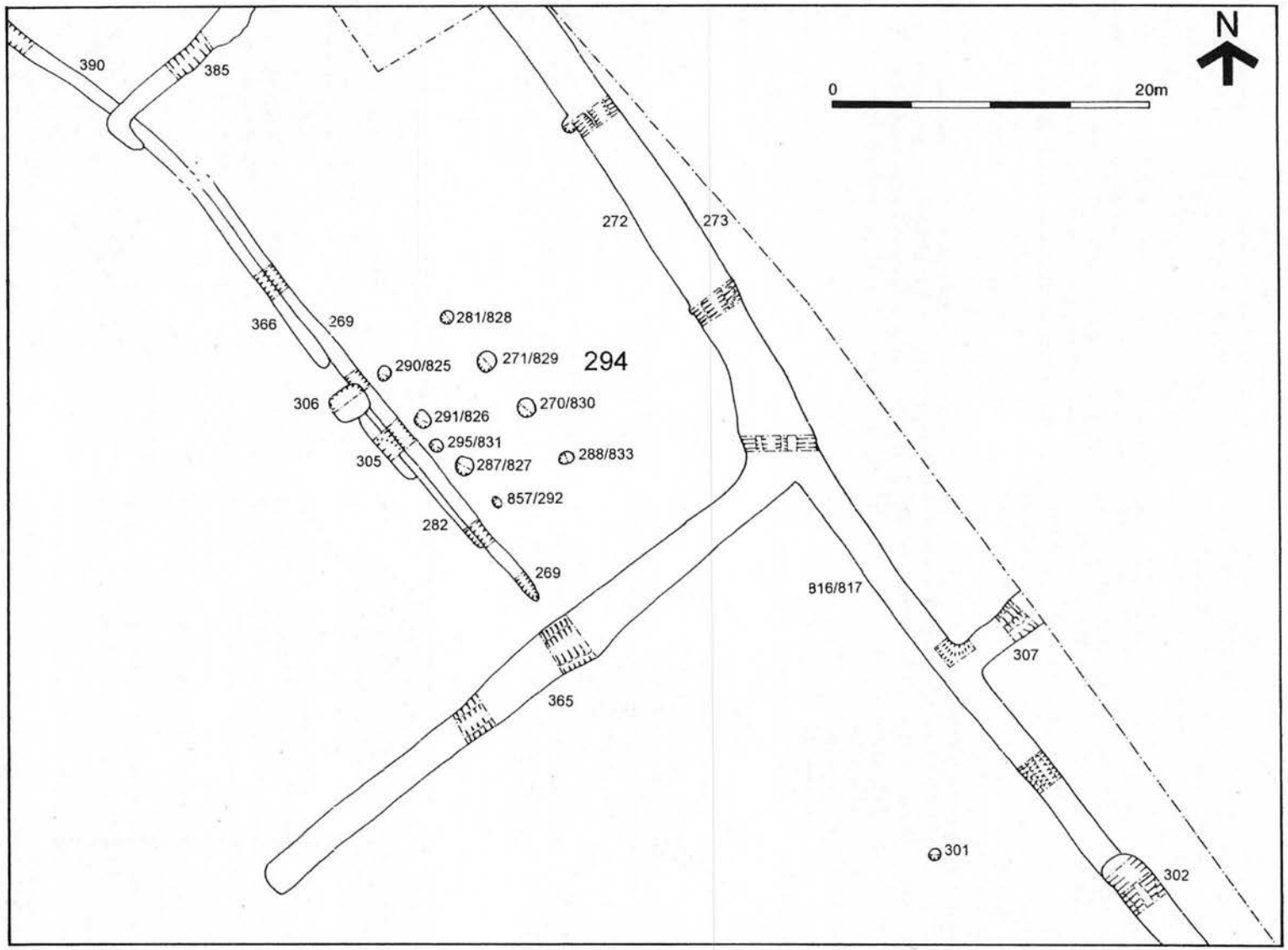


Figure 19 All features – east

Droveway and enclosures E9 to E11 and E14 to E26 (Fig. 17)

Droveway and enclosures E10 to E11 and E14 to E20

The droveway and the nine enclosures E10 to E11 and E14 to E20 were defined by ten well and fifteen poorly dated ditches (269, 312, 361, 377, 381, 385, 387, 395–97, and 33, 63, 198, 272, 323, 325, 326, 340, 365, 373, 388, 389, 398, 403, 853 respectively). The assignation of the fifteen poorly dated ditches was based on a combination of stratigraphy and structural arrangement with well-dated II.2 counterparts. Eight of the poorly dated ditches were extrapolated back from II.3 (33, 63, 198, 323, 325, 326, 340 and 365). Five ditches were probably present in phase II.1 as well as phase II.2 (63, 198, 272, 381 and 365).

Phase II.1 ditch 378, on the south-west side of E10, was replaced by parallel ditch 377 (*c.* 1.76m wide, 0.64m deep), and its recut 819 (*c.* 1.48m wide, 0.55m deep). The two cuts were distinguished by even sides and concave bases, with two and three fills each respectively (Fig. 24). The full length of 819, which was seen in section only, was not determined. Sherds of late 3rd/4th-century pottery were found in both cuts, in the top fill of 377, and the primary, secondary and top fills of 819. An in-filling date in the first half of the 4th century was partly suggested by an absence of exclusively late 4th-century pieces. The north-east side of II.1 ditch 372 from E3 was cut by 377 or 819.

The south-west side of the entranceway on the south-east side of E14, the II.2 equivalent of II.1a area E8, was enlarged by cut 361. The opposite side of the entranceway, ditch 365 which was noticeably larger than most of its counterparts, was possibly enlarged at the same time, although no trace of the previous cut was found to confirm this. Ditch 361, which was sampled in one location only, was cut by well-dated II.3 recut 360 (Fig. 24). It was distinguished by even sides and a broad slightly uneven base (*c.* 2.14m wide, 0.62m deep), three deposits, and pieces of late 3rd/4th-century pottery.

Enclosures E15 and E20 were defined by contiguous ditches 312 and 373, and an extension to the south-west end of ditch 63. Ditch 312 (*c.* 1.5m wide and 0.44m deep) was sampled by two segments and ditch 373 (*c.* 1.5m wide, 0.5m deep) by one segment. Both ditches had even sides and concave bases, with two to three fills per segment. No sherds were found in 373, which cut well-dated II.1 ditch 370. Ditch 312 contained sherds of late 3rd/4th-century pottery in all three fills. The extension to ditch 63, which was not sampled, was marked by a slight deviation in course, from ditch 377 onwards. Enclosure E20 was the same width as II.1 enclosure E1, which it appears to have replaced.

Enclosure E15 was possibly mirrored by enclosure block E16 to E18, on the opposite side of E10, on the conjectured inside, north-east boundary. The south-west and north-west corners of E18 were formed by contiguous ditches 388 and 389, and 387 and 395 respectively. Enclosure E17, in the centre, was formed by ditches 395 and 396, and enclosure E16, to the north of 399, by ditches 398 and 403. Ditches 387, 395 and 396 were sampled by one segment each and ditches 397 and 403 by two segments each. The remaining three features were not sampled. The five excavated features were distinguished by shallow to even sides and concave bases. Each ditch was less than 1.2m wide and 0.26m deep. The north-west end of ditch 403 was not determined. Pieces of late 3rd/4th-century pottery were found in 387 and 395–97. A sherd of late 4th-century pottery in 395 was possibly intrusive. A small assemblage of Roman pottery in 403 was not closely datable. The phasing of the unexcavated and ceramically undatable components in E16 to E18 was determined by spatial alignment and by the mirroring of the block as a whole by E15, on the other side of E10.

Enclosure E11, in the south-east corner of the E10/E14 block was redefined by ditches 269 and 385. Ditches 385 (*c.* 1.35m wide, 0.42m deep) and 269 (*c.* 1.2m wide, 0.65m deep) were sampled in one and five locations each respectively. The profiles in both ditches were represented by even sides and wide or narrow concave bases. The south-west end of ditch 390 turned towards 269, the north-west terminal of which was not detected. Ditch 385 cut phase II.1b ditch 390, and ditch 269 cut II.1b ditches 282 and 366. Ditch 269 was cut in turn by phase II.2 or II.3 pit 306. All six segments were filled by two fills apiece. The top, bulk fill in 385, which was comprised of dark brown silt clay loam and charcoal, was possibly dumped because it contained a large assemblage of late 3rd/4th-century pottery, with no exclusive late 4th-century forms. Pieces of 3rd/4th-century pottery were found in the topmost fills of segments 4055 and 4056 across 269.

Ditch 272, on the opposite side of E11, was ceramically undatable. It was sampled in two locations and was cut by phase II.3 ditch 273. It had shallow to even sides and a broad concave base (*c.* 0.69m deep and over 1.2m wide) and was filled by two to four fills per segment.

The droveway and enclosure E19 were formed by ditches 33, 198, 323, 340 and 853. Ditches 33, 198, 323 and 340, which are discussed in more detail in the following phase, were extended back from phase II.3. Enclosure E19, in particular, must have been present at some point between the early to mid 3rd and the late 4th century, because II.1 ditch 311 was cut by 323, and ditch 33 was cut by II.3b ditches 337 and 359. Ditch 853 (over 1.4m wide, 0.74m deep) and its II.3 recut 854 were seen in section only, in segments 4077 and 4079 across well-dated II.3 ditch 229, which was half as deep (Fig. 24). It had a distinctive V-shaped profile, and was filled by two deposits per segment. The only closely datable find from the feature was a 3rd/4th-century sherd from a primary deposit. Poorly dated ditches 325 and 326 on the north side of 853 (see phase II.3) were probably present in II.2 and/or II.3.

Ditch 381 (0.8m wide, 0.25m deep), up against the south-west side of E10, was sampled by a single segment. It contained one deposit and a small assemblage of late 3rd/4th-century pottery.

Dating evidence

269	5550 (top 4056)	*Misc. pot:* Fabric HAX. 3rd to 4th c.
	5548 (top 4055)	*Misc. pot:* Fabric HAX. 3rd to 4th c.
312	5654 (primary 4078)	*Misc. pot:* Fabric RET. Late 3rd c. +
	5617 (second 4080)	*Misc. pot:* Fabric RET. Late 3rd c. +
	5653 (top 4078)	*Misc. pot:* dishes B6.2 (BSW); jar G24.2 — black surfaced (RET). Late 3rd c. +
361	5776 (second 4102)	*Misc. pot:* dishes B1 (BB1, GRS, BSW & BB2), B3.2 (BB2), B6.2 (GRS & BSW); mortarium D11.1 (COLB); bowl-jar E3.3 (BUF); jars G26.1 (GRF), G24 (GRS & RET), G21.1 (GRS), G40.1 (HAR), H27.1 (OCC); Fabrics NVC & HAX. Late 3rd c. +
	5777 (top 4102)	*Misc. pot:* Fabric RET. Late 3rd c. +
377	6299 (top 4141)	*Misc. pot:* bowl-jar E6.1 (HAX). Late 3rd c. +

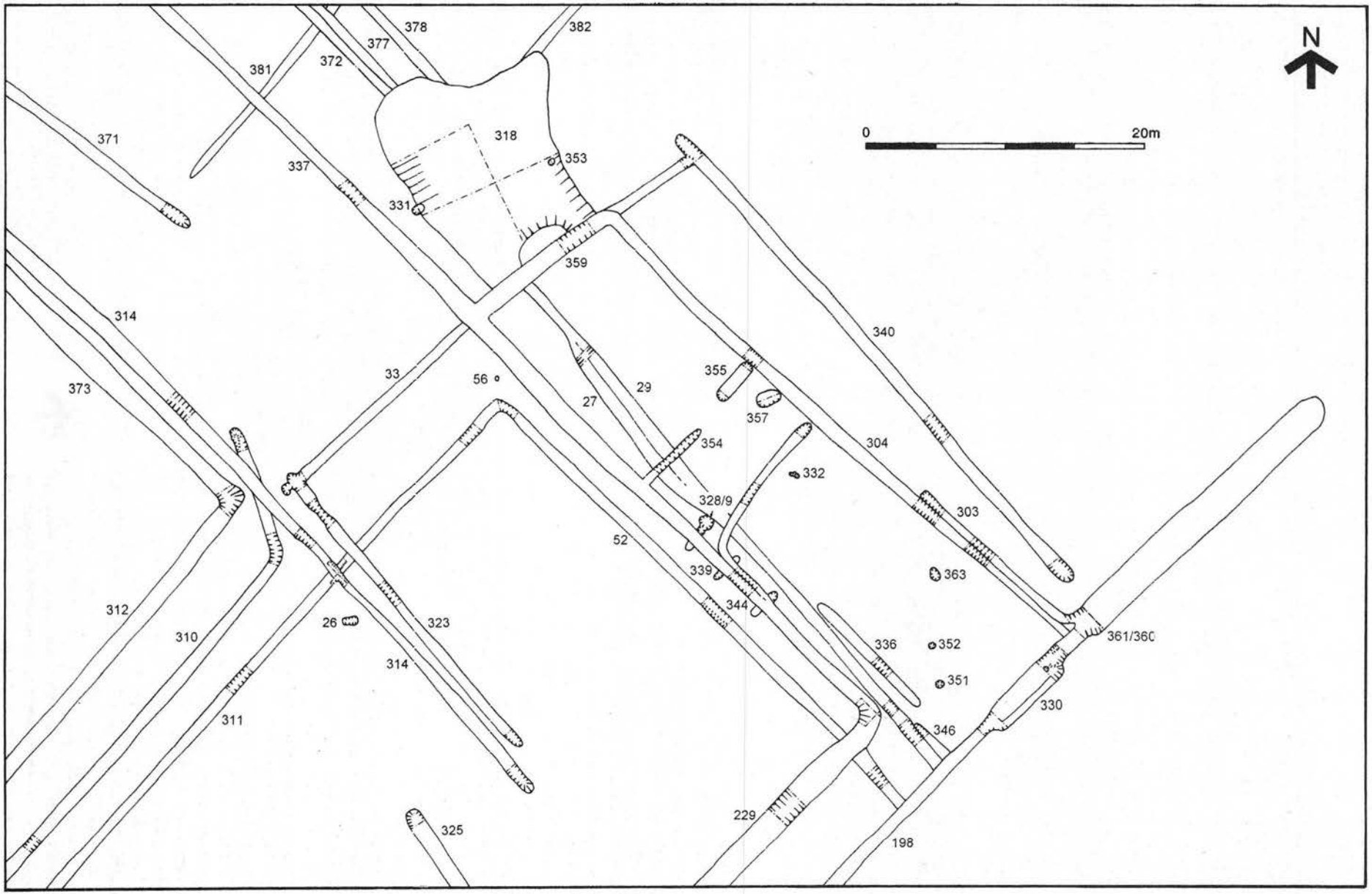


Figure 20 All features – centre (south)

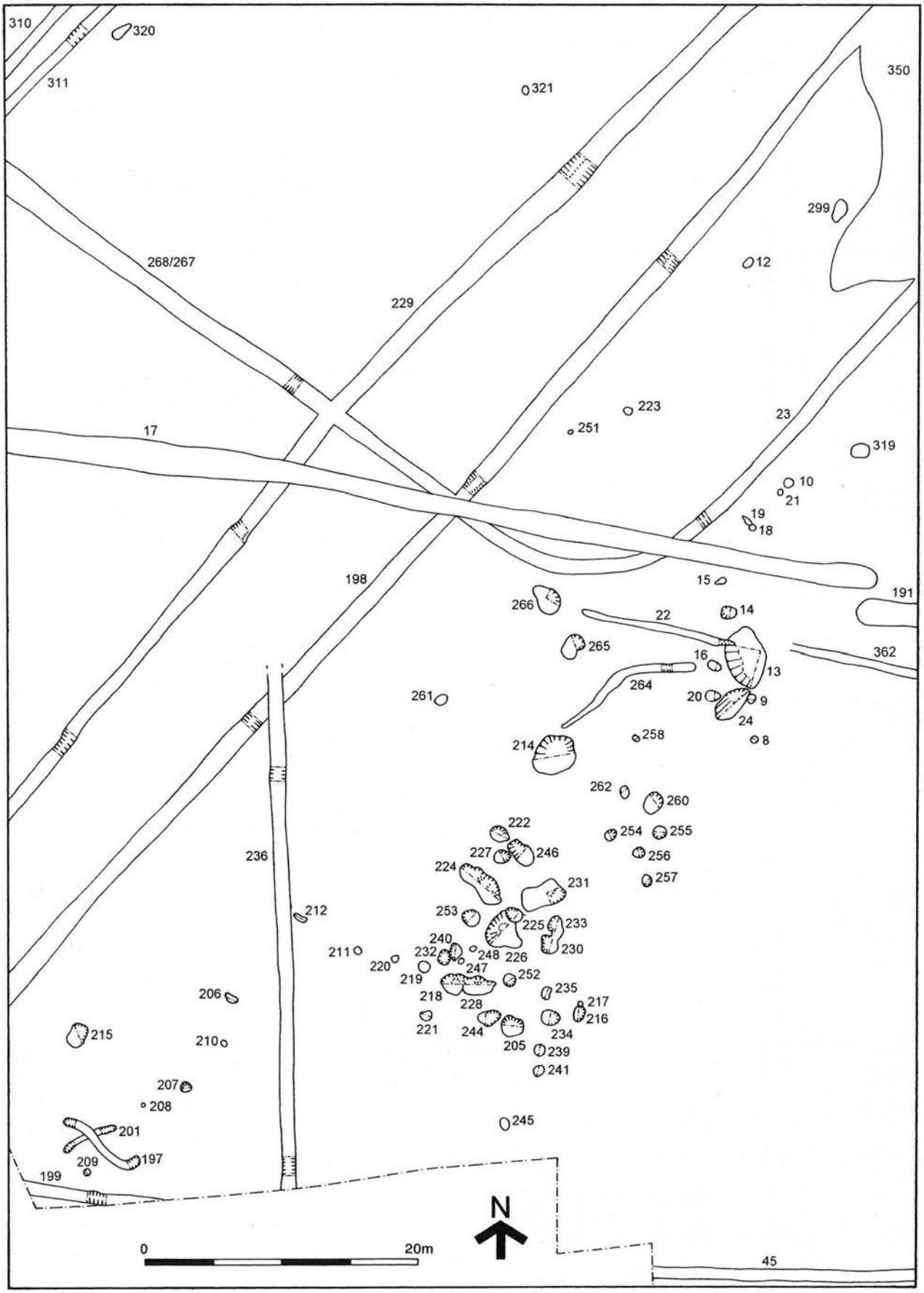


Figure 21 All features – south-west

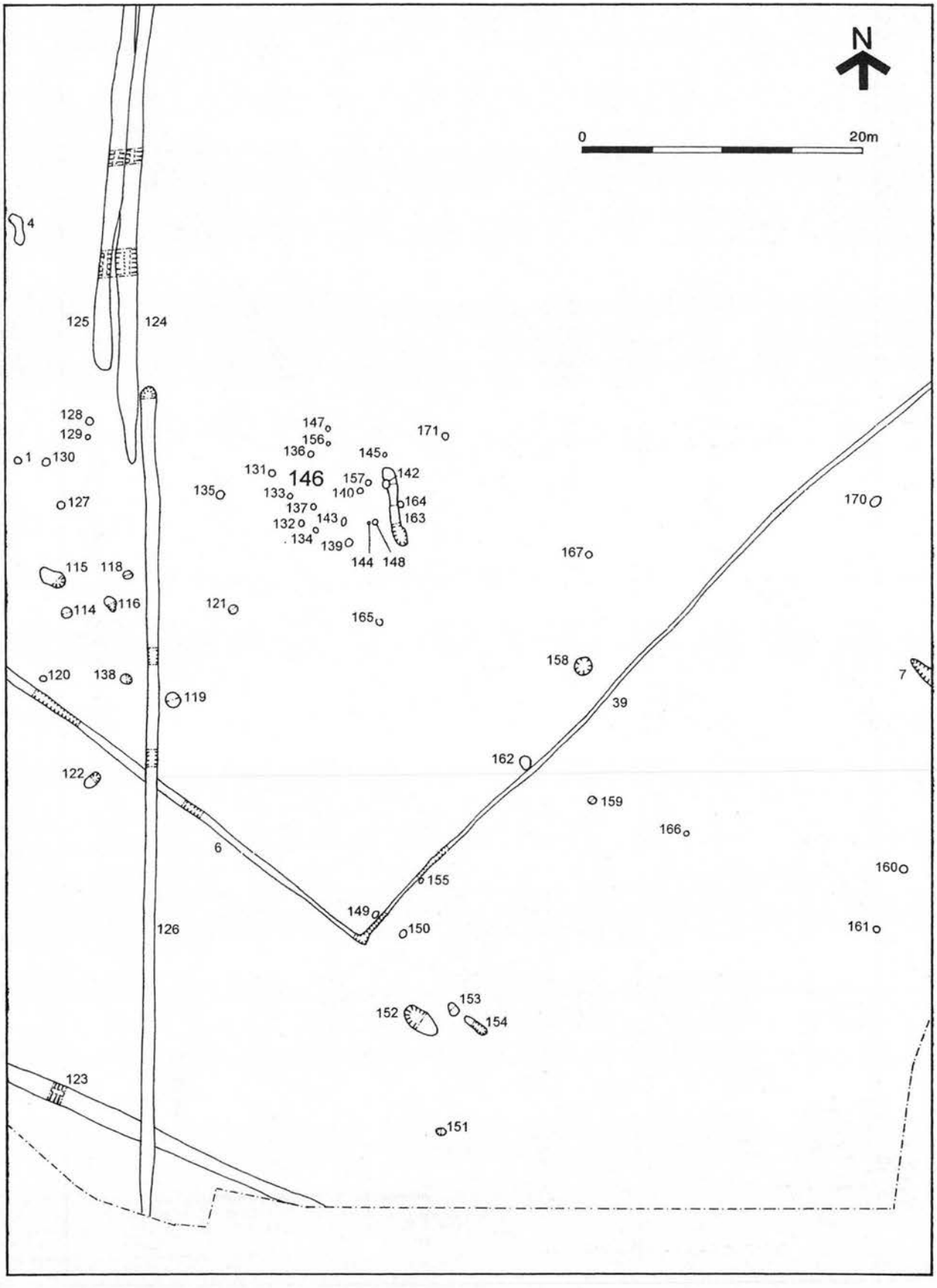


Figure 22 All features – south

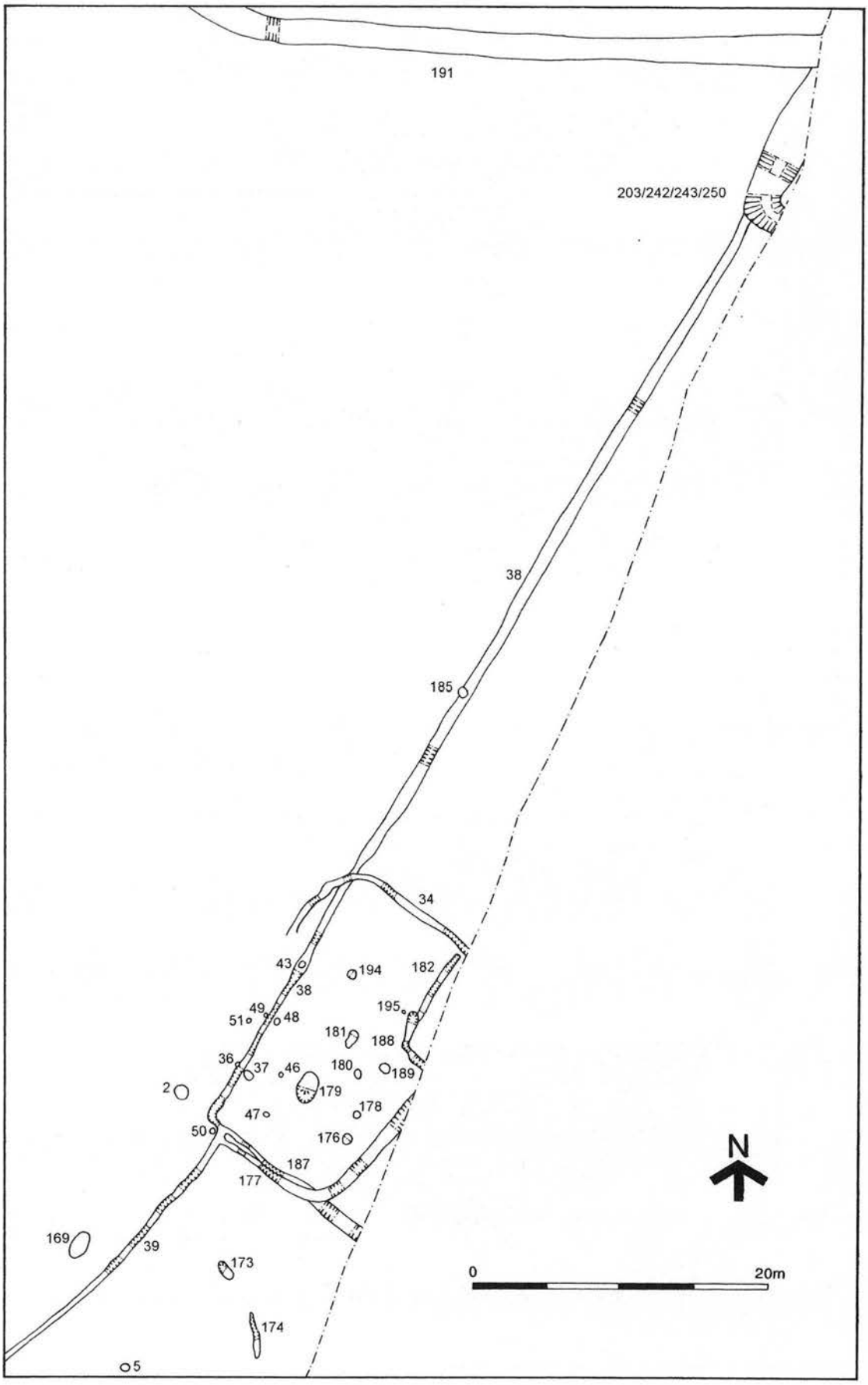


Figure 23 All features – south-east

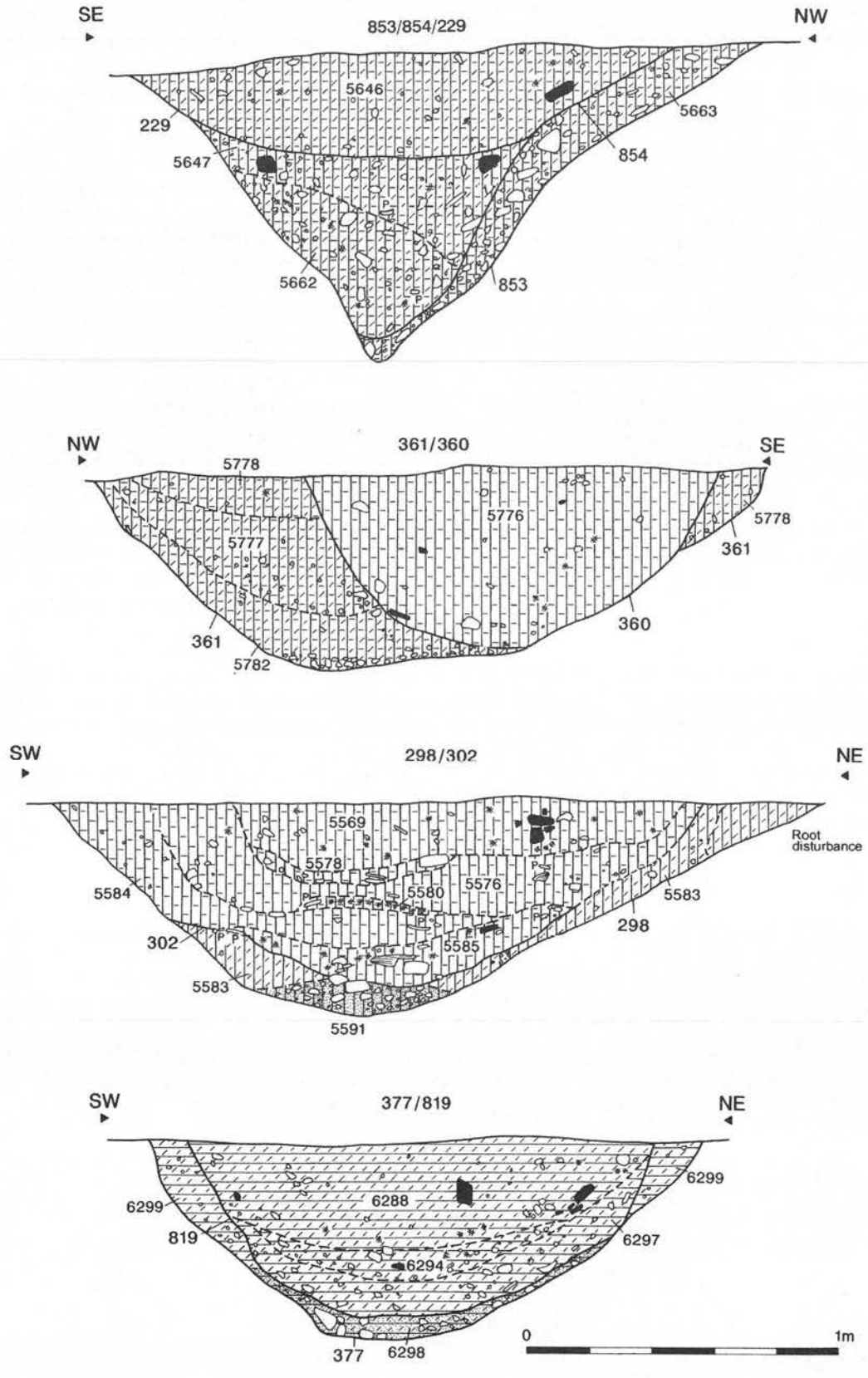


Figure 24 Phase II.2 and II.3 ditches – sections

381	5811 (single)	*Misc. pot:* dish B6.2 (GRS). Late 3rd c. +
385	5815 (top)	*Misc. pot:* dishes B1 (GRS), B1.6 (HAR), B6.2 (GRS); bowl C8 (NVC); bowl-jars, E2.2 (GRF), E5.4 (GRS), E6.1 (HAR); jars G24.1 (GRS & RET), G24.2 (GRF & RET), G26 (BSW), G35.2 (BSW); beaker H39 [*cf.* Howe *et al.* 1980, No. 52] (NVC); Fabric HAX. Late 3rd c. +
387	6289 (single 4142)	*Misc. pot:* jar G26 (narrow-necked variant) (BSW); Fabric RET. Late 3rd c. +
395	6290 (single 4143)	*Misc. pot:* dish B6 (GRS); jar G27.2 (LSH); Fabric HAX. Late 3rd c. + with ?intrusive late 4th cent. LSH.
396	6293 (single 4147)	*Misc. pot:* dish B6.3 (BB1). Late 3rd c. +
397	6234 (primary)	*Misc. pot:* dish B1 (GRS). 2nd to 4th c.
	6291 (single 4145)	*Misc. pot:* Fabric RET. Late 3rd c. +
403	6216 (single 4136)	*Misc. pot:* Fabric GRS. Roman
	6295 (single 4148)	*Misc. pot:* jars G (BSW & GRS); Fabric GRF. Roman
819	6297 (primary 4141)	*Misc. pot:* bowl-jar E2.3 (GRF); Fabric RET. Late 3rd c. +
	6294 (second 4141)	*Misc. pot:* bowl-jar E6.1 (HAX). Late 3rd c. +
	6288 (top 4141)	*Misc. pot:* dishes B6.2 (GRS, BSW & GRF), B1 (GRS, BSW & GRF), B1.3 (GRF); bowl-jars E2.2 (GRF), E2 (GRF), E5.2 (BSW), E6.1 (GRF & HAX); jars G24.1 (GRS & RET), G24.2 (GRS & RET), G34/G35 (GRS), G43.1 (STOR). *Coins:* Carausius, 286–93 (No. 23). Early to mid 4th c.
853	5681 (primary 4079)	*Misc. pot:* Fabric NVC (K7 knob or base). 3rd to 4th c.

Enclosures E21 to E25

The new enclosures in the south-east part of the site were defined by well-dated ditches 38, 187, 203, and 307 and poorly dated ditches 6, 39 and 298. As in most cases, the cutting date of all nine ditches was not closely datable; a setting out date in phase II.1 is therefore possible.

The south-west corner of E21 in the centre was defined by ditches 6 and 39. Both ditches, which were filled by one to two fills per section, were sampled by two and eight segments each respectively. The south-east end of 6 (*c.* 0.7m wide and 0.35m deep) and the whole of 39 (*c.* 0.55m wide and 0.19m deep) were badly truncated. Nothing was found in 39, but several sherds of a general Roman date were found in 6, which was cut by ditch 126 from phase III.3. Both features were distinguished by shallow to even sides and concave bases.

Ditches 38 (*c.* 0.78m wide and 0.29m deep) and 187 (*c.* 1m wide and 0.47m deep) on the north-west and south-west sides of E22 were sampled by nine and five segments each respectively. All fourteen segments were filled by one or two fills per segment. The profile in 38 was highly varied, changing from a steep-sided V-shaped profile in segment 4008 to a shallow-sided, uneven-based profile in 4006. The profiles in 187, which were far more uniform, were comprised of steep or near vertical sides and broad, concave bases. A complete 3rd/4th-century beaker was found in a top fill of 187 and sherds of late 3rd/4th-century date in several top fills in 38. As in most cases, no datable finds were found in the primary deposits, most of which comprised material eroded from the feature sides. Ditch 38 was cut by II.3 cremation 185 and ditch 187 by II.3 ditch 177.

The south-west corner of E23, on the north-east side of E22, was formed by L-shaped ditch 203. This ditch, which was *c.* 1.2m deep and over 2.8m wide, was characterised by even sides and a broad flat base (Fig. 25). It was occupied by one deposit and was cut by well-dated II.2 recuts 242 (over 0.8m wide, 0.8m deep), and 243 (over 2m wide, 1.1m deep). The second recut 243 was cut by well-dated II.3 recut 250. One deposit of dark silt clay loam was found in 242 and four deposits of dark or very dark silt clay loam in 243. Small assemblages of late 3rd/4th-century pottery were found in both recuts. The initial cut and the first recut had even sides and flat, slightly sloping bases. The second recut had even sides

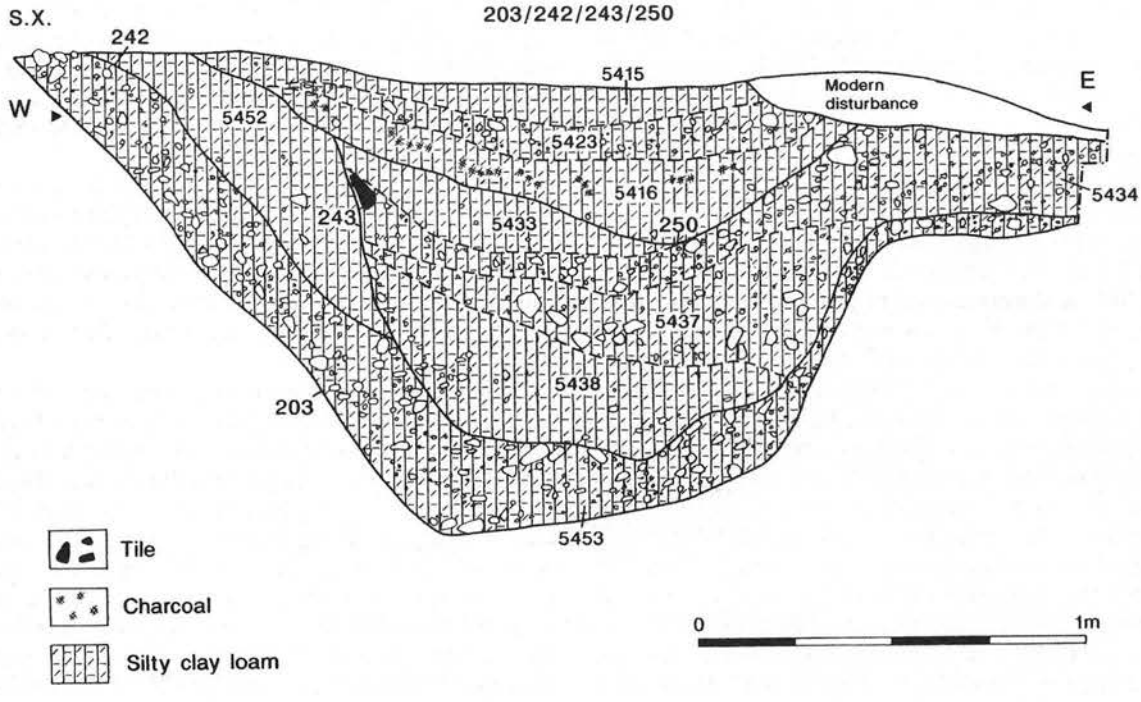


Figure 25 Phase II.2 to II.3 ditches 203, 242, 243 and 250 – section

and an irregular base. No evidence for an internal or external bank could be identified in the fill sequences, most of which were probably due to natural erosion and silting.

The other two ditches from this part of site, 298 and 307, were positioned near the north-east balk. Ditch 298 (less than 2.8m wide, 0.67m deep), which was seen in section only, beneath II.3 ditch 302, was possibly the same feature as II.3 ditches 816 or 817 (Fig. 24). It had a concave base and even sides, and two deposits, one of which, the top, was found to contain a small amount of late 3rd/4th-century pottery. Ditch 307 (*c.* 1.7m wide and 0.59m deep) came off at right angles from ditch 298, or II.3 ditches 817 or 816 — the precise feature is not known. It had even sides and a broad concave base, and — in the topmost fill of its two deposits — a small assemblage of late 3rd/4th-century pottery.

Dating evidence

6	5231 (top)	*Misc. pot:* Fabric BSW. Roman
38	5055 (primary 4008)	*Misc. pot:* Fabric BSW. Roman
	5335 (top 4031)	*Misc. pot:* dishes B1.2 (GRS), B6.2 (GRS); Fabric RET. Late 3rd c. +
	5355 (top 4039)	*Misc. pot:* Fabric HAX. 3rd to 4th c.
187	5357 (top 4029)	*Misc. pot:* beaker H40.1, copying CAM 408/409 (GRF). 3rd to 4th c.
203	5385 (single 4040)	*Misc. pot:* Fabric GRS. Roman
242	5384 (single 4040)	*Misc. pot:* dish B1 (HAR); Fabric RET. Late 3rd c. +
243	5433 (top 4044)	*Misc. pot:* Fabric RET. Late 3rd c. +
	5434 (third)	*Misc. pot:* dishes B1 (BSW), B6.2 (GRS); Fabric RET. Late 3rd c. +
298	5583 (top)	*Misc. pot:* Fabric RET. Late 3rd c. +
307	5586 (top 4061)	*Misc. pot:* bowl-jar E6 (RED); Fabric HAX. Late 3rd c. +
	5602 (top)	*Misc. pot:* Fabrics HAX & RET. Late 3rd c. +

Enclosures E9 and E26

Enclosure E9 was possibly redefined by poorly dated ditches 64, 406, 410 and 707. All four features, except 410, which was left undug, were sampled by one segment each. Features 406 and 707 were both occupied by single fills only. Two fills were found in the single section across ditch 64. Small amounts of undiagnostic Roman pottery were seen in all three ditches, but no other finds were discovered. The north-east side of phase II.1 ditch 445 was cut by ditch 406 (*c.* 1.3m wide, 0.35m deep), which had even sides and a broad flat base. Ditch 410 was found to the immediate north-east of parallel phase II.1 ditch 408. It was *c.* 0.7m wide was cut by unphased ditch 409 and phase III.3 ditch 59. The terminals of the final two ditches, 64 and 707, to the north-west of phase II.1 ditch 62, were not detected. Both ditches were possibly part of the same feature. Ditch 64 (more than 1.8m wide, 0.62m deep) had steep sides and a broad, base which was somewhat irregular. Ditch 707 (*c.* 1m wide, 0.35m deep) had even sides and a concave base. The north-east end of 707 turned ninety degrees towards ditch 410. The *c.* 15m wide gap between the two features may have been part of an entranceway. The assignation of all four features to II.2 was based on stratigraphy and spatial arrangement. It is therefore not impossible that some or all of the features were present in preceding and succeeding phases.

The enclosure E26 to the immediate north-west was defined by poorly dated ditches 57, 712 and 719. All three features were sampled by one segment apiece. Features 57 (*c.* 1.7m wide, 0.4m deep) and 719 (*c.* 1.68m wide, 0.47m deep) had even sides and flat, or slightly concave bases. Feature 712 (*c.* 1.36m wide, 0.62m deep) had steep sides, a curved break of slope, and a base which was flat and narrow. Two deposits were found in 57 and one apiece in 712 and 719. Nothing was found in 57 and 712, but a few sherds of not closely datable Roman pottery were seen in 719. The designation of all three features to this particular phase, like E9 to the south-east, is purely speculative, being based on a combination of stratigraphy and spatial arrangement. As with E9, above, all three features could have been present in the preceding or succeeding phases. The terminals of 57 and 712 were not located. Both ditches may have been part of same feature.

Dating evidence

64	5087 (top)	*Misc. pot:* Fabric BSW. Roman
406	5838 (single)	*Misc. pot:* Fabrics RED & BSW. Roman
707	6310 (single 4158)	*Misc. pot:* Fabrics COLB & GRS. Roman
719	6330 (single)	*Misc. pot:* Fabrics COLB & GRS. Roman

Buildings

Building 416

(Figs 17, 18, and 26–29; Plate III)

This aisled structure, in the north-west half of the E10 enclosure, was 27m long and 15m wide. It was represented by six outside wall-trenches, two internal wall-trenches, thirty-seven internal post-holes, and one slot. Twenty-four aisle post-holes were arranged in two parallel rows of ten and fourteen. The south-west end of the building was occupied by three rectangular 'box-pits' for internal storage (394, 498 and 506). Wall-trench 554 on the south-east side of the structure was 'cut' by well 567, which was continued into the first half of the phase from the second half of the previous phase. The aisled building was linked to bath-house 414 by a 2m wide break in the north-east wall-trench.

The north-west side of 416 was defined by post-trench 558, the south-west side by 500, the south-east side by 548 and 554, and the north-east side by 802 and 553. A break in the centre of 553 was due to over-machining during the topsoil stripping of trial-trench B. The outside wall-trenches were sampled by one (500 and 802), two (548 and 553), four (554) and six (558) segments apiece respectively. All six features were less than 1.2m wide and 0.3m deep, with one fill per segment.

The internal stratigraphy of the outside wall post-trenches was difficult to determine, partly due to late 4th-century robbing/demolition cuts, and partly due to the fact that none of the features were fully excavated. Most outside wall-trench related features, such as post-pipes and robber/demolition cuts, were identified in section (Fig. 27).

Six post-pipes, *c.* 1.2m to 1.8m apart, were identified in wall-trench 558 (722–24, 731, 740 and 741). Fourteen more wall-trench post-positions were represented by late 4th/early 5th-century robber/demolition cuts (88, 102, 547, 555, 557, 560–61, 566, 715–17, 787–88 and 790). The six post-pipes in wall-trench 558 were located in basal depressions, 0.02m to 0.1m deep (835 to 839; 837 and 839 not in section). A cross-brace at an angle of 30 or 60 degrees was represented by phase II.3 post-extraction cut 561 in segment 4116. Three other outside wall features were slot 559 and post-holes 562 and 565 on the south-east face. All three features were less than 0.15m deep. A sub-circular post-pipe or post-extraction cut in 562 was *c.* 0.22m wide (552). Three small post-holes or post-

Plate III Building 416

extraction cuts from a preceding phase of construction/demolition were cut by wall-trenches 500 and 548 (515, 550 and 789).

The two rows of aisle post-holes were separated by a 6.4m gap (78, 81, 92, 458–68, 471, 475–81, 496 and 517). Each post in each row was in line with its parallel counterpart, between 1m and 2.2m apart. One row was less complete than the other, due to uneven truncation. The associated post-holes, which contained one or two fills apiece, were less than 0.2m deep. No post-pipes were identified.

The remaining internal features were two wall-trenches (529 and 571), thirteen post-holes (97, 491–94, 501, 503, 508, 510, 516, 521, 794 and 797), one slot (513) and one shallow feature of indeterminate function (77). A rectangular post-pipe (519) was found in post-hole 797 and a sub-circular post-pipe (541) in post-hole 794. The north-west end of slot 513 was occupied by a small stake-hole (514). Post-holes 97, 491–94, 503, 508, 510, and 797 were situated in the nave and post-holes 501, 516 and 521 in the north-west aisle. Two post-holes were situated on the long-ways axis (503 and 797). Post-hole 794 was located in the south-east corner, in the same location as wall-trench 571, which came off at right-angles from outside wall-trench 554. Slot 513 and wall-trench 529, at the south-west end of the nave, were *c.* 2m apart. All twenty features were less than 0.3m deep, apart from 97, which was 0.38m.

Wall-trench 529, which was replaced on two occasions (Fig. 29), was occupied by four irregular shaped post-extraction cuts (528, 834, 527 and 524). Two more post-extraction cuts, to the south-east, were part of the same alignment (507 and 520). The north-east side of the alignment was cut by partition 783, which was comprised of one slot (536) and four or more internal post-holes (538–39, 564 and 570). This was cut in turn by partition 530, nine small, unevenly spaced post-holes in a slightly irregular line (523, 525–26, 531–35 and 537), three of which (523, 533 and 535) may have been part of the preceding partition. None of the features in all three partitions were more than 0.2m deep.

Frequent flecks of reddish-brown wall daub were found in most related contexts. This included a *c.* 3.5m long, 0.3m wide line of concentrated daub flecks at the south-west end of post-trench 554 (not illustrated). Small amounts of late 3rd/4th-century pottery were found in segments 4111, 4117 and 4116, in outside wall-trenches 500, 548 and 558 respectively. 4th-century coins were found in segments 4172 and 4112 across wall-trenches 558 and 553. The replacement of the south-east wall in the late 4th century was demonstrated by late 4th-century pottery and a late 4th/5th-century coin in segment 4114 across post-trench 554. A small amount of window glass was also discovered.

The phasing of the building was complicated by the fact that many associated cuts were only seen in section, and that many of the earlier cuts and deposits had been badly disturbed or even possibly destroyed by subsequent episodes of upkeep or demolition/robbing. In its surviving form at least, the structure must have been built in the late 3rd/4th century because of the coins and sherds in some of the post-packings in the outside wall-trenches. If the building was constructed in the late 3rd/4th century then it must have been built around pre-existing well 567, the top part of which at least was still open whilst the building was standing.

The earlier post-holes (515, 550 and 789) at the south-west end of the structure, and the replacement of internal wall-trench 529 with partitions 783 and 530 respectively are not closely datable.

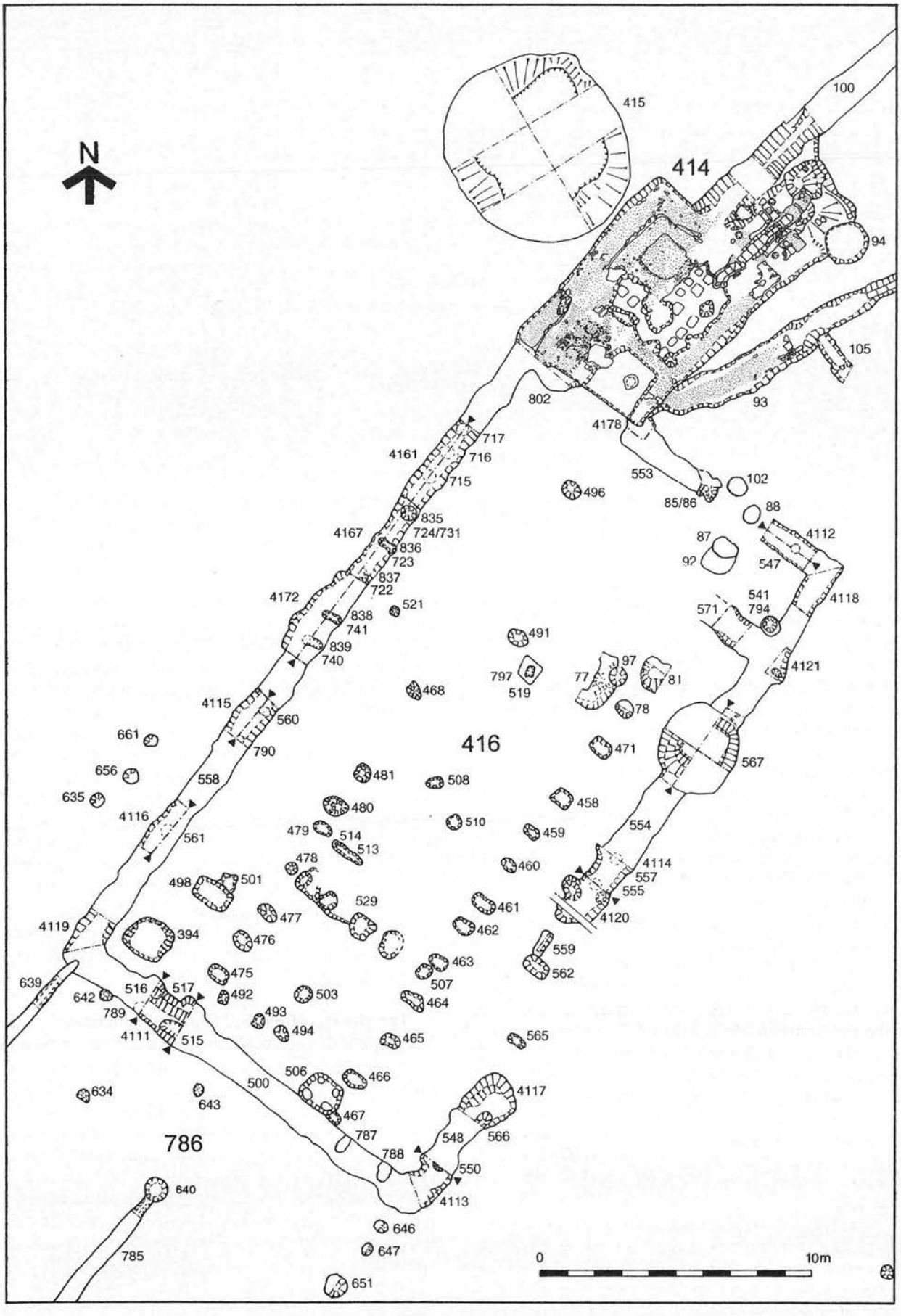


Figure 26 Phase II.2 to II.3 building 416 and II.2 bath-house 414

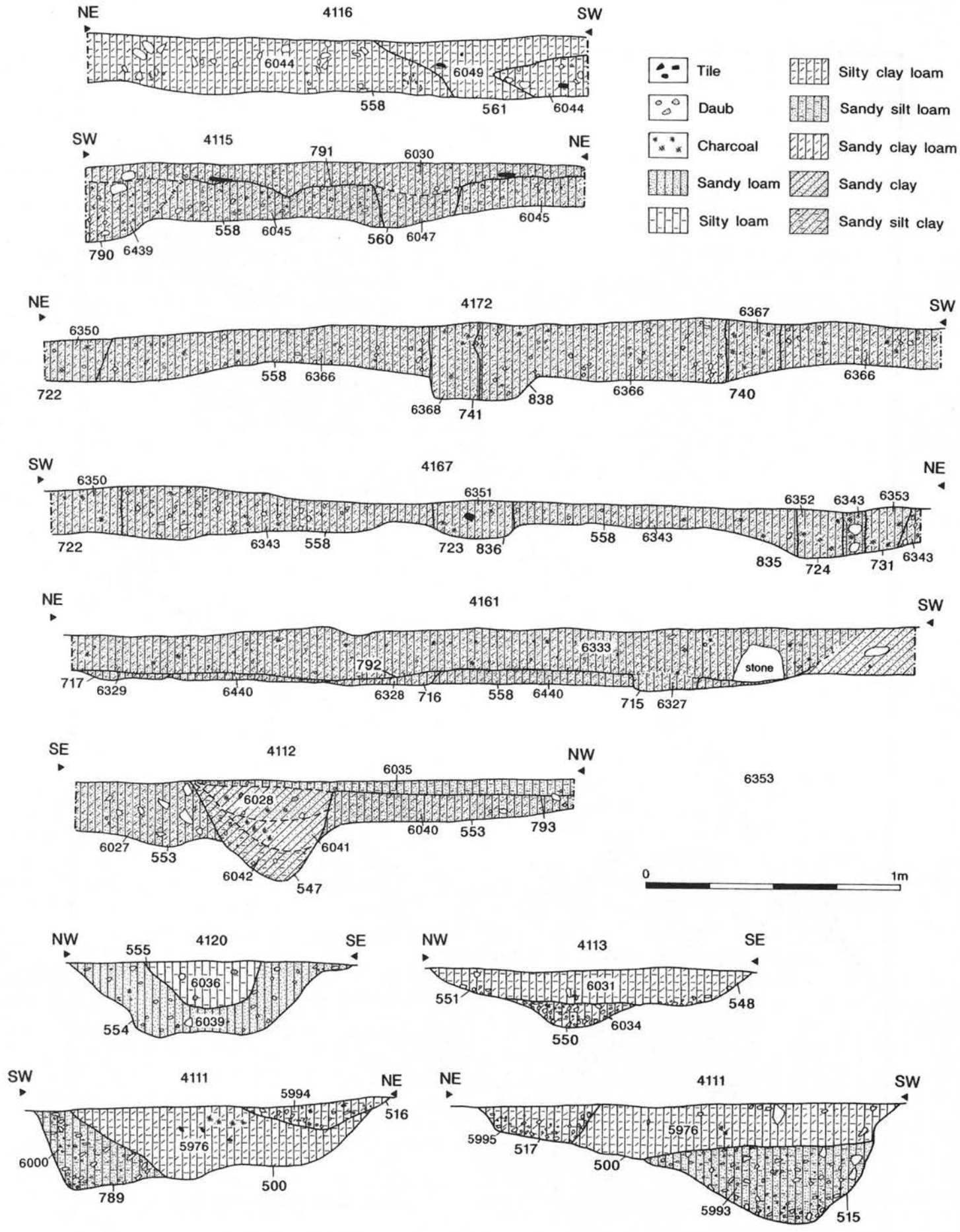


Figure 27 Phase II.2 to II.3 building 416 – sections

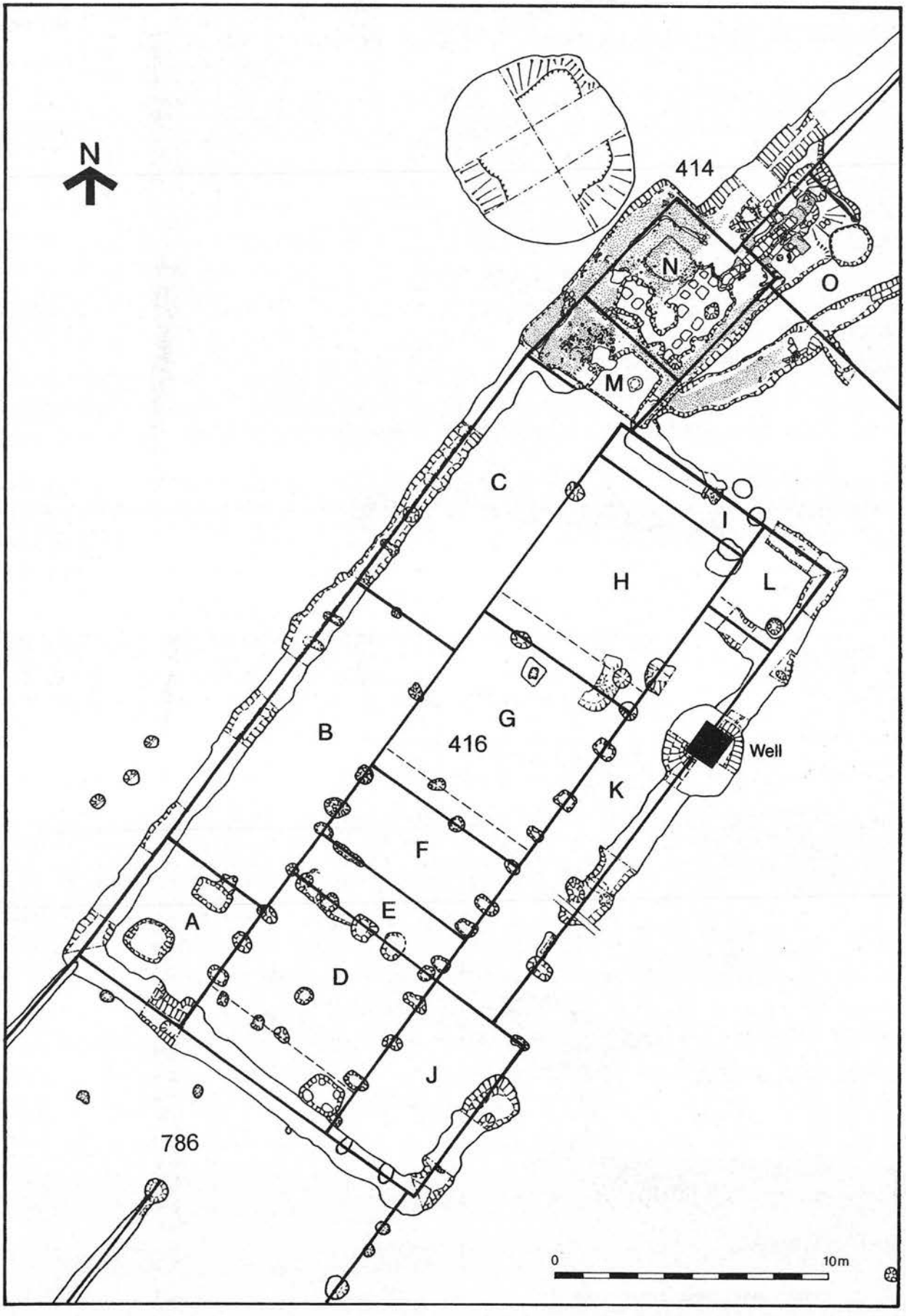


Figure 28 Phase II.2 to II.3 building 416 – interpretation

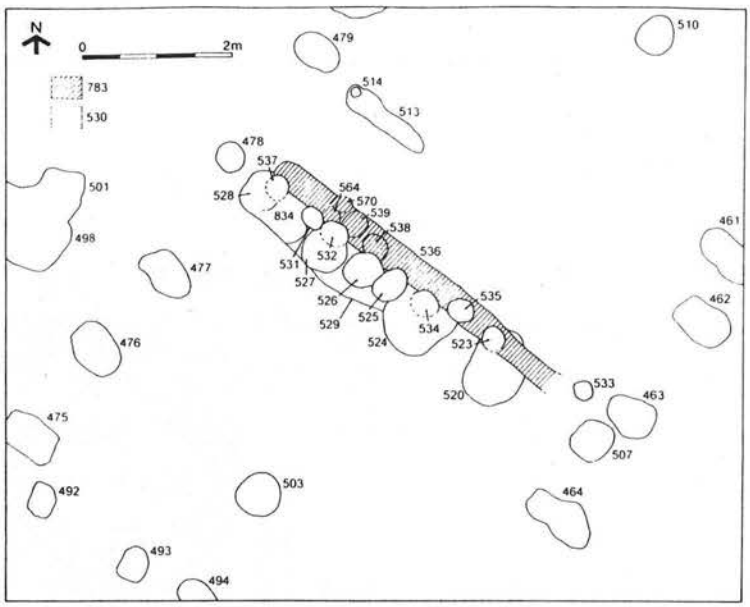


Figure 29 Phase II.2 to II.3 building 416 – internal partitions 529, 783 and 530

Dating evidence

500	5976 (single 4111)	*Misc. pot:* dish B6.2 (GRS); bowl-jar E3 (BSW); jars G (BSW), G24 (GRS); Fabrics HAX & STOR. Late 3rd c. +
533	6027 (single 4112)	*Misc. pot:* dish B3.2 (GRS). Late 2nd to 3rd c. *Coins:* Diademed head, 4th c. (No. 47)
548	6055 (single 4117)	*Misc. pot*: bowl-jar E6 (GRS). Late 3rd c. +
558	6044 (single 4116)	*Misc. pot:* Fabric RET. Late 3rd c. +
	6058 (single 4119)	*Misc. pot:* Fabric HAX. 3rd to 4th c.
	6366 (single 4172)	*Coins:* Diademed head, 4th c. (No. 46)

Building 416: storage-pits 394, 498 and 506
(Figs 26 and 30)
Pits 394 (*c.* 0.9m wide, 1.25m long, 0.4m deep) and 498 (*c.* 0.9m wide, 1.45m long, 0.45m deep) were found at the south-west end of the nave, and pit 506 (*c.* 1.1m wide, 1.3m long, 0.4m deep) at the south-west end of the north-west aisle. All three pits were characterised by box-like plans and steep sided, flat-bottomed profiles. Pieces of copper-alloy bracelet were discovered in 506, which was distinguished by shallow scoops in its four bottom corners. A small number of iron fittings from a large wooden chest (*c.* 0.76m wide and 1m long), some of which were still *in situ*, were found in 394. Two other finds from 394 were two large lead water pipes, both of which were possibly derived from bath-house 414. Both pipes were found outside the projected confines of the box, one on top of the other, up against the south-west side of the pit.

Dating evidence

394	5826 (primary)	*Misc. pot:* Fabric BSW. Roman
	5824 (second)	*Misc. pot:* Fabric GRS. Roman with ?intrusive early Saxon. *Coins:* Gratian, 364–378 (No. 41).
498	5973 (single)	*Misc. pot:* Fabric RET. Late 3rd c.
506	5982 (primary)	*Misc. pot*: dish B6.2 (GRF); mortarium D (OXW); bowl-jar ?E3 (GRS); jar G9 (BB1); beaker H36 (GRS); lid K7 (NVC); Fabric RET. Late 3rd c. +

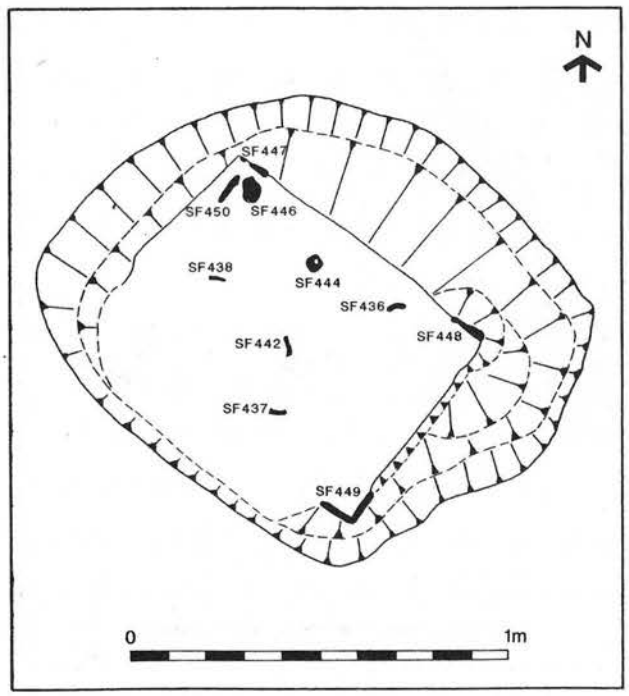


Figure 30 Phase II.2 and/or II.3 storage pit 394

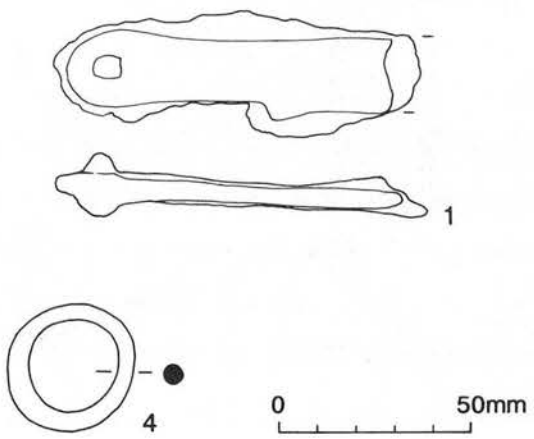


Figure 31 Iron box fittings

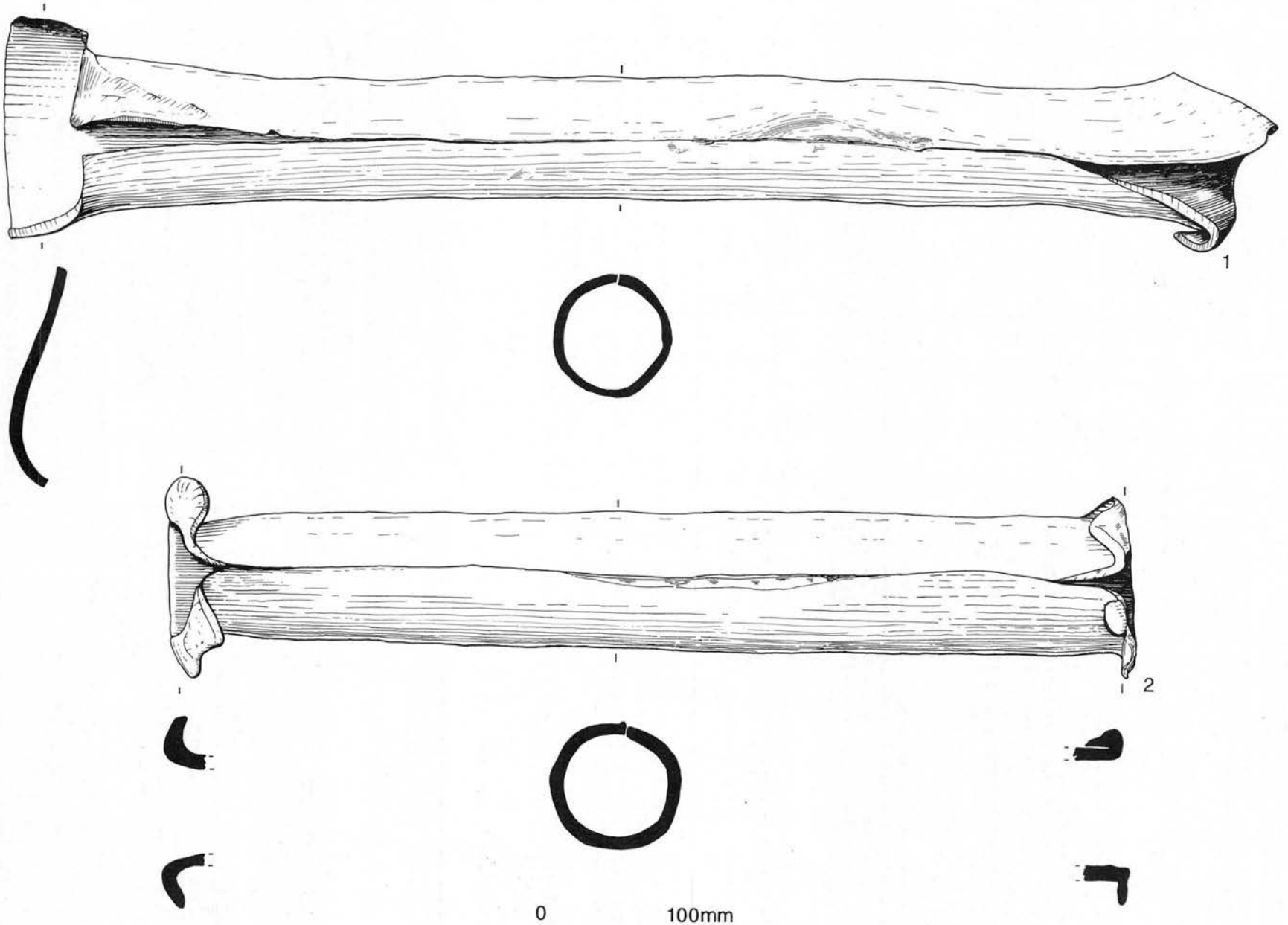


Figure 32 Lead water pipes

Metalwork (storage-pit 394)
by H. Major
The pit contained a group of iron box fittings *in situ*, and, outside the box, two lead water pipes. These had presumably been robbed out from the bath-house, the robbers for some reason having buried them with, no doubt, the intention of retrieving them later, since that amount of lead would have been of some value. The box itself may have contained valuables, presumably organic, since nothing was found 'in' the box. One possibility is that the contents were textiles.

Iron box fittings
(Figs 30 and 31)
The fittings are from a joined, rather than nailed, box, with angle brackets on three corners. A fourth bracket may have been present, but possibly lost during the excavation of the lead pipes, which lay directly outside the box, and were excavated first. The ring found was probably the handle (No. 4, below), and may have been fixed to the box by a leather strap. The position of the ring as excavated suggested that it was on the top of the box, towards one side, implying a hinged lid, although no metal hinges were found. As with the fourth angle bracket, these might have been missed or destroyed during excavation of the pipes, or alternatively, the hinges might have been made from an organic material such as rope, or leather thongs, which would have left no trace.

There were also five or six loose nails from the pit (excluding those in the brackets) which were all bent or curved, and appear to have been forcibly removed from an object, resulting in distortion of the head in two cases. Unlike the brackets, they have no mineralised wood present, suggesting that they were not directly in contact with the box when they corroded, and are unlikely to be part of the structure of the box.

1. Angle bracket, in two pieces, corner missing (recent damage). Each arm is a strip, tapering to a rounded terminal with a nail through, shaft broken. The side view on the X-ray suggests that the nail head was round and slightly domed, diam. *c.* 13mm. There is extensive mineralised wood on the back. L. 97mm, W. 18–29mm. SF447/450
2. Three joining fragments of an angle bracket as SF447/450, with a nail through the terminal. One side of the strip may be damaged. The bracket appears to have been flattened, with one arm either having broken off or been bent, and now lying almost parallel to the other arm; the nail appears to go through both arms of the bracket, but this may be illusory. The corner of the bracket is missing. The distortion of the bracket presumably happened when the box collapsed. Surviving L. 80mm, W. 20–29mm. SF448 (Not illustrated).
3. Two joining pieces of an angle bracket, as SF447/450. Both terminals are broken, one with a fresh break across the rivet hole. There is extensive mineralised wood on the back. Two other fragments are probably parts of the terminals. Surviving arm lengths 117mm and 70mm. SF449 (Not illustrated).
4. Ring. Internal diam. 25mm, external diam. 35mm. The surface is extensively covered in preserved organic remains, probably leather (identification by A.Sutherland). SF444

The lead water pipes
(Fig. 32)

1. Water pipe, made from a piece of sheet *c.* 5mm thick, with the edges butted together. The ends are now distorted, possibly caused during the removal of the pipe from its original location. One end had a rectangle cut out of each corner of the sheet to form a 'flap', now slightly curved. This may have formed a spout at this end of the pipe. The other end, which is now quite squashed, was also cut, but appears to have just had a corner taken off at an angle; the rest of the edge is now rolled under and flattened against the pipe. L *c.* 850mm. 5824 SF 376.
2. Water pipe, made from butted sheet, as SF376. The sheet has been bent out at one end to form a continuous flange *c.* 21mm wide. The other end is also flanged, but in this case the flange has been formed by cutting the pipe at intervals and folding the sheet out like petals. The flange is now partly folded back along the pipe. L. 680mm. 5824 SF377.

Building 416: well 567
(Figs 26 and 33)
The main components from this phase were four fills of dark brown organic mud (6461, 6462, 6463 and 6459) from the bottom 2m and five fills of dark yellowish brown sandy clay from the top 1.4m (6083, 6067, 6085, 6084 and 6086). A discrete deposit of compacted grass and cereal

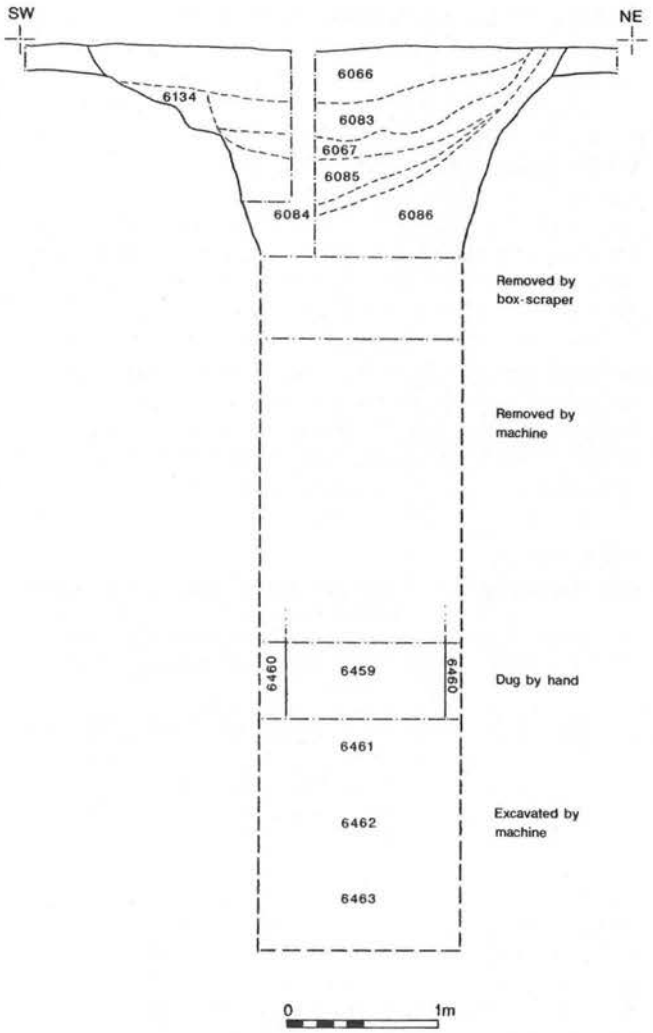


Figure 33 Phase II.1 to II.3 well 567 – section

stems (6465) was found in 6463. The central part of the well, which was removed by the quarry, was not investigated. The minimum limit to the water table was represented by the interface between 6459 and 6461.

Three of the basal fills were sampled for pollen and insects (6462, 6463 and 6465), four for fish bones (6459 and 6461–63), and five for plants and animal bones (6459, 6461–63, and 6465) (see Parts 4 and 5). The botanical remains were distinguished by abundant food stuffs, including new introductions or imports such as Mediterranean stone-pine, sweet chestnut, olive, grape and walnut. The fish bone assemblages were comprised of pike, eel, herring, plaice/flounder, scad (which is a valued food source in the Mediterranean) and spanish mackerel. The hay and straw, which was unmasticated, had been used as a floor covering for humans, but not animals. This was attested by the beetle assemblages, which were comprised predominantly of indoor species, including *Aglenus brunneus*, which had once been common in the compacted debris on the earth floors of buildings. Wild and domesticated animals were represented by faunal remains from cattle, sheep/goat, pig, horse, dog, cat, red deer, hare, chicken, goose, duck, woodcock, golden/grey plover, sparrowhawk and thrush. The evidence for sparrowhawk and thrush (the natural prey of the sparrowhawk) was significant, because it alluded to some

form of hunting, such as hawking. The cattle bones, which were inordinately large, were possibly derived from imported livestock.

A large assemblage of early 4th-century pottery was found in 6459 and small assemblages of late 3rd/4th-century pottery in 6462, 6463 and 6084. The upper fills, which were deposited at some point or points prior to the late 4th century, were sealed by deposit 6066, which contained late 4th-century pottery. The fills in the top part of the well (at least) were predated by the single fill in the central part of wall-trench 554.

The remaining finds from the bottom part of the well included the head from a charred wooden spatula, two leather shoes, and a small amount of window glass. A small number of sherds in 6084 from an 'almond-rimmed' amphora from Campania were possibly related to an affluent lifestyle, with Mediterranean links.

Dating evidence

567	6463 (third)	*Misc. pot:* dish B6.2 (GRS); bowl-jar E5.4 (BSW); Fabrics NVC & HAX. Late 3rd c. +
	6462 (fourth)	*Misc. pot:* dish B6.2 (BSW); jar G24.1 (GRS); Fabrics NVC & HAX. Late 3rd c. +
	6461 (fifth)	*Misc. pot:* Fabric HAX. 3rd to 4th c.
	6459 (sixth)	*Misc. pot:* dishes B6.2 (GRF, GRS, RET & BSW), B6.3 (BB1); bowl-jars E3 (HAX), E6.1 (RED); jar G35.1 (RET). Early 4th c.
	6084 (eighth)	*Misc. pot:* Fabrics HAX, RET, ASS & AMPH. Late 3rd c. +

Building 368

(Figs 18 and 34 to 36)

This aisled building (*c.* 24m × 12m) was situated to the immediate north-east of bath-house 414 and building 416. The central nave was represented by twelve large, sub-circular post-pits, in two parallel rows of six, in a rectangle 6.2m wide and 18m long. The external walls from one or more phases of construction were indicated by one wall-trench, one timber slot, seven post and stake-holes, and bath-house drain 100/620, which went around the projected course of the north-west and north-east sides. The *praefurnium* for bath-house 414 was situated in the north-west corner (see bath-house 414 below).

The post-pits for the central nave were distinguished by steep sides and flat or slightly concave bases (94, 96, 573–74, 580, 583–84, 587, 600, 604, 718 and 629 (not on plan) which was poorly preserved). The fact that the post-pits in the south-west part of the structure were substantially deeper than the post-pits in the north-east part, was probably due to uneven truncation (from *c.* 0.6m to *c.* 0.25m). Well-defined sub-square and sub-rectangular post-pipes (585 and 588, not in section) were found in post-pits 584 and 587. The best preserved of these, in 587, was *c.* 0.3m square. Two additional post-pipes (98, not in section, and 586) were discovered in two post-replacement cuts (840 and 857) in post-pits 94 and 583 (not in section) at the south-west end of the building, which was reconstructed in the following phase. An additional post location was revealed by a late 4th-century demolition cut (581) in post-pit 600. All twelve post-pits had been backfilled with a single deposit of redeposited natural (94, 96, 583–84, 587 and 600) or dark greyish brown silt clay loam (573–74, 580, 604, 629 and 718).

The outside walls were represented by one shallow remnant of wall-trench at the south-west end (105), four sub-circular post-holes on the north-west and south-east sides (101, 106 and 734–35), and one timber slot (808, not on plan) and three sub-square or sub-rectangular post-holes or stake-holes (721, 729 and 752) in the *praefurnium* area in the north-west corner (Fig. 37). They were also defined by a small section of surviving wall at the north-east end of the bath-house *caldarium* (623), and by a sudden narrowing of bath-house drain 93, which passed under the projected line of the south-west wall. All nine features, except 734, were equi-distant (*c.* 2.9m and 3m) from the central nave. Post-holes 101 and 106 and two small features on the opposite side of drain 100/620 (107 and a small unnumbered swelling) were possibly related to a doorway/foot-bridge.

The evidence for internal divisions was confined to one narrow gully or timber slot in the north-west aisle (108), and one sub-square stake hole (577) and one small timber slot in the north-west corner (576) (Fig. 37).

A small assemblage of daub from some of the associated contexts was possibly related to the outside walls. Some of the daub was distinguished by a combed surface indicative of pargetting or keying for rendering.

The north-west end of the structure, as represented by post-pits 580, 584, 604 and 629, was demolished to make way for pond 422 at some point prior to the mid 4th century. Pond 422 was probably dug to accommodate the overflow from bath-house drain 93, which went through the building and was presumably prone to flooding. It cut post-pits 604 and 629 and was no longer in use by *c.* 350. A new north-east end to the building was then possibly constructed, possibly on the line of gully/slot 108. The rest of the building was demolished in the late 4th/early 5th century.

Small assemblages of 2nd to mid 3rd or 3rd/4th-century pottery were found in post-pits 573–74, 580, 583, 718, and post-hole 735, and late 3rd/4th-century pottery in post-pit 604, post-hole 734 and timber slots 108 and 576. Post-pit 583 was cut by phase II.3 post-replacement cut 857. Late 4th-century post-extraction cuts (842, 858 and 581) were identified in plan or in section in 96, 587 and 600. Some of the silt clay loam deposits in some of the post-pits may have been related to otherwise undetectable demolition cuts. This was supported by an absence of post-pipes in 573–74, 580, 718 and 604.

A construction date in the late 3rd to early to mid 4th century was suggested by the sherds in post-pit 604 and post-hole 734 and the mid 4th-century disuse date of pond 422, which cut the north-east end. This date was questioned, however, by the possibility that the post-pipe free deposit of silt clay loam in 604 was related to deconstruction, rather than construction. There was also the possibility that timber slots 108 and 576, and post-hole 734, which all contained late 3rd/4th-century sherds, were related to subsequent insertions or modifications, rather the initial phase of construction. A sherd of late 4th-century pottery in 600, if not intrusive, was possibly related to a late 4th-century episode of remodelling.

Dating evidence

108	5183 (single)	*Misc. pot:* dish B6.2 (NVC); Fabrics HAX & RET. 4th c.
573	5167 (single)	*Misc. pot*: dish B2 (GRS); jar G (GRS); Fabrics COLC, COLB, GRF, STOR & BSW. Mid 2nd to mid 3rd c.
574	6096 (single)	*Misc. pot:* dish B3.2 (GRS); lid K7 (NVC). 3rd c. +

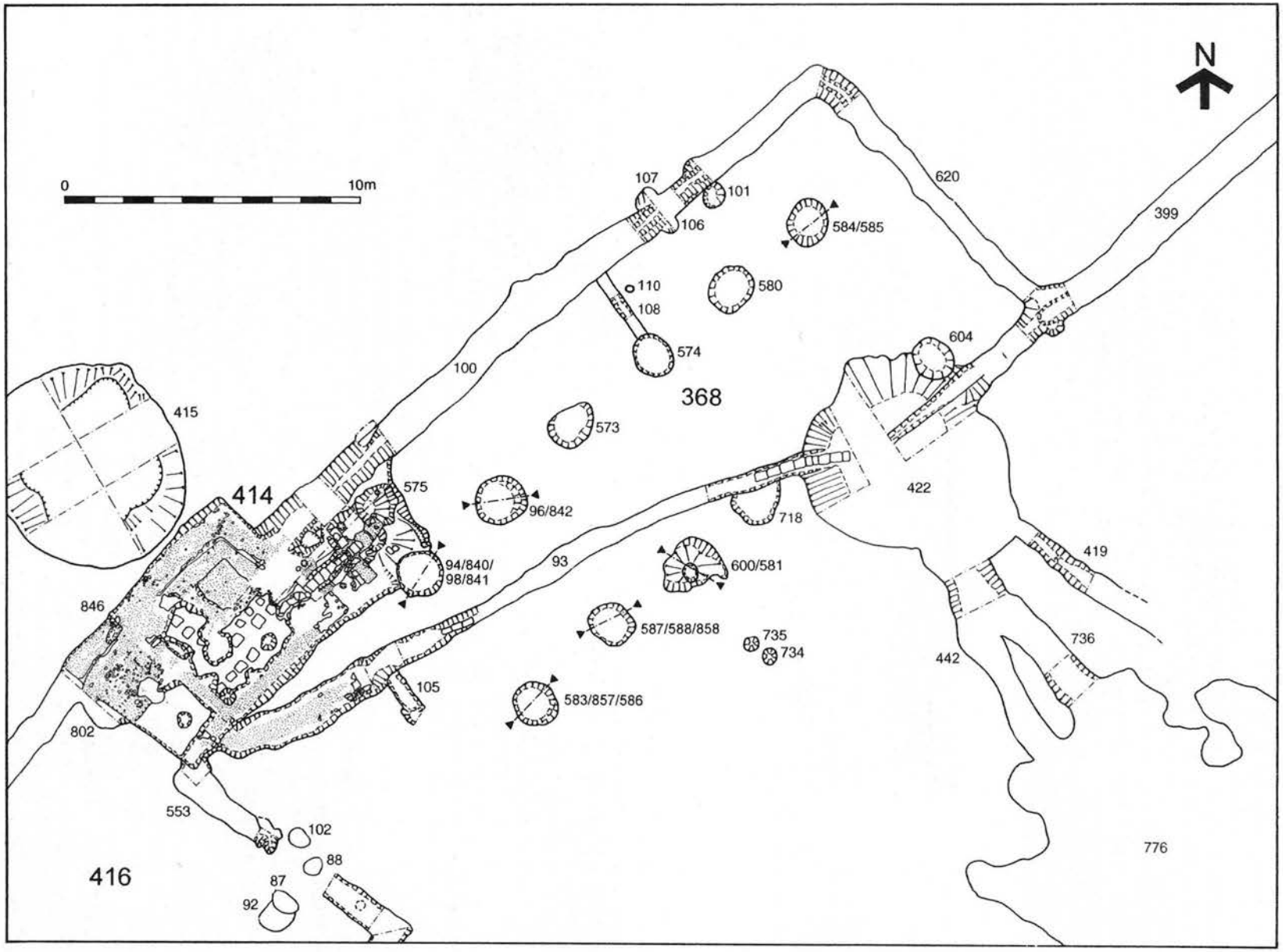


Figure 34 Phase II.2 to II.3 building 368 and II.2 bath-house 414

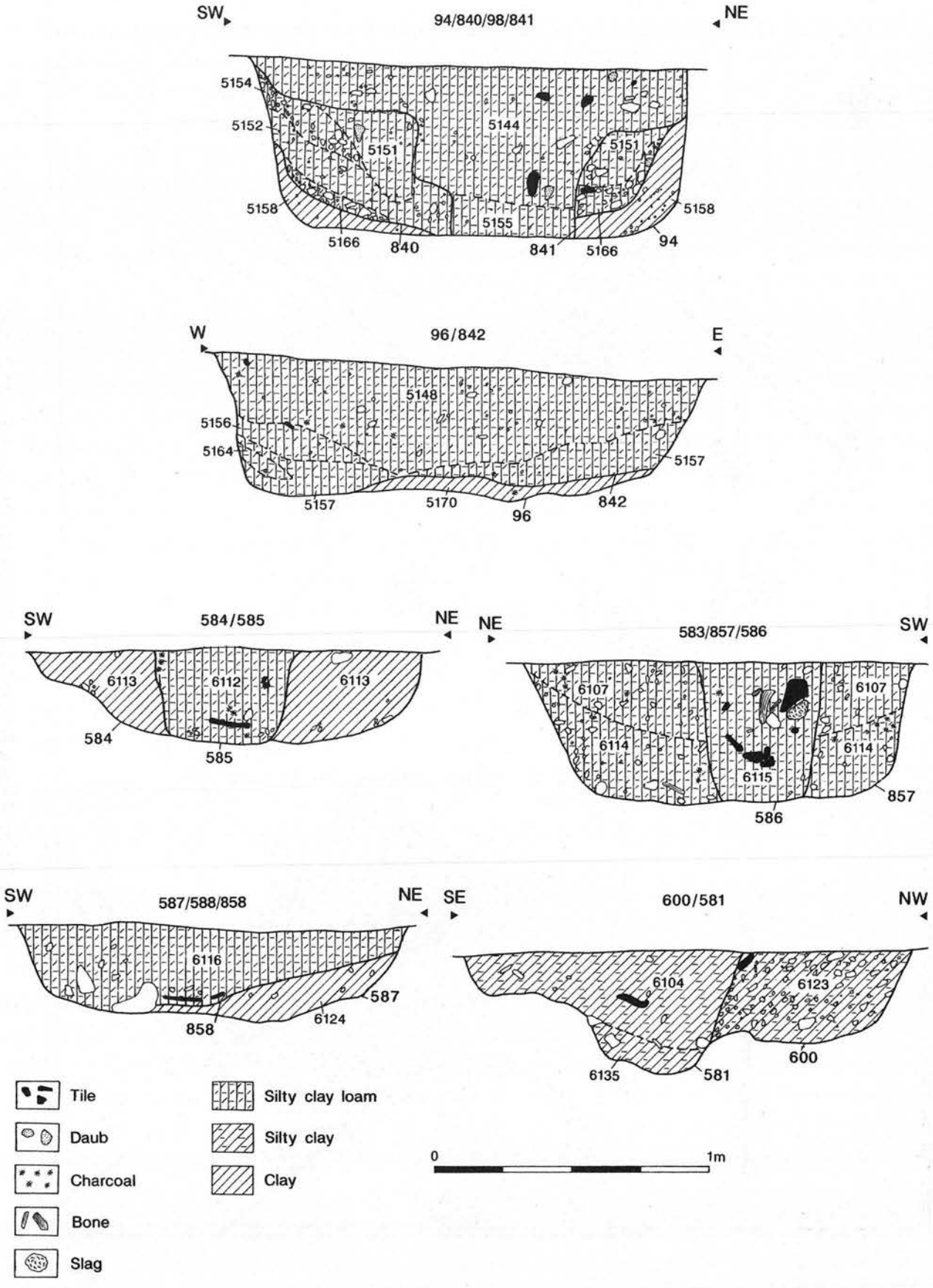


Figure 35 Phase II.2 to II.3 building 368 – sections

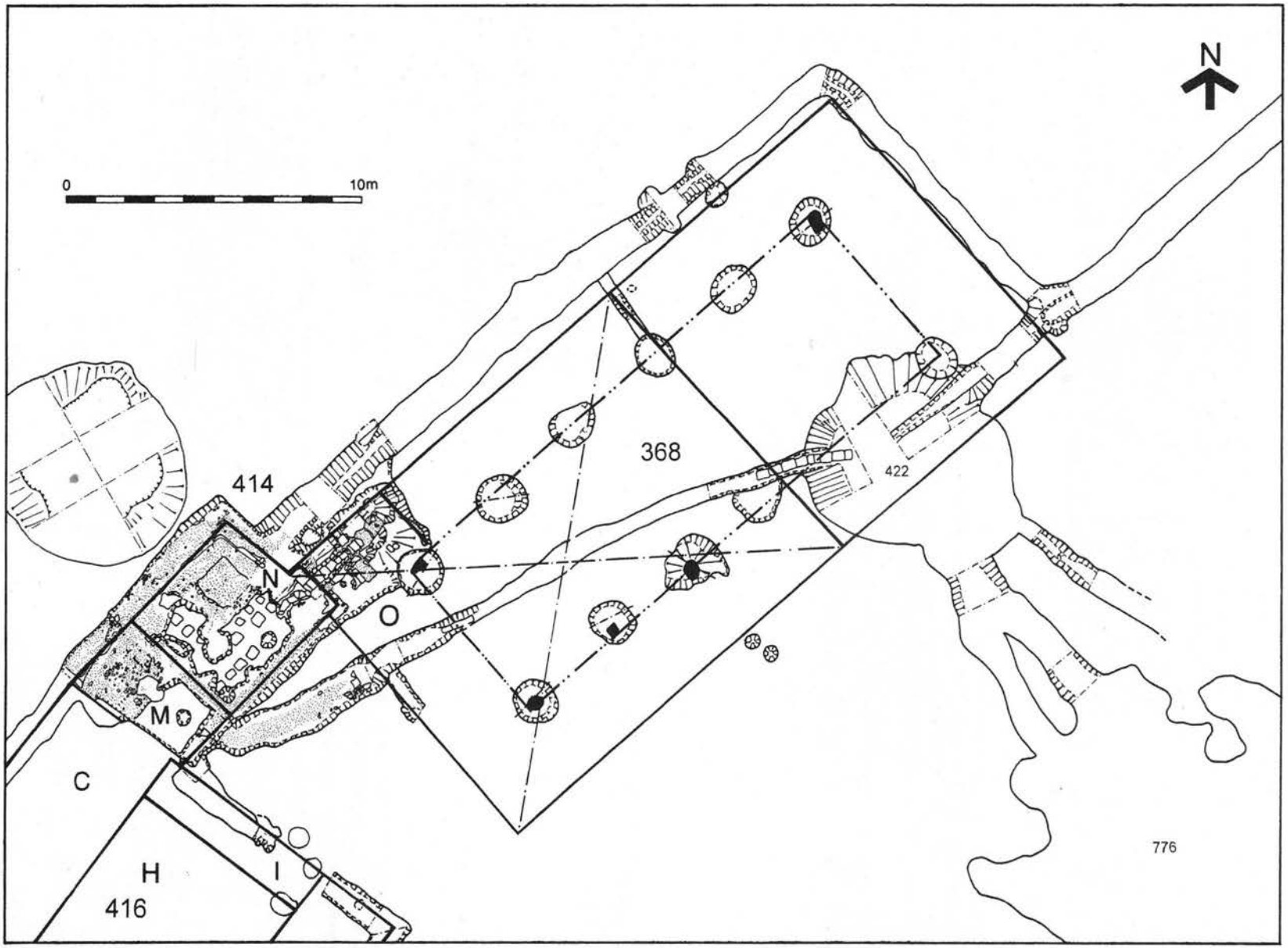


Figure 36 Phase II.2 to II.3 building 368 and II.2 bath-house 414– interpretation

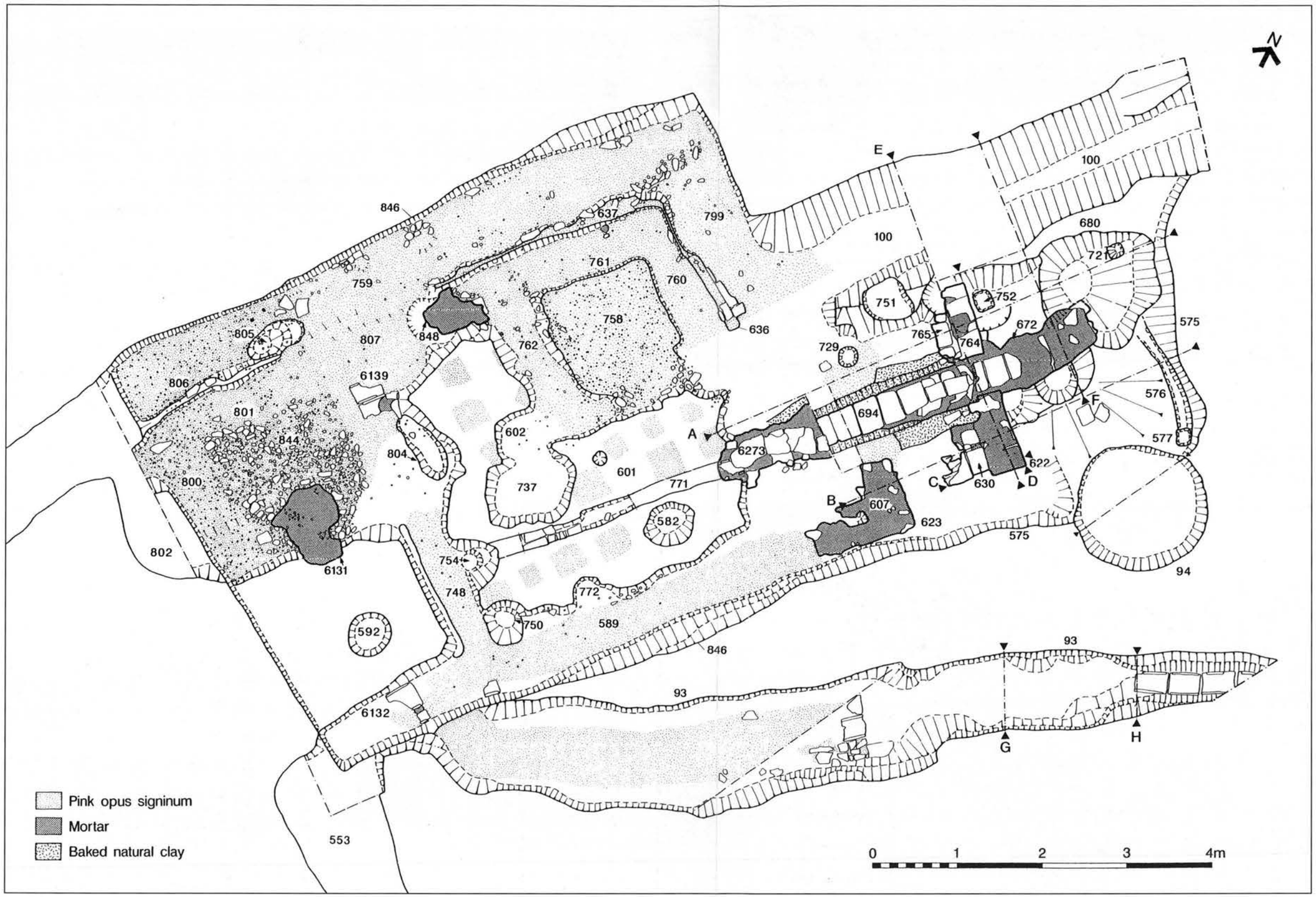


Figure 37 Phase II.2 bath-house 414

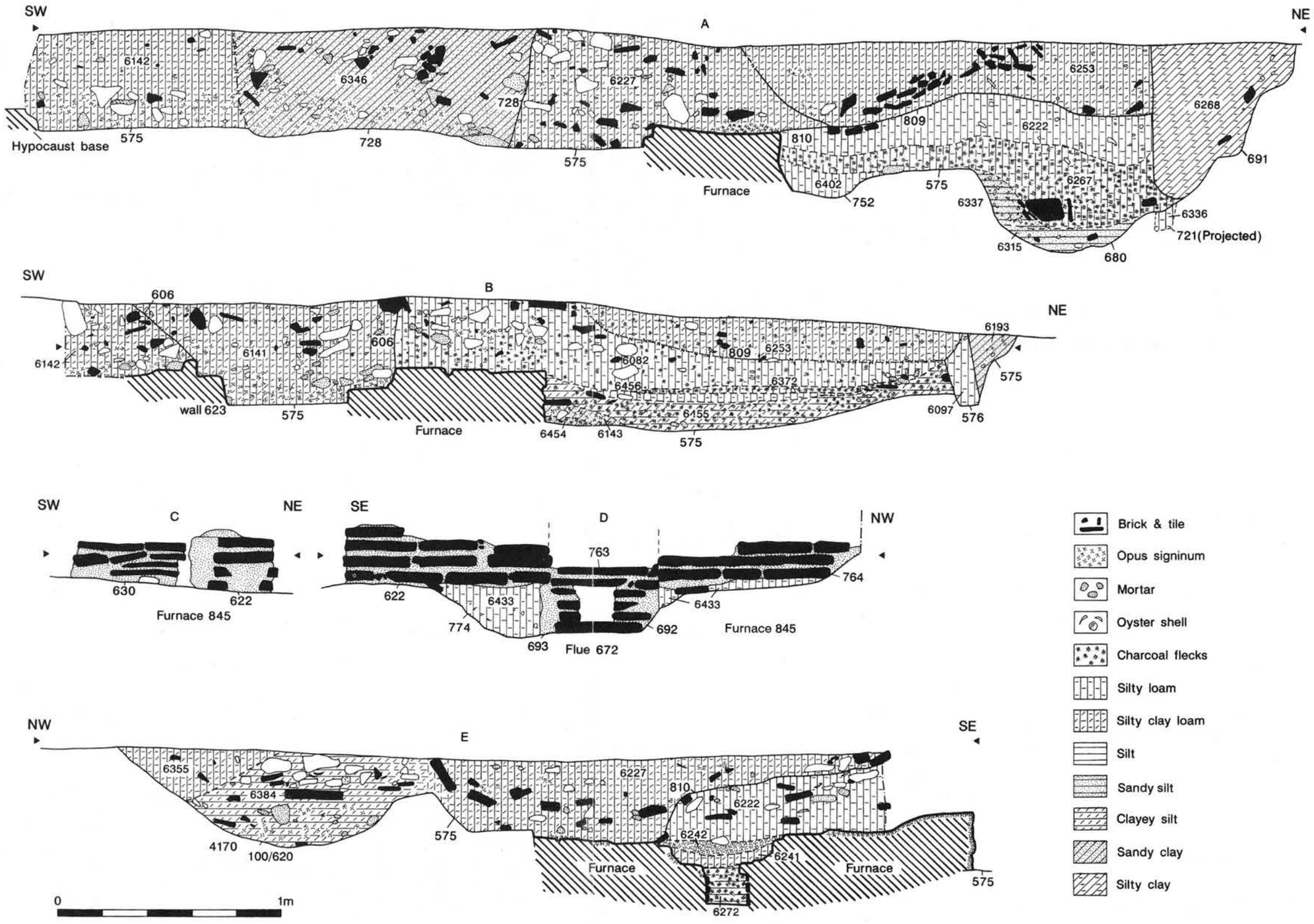


Figure 38 Phase II.2 bath-house 414 – sections

576	6097 (single)	*Misc. pot:* Fabrics BB1 & GRS. ?Late 3rd c. +
580	6103 (single)	*Misc. pot:* Fabric COLC. Mid 2nd to early 3rd c.
583	6121 (single)	*Misc. pot:* jar G5.4 (BSW); Fabric GRS. 2nd to early/mid 3rd.
600	6123 (single)	*Misc. pot:* jár G24 (GRS); Fabric OXRC. Late 4th c. ?intrusive
604	6151 (single)	*Misc. pot:* Fabrics NVC & RET. Late 3rd c. +
718	6326 (single)	*Misc. pot:* jars G5.4 (GRS), G28 (GRS); Fabric HAX. 3rd c. +
734	6357 (single)	*Misc. pot:* jar G24 (RET); Fabric NVC. Late 3rd c. +
735	6358 (single)	*Misc. pot:* Fabric HAX. 3rd c.

Bath-house 414

(Figs 18, and 37–40, Plates IV and V)

Bath-house 414 was situated in the 9m wide gap between buildings 368 and 416. It was located in two construction trenches and was comprised of three different rooms. The *frigidarium* and the *caldarium* were located in construction trench 846 and the *praefurnium* in construction trench 575. Trench 846 was *c.* 0.35m to 0.5m deep and trench 575 *c.* 0.3m to 0.5m deep. The *frigidarium* was linked to building 416 by a 2m wide gap in its north-east wall. The *praefurnium* was enclosed by the north-west corner of building 368. The building was probably demolished in the mid 4th to late 4th century, and then robbed on several separate occasions from the late 4th century onwards. The surviving components in the first two rooms were four strips of *opus signinum* from the wall-footings of the robbed-out walls, two square patches of *opus signinum*, pea grit and gravel, from the foundations of the sunken hot and cold baths, and an L-shaped area of *hypocaust*. The *praefurnium* was occupied by a furnace and flue, which were constructed from mortar and bricks, and a pit. The cold bath was drained by tile-lined drain 93, and the hot bath by drain 100/620. A large cistern was situated to the immediate north-west (415).

The *caldarium* and the *frigidarium* were defined by four wall footings (589, 748, 759 and 799), four pieces of upward facing *tegulae* from a levelling course (6132 and 6139) and an L-shaped fragment of wall (623). The wall fragment was constructed from cream-coloured mortar with free-floating occasional small to large pieces of tile and flint. It was 0.2m high and was distinguished by a *c.* 0.18m square void from an upright post (607).

The *frigidarium*, in the south-west part of the construction trench, was *c.* 4.2m wide and 2m long. It was occupied by the footing for a sunken cold bath and a *c.* 0.1m high block of un-numbered natural. The bath was situated in the north-west part, up against the inside wall. It was *c.* 1.6m square and was indicated by one base footing of crushed tile and compacted gravel stones (844), and two side footings of reddish brown *opus signinum* (800 and 801). The base footing was 0.05m high, and the side footings 0.03m thick. The south-east side of the bath was possibly defined by two projections, which were left un-numbered, at ninety degrees to 748 and 800. A 0.2m thick fragment of cream coloured mortar in the gap between the two projections was possibly related to the base or the south-east side (6131). It is assumed that the area of natural in the south-east half of the room was covered by a wooden floor at the same height as the floor in building 416. It is also assumed that the bath was linked to the drain (93) on the outside, south-east side of the *frigidarium* by an underlying drainage pipe. The floor or the pipe was possibly supported by a small post in post-hole 592, which cut the clay natural.

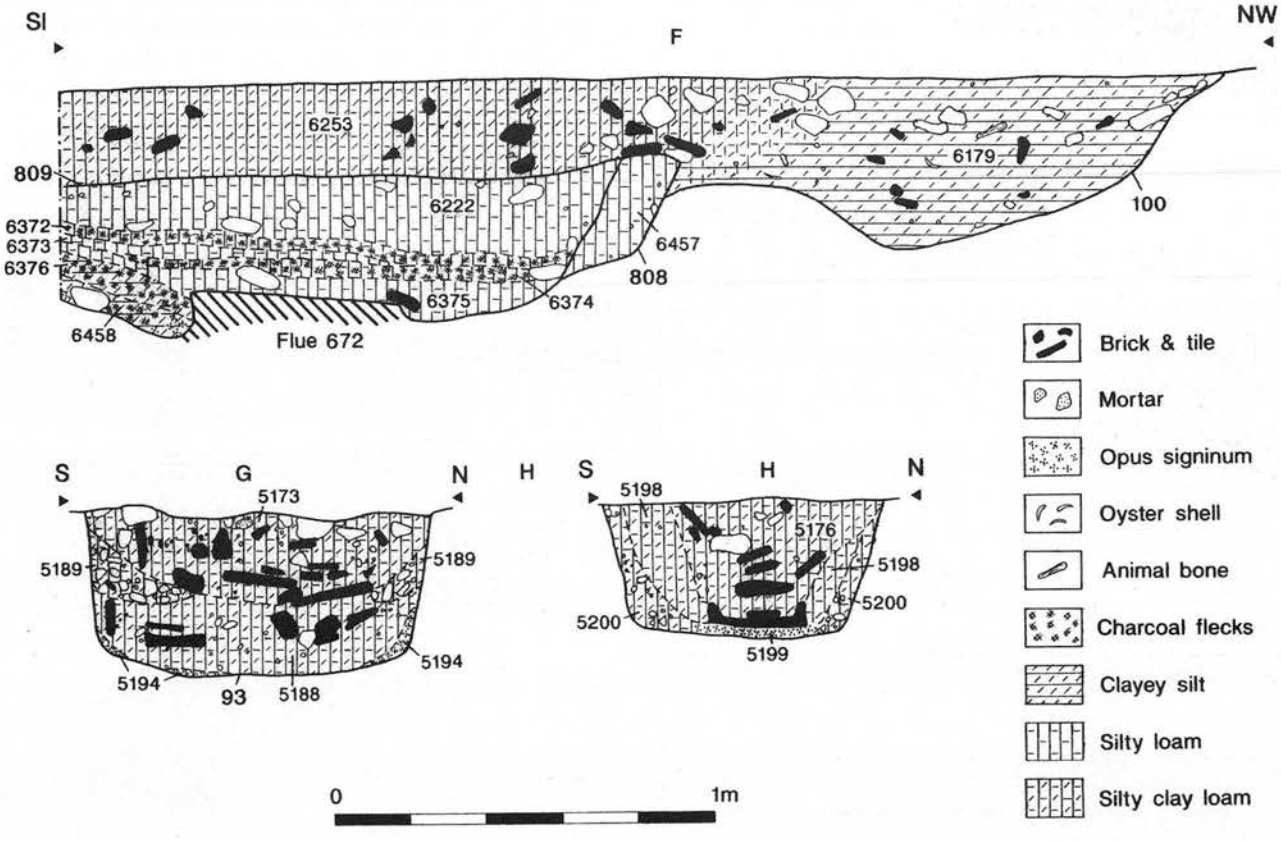


Figure 39 Phase II.2 bath-house 414 – sections

The *caldarium*, in the north-east part of the pit, was *c.* 4.2m square. A small area, *c.* 3m wide and 1.5m long, on the north-east side of the room was defined by wall fragment 623 and a change in direction in the north-east wall footing (799). The two main elements inside the room were a sunken hot bath and an L-shaped *hypocaust*. The bath, in the north-east corner, was represented by a square base footing of compacted crushed tile and pea grit (758) and three side footings of pink *opus signinum* (760–62). The base footing was *c.* 0.04m thick and the *opus signinum* strips *c.* 0.03m thick. A fourth side and/or step was defined by two small, unnumbered projections on the south-east side. The *hypocaust* was represented by a support base (601) and fifteen *pila* marks (603). The base was constructed from a 0.06m thick layer of pink *opus signinum* on a 0.1m high bed of compacted gravel. It was stained dark reddish brown by soot and heat and was cut by seven late 4th-century, or post-Roman, robber-cuts (582, 602, 737, 750, 754, 772 and 804). The *pila* marks were comprised of thin surface coverings of pink *opus signinum* in two sizes, in a semi-regular pattern. The larger marks were akin to a *pedalis* (*c.* 0.34m²) and the smaller marks, near the hot bath, to a small *pedalis* or large *bessalis* (*c.* 24m²). The insertion of the hot bath at a subsequent date to the main phase of construction was suggested by the positioning of the three small *pila* marks on the south-east side. This was supported by the fact that the hot and cold bath footings were constructed from slightly different materials, perhaps indicating that they were constructed on different occasions. The remaining components were three, thin, irregular ridges of rubble and *opus signinum* (636, 637 and 806), one small block of mortar (848), and one small, U-shaped channel (771). The rubble ridges were probably related to the infilling of the space between the bath sides and the outside walls. The best-preserved ridge 637 was *c.* 0.3m high. The gully, which was originally lined with end to end upside-down *imbrices*, was connected to a large brick-built flue (672), which came in across the floor of the extended area. The purpose of the mortar block was not determined. It was 0.04m high and was found on a levelling course of *tegulae*.

The *praefurnium* in 575 in the north-west corner of building 368 was *c.* 2.5m wide and 4m long. The surviving components were a large flue (672) and the north-east face of a rectangular furnace (845). The flue was located in a linear cut, which went up underneath the furnace at an angle of seven degrees (774). It travelled from a pit (680) in the north-east corner to the north-east end of channel 771, which went up across the surface of the *hypocaust* base at an angle of two degrees. The first part of the flue, to the north-east of the furnace, was comprised of a rectangular box-like structure with a *c.* 0.15m square duct. Its sides (692 and 693) were constructed from three courses of half *lydion* in an irregular bond and its base (694) and top (763) from a single and double course of side-by-side *lydion* and *tegulae*. The mouth of the flue tilted downwards into the top of the pit. The rest of the flue, to the south-west of the furnace face, was poorly preserved. It was severely scorched and was restricted to the base and part of the sides; the natural orange clay to either side of the flue had been scorched matt red. There was no scorching in the area to the north-east of the furnace, including the pit in the north-east corner, and the north-east section of flue. A small amount of ash, however, was found in the duct. The furnace was constructed from two front facing blocks of *lydion* (622 and 764) and two rear blocks of *lydion* and *tegulae* (630 and 765). The bricks were held together in an irregular bond with cream-coloured mortar. The middle part of the front two blocks was distinguished by the bottom part of a 0.45m wide stoke-hole. No trace of the hot water tank, which would have sat on top of the furnace, was found.

The fire for the *hypocaust* was probably situated in the furnace area because of the scorching (Fig. 40). It was possibly located on top of a metal or ceramic grate and fed via the stoke-hole. The flue, underneath the fire, was used to feed the fire with extra air and/or maintain the process of convection in the *hypocaust*; the amount of air coming through the flue was regulated by blocking off the north-east end.

The cold and hot baths were drained by drains 93 and 100/620 respectively. The first of these ran from the

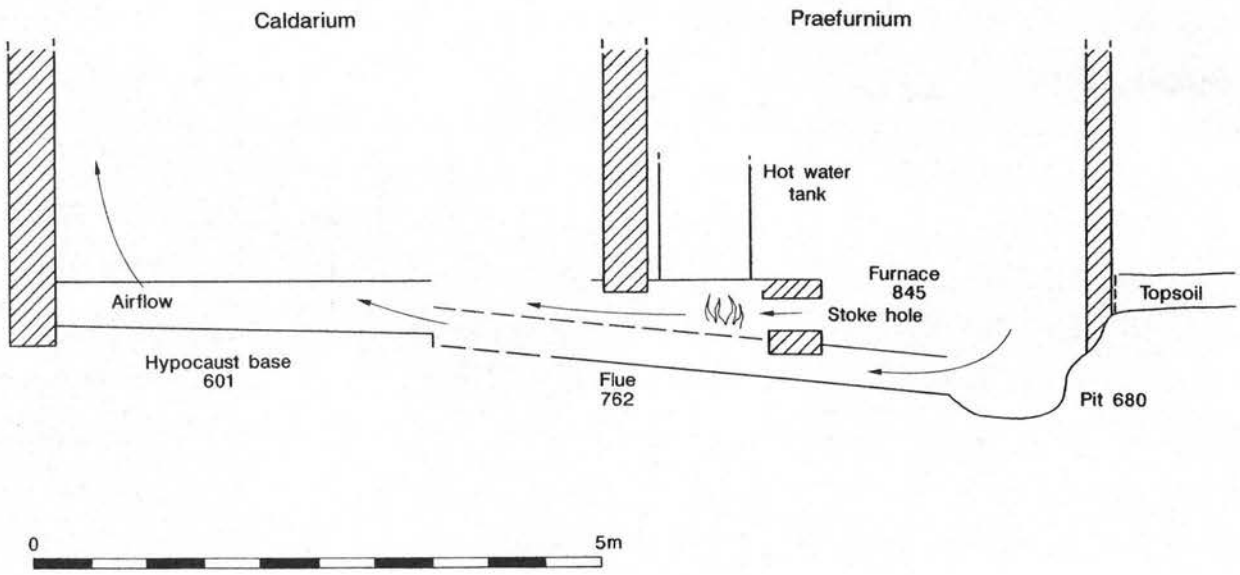


Figure 40 Phase II.2 bath-house 414 – flue interpretation

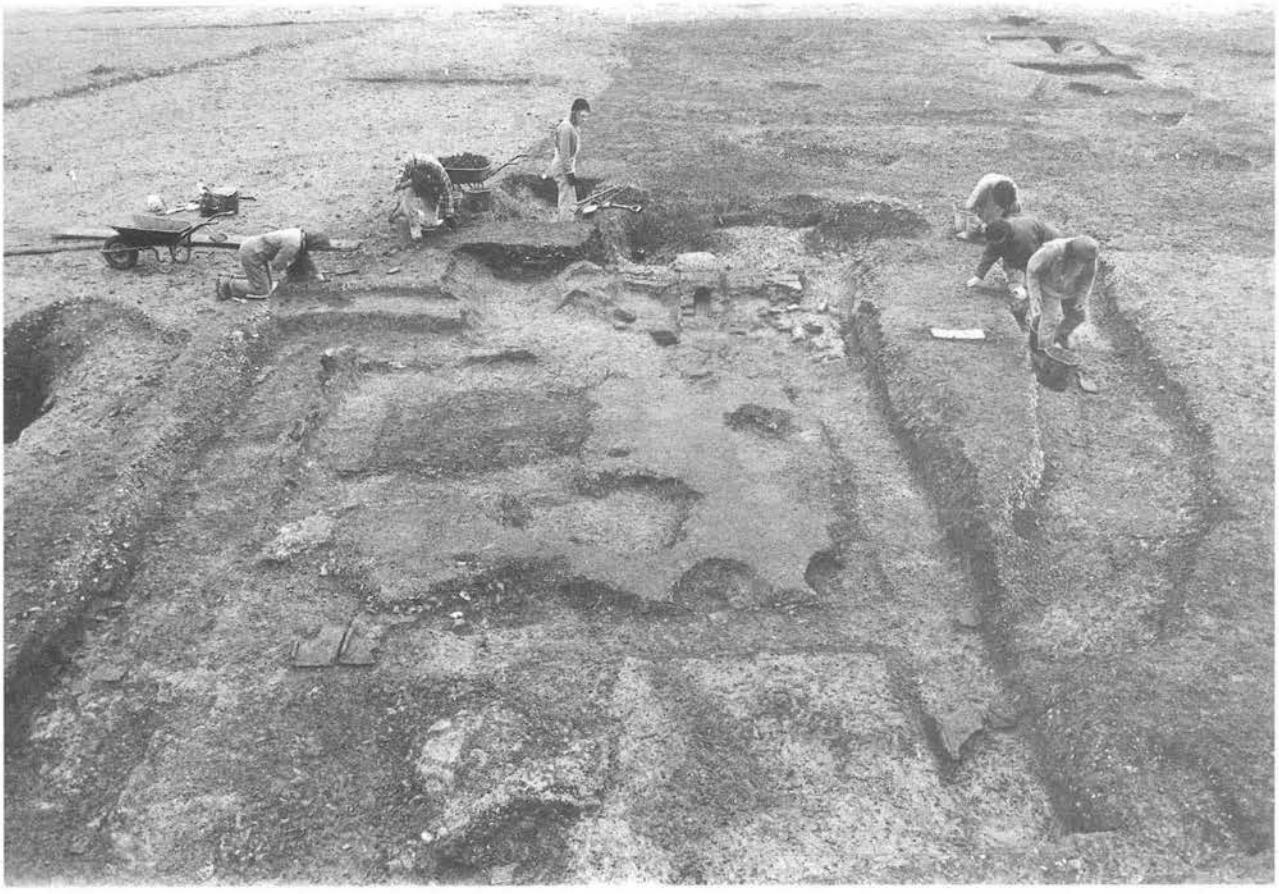


Plate IV Bath-house 414

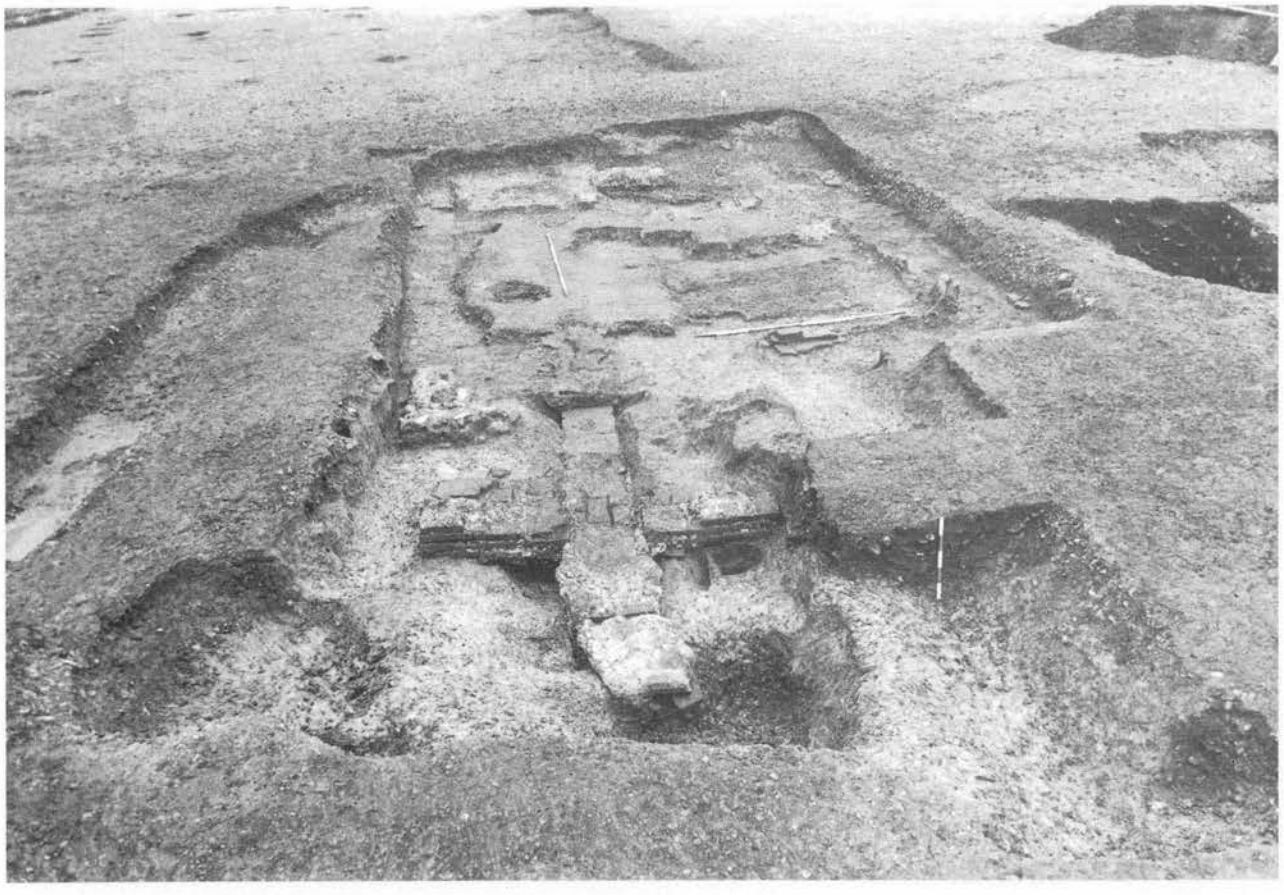


Plate V Flue 672 and furnace 845

south-east side of the *frigidarium* to the south-west end of ditch 399. It narrowed at the projected line of the south-west wall of adjacent building 368 and went across the floor of the building at an oblique angle. The tile lining was represented by one short section of end to end *lydion* near pond 422 (Fig. 34) and two short sections of upward facing *tegulae*, all on a thin base of pink *opus signinum*. Two fragments of side wall in the wider part of the drain were comprised of half *lydion*, in an irregular bond, up to three courses high. The hot bath drain, in contrast, was unlined, but may have been lined with wood in its original form. It went around the adjacent building, from the north-east side of the *caldarium*, to the north-west side of 399. The cistern (415), which was not bottomed, was *c.* 4m square and 1.5m to 2m deep. It had a steep-sided profile and was surrounded by a broad cone of erosion.

At some point during this phase, the flue (672) was discontinued; the channel (771) in the *hypocaust* was infilled with *opus signinum*, and the top and sides in the section of flue to the south-west of the furnace face removed, and the resulting void backfilled with tile (6273), soil and rubble (6241) and a capping of *opus signinum* (6242). The *praefurnium* must have been able to carry on without the flue because the infilling of the flue had been scorched by subsequent firings, and the untouched, north-east end of the flue, including the pit in the north-east corner (680), had been subsumed by a subsequent build-up of ash, charcoal and silt loam (6143, 6267, 6315, 6337, 6372 to 6376, 6402, 6454 to 6456, and 6458).

Large amounts of brick and tile and other finds, such as window glass and painted wall-plaster, were found in

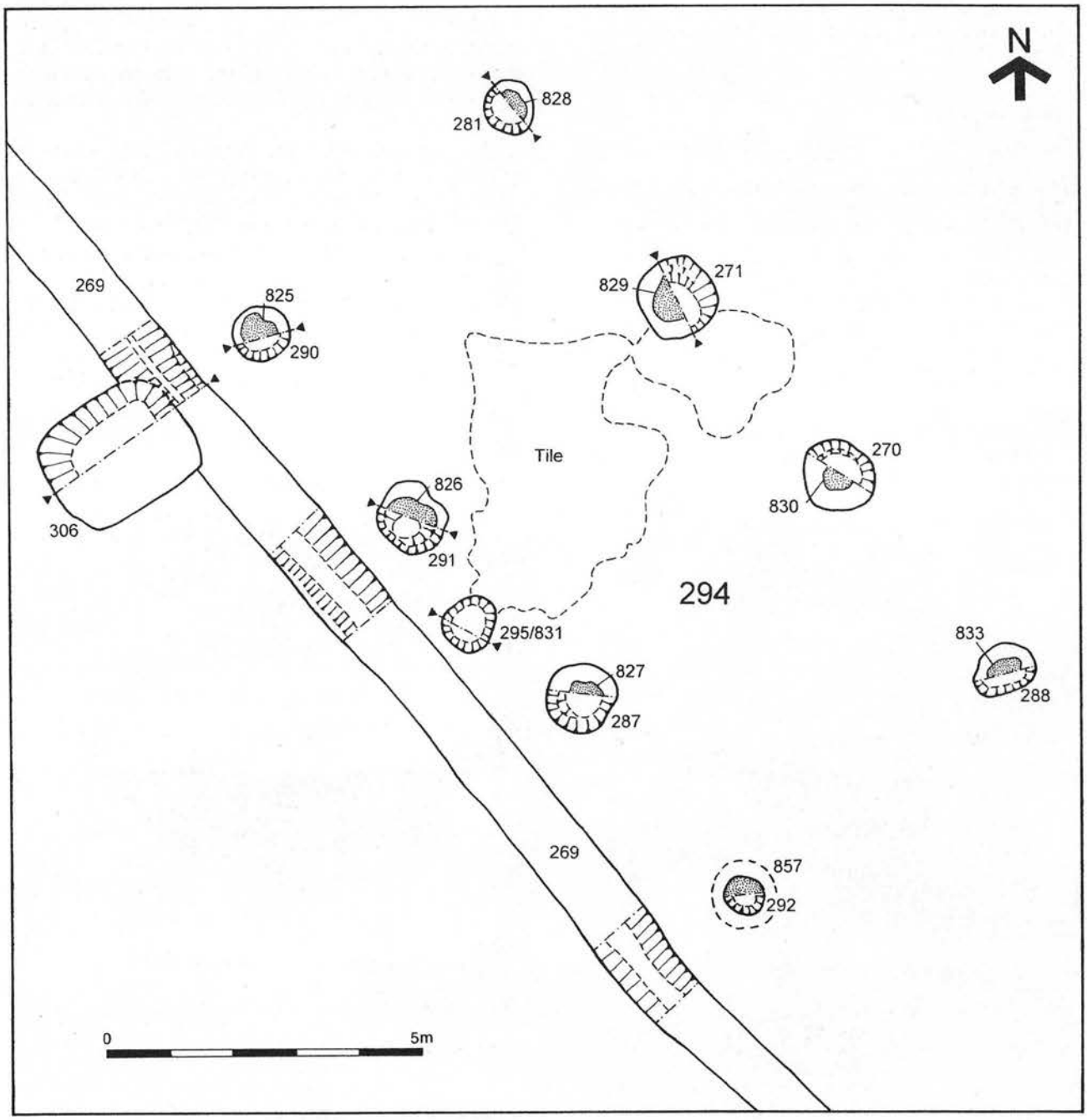


Figure 41 Phase II.2 and/or II.3 building 294

the backfills of the late 4th-century and post-Roman robber cuts. Two lead water pipes from storage pit 394 in building 416 were probably derived from the bath-house. It was possible that both pipes were used to link the cold bath with the cold bath drain or hot bath with the hot water tank.

The building, in its surviving form at least, was probably built at some point in the late 3rd to mid 4th century. The only datable finds that were definitely derived from a construction context were two pieces of *opus signinum* covered late 3rd/4th-century pottery from wall-footing 759. Several other sherds were found, but these were possibly derived from the overlying robbing, as they were uncovered by mortar/*opus signinum*, and were found pressed into the top of underlying contexts (748 and 800). The building was probably no longer in service as a bath-house by the mid 4th century, or shortly thereafter, as pond 422, which had been cut to deal with the excess overflow from drain 93, had gone out of use by then.

Dating evidence

748	6139 (*tegulae*)	*Misc. pot:* dish B1.2 (NVC); Fabrics RET & OXW. 4th c.
759	6413 (*opus. sig.*)	*Misc. pot:* dish B6.2 (GRS); Fabric RET. Late 3rd c. +
800	6411 (*opus. sig.*)	*Misc. pot:* Fabric RET. Late 3rd c. +

Building 294

(Figs 19, 41, 42, 45 and 121)

Building 294 was situated in the E11 enclosure. It was in use in phase II.2 and/or II.3 and was at least 5.4m wide and 12m long. It was used as a granary and was gutted by fire at some point during this or the following phase. The surviving components were eight large, sub-circular post-pits (270–71, 281, 287–88, 290–91 and 857, which was ill-defined), one post-pit of unknown purpose in an off-line position (295), nine irregular-shaped post-extraction cuts (*i.e.* one per post-pit, 292, 825–31 and 833), and one spread of roof tile (293). One more feature, which may have been part of the building, was phase II.3 pit 306 to the south-west.

The post-pits were either related to the outside walls or the internal nave. If the building was in use in phase II.2, then they must have been part of the outside walls, because of the close proximity of phase II.2 ditch 269, to the south-west. They were distinguished by steep sides, uneven or slightly concave bases, and post-packings of redeposited natural (Fig. 42). The four post-pits in the central bay (270, 271, 287 and 291), which were slightly wider and deeper than their surrounding counterparts, were possibly related to two central doors, as in a post-medieval barn (1m to 1.23m wide and 0.27m to 0.43m deep, as against 0.78m to 0.96m wide and 0.21m to 0.33m deep).

The pit to the south-west, which could only have been part of the building if the building was aisled and in use in the late 4th century, was characterised by a sub-rectangular shape, and steep sides and a broad flat base (Fig. 45). It cut phase II.2 ditch 269 and was similar to pit 638 on the north-west side of building 417.

The ending of the building by fire was indicated by large amounts of charcoal and carbonised macrofossils in the post-extraction cuts, which had been backfilled with tile and other debris from their immediate vicinities. A

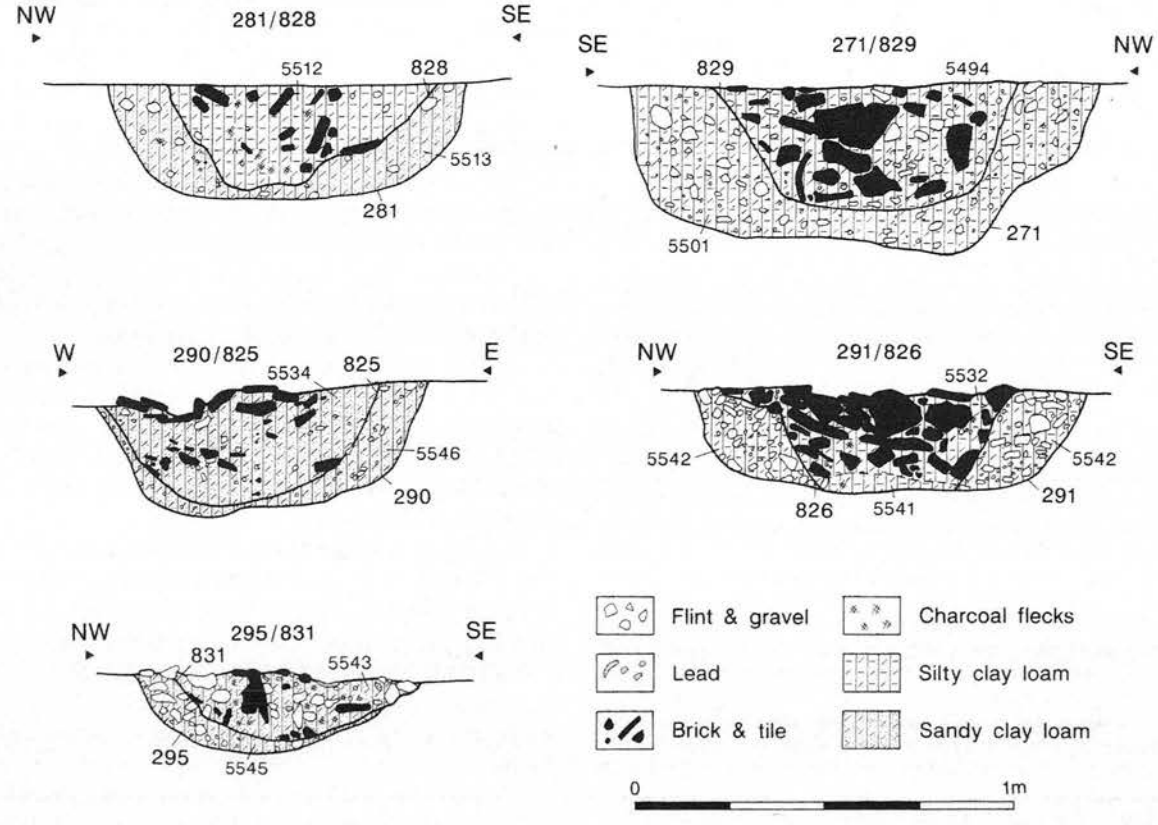


Figure 42 Phase II.2 and/or II.3 building 294 – sections

large amount of carbonised material was also discovered in the tile spread, which was found on top of the subsoil and was *c.* 0.2m thick. The storage pattern inside the building at the time of the conflagration was demonstrated by the distribution pattern of the carbonised macrofossils (Fig. 121). The central and south-west part had been used to store processed wheat and the north-west and north-east corners respectively processed barley and pulses (p. 204). A further piece of evidence for two large side doors was the condition of the macrofossils from the central area, which were all puffed and malformed due to the greater air flow in that part of the building during the fire.

Two small patches of baked subsoil (not illustrated) underneath the spread were possibly related to the conflagration or to internal, but non-surviving features such as hearths, ovens or corn driers. The fire must have been locally severe because the tile, which would have been up on the roof, was un-scorched and un-sooted. It was possible that the tile was derived from another building, but this was unlikely, as the tile spread was closely associated with the distribution pattern of the carbonised macrofossils.

The construction date was not determinable, as no datable finds were found in the post-packings. A small assemblage of late 3rd/4th-century pottery was discovered in post-extraction cut 829, and a small assemblage of possibly intrusive late 4th-century pottery in tile spread 293, the top part of which had been loosened by modern ploughing. The remaining finds were eleven and fifty-nine small pieces of lead in 293 and 831, and iron nails in 825, 830, 293 and 826. Seven composite bosses from a wooden box or chest were found in a tight cluster in the secondary fill of pit 306. Very little daub was found in related contexts.

Dating evidence

293	5540 (top)	*Misc. pot:* bowl C — Young C78 (OXRC); Fabrics LSH, ASS, NVC, UPOT, GRF & GRS. Late 4th c.
829	5494 (single)	*Misc. pot:* jar G44.2 variant (STOR); Fabrics GRS, NVS, GRF, BUF & RED. Late 3rd c. +

Metalwork (pit 306)

by H. Major

A group of seven similar composite bosses was found in pit 306 (small find Nos 192 and 196–201). It is likely that they were box fittings, and were probably still attached to the box when buried, since one of the bosses had mineralised wood on the back. However, their positions relative to each other were not recorded, and the rectangular pit was only half sectioned, so if there were further box fittings present which would have confirmed the existence of a complete box, they were not recovered. A single iron nail was also found, possibly used in the construction of the box.

The bosses were all constructed in the same way, with hemispherical copper-alloy caps (A. Sutherland (Conservator) notes probably high tin content) over a lead core, in which had been set an iron shank. The shanks may simply have been standard nails; the one from SF201, which had detached from the body of the boss, had a flattened head about 10mm in diameter. The bosses were in very poor condition when recovered, the iron corrosion products having cracked and distorted the lead, leading to severe damage to most of the copper-alloy caps. A. Sutherland notes that several bosses also exhibited clear evidence of splitting on opposite sides of the head from a severe blow in antiquity. This damage presumably took place while hammering the bosses into the wood. There may be two sizes of boss present, with diameters of *c.* 23mm (two examples) and *c.* 30mm, although this apparent difference in size could be due to distortion caused by corrosion.

Similar, but slightly smaller, composite studs were found in a 4th-century grave in the Butt Road cemetery, Colchester (Crummy 1983, 85, no. 2179 ff.), where they were used to secure the lock plate and other fittings on a box or casket. One of the bosses is illustrated (Fig. 43).

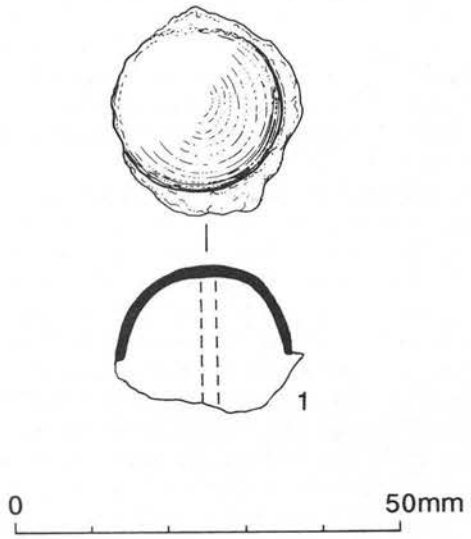


Figure 43 Copper-alloy boss

Building 417

(Figs 44 and 45)

Building 417, on the north-east side of pond 776, was *c.* 5.4m wide and 12m long. It was represented by one central depression (597), eleven irregular post-holes from the side-walls (594–96, 611, 612, 616–19, 621 and 632), and two post-holes from the end walls and/or the central ridgepole (608 and 847, which was ill-defined). An elongated pit (638), at the north-west end, was possibly part of the structure. Most fills are thought to be related to the demolition phase, due to an absence of post-pipes.

The two end post-holes were slightly larger than the side-wall post-holes. They were 0.3m and 0.4m deep and were occupied by single deposits. Post-hole 847 was seen in section only, up against pit 638 (Fig. 45). Post-hole 608 cut phase II.1a ditch 390. Both features were distinguished by steep-sided profiles.

The post-holes for the side walls, which were unevenly spaced, were filled by one or two deposits. They were less than 0.15m deep, except for 621 which was 0.35m deep.

The central depression was *c.* 0.2m deep. It cut ditch 390 and was highly irregular. The relationship between the depression and pit 638 was not determined.

Pit 638 was distinguished by steep-sides and a flat base. It was 0.6m deep and was occupied by two deposits. Its primary fill of sand clay loam and gravel was indistinguishable from the single fill in post-hole 847, and its top fill of dark silt clay loam from the single fill in depression 597.

A small assemblage of iron, including a possible prick iron, a steelyard, two knives and a probable weight were found in post-hole 621. A large assemblage of finds, including two possible chisels, a carpenters dog and an L-shaped lift key, were found in depression 597. A small assemblage of possible daub from post-hole 621 was distinguished by a fine surface coat of whitewash or plaster.

Sherds of late 3rd to mid 4th-century pottery was found in depression 597 and late 3rd/4th-century in post-holes 596 and 621. Two sherds of intrusive medieval pottery were found in 597 and Saxon pottery in 621.

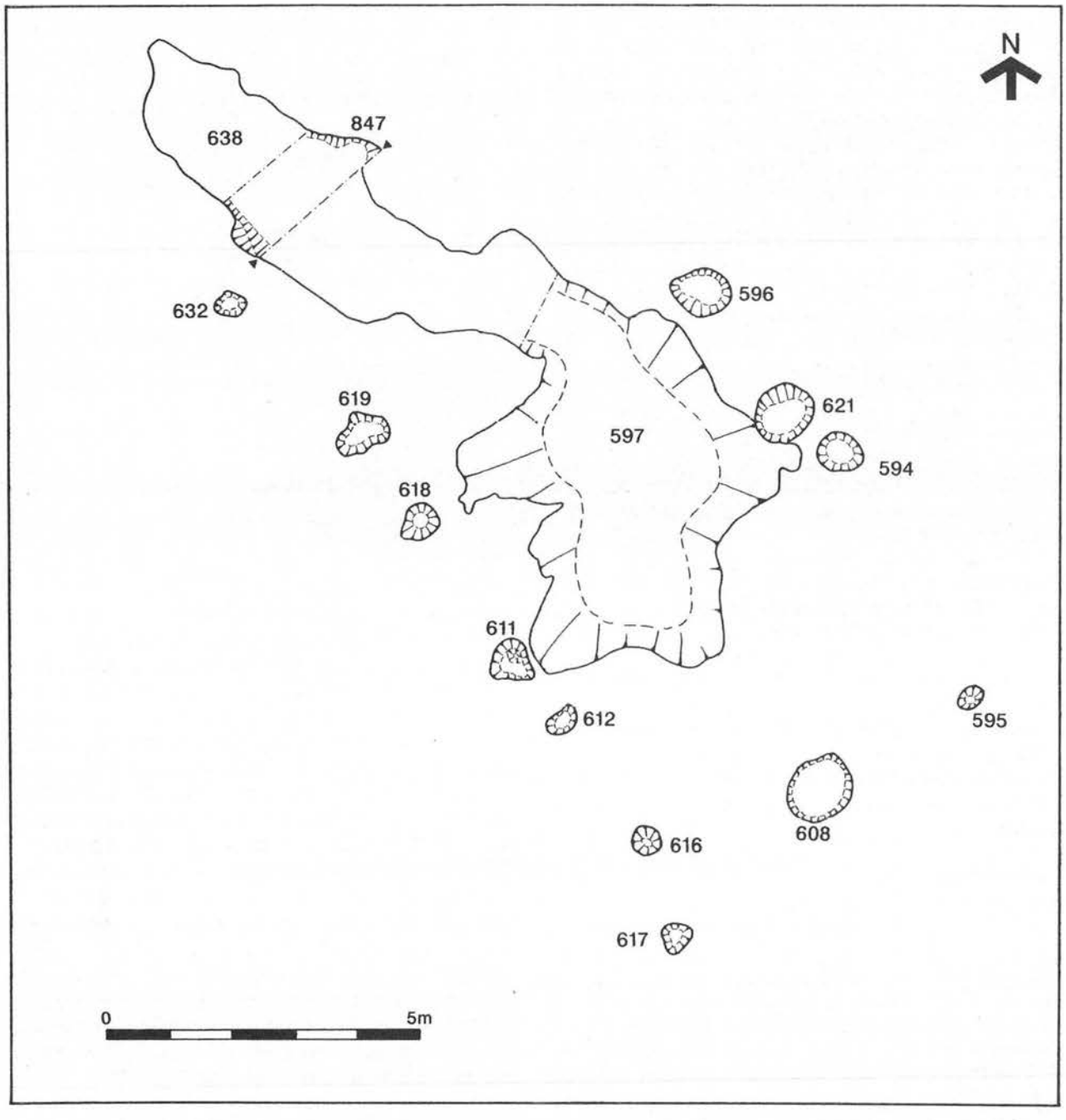


Figure 44 Phase II.2 building 417

Dating evidence

596	6128 (single)	*Misc. pot:* dish B6.2 (GRF); Fabric GRS. Late 3rd c. +
597	6129 (single)	*Misc. pot:* dishes B6.2 (BSW, GRF & GRS), B2.2/B4.2 (GRF), B4.2 (GRS), B2.1 (GRS), B3.2 (BSW), B1.3 (BSW), B1.2 (BSW, GRF & GRS), B5.1 (BSW & GRS); jars G5.4 (GRS & BSW), G5.5 (GRS), G24.1 (GRS & RET), G24.2 (GRS), G40.2 (GRF), ?G20 (GRF); beaker ?H20/H32 (COLC); Fabrics NVC, HAX, RED, COLB, BUF, HAR, GRF, BB1, BB2, STOR & ASS. Late 3rd to mid 4th c. with ?intrusive medieval sherd.
621	6162 (primary)	*Misc. pot:* dishes B1 (BSW), B6.2 (BSW & GRS); bowl-jar E2.3 (BSW); jars G40.1 (GRF), G40.3 (GRF), G24 (RET). Late 3rd c. + with ?intrusive Early Saxon.

Building 786

(Figs 18 and 46)

This structure was built up against the south-west end of building 416 in the first half of the 4th-century or later, after the ending of phase II.2 ditch 377 and its recut 819. Two walls were represented by slots (639 and 785) and post-holes (640 and 649) and a third wall by seven post-holes (646–48, 651, 653, 655, and 659) in a 14m long line. A further three post-holes, which may have been part of the building, were also in attendance (634, 642 and 643). A possible post-hole at the south-west end of 639 was left unnumbered.

All fifteen features were less than 0.4m deep. It is possible that some post-holes in the post-hole line were left undetected. Wall-trench 500, which formed the south-west end of building 416, was clipped by slot 639.

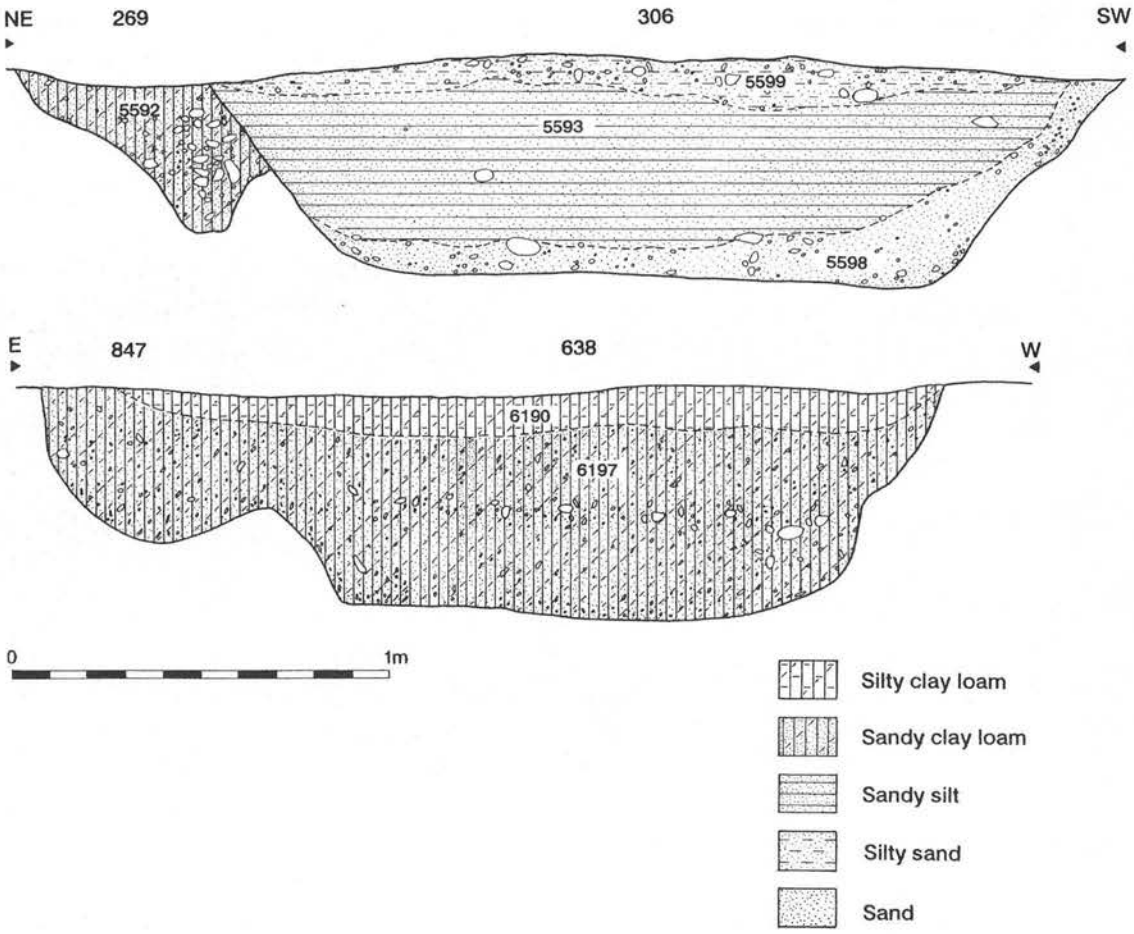


Figure 45 Phase II.2 pit 638 and phase II.3 pit 306 – sections

Slot 785 cut recut 819 in ditch 377, which went out of use in the first half of the 4th century. Post-hole 653 was cut by post-hole 648, which was a possible repair. A sub-circular post-pipe, 0.2m wide, was seen in section in a central, upright position in post-hole 651 (652).

Small amounts of daub were found in slots 639 and 785. A further two finds were an iron key bit in 785 and a possible blade fragment in 649. A few sherds of late 3rd/4th-century pottery were recovered from 639 and 647, but the remaining pottery was not closely datable.

Slots 639 and 785 may have been part of an open-sided workshop, stable or byre (*c.* 8m wide and 12m long). The post-hole line, if contemporary, may have been part of a fence line for an adjacent yard or another wall.

Dating evidence

639 6195 (single 4134) *Misc. pot:* Fabric RET. Late 3rd c. +
647 6207 (single) *Misc. pot:* Fabric RET. Late 3rd c. +

Discrete features

Ponds 422 and 776 and pond channels 442 and 736 (Fig. 18)

Pond 776 was a larger, but shallower, recut of pond 421 from phase II.1. In trench 450 it was numbered as cut 775 and in trench 455 as cut 799. The pond was possibly cut at the same time as the partial backfilling of previous pond 421, as the two fills in 421 were both sealed by a thick deposit of redeposited clay. It had gentle sides and a broad, undulating base (*c.* 16m wide, 35m long, 0.6m deep) and was occupied by two fills of dark grey silt per section. It also contained a small assemblage of late 3rd/4th-century pottery. A small amount of tile and a sherd of Antonine samian were found in the redeposited clay. A monolith of sediments was taken from the central part of the section of trench 450 for palynological analysis (p. 214).

Pond 422, to the north of 776, was possibly cut in the second half of this phase to accommodate the overflow from bath-house drain 93. The feature, which was sampled by two quadrants, was distinguished by a sub-circular plan and a shallow, concave profile (*c.* 0.3m deep). It contained a single deposit of dark brown silt and a large assemblage of late 3rd to mid 4th-century pottery. It cut drain 93 and the south-west end of ditch 399, which must have gone out of use before the rest of the feature.

Both ponds were linked by two channels (442 and 736) and a short section of ditch (419). The two channels were both broad and shallow (*c.* 0.2m deep), with one fill apiece. Ditch 419 (*c.* 0.16m deep) had even sides and a concave base, with one deposit. Small assemblages of late 3rd/4th-century pottery were found in all three features. The south-east end of ditch 419 was not detected.

Dating evidence

422 6148 (single) *Misc. pot:* dishes B6.2 (BB1); beaker H33 (OCC); Fabrics NVC. Late 3rd c. +
6171 (single 4169) *Misc. pot:* dishes B1.3 (GRF), B3.2 (BSW), B6.2 (BSW, GRF & GRS), B6.3 (BB1);

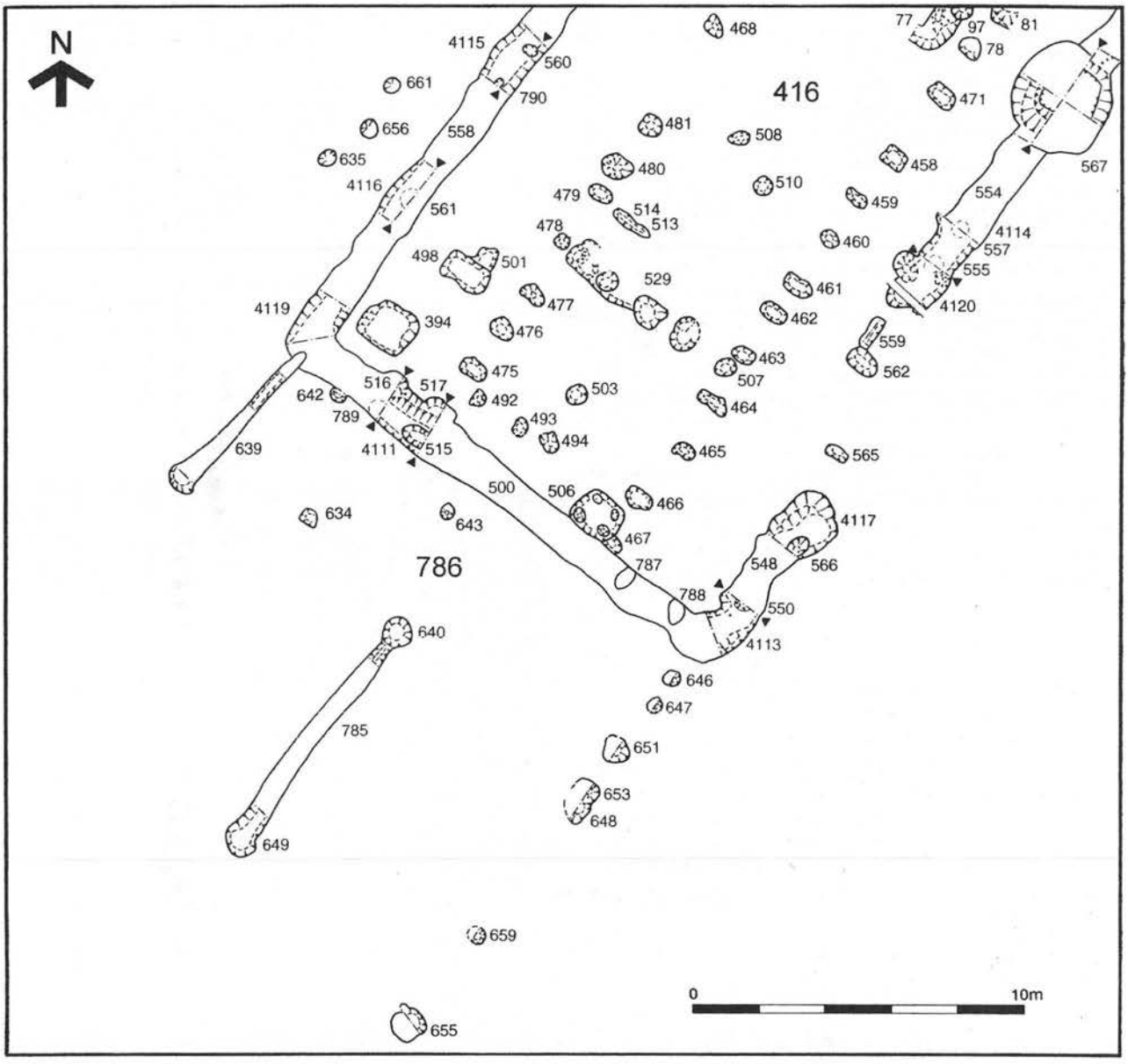


Figure 46 Phase II.2 to II.3 structure 786

bowl-jars E2 (GRS), E6.1 (GRS); jars G9.3 (GRS), G9.4 (BB1), G24.1 (RET), G24.2 (GRS), G25 (GRS); Fabrics NVC & HAX. Late 3rd c. +

6155 (single 614) *Misc. pot:* dishes B1.3 (BSW), B6.2 (GRS); jars G24.1 (GRS & RET); Fabrics NVC & BB1. Late 3rd c. +

442 6395 (top 4179) *Misc. pot:* dish B6.2 (RET); jar G43 (STOR). Late 3rd c. +

776 6199 (surface) *Coins:* Julian, 361–63; Radiate head, 268–75; Eugenius 393–94 (?intrusive); Claudius Gothicus 268–70; Constantine I, 316–17, 321–23, 321–24; Constantius II, 353–61; Gallienus, 260–68 (Nos 12, 17, 20, 24, 25, 26, 37, 38, 42). Mid 4th c.

Depression 318
(Fig. 20)

This large, shallow, sub-rectangular feature, on the north-west side of the square enclosure E19, was possibly in use in the second half of this phase. It had gentle sides, a broad, slightly undulating base, and three fills, the primary one of which may have been natural. It contained a large assemblage of late 3rd/4th-century pottery, and it cut ditch 377, which was in use during the first part of this phase.

Dating evidence

318 5710 (primary) *Misc. pot:* G42 (RET). Late 3rd c. +
5656 (second) *Misc. pot:* dishes B1.3 (GRS), ?B1.2 (NVC), B6.2 (GRF, BSW & GRS), bowl-jars E2 (BSW), E6 (HAX); jars G44 (STOR), G42.1 (STOR), G24.1 (RET & GRS), G24.2 (RET, BSW & GRS), G26 (GRS), ?G26 (HAX), G35 (BSW), beaker H41 (NVC). 4th c.

Miscellaneous
(Figs 17–23)

Three small gullies (174, 188 and 201) and twenty-six small, shallow pits, cut-features and post-holes were possibly dug during this or the following phase. The majority of these features were found in the north-west corner of E21, in a large spread of discrete features, most of which were undatable (11, 15, 205, 214, 222, 224, 226,

230, 235, 253, 252, 255–56, 260, 265 and 266) (Fig. 21). The remainder were discovered in south-west E21 and E22 (2, 5, 119, 152 and 179; Figs 22 and 23), in or near E19 (322 and 357; Fig. 20), or in the vicinity of pond 776 (470; Fig. 18). The distribution bias towards the south-east half of the site was exaggerated by the fact that many possible discrete features were left un-dug (and therefore unverified) in the stage II area due to insufficient time. One notable feature was post-hole 183 at the base of pit or post-extraction cut 179, in the south-west corner of E22 (Fig. 23). This feature was significant because it appeared to be related to a large, apparently isolated post of unknown function. Some of the post-holes in the group in the north-west corner of E21 may have been related to buildings or fence lines (*e.g.* 230 and 235 and undated post-holes 233, 234, 239 and 241; Fig. 21), but the quality and quantity of the features was too poor to confirm this. All twenty-eight features were distinguished by small assemblages of late 3rd/4th-century sherds. None of the pits could be safely classified as rubbish pits due to insufficient finds. A large number of possible further cut-features and post-holes which were present in this location were not planned or dug, due to insufficient time.

Dating evidence

2	5001 (top)	*Misc. pot:* Fabrics HAX & BSW. 3rd to 4th c.
5	5005 (single)	*Misc. pot:* Fabric RET. Late 3rd c. +
11	5012 (single)	*Misc. pot:* dish B6.2 (BSW). Late 3rd c. +
15	5017 (single)	*Misc. pot:* Fabric RET. Late 3rd c. +
119	5207 (single)	*Misc. pot:* Fabric RET. Late 3rd c. +
152	5279 (top)	*Misc. pot:* dishes B1 (GRS), B6.2 (GRS & BSW); jars G24 (GRS), G (HAB); Fabric GRF. Late 3rd c. +
174	5310 (top)	*Misc. pot:* dish B6.2 variant (GRS); Fabrics HAX, RED, GRF & BSW. Late 3rd c. +
179	5320 (top)	*Misc. pot:* dish B3.2 (GRF); Fabrics OWC (mortarium), HAX, RED, BSW, HAR, GRS & RET. Late 3rd c. +
188	5353 (top 4038)	*Misc. pot:* dish B6.2 (GRS); jar G — club-rim (STOR). Late 3rd c. +
201	5382 (single)	*Misc. pot:* jars ?G5 (RED), G24.2 (GRS), G24 (RET), G34/36 (RET), G (RED); Fabric HAR. Late 3rd c. +
205	5391 (top)	*Misc. pot:* Fabrics HAX & RET. Late 3rd c. +
214	5407 (single)	*Misc. pot:* dishes B6.2 (BSW & GRS); B1.2 (GRF); mortarium D12 (NVC); Fabric HAX. Late 3rd c. +
222	5425 (single)	*Misc. pot:* jars ?G25 (RET), G (GRS); Fabrics NVC, HAX & GRF. Late 3rd c. +
224	5427 (single)	*Misc. pot:* Fabrics BSW, GRS & RET. Late 3rd c. +
226	5430 (top)	*Misc. pot:* dish ?B1 (BSW); jar G (RET); Fabrics GRF & GRS. Late 3rd c. +
230	5440 (single)	*Misc. pot:* dishes B1.2 (NVC), B6.2 (GRS); Fabrics OXW (mortarium) & RET. Late 3rd c. +
235	5446 (single)	*Misc. pot:* Fabric HAX. 3rd to 4th c.
252	5466 (single)	*Misc. pot:* beaker H42/CAM 395 and 409/410 cross (GRS); Fabric HAX. Late 3rd c. + with ?intrusive post-medieval sherd
253	5468 (single)	*Misc. pot:* jar G 24.1 (RET); Fabric GRS. Late 3rd c. +
255	5472 (single)	*Misc. pot:* C8.2 variant (HAX); Fabric GRS. Late 3rd c. +
256	5482 (single)	*Misc. pot:* jar G (HAX); Fabric RET. Late 3rd c. +
260	5477 (single)	*Misc. pot:* jar G24 (RET). Late 3rd c. +
265	5482 (single)	*Misc. pot:* jars G24 (GRS & RET); dishes B1 (GRS), B6.2 (GRS). Late 3rd c. +
266	5483 (single)	*Misc. pot:* dish B6.2 (GRS); Fabric RET. Late 3rd c. +
322	5676 (single)	*Misc. pot:* dishes B1 (GRF), B6.2 (BSW); Fabrics RET, GRS & GROG. Late 3rd c. +
357	5759 (top)	*Misc. pot:* dishes B1 (GRS), B3.2 (GRS); jar G (RET); Fabrics HAX & BSW. Late 3rd c. +
470	5934 (secondary)	*Misc. pot*: dish B3.2 (BSW); Fabrics BUF, GRF & GRS, 3rd to 4th c.

Discussion

Layout and phasing

The introduction of the new enclosures and the construction of the two main buildings 416 and 368 is probably related to the large scale remodelling of the II.1a layout in the early 3rd to mid 4th century, between the infilling of the phase II.1 E1 to E3 enclosure ditches and the ending of the phase II.2 bath-house. This remodelling is thought to have been carried out as a single undertaking due to the location of the main building complex, which is directed at the E14 entranceway, and the close association of the flanking enclosures (E11, E15 and E16 to E19). It has not been possible to establish a precise date for this development as the construction date of the two main buildings is open to doubt and the primary cutting of the II.2 ditches is difficult to determine. If the interpretation of the Roman pottery supply is correct, then the remodelling was probably undertaken in the late 3rd/early 4th century, after an on-site 'quiet period' of *c.* eighty years. This is supported by the construction of the bath-house in the late 3rd to mid 4th century, which (on the assumption that it was not inserted or largely revamped) was probably built at the same time as the two adjoining buildings.

The relation between the villa estate, which is represented by the phase II.2 evidence, and the phase II.1 layout which proceeded it is impossible to determine in any detail, partly due to the phasing problems, which are mentioned above, and partly due to the low range of phase II.1 feature types. If the site was unoccupied in the mid Roman phase, then a late Roman villa estate and the remodelling of an unoccupied set of fields, possibly through the shifting of an off-site mid Roman settlement, is represented by the broad range of phase II.2 features. If the opposite is true, then the phase II.2 evidence must be related to the remodelling and expansion of an existing settlement. Either way, the 'professional', business-like enterprise, which was evident in the structure of the II.1a layout, is clearly maintained by the development which follows. The pre-existing layout is modified and expanded, but not altered to any significant degree. The main exception is the introduction of the droveway, which in itself, may be related to the introduction of livestock, or to the way in which existing livestock was handled.

It is very likely that enclosures E10 and E14 are inner and outer yards or compounds, because of the buildings and the south-east entranceway. Areas E11 and E15 to E19 to either side are thought to be attendant enclosures, such as holding pens, or areas for farm work or horticulture; enclosure E11 is possibly related to building 294, which was used as a granary. It is possible that the north-east end of enclosure E21 was crossed by a trackway, due to the south-east facing arrangement of the inner and outer compounds and the E14 entranceway. Enclosure E23, which sits directly opposite, is possibly important, due to its position, and ditch 203, which is unusually large; it is possible that it was used as a cemetery, because of the inhumation which was found by St Albans Sand and

Gravel in the late 1980s. Several foci of agricultural activity outside the main central area are thought to be indicated by the small groups of discrete features in the north-west corner of E21, and the south-west corner of E22. It is possible that some of these features are related to fence lines or buildings, such as sheds or small barns.

Buildings

Building 416 is thought to be an aisled villa with twelve or more rooms (Fig. 28). Two solid walls are represented by the aisle post-holes, which are unusually small and close for an otherwise open-hall building (*cf.* building 368, for example). Further divisions are suggested by post-holes 92, 491 and 510, wall-trench 529 and slot 513 in the nave (rooms D to I), and post-holes 501 and 521 and wall-trench 571 in the aisles (A to C and J to L). Room D is the same size as rooms G and H (*c.* 6.5m by 6.75m), and room F (*c.* 6.5m by 3.25m) two times the width of rooms E and I (*c.* 6.5m by 1.7m). Two wing rooms (J and L) and a portico (K) are emphasised by the narrowed width of the south-east aisle; it is likely that the well on the front face of the aisle was straddled by an open or semi-open colonnade of posts (Fig. 47). An entrance hall is possibly represented by room G, which is in a central location in relation to room K. Stairwells or cross-passages are suggested by the restricted widths of rooms E and I, and the three small post-holes at the south-west end of room D (492–94). Post-holes 503 and 797 on the central axis are thought to be roof or ceiling supports; post-hole 503 is in a central location in relation to room D. It is possible that other rooms were present, possibly in the north-east quarter, which was severely truncated.

The remodelling or reconstruction of the interior and the south-west end is attested by wall-trench 529, and the stratigraphic relationship between post-holes 515, 789 and 550 and wall-trenches 500 and 548. It is conjectured that the equidistant spacing of post-holes 491 and 510, and 97 and 508 respectively is related to the shifting of room G at the possible expense of room I.

The status of the building is increased by the room divisions, the two wings, and the portico, which emulate some of the defining characteristics of high status corridor villas. It is further increased by the small bath-house, and the attendant position of building 368. The status of the building, however, is tempered by the absence of high status fittings, such as plastered walls, tiled floors, and hypocausts.

The timber construction is probably due to the dearth of good quality building stone in the region. It is likely that the stability of the structure was reinforced by tie beams, top plates and cross-braces, due to the shallow depths of the post-holes and wall-trenches, which are less than 0.3m deep. A cross-brace at an angle of thirty or sixty degrees is attested by post-extraction cut 561, which was found in the north-west wall. It is assumed that the earth-fast posts in the outside walls were susceptible to damp and infestation, although this could have been minimised by broad eaves and heavy rendering.

The well on the front face of the villa is an integral part of the structure because of its stratigraphic relationship with wall-trench 554, and the complementary nature of the material from the waterlogged deposits. The ecofactual evidence for the exclusion of livestock, for a domestic setting of earth floors covered with straw, is in accordance with the artefactual and stratigraphic evidence for un-tiled floors and a divided interior. This includes the large amount of hay and straw, which was uncomminuted, the low number of dung beetles, and the species of beetle

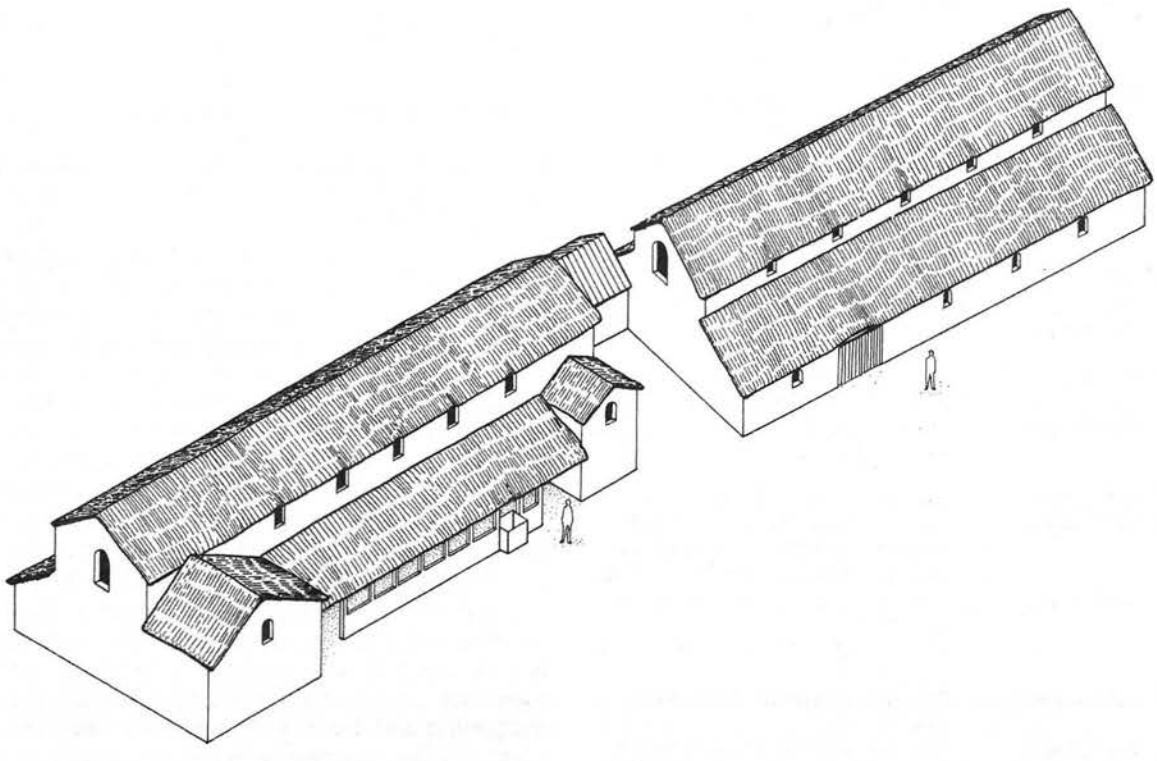


Figure 47 Phase II.2 to II.3 buildings 368, 414 and 416 – isometric reconstruction

which was once common in the compacted debris on the earth floors of buildings. Likewise, the emulation of a high status corridor villa, and the implication that the inhabitants of the building were well-to-do and aspirant, is in keeping with the high status food stuffs and the evidence for hunting. This includes the pieces of amphora from Campania, which as a type, is more normally found on military sites. The assumption that the timber construction was prone to damp and infestation is strengthened by the two species of beetle, which attack structural timbers, and the upkeep or reconstruction of the interior and the south-west end.

If the building was built at the same time as the well (*i.e. c.* 220), then the late 3rd/4th-century evidence in the outside wall-trenches is related to upkeep or reconstruction. If the building was built around a pre-existing feature, then the bottom part of the well was possibly backfilled when the structure was built, or shortly thereafter in the early 4th century. A ritual connotation, such as a foundation or termination deposit is possibly implied by some of the pottery, which appears to have been deliberately marked and broken.

Building 368 is thought to be an aisled house, being part domestic and part agricultural. A utilitarian side is demonstrated by the *praefurnium* in the north-west corner, and the unusual course of the tile-lined drain, which may have been related to a dual function, such as a drainage channel for livestock. A more domestic side, in contrast, is suggested by the evidence for pargetting; it is possible that a good outward appearance was considered important because of the shared frontage with the aisled villa.

The function of building 294, the granary, is clearly indicated by the carbonised macrofossils. It is possible that the subsoil inside the building was exposed when the building was gutted by fire, because of the patches of scorching and the location of the tile spread, which was derived from the roof of the building. The hypothesis that this exposure was related to a sub-floor air gap is in accordance with the building's function, as it seems likely that fungal infestation and damp were minimised by the surrounding air flow. The division of the interior into bins or compartments is suggested by the distribution pattern of the carbonised macrofossils; four large bins to each side of two large side doors and the central bay are possibly indicated by the sub-division of the north-west part into one part pulses, one part wheat, and two parts barley. The value of the stored crops is reflected in the provision of a tiled roof.

Building 417 is of cruck construction because of the two large end post-holes, which were used for a central ridgepole, and the irregular spacing of the post-holes in the side-walls, which are suggestive of crucks with scarfs. The central depression 597 is thought to be related to a central hollow or a sub-floor air gap. The use of the building as a workshop and/or storehouse is suggested by the steelyard and weight, the knives, and chisels, the possible prick iron, and the carpenter's dog.

Economy

The granary and the carbonised macrofossils demonstrate the production and processing of wheat, barley, peas/pulses and oats for external demand. The threshing and winnowing of crops away from the granary is indicated by the clean grain, and the absence of cereal chaff. It is likely that the crops were being grown and stored as separate crops rather than maslins because of the distribution pattern. If the level of production is reflected in the distribution pattern, then the bulk of production was geared towards wheat, followed by barley, peas/pulses and oats.

The importation of cattle, and the consumption and/or husbandry of sheep/goats and pigs is indicated by the well-preserved faunal remains from the bottom part of the well. The plover, woodcock, thrush, red deer and hare bones attest to the exploitation of local wildlife. The duck and geese bones are relatively small, and therefore possibly derived from local wildfowl.

The importation of cattle for ploughing and/or the improving of existing stock is suggested by the extra large cattle metapodials. The importation of these animals for ploughing is indicated by the severe arthropathies, and the heavy clay soils, which are fertile, but highly intractable. It is probable that the movement of livestock into and out of the E10 and E14 compounds was controlled by the droveway and the E19 enclosure, which was possibly used as a holding pen.

The presence of the granary implies that the villa estate was geared towards the production of crops, influenced by the surrounding soil and climate. If the weather was similar to the climate today, then it is likely that the production of grass, and therefore livestock, was restricted by low summer rainfall. The production of arable crops was probably facilitated by the cattle, which would have been used to plough the heavy clay soils, and to fertilise, through the dispersal of dung via midden heaps, the surrounding fields. The by-product of this, meat and leather, is attested by the evidence for skinning, and the prick iron from building 417. Some of the remaining material, such as horn cores, was used for making tools.

Because of the aforementioned climate, it is assumed that the wetter ground down towards the nearby brook and the River Chelmer was reserved for the grazing of sheep and cattle, and the higher ground to the east for the growing of crops. Pond 776 in enclosure E10 was probably used for the watering of livestock, due to the palynological evidence, which indicates that it was surrounded by disturbed ground.

The wood in the well is possibly derived from an unmanaged woodland resource. The woodworking tools from building 417 are thought to be related to the immediate needs of the farm.

Phase II.3 Latest Roman (*c.* 350/60 to *c.* 410)

Summary

(Figs 48 and 49)

Eleven II.2 ditches were maintained into the late 4th century. The three main developments were the construction of enclosure E27 in the south-west corner of phase II.2 area E22, the redefinition of the droveway, and the replacement of enclosure E19 with E28, E29 and E30. Building 416 was repaired or modified and structures 294 and 786, if not already built, built. Structure 414 was probably retained, but no longer used as a bath-house. Several cremations were interred and the north-west end of pond 776 dredged.

The final two developments in the life of the Roman settlement were the demolition or robbing of buildings 416, 414 and 368 and the abandonment or backfilling of the remaining ditches.

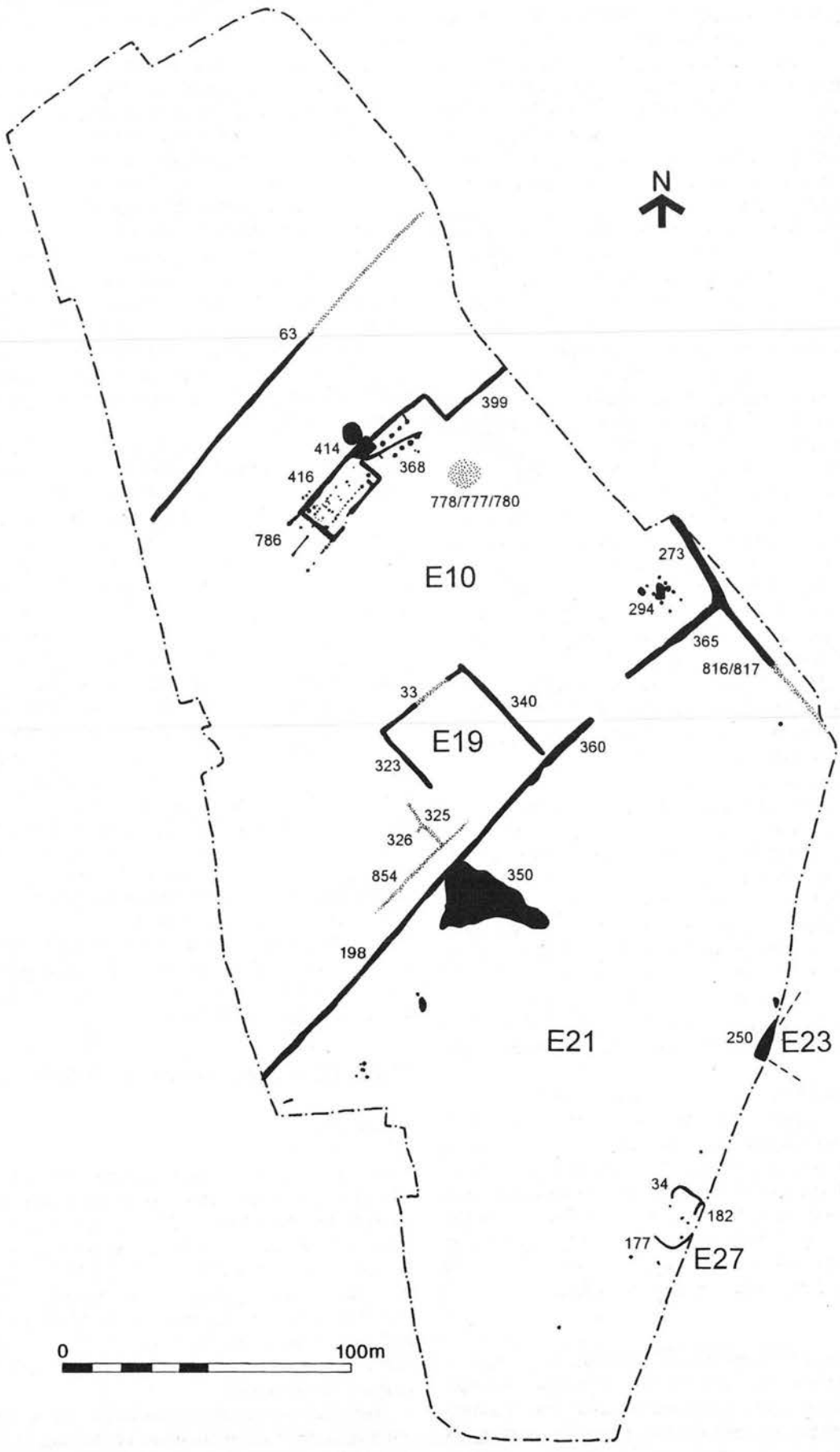


Figure 48 Phase II.3a Latest Roman

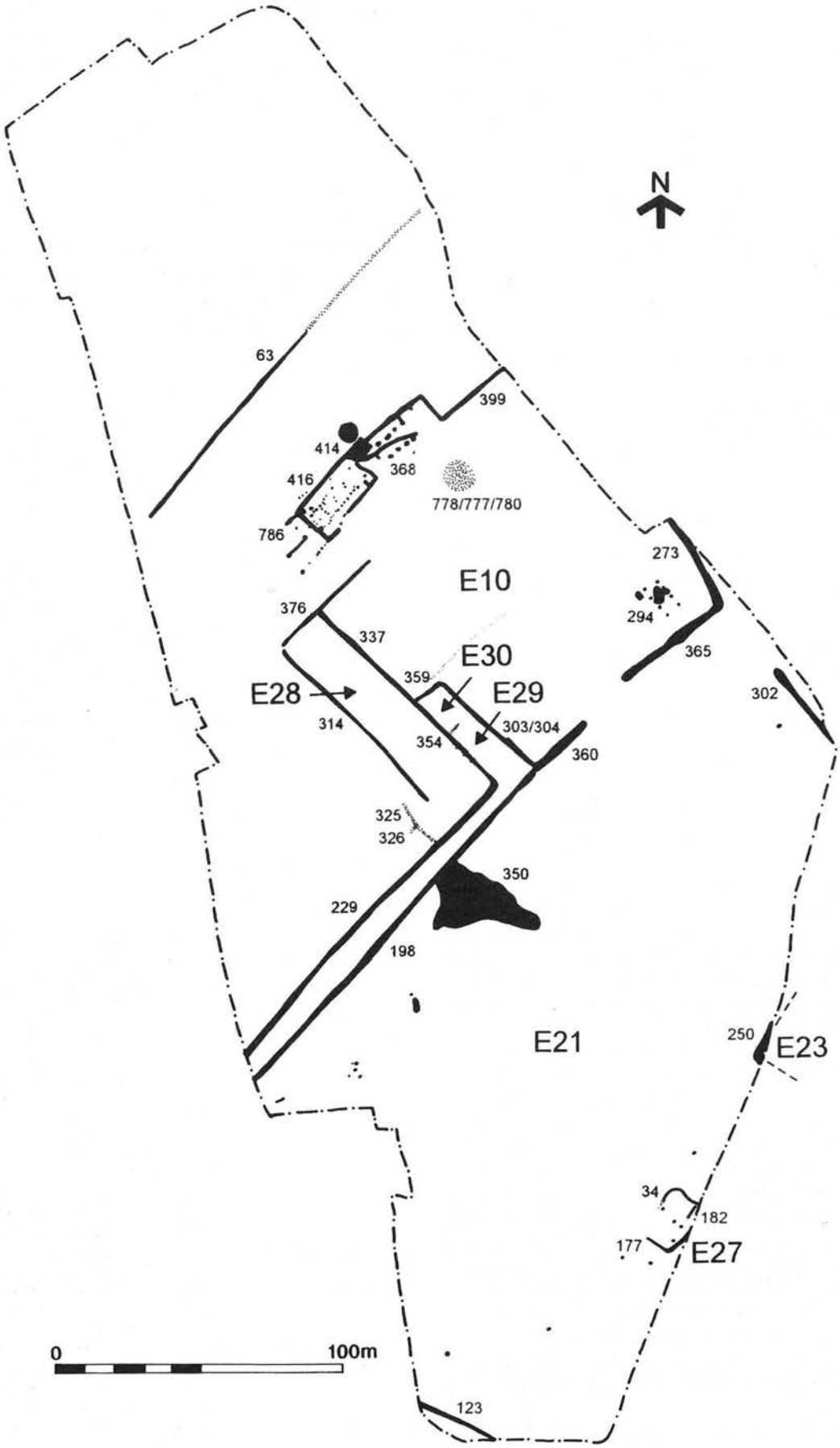


Figure 49 Phase II.3b Latest Roman

Droveway and enclosures E10, E19, E21, E23 and E27 (Fig. 48)

Droveway and enclosures E10, E19, E21, E23 and E27

The droveway and enclosures E10, E19, E21, E23 and E27 were defined by thirteen well- (33, 34, 63, 182, 177, 198, 250, 273, 323, 340, 360, 365 and 816) and three poorly dated ditches (325, 326 and 854). Seven well-dated II.3 ditches were new to this phase, four were recuts, and six were possible continuations from II.1 and/or II.2.

Ditch 63, on the north-west side of E10, was cut by phase III.3 ditch 59. It was examined in two locations (*c.* 2.7m wide, 0.7m deep) and was characterised by even sides and a narrow to broad concave base, with two to three fills per section.

Ditch 365, on the north-east side of the E10 entranceway, and 273, a recut of II.1 to II.2 ditch 272, were both excavated in two locations. Both features were represented by three fills per segment and even sides and narrow or broad concave bases. Ditch 273 was *c.* 2.15m wide and 0.78m deep, and 365 *c.* 3m wide and 1m deep. A carbonised plank (*c.* 0.18m wide and over 0.6m long) in the top fill of 365 was possibly derived from nearby II.2 and/or II.3 building 294, which was gutted by fire. Ditch 360, a recut of phase II.2 ditch 361, on the other side of the E8/E10/E14 entranceway, was sampled by a single segment. It was distinguished by a U-shaped profile (*c.* 1.3m wide, 0.58m deep) and was filled by one deposit (Fig. 24).

Sherds of late 4th-century pottery were found in the secondary and top fills of 365, the top fill of 273, and the single fill of 360. A piece of late 4th-century mortarium and a small assemblage of mid 3rd/4th-century pottery respectively were recovered from the primary and secondary fills of 63.

Enclosure E19, at the north-east end of the droveway, was in use for an unknown period between the ending of enclosures E1 to E3 in the early to mid 3rd century and the setting out of enclosures E28 to E30 in the latter part of the late 4th century. Ditch 323 (*c.* 1.45m wide, 0.36m deep), on the south-west side, was sampled by four segments, and ditches 33 (*c.* 1.2m wide, 0.36m deep) and 340 (*c.* 1.2m wide, 0.41m deep), on the north-west and north-east sides, by one and three segments. The profiles in all eight segments were represented by slight to even sides and concave bases, with one to three fills. A small quantity of residual early Roman pottery was discovered in 33 and 340 and a small amount of late 4th-century pottery in 323. Ditch 311 from phase II.1 was cut by 323, and ditch 33 from phase II.3a by II.3b ditches 337 and 359.

Recut 854, in phase II.2 ditch 853, on the north-west side of the droveway, was cut at some point prior to the very late 4th/early 5th century. It was ceramically undatable and was seen in section only, beneath well-dated phase II.3b recut 229 (Fig. 24). It had a steep-sided profile (*c.* 1.7m wide and 0.9m deep), and was filled by two deposits of dark brown silt clay loam in each segment. Long-lived ditch 198, on the opposite side of the droveway, was excavated in seven locations. It was represented by a broad, shallow-sided profile (*c.* 1.9m wide, 0.4m deep), and was filled by one to three fills per segment, with late 4th and late 3rd/4th-century pottery in two top fills.

Ditch 325 came off at right angles from ditch 853/854/229. It was sampled in two locations (*c.* 1m wide and 0.28m deep) and was filled by one and two deposits. Ditch 326, on the south-west side of 325, was less than 2m long. It was sectioned in one location (*c.* 0.9m wide, 0.3m deep) and was filled by one deposit. Both ditches were distinguished by even sides and flat or concave bases.

Recuts 816 and 817 were seen in section at the north-west end of II.2 ditch 298 on the north-east side of enclosure E21. The primary recut 817 (*c.* 1.8m wide, 0.5m deep) was seen in one segment, and the secondary 816 (*c.* 1.3m wide, 0.3m deep) in two segments. For both recuts, the profiles were comprised of steep to even sides and broad uneven bases. Sherds of late 4th-century pottery were found in the single fill of 817 and the secondary and top fill of 816.

Enclosure E27 was constructed in the south-west corner of former area E22. Ditch 177, on the south-west side was investigated in five locations, and gully 34, on the north-east side, in four locations. The ditch and the gully respectively cut ditch 187 and gully 38 from phase II.2. The ditch was filled by one to two fills per segment. It was distinguished by a steep-sided profile (*c.* 0.75m wide, 0.48m deep), and a large assemblage of late 4th-century pottery. The gully, in contrast, was more irregular (*c.* 0.55m wide, 0.2m deep). It contained single fills in three segments and a double fill in one segment, as well as two assemblages of late 3rd/4th-century and late 4th-century pottery.

A small division inside the enclosure was possibly defined by gully 182, which was set at ninety degrees to gully 34. The gully, which was sectioned in three places (*c.* 0.6m wide, 0.22m deep), was filled by one or two fills per segment. It cut gully 188 from phase II.2, and was distinguished by small assemblages of late 4th-century pottery in top and single fills.

The south-west corner of enclosure E23 was redefined for the third time by recut 250 which, in contrast to its more regular II.2 predecessors, was characterised by even to shallow sides and a broad, slightly irregular concave base (*c.* 2m wide, 0.45m deep). It was occupied by two to three dark silty fills per segment, and several assemblages of late 4th-century pottery (Fig. 25).

Dating evidence

34	5331 (single 184)	*Misc. pot:* Fabric RET. Late 3rd c. +
63	5095 (primary)	*Misc. pot:* mortarium Young 1977, Type WC7 (OXSW). Late 4th c.
	6302 (second 4149)	*Misc. pot:* Fabric OXW. Mid 3rd to 4th c.
177	5345 (single 4034)	*Misc. pot:* dishes B6.2 (NVC, GRS & BSW), B1.3 (BSW & HAR), B5.3 (LSH); bowl C8.1 (OXRC); mortaria D14 (NVM) D7.2 & D9.1 [Young 1977, M22] (OXW); bowl-jars E3.3 (BSW), E6.1 (HAX & HAR), E3.3 variant (NVC); jars G24 (GRS), G24.2 (RET), G27.1 (LSH), G27.2 (LSH); Fabric OXSW & MEK. Late 4th c.
	5316 (top)	*Misc. pot:* jar G27.2 (LSH). Late 4th c.
	5341 (top 4033)	*Misc. pot:* dishes B6.2 (GRS & GRF), B1.3 (HAX); bowl C8.2 (OXRC); jars G24 (RET), G34.1 (GRS). Late 4th c.
182	5328 (single 4030)	*Misc. pot:* dish B6.2 (NVC); jar G (HAX); Fabrics LSH & RET. Late 4th c.
198	5376 (top)	*Misc. pot:* dishes B2.2 (OXRC), B6.2 (BSW); jars G24.2 (GRS), G35.1 (RET); Fabrics HAX. Late 4th c.
	5428 (top 4045)	*Misc. pot:* Fabric RET. Late 3rd c. +
250	5364 (primary 4181)	*Misc. pot:* dish B1 (BSW); bowl-jar E3.3 (RET); jars G- club-rim (STOR); beaker H39 (NVC); Fabrics HAX & LSH. Late 4th c.
273	5495 (top)	*Misc. pot:* jar G24 (BSW); Fabric LDH. Late 4th c.
	5521 (top 4053)	*Misc. pot:* beaker H17/CAM 290 (HAX). 3rd c. +
323	5570 (top 4082)	*Misc. pot:* Fabric OXRC. Late 4th cent.

360	5778 (single 4102)	*Misc. pot:* dishes B6.2 (GRS & BSW); bowl C8.3 (OXRC); bowl-jar E2.1 (GRS); jar G27.2 (LSH); Fabrics RET & HAX. Late 4th c.
365	5594 (second 4060)	*Misc. pot:* mortarium Young 1977 M22 (OXW); jar G27.2 (LSH). Late 4th c.
	5582 (second 4057)	*Misc. pot:* Fabric RET. Late 3rd c. +
	5575 (top 4060)	*Misc. pot:* Fabric LSH. Late 4th c.
	5563 (top 4057)	*Misc. pot:* mortarium D (OXW); Fabrics HAX & BSW. Late 3rd c. +
816	5574 (primary 4059)	*Misc. pot:* dishes B1.3 (GRF), B6.2 (GRS); bowl-jar E5.1 (GRS); Fabrics HAX & RET. Late 3rd c. +
	5589 (single 4061)	*Misc. pot:* dish B6.2 (NVC); jar G (HAX); Fabrics LSH & RET. Late 4th c.
	5570 (top 4059)	*Misc. pot:* dishes B1.3 (HAB & BSW), B6.2 (GRS, BSW & GRF), bowls C8 (HAX), C25.2/Young 1977 C81 (OXRC), C — ?tazza — (GRS); mortarium D9 (?HAX); bowl-jars E3.2 (HAX), E3.3 (HAX, GRS & BSW), E6 (HAX), jars G5/CAM 276 (MEK), G21 (GRS), G24.1 (GRS), G24.2 (GRS), G25 (GRS), G27.1 (LSH), G27.2 (LSH), G34 (BSW & GRS), G35.1 (RET), G42 (STOR); beakers H39 (OXRC), ?H39 (HAX), ?H41 (NVC); flagon J11 (HAX); miniature R2 (RET); Fabric ?AHL. late 4th c.
817	5571 (single 4059)	*Misc. pot:* dishes B1.3 (BSW), B6.2 (GRS); jars CAM 290 face pot (HAX), G27.2 (LSH); Fabrics NVC & RET. Late 4th c.
854	5678 (single 4079)	*Misc. pot:* dish B6.2 (BSW); Fabrics RET & GRS. Late 3rd c. +

Droveway and enclosures E21 and E28 to E30
(Fig. 49)

Enclosure E21

Recut 302 cut the south-east end of ditch 298 on the north-east side of E21 (Fig. 24). It was investigated by two adjoining segments and was distinguished by even sides and a concave base (*c.* 2m wide, 0.6m deep). The recut was filled by three and six deposits (per segment), most of which were dark and silty, and a large assemblage of well-preserved finds, such as oyster shell, animal bone, quern stone and metalwork.

Dating evidence

302	5790 (primary 4106)	*Misc. pot:* dishes B [fish dish] (HAX), B1 (GRS), B1.2 (RED), B1.3 (BSW), B6.2 (GRS & BSW); mortaria D [b/s] (OXW & NVM); bowl-jars E3.3 (HAX & RET), E5.2 (RET & BSW), E6.1 (HAX & GRS); jars G24.2 (RET), G27.1 (LSH), G31 [b/s with Romano-Saxon] (HAB); Fabric OXRC. Late 4th c.
	5578 (fifth)	*Misc. pot:* dishes B1.2 (NVC), B6.2 (NVC, BSW & HAB), B1 (GRS), B1.3 (BSW); bowl-jar E6 (HAR); jars G24.1 (RET), G24 (GRS & BSW), G24.2 (BSW); beaker H (NVC); Fabric HAX. 4th c.
	5569 (top)	Misc. pot: dishes B1 (GRS), B1.3 (HAB & BSW), B6.2 (GRS); bowl C8 (OXRC); bowl-jars E (HAX), E5 (GRS), E6 (HAX), E6.1 (GRF); jars G21 (GRS), G24 (RET), G24.1 (RET), G24.2 (RET), G27.1 (LSH), G27.2 (LSH), G35 (RET), G42 (STOR); Fabric NVC. Late 4th c.
	5780 (top 4106)	*Misc. pot:* dishes B1 (RET, LSH, HAB, BB2, BSW, GRF & OBB), B1.3 (GRS & RET), B6.2 (GRF, GRS, HAB & BSW); bowl C8 (OXRC); mortarium D [new form with spout] (?HAX); bowl-jars E3 [with Romano-Saxon decoration] (HAX), E3 (RET & GRF), E3.3 (HAR & HAX), E5 (GRS), E5.4 (RET), E6 (HAX), E6.1 (HAX), E6.2 (GRS); jars G21 (GRS), G24 (GRS & RET), G24.1 (RET & GRS), G24.2 (GRS & RET), G25 (HAX), G27.1 (LSH), G27.2 (LSH), G35 (RET), G35.1 (RET), G40 (BSW), G43 (STOR); beakers H39 (HAB), H42 (NVC). Late 4th c.

Droveway and enclosures E28 to E30

Phase II.3a recut 854, on the north-west side of the droveway, was recut and extended by well-dated II.3b recut 229 (Fig. 24). The recut, which was sampled in five locations, was contiguous with ditch 337 and (according to cropmark evidence) ditch 123 in the far south-west corner. It was distinguished by even sides and a broad concave base (*c.* 1.5m wide, 0.5m deep), and was filled by one or two fills per segment. Ditch 123, in contrast, was represented by a V-shaped profile (*c.* 1.46m wide, 0.65m deep) and a sequence of four deposits.

Enclosures E28 to E29 at the north-east end of the droveway were defined by well-dated ditches 304, 314, 337, 359 and 376 and poorly dated ditch 354. Ditches 354, 359 and 376 were sectioned by one segment apiece, and ditches 304 and 337 by two segments apiece. Most segments contained single or double fills. The one exception, 314, which was dug in two locations, was occupied by two to three deposits. As in most cases, the top and single fills were dark and silty, in contrast to the primary fills, which when present, were generally lighter and more akin to the surrounding natural. Ditch 314 cut phase II.1 ditches 310, 311 and 370; ditch 354 cut II.1b ditch 27; ditch 359 cut II.2 to II.3a ditch 33; and ditch 376 cut II.1 ditch 378 and II.2 ditch 377/819. Ditches 354 and 359 were broad and shallow, and 304, 314, 337 and 376 steep to even, with concave or narrow concave bases. All six ditches were between 1.5m and 0.5m wide and 0.08m and 0.47m deep. The assignation of ditch 354, which was poorly dated, was based on stratigraphy and its seeming dependence on ditch 337.

The final development was the partial redefinition of ditch 304 with recut 303, which ran part of the way up the north-east side. It was *c.* 14m long and 0.8m wide and 0.3m deep. It was distinguished by steep to even sides and a narrow concave base and filled by one or two fills per segment.

Small amounts of late 4th-century pottery were found in 123, 229, 303, 304, 337 and 376 and late 3rd/4th-century pottery in 314, 354 and 359. There were no datable sequences and no datable finds in the primary fills.

Dating evidence

123	5213 (third)	*Misc. pot:* Fabric LSH. Late 4th c.
229	5439 (single)	*Misc. pot:* dishes B5.3 (LSH), B6.2 (GRS); bowl C8.2 (HAX); mortarium D7/Young 1977, M22 (OXW); bowl-jar E3 (GRS); Fabrics NVC & RET. Late 4th c.
	5510 (single 4052)	*Misc. pot:* Fabric LSH. Late 4th c.
	5646 (single 4077)	*Misc. pot:* dish B1.3 (BSW), bowl-jars E3.1 (NVC), ?E6 (RET); jars G27.2 (LSH); beaker H — base (NVC); Fabric HAX. Late 4th c.
	5771 (single 4099)	*Misc. pot:* dishes B1 (LSH), B6.2 (GRS); bowls C/Young 1977, C75.1 (OXRC); bowl-jars E3 new variant with bifid rim (HAX), ?E3 (HAX), E4.2/Young 1977, C78 (OXRC), E6.2 (GRF), E6 (GRS), jars G24.1 (RET), G27.2 (LSH), G36 (GRS), G42 (STOR); Fabrics NVC & OXP. Late 4th c.
303	5595 (single 4063)	*Misc. pot:* dish B6.2 (RET); jar G34.1 (RET); bowl-jar E3 (GRS); Fabrics NVC, HAX & LSH. Late 4th c.
	5767 (single 4097)	*Misc. pot:* Fabric LSH. Late 4th c.

304	5596 (top 4063)	*Misc. pot:* jar G35 (RET). Late 3rd c. +
	5758 (single 4097)	*Misc. pot:* dish B6.2 (GRS); Fabrics NVC, HAX & RET. Late 3rd c. +
	5761 (single 4097)	*Misc. pot:* Fabric LSH. Late 4th c.
314	5657 (single 4081)	*Misc. pot:* Fabric RET. Late 3rd c. +
337	5722 (second 4090)	*Misc. pot:* jar G25 (RET); Fabric PORD. Late 4th c.
354	5753 (single)	*Misc. pot:* Fabric HAX. 3rd c. +
359	5781 (single)	*Misc. pot:* dish B1 (GRS); bowl C8 (GRS); jar G24 (RET); Fabric NVC. Late 3rd c. +
376	6251 (top 4138)	*Misc. pot:* dish B6.2 (BSW); Fabrics HAX, RET & LSH. Late 4th c.

Buildings

Building 416
(Figs 26 and 27)
The demolition or robbing of this building at the end of this phase was probably preceded by one or more episodes of late 4th-century maintenance or modification. Some of the posts in the front face of the building were possibly replaced, as small assemblages of 4th and late 4th-century pottery were found in the post-packings in segments 4114 and 4120 in post-trench 554, on the south-east face of the structure.

Twelve post-extraction cuts were identified in section, in segments 4116 (561), 4115 (791, 790, and 560) and 4161 (792, and 715–17), in post-trench 558, and in segments 4112 (547, 793) and 4114 and 4120 (555 and 557) in post-trenches 553 and 554 respectively. Small assemblages of late 3rd/4th-century and late 4th-century pottery were discovered in 791, 792, 547, 555 and 557.

Dating evidence

547	6028 (third)	*Misc. pot:* flagon J11 (NVC). 4th c.
554	6039 (single 4114)	*Misc. pot:* Fabric LSH. *Coins:* Diademed head, 4th c. (No. 48). Late 4th c.
	6059 (single 4120)	*Misc. pot:* dish B6.2 (GRF); Fabric MEK. 4th c.
555	6036 (single)	*Misc. pot:* Fabric OXRC (burnt). Late 4th c.
557	6038 (single)	*Misc. pot:* jar G27.2 (LSH). Late 4th c.
715	6327 (single)	*Coins:* ?Gratian, Mid to Late 4th c.; Diademed head, Mid 4th to Early 5th (Nos 53, 54).
791	6030 (single)	*Misc. pot:* jar G24 (RET). *Coins:* Diademed head, 4th c. (No. 45).
792	6333 (single)	*Misc. pot:* jar G27.1 (LSH). Late 4th c.

Building 416: well 567
(Fig. 33)
A small assemblage of late 4th-century pottery was found in the top fill (6066), which was suggestive of slumping.

Dating evidence

567	6066 (top)	*Misc. pot:* dish B5.3 (LSH); bowl C8.3 (HAX); jars ?G24 (GRS), G27.2 (LSH); Fabrics OXRC & OXW. Late 4th c.

Building 368
(Figs 34 and 35)
The two posts in post-pits 94 and 583 at the south-west end of the building were replaced at some point during this phase by post-replacement cuts 840 and 857 respectively. The reconstruction of this part of the building, which was possibly undertaken at the same time as the change in function of building 414, was then followed by the demolition/robbing of the entire building in two or more stages.

Five or more post-extraction cuts were seen in section (581, 586, 841, 842, and 858) in post-pits or post-replacement pits 600, 857, 840, 96 and 587 respectively; two or more post-extraction cuts were seen in plan and section (691 and 728) or in section only (809) in the north-west corner, in the same location as the *praefurnium* (Figs 37–39). Cut 809 was possibly related to the removal of the walls and posts in slots and stake-holes 576, 808, 577 and 752. This event was possibly undertaken at the same time as the removal of the post in stake-hole 729 by 728. Sub-circular cut 691 was possibly related to the extraction of the post in stake-hole 721. The demolition of the building must have been preceded by the demise of the *praefurnium* as a *praefurnium*, as the backfill in construction trench 575 was cut by demolition/robber 809. Likewise, the building must have been demolished/robbed in two or more stages because the infill in 809 was cut by 691. Some of the single deposits in the remaining post-pipe free post-pits (573, 574 and 718) may have been related to otherwise undetectable post-extraction cuts.

Small assemblages of 2nd-century pottery were found in 858 and 573, late 3rd/4th-pottery in 691 and late 4th-century pottery in 586, 842, 809, 857 and 581. One, possibly intrusive, piece of Early Saxon pottery was discovered in 858.

Dating evidence

581	6104 (top)	*Misc. pot:* jar G (HAX); Fabric LSH. Late 4th c.
586	6115 (single)	*Misc. pot:* bowl-jar E6 — *cf.* Going 1992a, No. 59.13 (HAX); Fabrics NVC & LSH. Late 4th c.
691	6268 (single)	*Misc. pot:* dish B6.2 (BSW). Late 3rd c. +
809	6253 (single)	*Misc. pot:* dishes B6.2 (GRF & GRS); bowl C (OXRC); Fabric LSH. Late 4th c.
840	5154 (third)	*Misc. pot:* jar G24 (RET). Late 3rd c. +
	5151 (top)	*Misc. pot:* Fabric RET. Late 3rd c. +
842	5148 (top)	*Misc. pot:* jar G27 (LSH); Fabric RET & HAX. Late 4th c.
857	6114 (primary)	*Coins:* Postumus 259–68 (No. 9).
	6107 (top)	*Misc. pot:* Mortarium D — *cf.* Young 1977 type WC7 (OXWC); Fabrics GRF, BSW & GRS. Late 4th c.
858	6116 (single)	*Misc. pot:* ?intrusive Early Saxon.

Bath-house 414
(Figs 37 and 38)
Building 414, which was no longer in use as a bath-house by this stage, was probably retained (for unknown purpose) until the late 4th/early 5th century, when it was levelled, and then subsequently robbed. Seventeen late 4th-century or later demolition or robbing cuts were identified: nine in the *frigidarium* and the *caldarium* (Fig. 37; 582, 602, 737, 805, 750, 772, 754, 798 (not on plan) and 804) and eight in the *praefurnium* (751 (Fig. 37), 606, 691, 728, 809, 810 (Fig. 38) and 578–79 (not illustrated)). Cut 798 is described in period III (p.67).

The demise of the building as a bath-house was marked by the partial demolition of the furnace in construction trench 575 (845). This event was possibly accompanied by the backfilling of 575 with a single deposit of silt loam (Fig. 38; 6222 = 6082). Some of the remaining furnace bricks were possibly removed in a subsequent episode of robbing by cut 810, which cut the north-west part of furnace face 764. A further three cuts in the *praefurnium* were possibly related to the demolition or robbing of building 368 (691, 728 and 809). The base of 809 in the ruins of 368 must have been exposed for a short while because it was cut by a small sub-circular hearth (730 — not illustrated). Deposit 6222 was also cut by two small

exploratory holes (578 and 579 — not illustrated) and a small circular pit with even sides (606). A small late 4th-century or later cut (751) on the north-east side of 728 may have been occupied by a small post-pipe, the purpose of which remains unknown.

The final course of events in cellar-pit 846 was much more difficult to determine because the pit had been stripped to its sides by a final episode of robbing in the post-Roman period (798). Some or all of the cuts in the base of the pit could have been cut at the same time as 798 because their single deposits were indistinguishable from the overlying backfill. Four small cuts on the outside edge of the *hypocaust* base (601) were probably related to the robbing of supports for the elevated floor of the *hypocaust* (772, 750, 754 and 804).

Some of the rubble from 414 was thrown into the adjacent cistern (415) as large amounts of tile, and frequent flecks of mortar were found up against its south-east side. Some of the backfill in drain 93 was possibly related to a late 4th-century and/or post-Roman episode of robbing. Drain 100 was probably stripped and then backfilled at the some point in this or the following phase.

Small assemblages of late 4th-century pottery were found in 93, 100, 415, 575, 809 and 810. Eight late 3rd-century coins, which are thought to be residual, were found in a small stack in 6082 in 575 (p.68, coin numbers 58–65). A ninth coin, which may have been part of the stack, was also discovered in the same context. A dark brown material at the ends of the stack was thought to be the remains of a leather purse, although no evidence was found during conservation work to support this.

Dating evidence

93	5176 (top 4016)	*Coins:* (No. 51). 4th c.
	5182 (top 4018)	*Misc. pot:* jar G27.2 (LSH). Late 4th c.
	6122 (top 4128)	*Misc. pot:* dish B6.2 (GRS); bowl C8.2 (HAX); mortarium D (OXW); jar G27.2 (LSH). *Coins:* Magnentius, 350–53 (No. 36). Late 4th c.
	5188 (second)	*Misc. pot:* jar G27.2 (LSH); Fabric OXRC. Late 4th c.
	5173 (top)	*Misc. pot:* dish B10 (OXRC); jar G24 (BSW); Fabric HAX. Late 4th c.
100	6179 (single 4133)	*Misc. pot:* jar G27.2 (LSH); Fabric OXRC. Late 4th c.
399	5831 (single 4144)	*Misc. pot:* jars G24.1 (RET) & G27.2 (LSH). Late 4th c.
	6301 (single 4152)	*Misc. pot:* dish B6.2 (GRS); bowl C8 (OXRC); jars G24.1 (GRS), G42 (STOR). Late 4th c.
415	5923 (top)	*Misc. pot:* dish B6.2 (GRS); bowl C (OXRC); mortarium D (OXW); Fabric HAX. Late 4th c.
	6077 (sixth)	*Misc. pot:* bowl C (OXRC); Fabric LSH. Late 4th c.
575	6082 (top)	*Misc. pot:* dish B6.2 (HAB & GRS); bowl-jar E (HAX); beaker H (OXRC); Fabric LSH. *Coins:* Gallienus, 260–67, Claudius II (x3), 268–70, Quintillus, 270, Tetricus I, 272–74, Tacitus 275–76, Probus 276–82 & Postumus, 268–70 (Nos 57–65). Late 4th c.
579	6101 (single)	*Misc. pot:* Fabric RET. Late 3rd c. +
809	6253 (single)	*Misc. pot:* dishes B6.2 (GRF & GRS); bowl C (OXRC); jar G27.2 (LSH). Late 4th c.
810	6227 (single)	*Misc. pot:* dish B10 (OXRC); bowl C (OXRC); Fabric LSH. Late 4th c.

Discrete features

Cremations 43, 122 and 185
(Figs 22 and 23)

Cremation 122 was found in a small cluster of seven, six of which were undatable (1, 120, 128, 129, 130 and 135), near phase II.2 ditch 6, on the south-west side of E21 (Fig. 22). Cremations 43 and 185 cut well-dated ditch 38 from phase II.2 enclosure E22 (Fig. 23). All nine cremations, which were badly truncated, were found in small pits, less than 0.2m deep. Small amounts of charcoal and cremated bone were found in all nine. The cremated bones in 122 and 185 were intermingled with small amounts of cremated animal bone. Late 4th-century sherds, from more than one vessel, were found in 122 and 185. Several hobnails, which were seen in 43, were lost during the excavation.

Dating evidence

122	5211 (top)	*Misc. pot:* jar G24 (RET); Fabrics OXRC & HAX. Late 4th c.
185	5332 (single)	*Misc. pot:* dish B1.2 (GRS); Fabric (LSH). Late 4th c.

Depression 350 and pond recuts 778, 777 and 780
(Figs 48 and 49)

Depression 350, on the south-side of the droveway, was a large, amorphous shaped feature, less than 0.5m deep. A small number of late 3rd/4th-century sherds were found in the primary fill, which was a thin band of gravel, and a slightly larger amount of late 4th-century pottery in the overlying top fill, which was very dark and silty.

The three pond recuts at the north end of phase II.2 pond 776 were seen in section only, in machine-trench 455, across the north-west end (Fig. 18). Cut 778, the first recut, was cut by pit 456 on the south-west side. Cut 777, the second recut, was cut by cut 780. All three cuts were very broad and shallow, with one, two or three dark silty fills apiece. The primary fills in 777 and 778 were distinguished by thousands of tiny flecks of pink *opus signinum*, which were possibly derived from the demolition/robbing of the bath-house. No sherds of pottery were found in 780, but a few pieces of 3rd/4th-century date were discovered in 777 and 778. A silver coin of Eugenius (AD 392–394), which was found during the metal detecting of the pond, was probably derived from one of the recuts.

Dating evidence

350	5746 (primary)	*Misc. pot:* dish B6.2 (GRF); Fabrics HAX & RET. Late 3rd c. +
	5745 (top)	*Misc. pot:* dishes B5.3 (LSH), B6.2 (GRS & BSW), B1.2 (GRS), B6 (NVC); Fabric RET. Late 4th c.
777	5915 (top)	*Misc. pot:* dish B6.2 (GRS); jar G24.2 (RET). Late 3rd c. +
778	5919 (single)	*Misc. pot:* Fabric HAX. 3rd to 4th c.

Miscellaneous
(Figs 7, 18 and 20– 23)

Eighteen or more discrete features were possibly present during this phase. Six were situated in the south-west corner, in the same area as seventeen or more features from phase II.2 (Fig. 21; 13, 197, 218, 232, 240 and 244). Five were situated in the vicinity of former ditches 38 and 39 (Fig. 22; 158 and Fig. 23; 169, 173, 176 and 181) and two near enclosure E23 ditch recut 250 (237 and 238 — not illustrated). Three, equally spaced cut-features on either

side of enclosure E28 ditch 337 (Fig. 20; 328/9, 339 and 344) were possibly related to a small bridge/entranceway into E29. They were spaced *c.* 3.5m apart and were comprised of short lengths of gully at right angles to the ditch. One pit (347) cut phase I.2 ring-ditch recut 821 and one pit (456) the outside edge of pond recut 778 (Figs 7 and 18). Sherds of late 4th-century pottery were found in all eighteen features except 456, which was dated by stratigraphy, and 339 and 344, which were both dated by their apparent association with ditch 337.

Dating evidence

13	5015 (single)	*Misc. pot:* dishes B1 (BSW), B6.2 (BSW, GRS); mortarium D7.2 (HAX); bowl-jar E5.2 (BSW); jars G9.1 (BSW), G22.1 (GRS), G (RET); beaker H (NVC); Fabrics COLC, LSH & GRF. Late 4th c.
158	5293 (second)	*Misc. pot:* jar G (GRS); Fabrics GRF, BSW & RET. Late 3rd c. +
	5288 (top)	*Misc. pot*: dishes B6.2 (HAR, BSW & GRS), B1 (BSW), B4.2 (BSW), B1.3 (BSW); bowl-jars E6 (HAX), ?E6 (BSW); jars G (HAX & RET); Fabrics RED, GRF, OBB & LSH. Late 4th c.
169	5305 (top)	*Misc. pot:* dishes B1.2 (NVC), B1 (HAX & BSW), B5.1 (GRS), B6.2 (RET & BSW), B4.2 (LSH), B (RED); jars G24 (RET), G27.1 (LSH), G (HAX & RET); flagon J14 (HAX); Fabrics OXW (mortarium), HAR, GRF, STOR & OXRC. *Coins:* Constantine II, 335–341 (No. 30). Late 4th c.
173	5309 (top)	*Misc. pot:* dish B6 variant (BSW); bowl ?C8 (HAX); bowl-jar E (GRS); jar G27.1 (LSH); Fabrics COLC, OXRC & RET. Late 4th c.
176	5314 (top)	*Misc. pot:* bowl-jar E3.1 with Romano-Saxon decoration (HAR); Fabrics GRS & BSW. Late 4th c.
181	5325 (top)	*Misc. pot:* dish B1 (BSW); jar G (GRS); Fabrics HAX, HAR & HAB (Romano-Saxon decoration). Late 4th c.
197	5375 (single)	*Misc. pot:* dish small B6.2 (GRS); bowl-jar E4 (RED); Fabrics RET, OXW, NVC, HAR, LSH & BSW. Late 4th c.
218	5417 (single)	*Misc. pot:* jar G (HAX); Fabrics GRS & LSH. late 4th c.
232	5442 (top)	*Misc. pot:* dish B1 (OBB); bowl ?C8 (OXRC); jars G24 (RET), G (RET & GRS); Fabrics HAX, GRF, STOR & BSW. Late 4th c.
237	5449 (single)	*Misc. pot:* bowl-jar E4/Young 1977, C75 variant (OXRC); Fabrics NVC, HAX, RET & GRS. Late 4th c.
238	5450 (single)	*Misc. pot*: bowl or dish C8/B1 (HAX); Fabrics OXRC & GRS. Late 4th c.
240	5455 (single)	*Misc. pot:* Fabrics HAR, LSH, RET, GRF & GRS. Late 4th c.
244	5457 (single)	*Misc. pot:* bowl C8.1/Young 1977 C51 (OXRC); jar G (GRS); Fabrics HAX, NVC, BSW & RET. Late 4th c.
328	5700 (top)	*Misc. pot:* jar G27.2 (LSH); Fabrics GRS & ?NVS. Late 4th c.
329	5702 (single)	*Misc. pot:* Fabrics BUF & RET. Late 3rd c. +
347	5748 (top)	*Misc. pot:* dish B6.2 (GRS); Fabrics HAX, RED, BSW, RET & LSH. Late 4th c.

Discussion

The demise of the Roman settlement at the end of this phase is reflected in the high proportion of well-dated ditches on the phase II.3 phase plans (Figs 48 and 49), and the fact that most ditches could only be phased in terms of last use/disuse. It is possible that some phase II.2 boundaries were continued into the late 4th century by non-surviving archaeological features, such as banks and hedgerows. This is supported by the phase II.2 ditches from enclosure E22, which are respected by enclosure E27 and cremations 43 and 185.

A final flourish is represented by the introduction of the new enclosures and the redefinition of the droveway. It is likely that the farming of livestock, possibly cattle, continued to play a significant role, due to the redefinition of the droveway and the replacement of the E19 area with enclosures E28 to E30, which are thought to be holding pens.

The few remaining developments are the upkeep of structures 416 and 368, the burial of three or more cremations, the digging of cut-features and pits, and the re-cutting of the more significant ditches, such as 250 and 360. The continuation of the two areas of unknown activity in E21 and (formerly) E22 is indicated by the discrete features.

The beginning of the demise of the Roman estate is marked by the ending of structure 414 as a bath-house in the mid 4th century. An increasing air of dereliction from that point onwards can be seen in the fall-off in ditch maintenance, the dearth of new developments, the silting up of the ponds, and the dumping of large amounts of material in the ditches. A decline in standards is further implied by the addition of 786, probably of utilitarian function, to the south-west side of 416, in the first half of the 4th century or later. Structures 294 and 786 were possibly built during this phase, although on balance a construction date in the second half of the previous phase, when the level of investment in the estate was at its height, may be more likely. The abandonment of the settlement is marked by the demolition/robbing of the three main buildings 368, 414 and 416 in the late 4th/early 5th century.

III. Period III Post-Roman

Summary

(Fig. 50)

The post-Roman period was represented by a medieval building and post-Roman robber cuts. The Roman enclosures E9 and E26, in the north-east part of the site, were repeated by enclosures E31 and E32. A third enclosure, E33, was possibly present in the centre of the site. A break in continuity and a change in alignment in the south part of the site was indicated by post-medieval enclosures E34 to E36.

Enclosures E31 to E36

(Fig. 50)

Enclosures E31 and E32

Enclosures E31 and E32 were defined by well-dated ditches 59 and 74. Ditch 74 was situated between Roman ditches 62 and 64, on the north-west side of poorly dated Roman enclosure E9. Ditch 59 was a recut of the north-east section of phase II.1 to II.3 ditch 63. Both enclosures are recorded on the 1841 tithe award map (Essex Records Office: D/CT 30/3).

Enclosure E33

Ditches 23 and 268, on the south-west and south-east sides of E33, were possibly cut in the post-Roman period, prior to the post-medieval switch in alignment, as represented by E34 to E36. Ditch 268, which was cut by recut 267,

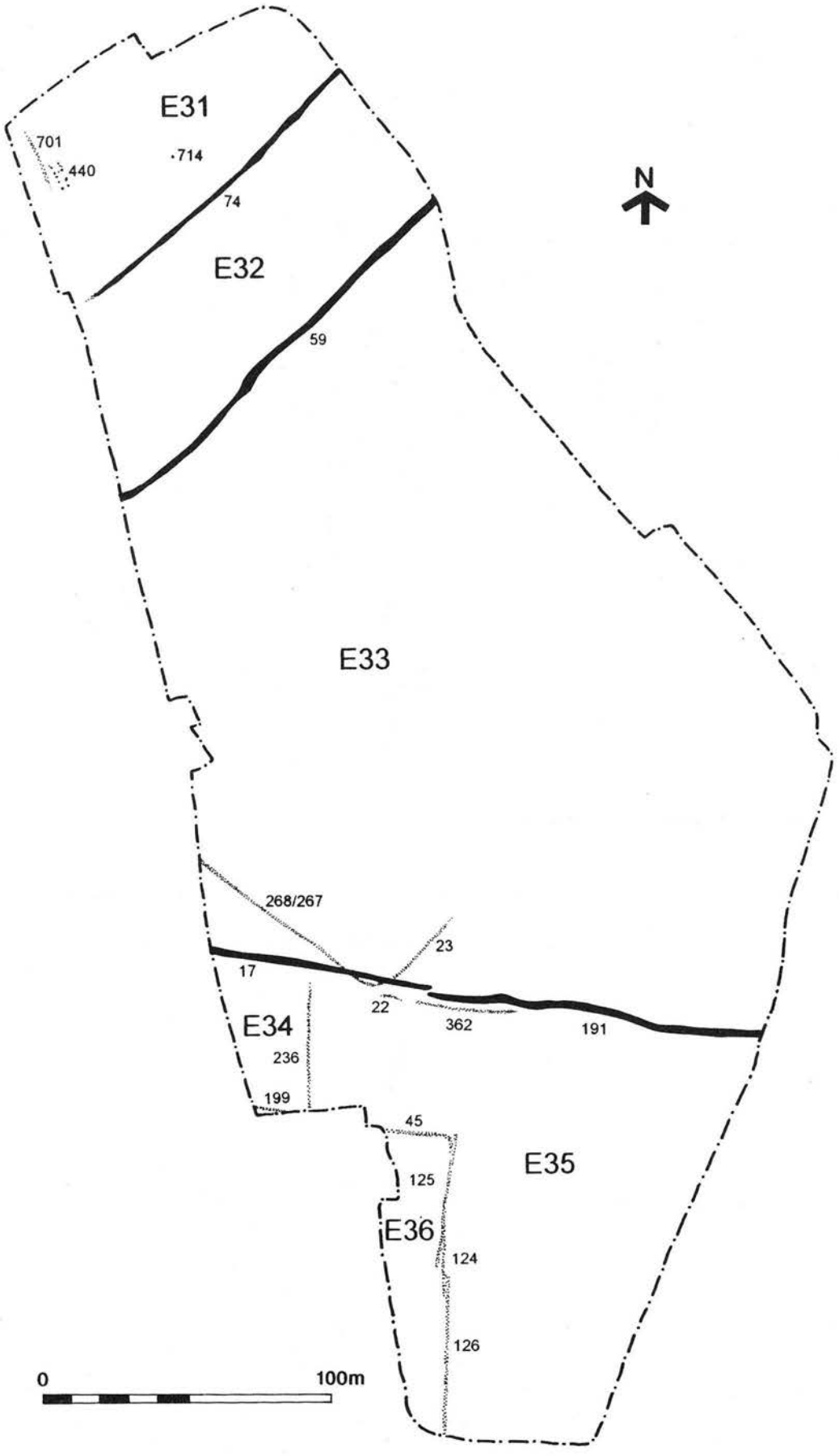


Figure 50 Period III – Post-Roman

Figure 51 Phase III.2 building 440

was sampled in two different places. It contained two fills per segment and was distinguished by even sides and a concave base (*c.* 1.22m wide, 0.39m deep). Its recut, which was seen in one segment only, was characterised by even sides and a narrow concave base. Small amounts of possibly residual 3rd/4th-century pottery were found in both cuts. Ditch 23 was contiguous with 268 or 267. It was cut by phase III.3 ditch 17 and was sampled in one location. It was also characterised by even sides and a broad, uneven base (*c.* 0.98m wide, 0.18m deep). It contained two deposits, but no finds. The relationship between 268/267, which were ill-defined, and Roman ditches 198, 229 and 310–12 was not determined. The assignation of 268/267 and 23 to the post-Roman period was based on the conclusion (from morphology) that the development of the Roman droveway and enclosures E1–E3 and E19–E20 was an uninterrupted sequence.

Enclosures E34 to E36

Enclosures E34 to E36 were demarcated by well-dated ditches 17 and 191, and poorly dated gullies and ditches 22, 45, 124–26, 199, 236 and 362. Ditch 236 cut phase II.3 ditch 229 and ditch 126 cut phase II.3 ditch 123. The west side of ditch 124 was cut by ditch 125. Ditches 17 and 191 and 126 and 124 were distinguished by overlapping ends. The north terminal of ditch 126 was not detected. Gullies 22 and 362 were possibly related to nearby features 17 and 191, both of which were in use until relatively recently. Small amounts of residual Roman pottery were found in 124–26.

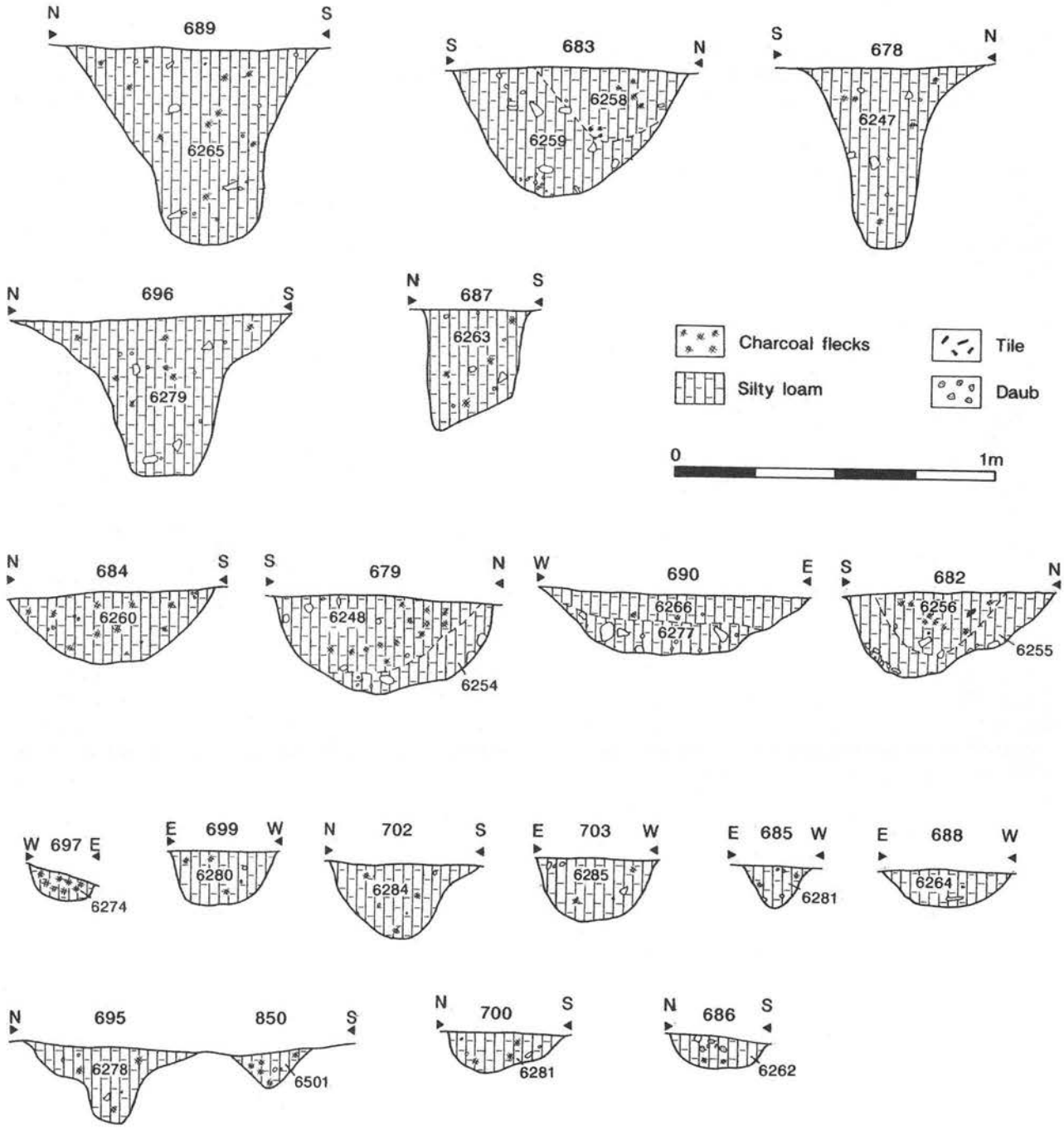


Figure 52 Phase III.2 building 440 – sections

Buildings

Building 440
(Figs 50–52)
This rectangular structure (*c.* 4.25m × 10m), in the north-west part of the site, was defined by twenty oval and sub-circular post-holes. The eight largest post-holes were arranged in two square blocks of four (679, 682, 684 and 690, and 678, 683, 689 and 696 respectively). Six small to medium sized post-holes were found in the intervening gap (686–88, 700, 812 and 850), three in the north-west square (695, 702 and 703), and three on the outside edge (685, 697 and 699). The four post-holes in the north-west square and post-hole 687 in the middle were noticeably deeper than their south-east counterparts. No post-pipes were identified.

All twenty features were occupied by one or two deposits of very dark, silt loam, with occasional small pieces of reddish brown daub and frequent small pieces of charcoal. Sherds of 10th to 13th-century pottery were found in 678, 689 and 690. Carbonised macrofossils of bread-type wheat, barley, rye, oats, pea/vetch and field bean were recovered from sampled post-holes 682 and 689.

Bath-house 414 (robber cuts)
(Fig. 37)
The remnants of the *caldarium* and the *frigidarium* in foundation-pit 846 in bath-house 414 were robbed in the Early Saxon period or later. The foundation-pit was stripped to its sides and then backfilled with a single deposit of soil and rubble (798). Eight other cuts, which were found in the same area, were possibly made at the same time or in the late 4th century (582, 602, 737, 750, 754, 772, 804 and 805). A Saxon bone pottery stamp and several sherds of Early Saxon pottery were found in the backfill.

The bath-house drain 100/620 was possibly open or robbed at the same time as the *frigidarium* and the *caldarium*, as a few sherds of Early Saxon pottery were found in the single fill of segment 4133, to the immediate north-east of the *praefurnium*.

Miscellaneous features
(Figs 50 and 51)

Ditch 701 and pit 714
Ditch 701 and pit 714 were found in the vicinity of building 440. The ditch, which was ceramically undatable, was sectioned in one location only. It was represented by a V-shaped profile (*c.* 1m wide, *c.* 0.6m deep) and a single deposit of dark brown silt clay loam. Building 440 and ditch 701 were possibly contemporary because they were both distinguished by frequent flecks of charcoal and occasional small pieces of distinctive reddish-brown daub. The pit was less than 0.9m wide. It was filled by one deposit and a small assemblage of 12th to 14th-century pottery.

Discussion
Enclosures E31 and E32 are significant because they redefine the north-west and south-east sides of the Roman enclosures E9 and E26. Further evidence for continuity in the landscape is possibly demonstrated by the present day ditch and hedgerow on the outside north-east edge of site, which is in line with the conjectured north-east side of the II.1 to II.3 E10 enclosure. The date of the cutting of the post-medieval ditches is not known, but it is possible that the time gap between the Roman and post-Roman ditches was bridged by non-surviving ditch-side features such as banks and/or hedgerows. The strongest piece of evidence for continuity in the landscape is the north-east section of ditch 59, which is a well-dated recut of II.1 to II.3 ditch 63.

It is likely that the site was unoccupied in the 5th to 10th centuries (III.1) due to the dearth of Saxon features. Although it is possible that some of the robber cuts were dug then, such features are not necessarily concomitant with occupation. The Saxon sherds and the bone pottery stamp are probably derived from one or more nearby, but so far undetected, Early Saxon settlements. This is supported by the retention of the Roman enclosures E9 and E26 which, during that period, must have been maintained by one or more nearby groups of people.

The only definite piece of evidence for post-Roman occupation is building 440, which was in use at some point between the 10th to 13th centuries (III.2), and is thought to be the remains of a medieval long-house. Post-hole 687 and the eight large post-holes in the two squares of four are probably related to load-bearing posts; an additional post-hole for a load-bearing post was possibly present on the opposite side of 687, but left undetected. A cross-passage is probably indicated by the six small to medium sized post-holes between 687 and 678/696, and two outside walls by 685, 697 and 699. The greater depths of 687 and the four large post-holes in the north-west square are probably related to an upstairs room or loft. It is possible that an internal wall was supported by post-holes 702 and 703 and an internal fitting or prop by 695. The surrounding enclosure E31, if contemporary, was possibly used as a croft.

Part 3. The Finds

I. Coins

by Wendy Toomey

Sixty-seven coins were recovered, all of which date to the Roman period. Two unstratified coins appear to be missing from the coin assemblage and are thus unavailable for examination: SF 369 and 395 both from context 9998 (which also contained a coin of Faustina I). The majority of the remaining sixty-five coins are in reasonable enough condition to allow identification, with narrow date ranges assignable. Eleven coins have been placed within broad date brackets as some of the features crucial to full identification have been obscured. Two coins are so corroded that they cannot safely be consigned to any chronological period.

Coins are listed in chronological order with a full description of each coin and a reference is given wherever possible. Where the coin corresponds exactly to the reference, it is described as 'RIC 3: 463'. If a coin is not completely legible, but corresponds in most details to the reference it is described as 'RIC 3: as 463'. Where a copy is suspected this is noted; the borderline between regular coins and copies is subjective and undefined which is unsatisfactory; however in the present state of knowledge, and short of illustrating every coin, this is all that can be attempted in the time available. Copies are always later than the original state-produced coins they attempt to imitate, and as is the case for all coins, they would have taken some time to arrive, circulate and be deposited at Great Holts.

The period over which the coins were produced spans the late 1st century to possibly the 5th century; however these should not be regarded as the dates of deposition. Few of the coins are of particular importance in themselves, but studied as a group they can be made to illuminate the sequence of occupation of the site and its position among the other sites of Roman Britain. Although this site has evidence of multi-period occupation, virtually the only coins to occur are Roman, which is of interest in itself.

Coin list

1. sf207 AD98–117 Dupondius
   Obv: Radiate head Trajan. Bust r.
   Rev: illegible
   Context: 5604, ditch 310, seg. 4064, phase II.1
2. sf367 late 1st to 2nd century Sestertius
   Obv: Bust r.
   Rev: illegible
   Context: 6199 (surface), pond 776, phase II.2
3. sf373 AD117–38 Dupondius
   Obv: Bust Hadrian r.
   Rev: illegible
   Context: 6133, ditch 399, phase II.3
4. sf352 AD117–38 Dupondius
   Obv: Radiate head Hadrian. Bust r.
   Rev: illegible
   Context: 5815, ditch 385, phase II.2
5. sf379 AD138–61 As
   Obv: Bust Faustina I, r.
   Rev: illegible
   Rome
   Context: 9998, unstratified
6. sf210 AD140–44 Dupondius
   Obv: [ANT]ONINVS AVG PIVS [PP TRP COS III] Radiate head Antoninus Pius. Bust r.
   Rev: [SAL]VS [AVG]VSTI SC Figure standing l. feeding serpent. Sceptre in l. hand, patera in r. hand
   RIC 3: 668. Rome
   Context: 5604, ditch 310, seg. 4064, phase II.1
7. sf118 AD 161–80 Dupondius
   Obv: Radiate head of Marcus Aurelius. Bust r.
   Rev: illegible
   Rome
   Context: 9999, unstratified
8. sf476 AD186 Sestertius
   Obv: M COMMODVS ANT [P FELIX AVG BRIT] Laureate head Commodus. Bust r.
   Rev: [PM TRP XI IMP VII COS V PP] (SC in field) Commodus seated l.
   As RIC 3: 463
   Context: 6102, post-extraction cut 841, building 368, phase II.3
9. sf405 AD260–67 Base silver
   Obv: [IMP GALLI]ENVS AVG Radiate head Gallienus; bust r.
   Rev: [FI]DE S [MI]LIT standing l.
   MP in exergue
   RIC 5, I: 481 Milan
   Context: 6133, ditch 399, phase II.3
10. sf400 AD260–67 Base silver
    Obv: [IMP GALL]IENVS AVG Radiate head Gallienus; bust r.
    Rev: [VIRTVS] AVGVSTI Mars standing l.
    X in field to l.
    obv. as RIC 5, I: 330. Rome
    Context: 6199 (surface), pond 776, phase II.2
11. sf486 AD260–68 Base silver
    Obv: IMP[C PO]ST[VM]VS PF AVG Radiate head Postumus, bust r.
    Rev: [VIRTVTI AVGVSTI] Hercules standing r.
    RIC 5, II: 333. Cologne
    Context: 6114, post-pit 857, building 368, phase II.3
12. sf583 AD268–70 Base silver
    Obv: [IMP C] VICTORINVS P[F AVG] Radiate head Victorinus, bust r.
    Rev. PAX AVG Pax standing l. holding flower in r. hand, sceptre in l.
    RIC 5, II: 55. Southern Mint
    Context: 6354, unstratified
13. sf164 AD268–70 Base silver
    Obv: [IMP C CLA]VDIVS A[VG] Radiate head Claudius II, bust r.
    Rev: SALVS [A]VG Figure standing l. feeding serpent, sceptre in l. hand
    RIC 5, I: 98. Rome
    Context: 5568 (surface), ditch 302, phase II.3
14. sf366 AD268–70 Base silver
    Obv: [IMP (C) CLA]VDIVS [PF AVG] Radiate head Claudius II, bust r.
    Rev: illegible
    Context: 6199 (surface), pond 776, phase II.2
15. sf187 AD268–70 Base silver
    Obv: [IMP] C CL[AVDIVS] AVG Radiate head Claudius II, bust r.
    Rev: illegible (offstruck)
    Off. mark: illegible
    Context: 5569, ditch 302, phase II.3
16. sf194 AD272–274 Base silver
    Obv: Radiate head Tetricus I, bust r.
    Rev: [FIDES MILITVM] Figure standing l. holding standard in each hand
    RIC 5, II: as 68
    Context: 9999, unstratified
17. sf44 272–74 Base silver
    Obv: Radiate head Tetricus I, bust r.
    Rev: illegible
    Copy?
    Context: 5144, post-extraction cut 841, building 368, phase II.3

18. sf389 mid/late 3rd century. Base silver
Obv: Radiate head, bust r.
Rev: illegible
Context: 6344, robber cut 798, seg. 4168, bath-house 414, phase III.1+

19. sf361 mid/late 3rd century. Base silver
Obv: Radiate head, bust r.
Rev: [ ]VG Figure standing l.
Context: 6199 (surface), pond 776, phase II.2

20. sf404 mid/late 3rd century. Base silver
Obv: Radiate head, bust r.
Rev: illegible
Context: 9998, unstratified

21. sf358 mid/late 3rd century. Base silver
Obv: Radiate head, bust r.
Rev: Pax standing l.
Context: 9998, unstratified

22. sf562 AD286–93 Base silver
Obv: Radiate head Carausius, bust r.
Rev: Pax standing l.
Off. mark: illegible
RIC 5, II: as London 98
Context: 6288, ditch 819, seg. 4141, phase II.2

23. sf399 AD316–17
Obv: IMP CONSTANTINVS P AVG Laureate head Constantine I, bust r.
Rev: SOLI INVICTO COMITI Sol standing l. holding globe
PLN in exergue with T in field l./ F in field r.
RIC 7: London 89
Context: 6199 (surface), pond 776, phase II.2

24. sf397 AD321–24
Obv: CON[ST]AN TINVS AVG laureate head Constantine I, bust r.
Rev: DN CONSTANTINI MAX AVG / VOT X in wreath
BSIS symbol in exergue
RIC 7: Siscia 180
Context: 6199 (surface), pond 776, phase II.2

25. sf398 AD321–23
Obv: CONSTANTINVS AVG Helmeted head Constantine I, bust r.
Rev: BEATA TRAN QUILLITAS Three stars above globe on altar (VOT on altar)
STR in exergue
RIC 7: Trier. 303
Context: 6199 (surface), pond 776, phase II.2

26. sf378 AD323–24
Obv: CONSTANTINVS AVG laureate head Constantine I, bust r.
Rev: SARMATIA DEVICTA Victory r. captive at feet
STR in exergue
RIC 7: Trier. 429
Context: 6071, robber cut 798, seg. 4122, bath-house 414, phase III.1 +

27. sf 184 AD 330–31
Obv: FL IVL CONSTANTIVS NOB [C] Laureate head Constantiuis II, bust r.
Rev: GLORIA EXERCITVS Two soldiers/two standards
Off mark: TR[P]
RIC 7: Trier. 521
Context: 5576, ditch 302, phase II.3

28. sf 171 AD330–31
Obv: URBS ROMA Helmeted head Constantine I, bust l.
Rev: Wolf and twins/two stars above
Off mark: TRS
RIC 7: Trier. 529
Context: 5569, ditch 302, phase II.3

29. sf166 AD330–35
Obv: [VR]BS [ROMA] Helmeted head Constantine I. Bust l.
Rev: [GLORIA EXERCITVS] Wolf and twins/two stars above
Off. mark: illegible
RIC 7: as Lyon 242
Context: 5568 (surface), ditch 302, phase II.3

30. sf 173 AD330–35
Obv: CONS[TANT]INOPOLIS Helmeted head Constantine I, bust l. spear against l. shoulder
Rev: Winged Victory standing l. on prow holding shield l. hand and sceptre r.
Off mark: illegible
RIC 7: as Lyon 241
Context: 5569, ditch 302, phase II.3

31. sf 112 *c.* AD335
Obv: Diademed head House of Constantine, bust r.
Rev: [GLORIA EXERCITVS] Two soldiers/one standard
RIC 7: as Lyon. 271
Context: 5340 (surface), ditch 177, phase II.3

32. sf167 *c.*AD335
Obv: Diademed head House of Constantine, bust r.
Rev: [GLORIA EXERCITVS] Two soldiers/one standard
RIC 7: as Lyon. 271
Context: 5568 (surface), ditch 302, phase II.3

33. sf 103 AD335–37
Obv: CONSTANTINVS AVG Diademed head Constantine II, bust r.
Rev: [GLORIA] EXER[CITVS] Two soldiers/one standard
Off mark: TRP
RIC 7: Trier as 586
Context: 5305, pit 169, phase II.3

34. sf 318 AD335–37
Obv: [CONSTANTINV]S IVN NOB [C] Diademed head Constans, bust r.
Rev: [GLORIA] EXERC-ITVS Two soldiers/one standard
Off mark: illegible
RIC 7 as Lyons 271
Context: 5570, ditch 816, seg. 4059, phase II.3

35. sf 396 AD 341–46
Obv: Diademed head, bust r.
Rev: Female figure standing l.
Off mark: F in field l, Q ? in exergue.
LRBC I: as Aquileia 707
Context: 6030, robber cut 791, building 416, phase II.3

36. sf172 AD347–48
Obv: illegible. Diademed head House of Constantine, bust r.
Rev: illegible. Two Victories holding wreaths
Off mark: TRP
RIC 8: as Rome 75
Context: 5569, ditch 302, phase II.3

37. sf386 AD350–53
Obv: DN MAGNEN[TIVS PF] AVG Bareheaded Magnentius, bust r.
Rev: [SALVS DD NN AVG ET CAES] Chi-Rho flanked by alpha and omega
RIC 8: as Trier 319
Context: 6122, drain 93, seg. 4128, phase II.3

38. sf525 AD355–60
Obv: [D]N CONSTAN TIVS PF AVG Diademed head Constantius II, bust r.
Rev: FEL TEMP REPARATIO Fallen horseman
Off mark: GPLG
RIC 8: Lyon 189
Context: 6199 (surface), ponds 778/777/780, phase II.3

39. sf169 mid 4th century
Obv: illegible
Rev: [FEL TEMP REPARATIO] Emperor in galley with standard
Context: 5568 (surface), ditch 302, phase II.3

40. sf360 AD361–63
Obv: [DN FL CL IVLI] ANUS PF AVG Helmeted head Julian, bust l. with shield and spear
Rev: VOT X MULT XX in wreath
Off mark: illegible
RIC 8: as Arles 326
Context: 6199 (surface), ponds 778/777/780, phase II.3

41. sf 371 AD367–75
Obv: Diademed head Gratian, bust r.
Rev: [GLORIANO VISA]ECVLI Figure centre holding shield
RIC 9: Arles as 15
Context: 5824, storage pit 394, building 416, phase II.3

42. sf 362 AD393–94
Obv: DN EVGENI [VS PF] AVG Diademed bearded head Eugenius, bust r.
Rev: VIRTVS RO MANORVM Roma seated l.
Off mark: MDPS
RIC 9: Mediolanum 32c
Context: 6199 (surface), ponds 778/779/780, phase II.3

43. sf 114 4th century
Obv: Diademed head, r.
Rev: illegible
Æ
Context: 5347, pit 189, phase II.3

44. (no sf number) context 5309 4th century
Æ. Illegible
Context: 5309, pit 173, phase II.3

45. sf 67 4th–5th century
Illegible
Æ
Context: 5176, drain 93, seg. 4016, bath-house 414, phase II.3

46. sf 592 4th century
Obv: Diademed head, bust r.
Rev: illegible
Æ
Context: 6366, wall-trench 558, seg. 4172, building 416, phase II.2

47. sf 441 4th century
Obv: Diademed head, bust r.
Rev: illegible
Æ
Context: 6027, wall-trench 553, seg. 4112, building 416, phase II.2

48. sf 440 4th–5th century
Obv: Diademed head. Bust r.
Rev: illegible
Æ
Context: 6039, wall-trench 554, seg. 4114, building 416, phase II.3

49. sf 91 4th century
Illegible
Æ
Context: 5305, pit 169, phase II.3

50. sf 230 4th century
Illegible
Æ
Context: 5648, seg. 4055, phase II.2

51. sf 580 4th–5th century
Illegible
Æ
Context: 6327, post-extraction cut 715, building 416, phase II.3

52. sf 392 late 4th century
Obv:[ ]D-N B[ ] Diademed head, bust r.
Rev: SPES ROMANORVM? Winged figure standing l.
LRBC II: as Rome (Theodosius and Eugenius) 802–3
Context: 6074, robber cut 798, seg. 4125, bath-house 414, phase III.1 +

53. sf 168 4th–5th century
Obv: Diademed head, bust l.
Rev: Figure standing l. holding sceptre
Æ
Context: 5568 (surface), ditch 302, phase II.3

54. sf 581 4th–5th century
Obv: Diademed head
Rev: Winged Victory walking l.
Æ 15mm
Context: 6327, post-extraction cut 715, building 416, phase II.3

55. sf 278
Unidentifiable
Æ
Context: 5771, ditch 229, seg. 4099, phase II.3

56. sf 245
Unidentifiable
Æ
Context: 5728, gully 336, seg. 4089, unphased

Hoard group

57. sf 472/1 AD260–267
Obv: GALLIENVS.AVG Radiate head Gallienus, bust r.
Rev: illegible
Off mark: S in exergue
RIC 5, I: Rome as 5
Context: 6082, foundation pit 575, bath-house 414, phase II.2

58. sf 472/2 AD268–270
Obv: [IMP CLAVD]IVS AVG Radiate head Claudius II, bust r.
Rev: [AEQVI]TAS AV[G] figure standing l. with cornucopia r. and scales l.
RIC 5, I: as Rome 15
Context: 6082, foundation pit 575, bath-house 414, phase II.2

59. sf 472/3 AD268–270
Obv: [IMP C CLAUDI]US A[VG] Radiate head Claudius II, bust r.
Rev: VICT[ORIA] AV[G] Winged Victory walking l.
RIC 5, I: as Rome 106
Context: 6082, foundation pit 575, bath-house 414, phase II.2

60. sf 472/4 AD268–270
Obv: IMP CLAVDIVS AVG Radiate head Claudius II, bust r.
Rev: VICTOR[IA AVG] Winged Victory running r. with palm
Mint mark: Ú in exergue
RIC 5, I: Rome 107
Context: 6082, foundation pit 575, bath-house 414, phase II.2

61. sf 472/5 AD270
Obv: [IMP QVINTILLVS AVG] Radiate head Quintillus, bust r.
Rev: [VICTOR]IA AVG Victory walking r.
Off mark: Ú in exergue
RIC 5, I: Milan as 33
Context: 6082, foundation pit 575, bath-house 414, phase II.2

62. sf 472/6 AD272–4
Obv: [IMP C TETR]ICVS PF AVG Radiate head Tetricus I, bust facing r.
Rev: [PA]X [AVG(G)] Pax standing l, raised r. arm
Mint mark: V left of field
RIC 5, II: as 100
Context: 6082, foundation pit 575, bath-house 414, phase II.2

63. sf 472/7 AD275–276
Obv: IMP CL TACITVS AVG Radiate head Tacitus, bust r.
Rev: MARS VICTOR Mars standing r.
Off mark: Star in field
RIC 5, I: Gaul 30
Context: 6082, foundation pit 575, bath-house 414, phase II.2

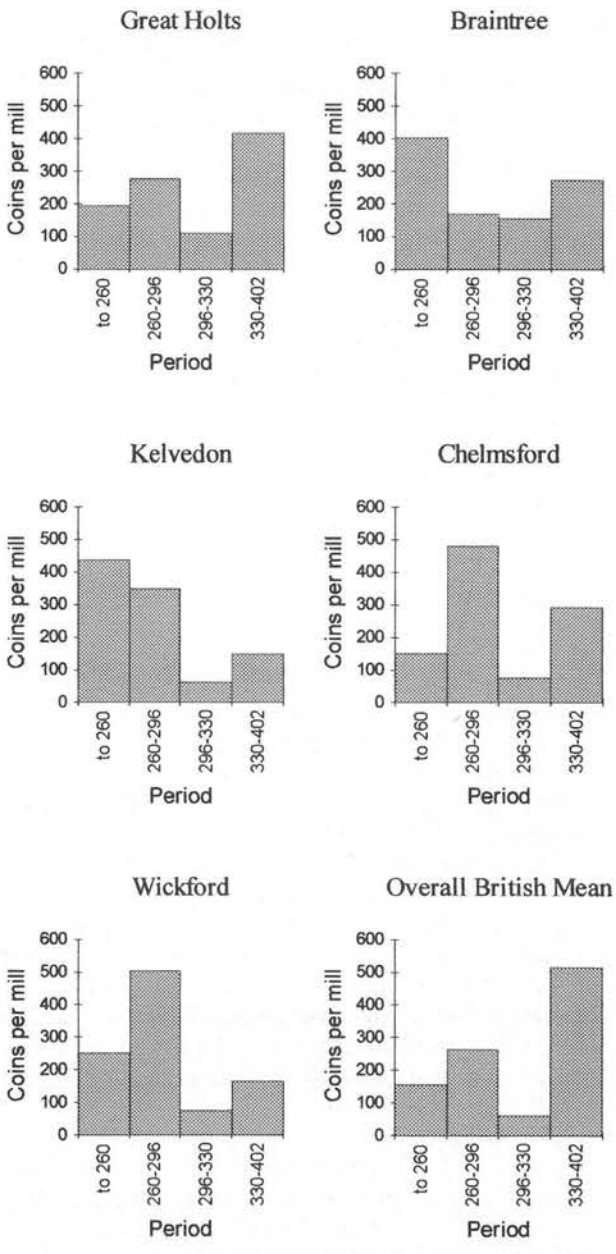


Figure 53 Coins per thousand: Great Holts and local rural sites in Essex over four periods compared to overall British mean (all sites)

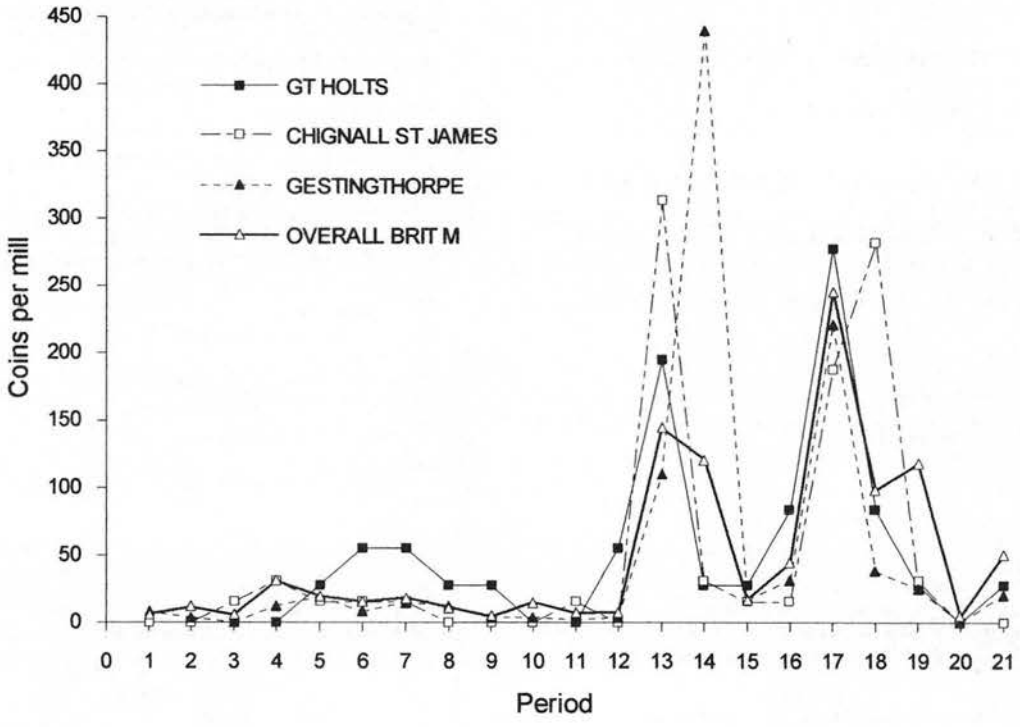


Figure 54 Coins per thousand: Great Holts and Essex villa sites over twenty-one periods with overall British mean (all sites)

64. sf 472/8 AD276–282
Obv: IMP C PROBVS.P.F.AVG Radiate head Probus, bust r.
Rev: PIAETAS AVG Pietas standing l.
Off mark: I I I in exergue
RIC 5, II: Lyon 93
Context: 6082, foundation pit 575, bath-house 414, phase II.2

65. sf 473 AD268–70 Base silver
Obv: IMP C [POSTVMUS PF AVG] Radiate head Postumus; bust r.
Rev: CVT.I. Sol advancing l. holding whip
RIC 5, II: copy (?) as Cologne 316
Context: 6082, foundation pit 575, bath-house 414, phase II.2

The relatively low number of coins from Great Holts limits the validity of statistical comparisons with other sites possessing a larger assemblage of coins; however, some comparative work may be carried out by estimating the frequency of coins per period, per thousand coins lost and some tentative preliminary observations may then be attempted. Period divisions follow those devised by Reece (1991). For purposes of comparison with data from sites in that volume, it is essential that only those coins from Great Holts datable to one of the twenty-one periods are used. The small towns of Kelvedon, Wickford, Chelmsford and Braintree (Fig. 53), and the villa sites of Chignall St James and Gestingthorpe have been used for comparison with Great Holts (Figs 54 and 55), as well as mean coin loss for various Reece site categories (Figs 56 and 57). The site of a possible *principia* excavated in 1990 at Bulls Lodge Dairy, close to Great Holts, only produced thirteen coins, the most notable being a coin of Septimius Severus' whose reign is not represented in the material at Great Holts. The coin list at Great Holts reveals no real numismatic surprises apart from the rare unclipped siliqua of Eugenius.

At Great Holts the whole of the 1st century is barely represented; the series begins with a single coin of Trajan giving a frequency of only 28 coins per thousand down to

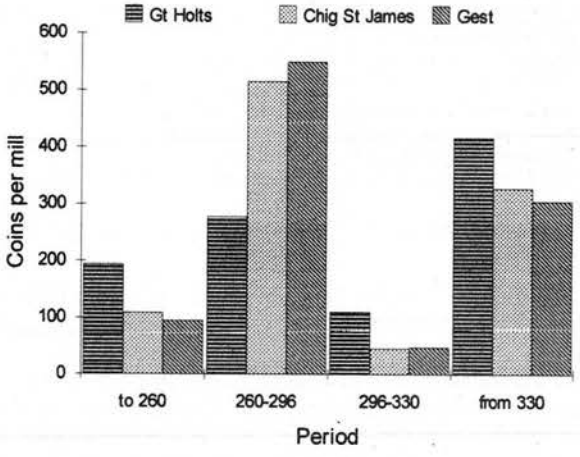
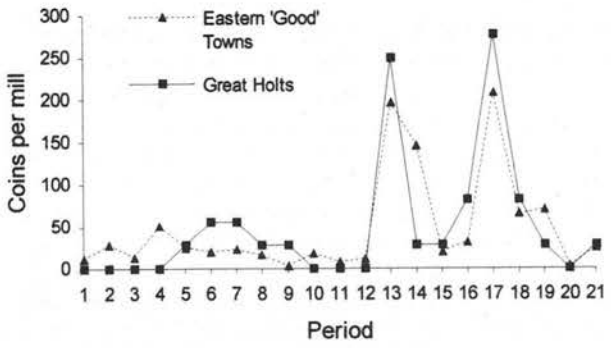
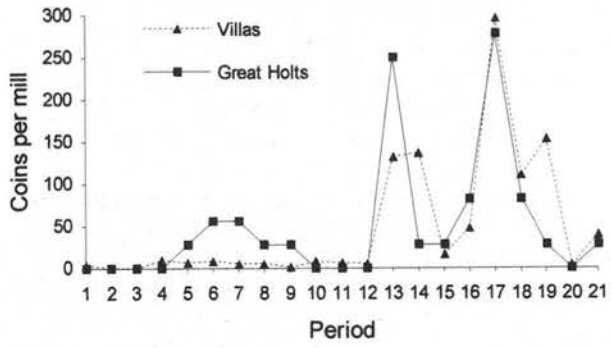


Figure 55 Coins per thousand: Great Holts and Essex villa sites over four periods

AD 117. If the sestertius of the late 1st to 2nd century were to be included, this would give a frequency of close to the overall mean of 55 coins per thousand for this period for British sites of all types (as in Reece 1991). Notably, coin loss for the 1st century at Great Holts is far below the mean of 104 coins per thousand for locally excavated rural sites in Essex. The four coins together representing the reigns of Hadrian, Faustina I and Antoninus Pius, covering the period AD 117 to 161 at Great Holts, give a pattern of loss just higher than both the local rural mean and the mean for military sites; however, coin loss at Great Holts represents more than double the frequency for this period seen generally on British sites during this period. At Great Holts the following one hundred years from AD 160 to 260 is only represented by two coins, one each of Marcus Aurelius and Commodus which gives a figure of 56 coins





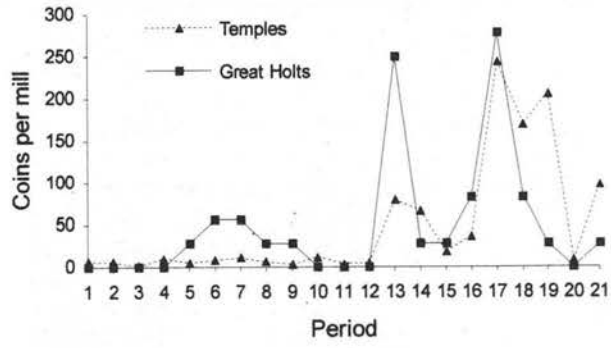
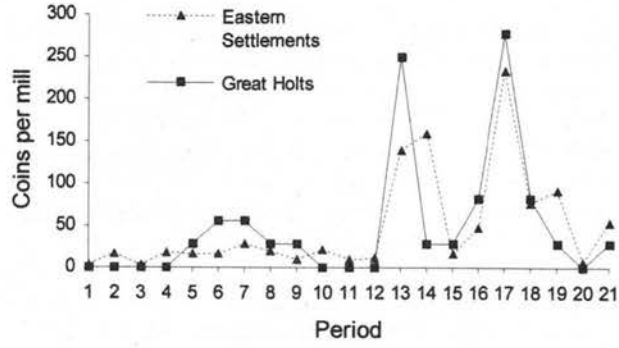
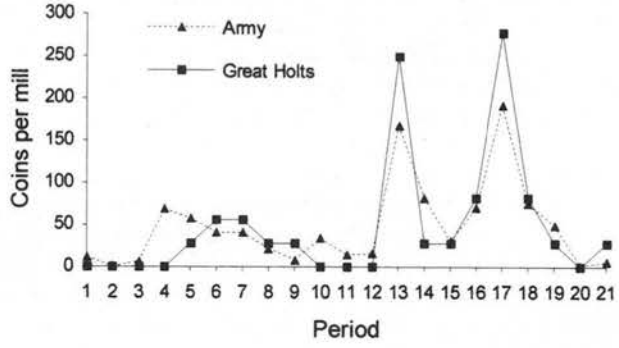


Figure 56 Coins per thousand: Great Holts and British site categories over twenty-one periods





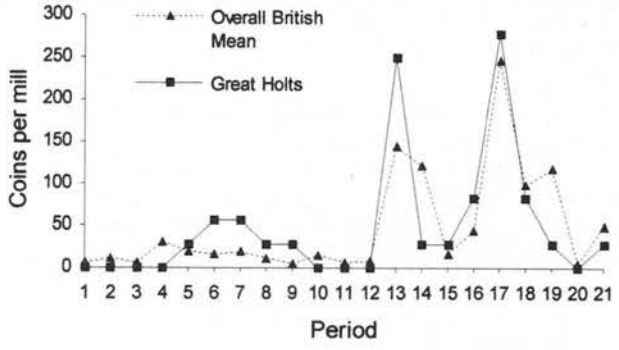


Figure 57 Coins per thousand: Great Holts and British site categories over twenty-one periods

per thousand where rural sites in the area achieve a far higher 130 coins per thousand for the same period. Generally coins of Commodus are uncommon; on Essex villa sites coins of the period AD 180 to 192, which includes the period of Commodus' reign, occur at a mean frequency of around 8 per thousand.

The period AD 193–238 at Great Holts is comparable to the overall British mean; however, taken as a whole, the period up to AD 260 is comparatively better represented at Great Holts than for most categories of site, excepting eastern 'good' towns, eastern settlements and military sites all of which present high coin loss over this period. Coin losses at Great Holts for AD 260–96 are a little higher than the British mean; whereas coin loss for the same period for the two Essex villa sites is far higher than that at Great Holts, the mean for Essex rural sites, mean for British villas and the overall mean for sites of all categories. The hoard of eight radiate coins and an associated coin of this period recovered from Great Holts have not been included in the data for comparison with other sites as Reece has taken care to exclude hoards from the data. The hoard was recovered from an occupation layer within cut feature 575; radiate coin SF473, from the same context as the hoard and with similar patination and condition, is likely to belong to this coin group and so should be included in any discussion of the hoard itself. The coins were found in a staggered pile in good condition, possibly surrounded in organic material probably of plant matter rather than leather which presumably comprised some form of wrapping (see conservation report in archive). The latest coin in the group is that of Probus (AD 276–282) giving a *terminus post quem* for deposition of the hoard.

When compared to the assemblages from two other villa sites in the region, Chignall St James which is nearby and Gestingthorpe in north Essex, the coins from Great Holts display a coin loss pattern that is far closer to the overall British mean and fairly different to the two Essex villa sites. At Great Holts, losses to AD 260 are substantially higher than for the two Essex villas and 4th-century coin loss overshadows that of other periods making up around half the total assemblage, reflecting the overall British picture, whereas at Chignall St James and Gestingthorpe 3rd-century radiate coins predominate. For rural sites in Essex local to Great Holts, 4th-century coins comprise only fifteen to twenty-nine percent of the total

and radiate coins in most cases make up a greater proportion of the assemblage. The general pattern for British sites, especially rural, is that 4th-century coins dating from AD 330–402 form the majority, and Great Holts follows this general pattern. High 4th-century loss is also typical of villa sites in Britain. Interestingly, when plotted against the British mean for each category of site over twenty-one periods, coin loss at Great Holts most closely follows the pattern for military ('army') sites, with eastern towns and settlements displaying many similarities. The Great Holts' pattern is least like that for villas and temple sites, where in each case losses up to 260 are minimal, and the frequency of radiate coins is lower, although in both cases 4th-century loss is high.

Although early coins do not necessarily indicate an early phase unless accompanied by early pottery or other material, the presence of early unstratified coins SF 118 and SF 379 does suggest that there was activity in the vicinity before AD 270, as these coins do not seem to be available for loss after that date (Reece: pers. comm. 1998). The coin assemblage indicates that the site was in occupation over a long period, possibly up to the 5th century. It must be remembered that we have only sixty-three useful coins from the site and that conclusions derived from statistical analysis are tentative and cannot stand on their own; essentially the history of the site must be derived from careful examination of all materials and features recovered. When suggesting dates for a phase, these should be impressions derived from consideration of all the coins in any one phase and the relationship of coin groups to one another. The fluctuations in coin loss over the Roman period cannot be used to evaluate the economic conditions at Great Holts over time, only monetary activity; and the absence of coins after AD 402 does not necessarily indicate a decline in economic activity, rather a transition or change from monetisation. Continuity and intensity of occupation cannot be evaluated from the coin assemblage and must be assessed through the examination of other artefacts from the site.

II. Non-ferrous metal objects

by H. Major

Copper alloy

(Fig. 58)

Discussion

The copper alloy from the site came principally from the late Roman phases, with only three pieces from the earlier phase (II.1), and small fragments from cremation 223. In addition, two objects from later Roman contexts were typologically earlier. The three phase II.1 objects were found in contexts in close proximity to each other, and comprised a possible harness ring and a pin or needle shaft from two segments of ditch 310, and a possible bracelet fragment from pit 26, which lies close to the terminal of 310. The residual earlier Roman objects were a bracelet fragment from ditch 198, in the same general area, and a 2nd-century brooch from ditch 399, immediately to the east of the main later Roman buildings. There are too few objects to draw any firm conclusions from the distribution of the copper-alloy objects for this phase, other than to say that the east of the site was more prolific.

Fourteen pieces of copper alloy came from phase II.2 contexts, and can be taken as being deposited during the lifetime of the buildings, except for two pieces which are intrusive post-medieval objects. The number of contexts involved is small, and none of the pieces is of particular note, comprising two studs, a boss head, a rivet, a ring, a probable necklace fragment, a bracelet fragment three sheet/plate fragments, a rod fragment and a small fragment of copper-alloy working waste. This group of objects tells us very little about the function of the site. The two studs, which were almost identical, both came from context 6110, the *opus signinum* in the drain, and presumably were accidentally incorporated in the cement. They were likely to be decorative features from the same object, probably a box or chest. Two pieces of sheet and the boss head came from well 567, with pond 775 producing the largest number of items, the rivet, the bracelet, a plate fragment, a rod fragment and a piece of working waste. However, this context also produced one of the intrusive objects, and as the items were recovered by metal detecting, the context cannot be considered secure.

The distribution of the copper alloy from the phase II.2–II.3 and phase II.3 contexts was somewhat different, with relatively little material coming from the area of the main buildings, only eight out of forty pieces. The bulk came from ditch contexts, the most prolific being ditch 816, to the south of building 294. All the copper-alloy finds from this ditch were from context 5570, and were probably all items of personal adornment, mostly trinket jewellery — typically 4th-century bracelets, a finger-ring and fragments of a probable buckle plate (No. 24, below). The iron from this context, on the other hand, was not particularly abundant, comprising two unidentified scraps and thirteen nails. Another of the ditches in this area of the site, ditch 302, also contained a number of pieces of copper alloy, although none were items of jewellery; there was no iron at all from 302. These two features contained relatively large amounts of tile, possibly not derived from the buildings excavated, and the copper alloy may derive from the same source. Seven composite bosses from pit 306 are dealt with separately (p.50).

The finds from the villa area comprised a vessel handle, a possibly intrusive bell-shaped object, a fragment of working waste, three bracelet fragments and a finger-ring made from a bracelet. Again, this small group of objects tells us very little about the function of the site.

Catalogue of copper-alloy objects

Conservation work was undertaken by A. Sutherland, whose reports are quoted where relevant (A.S.)

Jewellery

The site is unusual for a Roman site in Essex, in that it did not produce a single 1st-century brooch. This lack corroborates the impression gained from the pottery, that there was little early Roman activity on the site. There is, however, a single fragment from an early Roman strip armlet, despite the fact that such armlets are relatively rare compared to early brooches.

Three of the pieces were made from alloys with identical compositions, and must have derived from the same source, and were no doubt purchased as a group. Two were bracelets, and the third a cut-down bracelet made into a finger-ring, and all were found in the vicinity of the main building.

Ditch 816 context 5570 produced the largest group of jewellery, three bracelet fragments, a finger-ring, and a buckle plate. Although the context is contemporary with the main occupation on the site, the feature is well away from the main buildings.

1. Oval plate brooch, in very poor condition, with a band of (now) greenish-blue 'enamel' round the flange and a central oval setting with a blue 'enamel' intaglio with a crudely modelled 'Celtic-style' head, almost identical to that on a similar brooch found near Bury

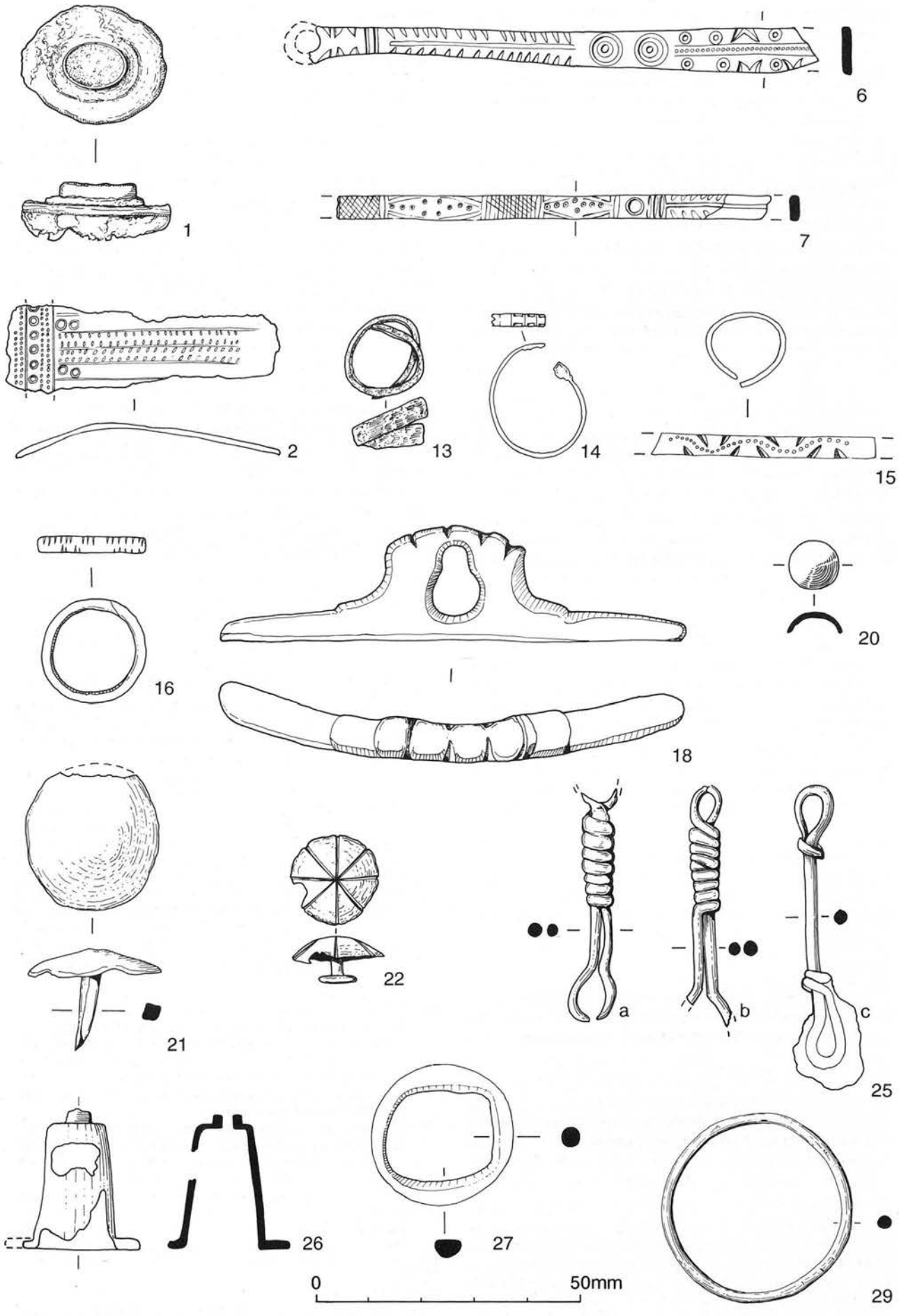


Figure 58 Copper-alloy objects

St Edmunds (Hattatt 1987, 252, no. 1209). The surface of the intaglio unfortunately disintegrated after identification but prior to conservation. The edges of the brooch had traces of silver plating on them (identification by A.S.) The type is 2nd century, so it must be residual here. A.S. notes that the nature of the crystals in the enamel on the flange indicates that it is a glass rather than a true enamel. 5765, ditch 198. Phase II.3

2. Fragment from a decorated broad strip armlet in poor condition. The type is early Roman, and may be paralleled at other sites in the area, for example at Chelmsford Temple (Wickenden 1992, 77, fig. 39.15); here it is clearly residual in its context, and is the only piece of definitely early Roman metalwork from the site. SF403, 6133, ditch 399, segment 4144. Phase II.3
3. (Not illustrated) Two fragments of a two-strand cable bracelet, with a terminal hook. The sides of the bracelet have been flattened. Internal diam. 56mm. 5570, ditch 816, seg. 4059. Phase II.3. A fragment of a similar bracelet came from drain 93 (SF70).
4. (Not illustrated) Two fragments and small pieces from a three-strand cable bracelet in poor condition. Diameter not measurable. SF179, 5570, ditch 816, seg. 4059. Phase II.3
5. (Not illustrated) A fragment from a delicate three-strand cable bracelet, with a rounded section only 2.5mm in diameter. Overall diameter not measurable. SF191, 5570, ditch 816, seg. 4059. Phase II.3
6. Strip bracelet in fourteen joining fragments, diameter not measurable. Lankhills Type E1 (Clarke, G. 1979, 307–11), 4th century. SF277, 5771, ditch 229, seg. 4099. Phase II.3
7. Bracelet fragment, in three joining pieces; Lankhills Type E. XRF analysis by A.S. showed that the alloy used was the same as bracelet SF457 and ring SF380. SF431, 6001, storage pit 506, building 416. Phase II.2-II.3
8. (Not illustrated) Two small joining fragments from a strip bracelet with herringbone decoration. L. 13mm, W. 5mm. A.S. writes: 'XRF analysis indicated that the object was made of a leaded tin-bronze with trace elements of iron, probably attributable to dirt/soil. The spectrum was identical to that obtained from small finds 380 and 431 using the same analytical equipment and parameters.' SF457, 6061, wall-trench 554, segment 4121, building 416. Phase II.2-II.3
9. (Not illustrated) Bracelet fragment with a rectangular section, in very poor condition, decorated with a line down each edge and ring-and-dots down the middle. It is similar to a bracelet from a mid/late 4th-century context at Bancroft Villa (Hylton and Zeepvat 1994, 306, no. 62). 20×5×1mm. SF364, 6199, pond 776. Phase II.2
10. (Not illustrated) Strip bracelet fragment, distorted, and in poor condition. Rectangular section, crenellated on one edge, Lankhills type D1d. L. *c.* 36mm, W. 3.5mm. SF477, 6087, bath robbing 798. Phase III.1+
11. (Not illustrated) Plain strip fragment, possibly part of a bracelet. L. 9mm, W. 5mm. SF181, 5570, ditch 816, seg. 4059. Phase II.3
12. (Not illustrated) Strip, edges damaged, possibly a bracelet fragment. L. 33mm, W. 3mm. SF19, 5028, pit 26. Phase II.1
13. Small coiled finger-ring made from a strip with a rectangular section, surface in poor condition. One end is rounded, the other more pointed, and possibly damaged. SF133, 5443, cut 233. Unphased.
14. Finger-ring with an incomplete, narrow hoop, broken across the top. There may have been a bezel, now missing. The broken ends have notched edges, with transverse lines between the notches. The object has a greyish patina. SF180, 5570, ditch 816, seg. 4059. Phase II.3
15. Small finger-ring made from a bracelet fragment, with the decoration on the inside. The bracelet is Lankhills type E, with notched edges and a zigzag of dots. While it seems strange that the design is on the inside of the ring, this is paralleled elsewhere, for example on a ring from Colchester (Crummy 1983, 49, no. 1774). A.S. notes that analysis showed the alloy to be identical to that of two other bracelets, SFs 431 and 457. SF380, 6075, drain 93. Phase II.3
16. Finger-ring, with a narrow hoop with a rectangular section, decorated with transverse grooves, some now partly worn away. The ring is poorly finished. SF383, 6133, ditch 399, segment 4144. Phase II.3
17. (Not illustrated) Very small wire fragment with hooked ends, diam. 0.5mm, L. 7mm. This might be part of a wire-and-bead necklace, such as that illustrated in Crummy 1983, 34, no. 1422–1423, although there were no beads recovered from the context. SF603, 6123, post-hole 600, building 368. Phase II.2

Household utensils

Household utensils were rare, with only two vessel fragments present in Roman contexts. In addition, there were fragments of a sheet brass vessel from post-medieval ditch 59.

18. A vessel handle, probably from a bowl, with a central suspension loop with a pear-shaped hole, the shape possibly due to wear. The top of the loop is decorated with notches. A.S. notes the presence of lead corrosion products, almost certainly traces of solder. SF381, 6430, wall-trench 553, segment 4178, building 416. Phase II.2–II.3
19. (Not illustrated) Curved strip fragment, probably a slightly rounded rim from a vessel such as a bowl. Little of the surface survives, and it is uncertain which edges are broken. L. 76mm, W. 6mm. A.S. writes: 'The material was analysed using XRF spectrometry at the A.M. Lab. The presence of both copper and lead were both strongly detected, with very small amounts of iron and tin. Although the analysis was not quantitative, results indicated that the material was possibly post-Roman. The stratigraphic position of the object, however, makes it more likely that it is Roman. SF254, 5710, depression 318. Phase II.2

Fasteners and fittings

20. Small domed boss head with no sign of a shank, but with possible traces of lead on the back. SF459, 6067, well 567. Phase II.2
21. Stud, with almost flat head, edges damaged. It was found with an almost identical stud (SF481, not illustrated), which may have originally been from the same object. SF479, 6110, drain 93. Phase II.2
22. Rivet, with round, slightly domed, petal-form head , and small circular back-stud. SF372, 6199, pond 776. Phase II.2
23. (Not illustrated) Sheet rolled into a cone, possibly a rivet; in poor condition. L. 12mm SF202, 5569, ditch 302. Phase II.3

Other copper-alloy objects

There was a small amount of intrusive later material, including a small post-medieval padlock, and a composite object of unknown use, probably part of a lock assembly. The latter could possibly be Roman, but A.S. considered that the metal was probably a post-Roman alloy. Roman finds not listed below comprise a number of sheet fragments, two fragments of wire, three rod fragments, and an irregular plate fragment.

24. (Not illustrated) Fragments of a sheet buckle plate, probably all the same object, with repoussee dots along the edge, and possibly across the middle. There is one rivet present. SF322 and SF323, 5570, ditch 816, seg. 4059. Phase II.3
25. Three objects made from wire. Two (a and b) are similar, and probably had loops either end, now broken. One end of the wire has been coiled round the shaft. The third object (c) has a surviving loop at both ends. A small fragment of iron was corroded onto the latter object, but is probably not associated with it. The purpose of these objects is unknown. The way that the wire has been looped at the end and then coiled round itself is reminiscent of techniques used, particular in the late 3rd to 4th century, for toilet implements (Crummy 1983, 62, no. 1943) and bracelets (Crummy 1983, 38 no. 1601), although these objects are neither of these. They are possibly fittings from a steelyard, by comparison with those present on a steelyard from Segontium, which has a suspension loop for the counterweight very similar to object (c) (Allason-Jones 1993, fig. 10.6) SF382, 6133, ditch 399, segment 4144. Phase II.3
26. Bell-shaped object, or possibly a socket. It has a conical body with a flange round the bottom, and a collared hole in the flat top. There is a hole in the side, probably originally oval, now damaged. The object is in good condition, and it may be intrusive. SF51, 5148, post-extraction cut 842, building 368. Phase II.3
27. Ring with variable section, probably from harness. SF209, 5608, ditch 310, segment 4065. Phase II.1
28. (Not illustrated) Rim fragment from an open-mouthed bell in grey metal, in good condition. It has a low concentric moulding above the slightly flared rim and is probably post-Roman. Diam. of mouth *c.* 80mm. SF236, 5679, depression 350. Phase III.3
29. Ring; this delicate ring resembles a modern curtain ring, and could have had a similar use. SF406, 6293, ditch 396, segment 4147. Phase II.2

Lead

(Fig. 59)

The lead consisted principally of amorphous scraps, puddles of waste metal and sheet fragments. There were a few objects, notably two lead water pipes, which were

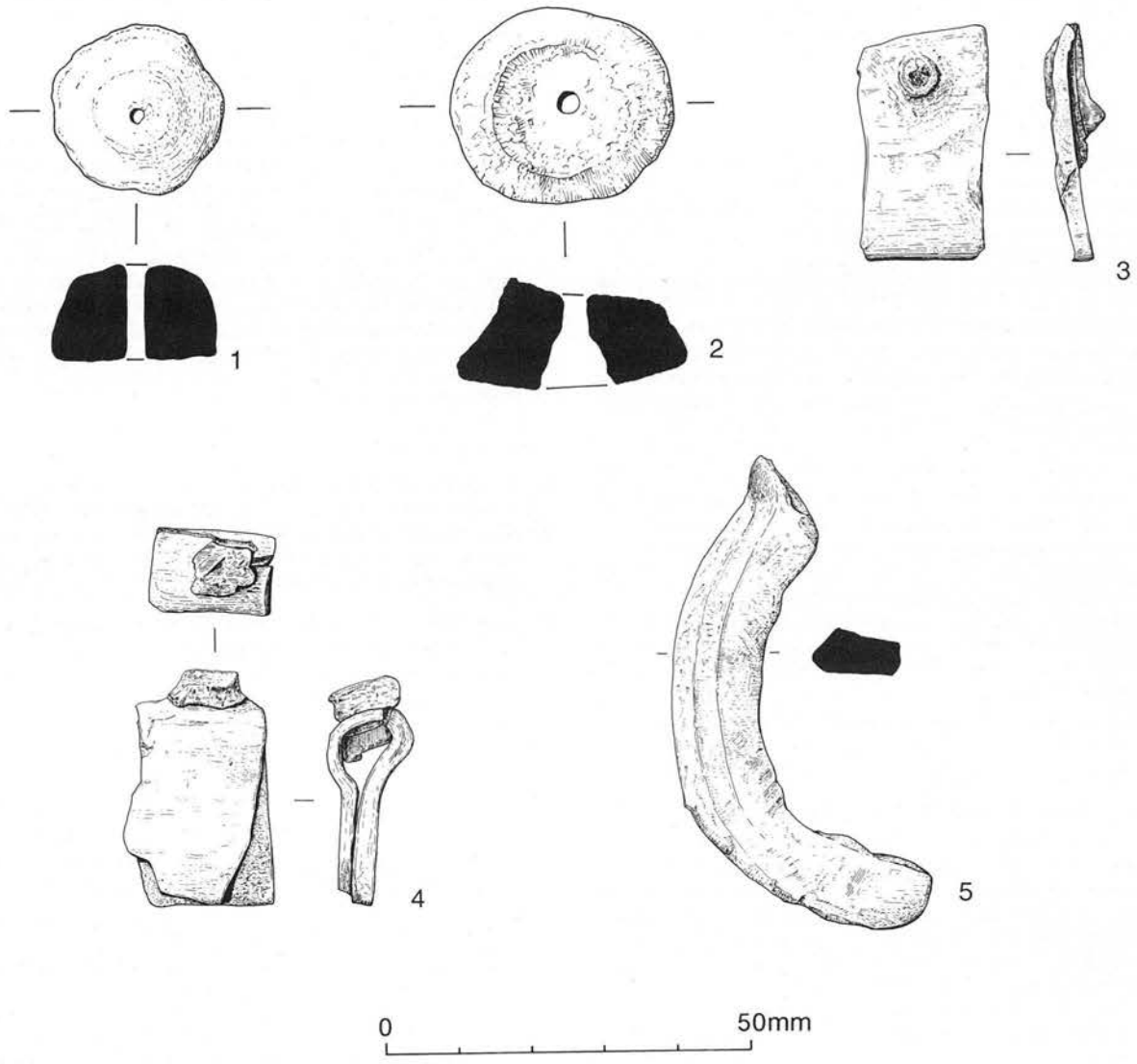


Figure 59 Lead objects

found in pit 394 together with the remains of an iron-bound box; the pipes and box fittings are described separately (p.40). All the lead came from phase II.2 or later contexts, and therefore is likely to relate to the buildings and activities associated with them.

By far the largest group of waste lead came from building 294, comprising eleven pieces from within tile spread 293, three pieces of scrap from post-extraction pit 825, and fifty-nine fragments from post-extraction cut 831. The latter material included sheet fragments, an offcut, irregular scrap and dribbles. The lead may have derived from processes taking place within the building.

It might be expected on this site that the lead, particularly the scrap, originally derived from the bath-house, lead being particularly associated with water systems. Certainly, the two water pipes must have been part of the bath-house fittings. However, the contexts in or near the bath-house containing demolition debris (the fills of the robber cuts and cistern 415) contained only five pieces of scrap; no doubt it was scavenged where possible. This material included two very similar lead strips with iron nails through them (Nos 3 and 4 below), which were probably structural lead from the bath-house.

There were few other lead objects from the site. Two weights were found, one from ditch 399, to the east of the main buildings, and the other from an unexcavated pit (393) to the south east of building 417. There was also a small number of possible rivets and pot repairs.

Catalogue

1. Weight. A truncated cone with a vertical hole. Wt. 23g. SF356, 5823, pit 393, not excavated
2. Weight. A truncated cone, oval in plan, with the top damaged. Wt. 42g. SF384, 6133, ditch 399. Phase II.3
3. Strip with a hole through it, containing part of an iron nail. SF390, 5923, U/S finds from cistern 415. Phase II.3
4. Strip, folded in half, with an iron nail through it. SF388, 6344, top fill, robber cut 798. Phase III.1+
5. Curved bar with roughly square section, probably an offcut. One edge shows slight facetting, probably from cutting. SF255, 5656, depression 318. Phase II.2
6. (Not illustrated) Possible double-ended rivet with a roughly mushroom shaped head, diam. *c.* 12mm, with a very short shank (*c.* 1mm), and an oval disc at the other end, *c.* 9×7mm. SF319, 5570, ditch 816. Phase II.3
7. (Not illustrated) Lump, roughly oval, with a shallow groove round the middle containing an unidentified brown material, probably iron corrosion products. Possibly a rivet or pot repair. *c.* 25×18×15mm. SF265, 5656, depression 318. Phase II.2

8. (Not illustrated) A roughly heart-shaped lump with a flattish base and rounded top, and a groove round the perimeter. This is probably a repair, though it seems rather thick for a pot repair. It is in very good condition, so may be a modern intrusion. L. 44mm, W. 28mm, T. 16mm. SF363, 6199, pond 776. Phase II.2.

III. Iron objects

by H. Major
(Figs 60–63)

Phase II.1

All the phase II.1 ironwork came from ditches, apart from a few nails, a total of forty-two pieces of iron and sixty-eight nails. In particular, ditch 310 was rich in iron, containing half of the material from this phase. Overall, the assemblage mostly consisted of scraps and working waste, but included a few objects; a blade point, latchlifter and probable chisel from ditch 27, a probable hook, a possible wedge, a split spike loop and a staple from ditch 310, a possible drill bit from ditch 371, and a cleaver from ditch 441. Oven 320 (phase II.1?) contained twenty-one hobnails, suggesting that a shoe or shoes had been discarded in it.

Phase II.2 and II.3

The iron from phases II.2 and II.3 was not significantly different in character from the earlier Roman ironwork. Over half of it had been deposited in the ditches, and it included a great deal of scrappy material. The objects present were principally tools and fittings.

It was hoped that the distribution of the iron objects would aid in identifying the activities associated with each building, but building 417 was the only structure where this was possible. The largest concentration of ironwork on the site came from post-hole 621 in barn 417 (context 6162). Most of it was scraps of sheet (twenty-six pieces), but it included a possible prick iron, a steelyard, a probable weight and two knives. Surprisingly, there was only one nail in the group. Assuming that the objects relate to activities taking place within the building, one could tentatively suggest that at least part of the barn was used as a workshop, possibly for leatherworking. The steelyard and weights could have been used for weighing produce, suggesting a storage area as well. Adjacent to building 294 was a pit (306), which contained what was probably a box, perhaps originally containing buried valuables.

Phase III.1–3

There was one definitely post-medieval iron object found, a small animal trap from ditch 17. Other items from surface clearance may possibly be post-Roman, but are not closely datable types.

General

There were numerous scraps of iron from the site, many of which appear to represent ironworking debris. All were X-rayed, and some exhibited a structure typical of partly worked iron. In addition, many of the small bar and sheet fragments appear to be offcuts or blanks. Some ditch contexts in particular contained a mixture of objects suggestive of metalworking debris, 5624 in ditch 310 (phase II.1), 5765 in ditch 198 and 5778 in ditch 361 (both phase II.3) being three examples. A complete list of the fragments can be found in the site archive.

The iron tools form an interesting group, as they indicate a range of activities on the site. They include woodworking tools, metalworking tools, chisels, and possible leatherworking tools. One of these is a needle with a square sectioned point, which resembles post-medieval harness-makers' needles. A second possible leatherworking tool is one of a class of objects of uncertain use, but possibly a type of leatherworking tool known as a stabbing pricker, or prick iron, used to mark out a series of holes to guide the awl before sewing, the butt presumably being set into a handle. In addition, there are two awls of a type suitable for use with leather. This selection of tools complements the evidence for leatherworking recovered from well 567.

One category which is notable by its absence is material associated with horses and transport. There are no hipposandals or horse furniture, fairly common finds from Roman sites. In addition, there is little trace in the assemblage of the agricultural aspects of the site, with only three objects directly connected with farming, and of these, only one (an ox goad) is from a later Roman context. The other objects are a bell, probably for a cow, but possibly post-Roman, and a possible pruning hook fragment from an earlier Roman context. The sparsity of material evidence for what one might assume to be the main activity of the site, *i.e.* farming, is surprising given the number of small tools recovered.

Catalogue

In the following catalogue, where measurements have had to be taken from X-rays, it has not always been possible to give all dimensions.

Jewellery

1. Half a ring, probably a finger-ring with a simple wire hoop. A slight thickening at one point is probably an effect of corrosion. SF517, 6171, pond 422, segment 4169. Phase II.2

Household utensils

2. Spoon or small ladle bowl; circular, with a short, flat rectangular handle one on side, with a rectangular perforation. This presumably had either a folding iron handle, or a handle of some other material riveted on. There is possibly a small hole in the centre of the bowl, although this may be a product of corrosion. Roman iron spoons and ladles are rare, and this example has an unusual form of handle. Although barely large enough to be called a ladle, the handle is reminiscent of the flat, shouldered plates at the bottom of the handle found on some ladles, *e.g.* at Winterton (Stead 1976, 222, no. 187) and Magiovinium (Neal 1987, 52, no. 107). 5148, post-pit 96, building 368. Phase II.2
3. Six fragments of a bucket handle, with a circular section and looped terminal. Not all the pieces join, but it is likely that they are all from the same object. The original width of the handle was *c.* 250mm. 6459, well 567. Phase II.2

Objects associated with weighing

4. Steelyard, in two joining fragments. The knobbed end is missing. SF512/513, 6162, post-hole 621, building 417. Phase II.2
5. Cylinder or sub-globular object, with a central hole; probably a weight. Wt. 125g. SF546, 6162, post-hole 621, building 417. Phase II.2

Knives

6. (Not illustrated) Knife; the X-ray shows the remains of a circular sectioned handle, possibly bone, but now completely mineralised. SF240, 5679, sc 350.
7. Socketed knife with a straight back and curved tip. There is no good metal surviving at the cutting edge, and the shape of the choil is unknown. It is probably similar to Manning's type 17 (1985, 116), a rare type, but here with a closed socket rather than a tang. SF543, 6161, post-hole 621, building 417. Phase II.2
8. Tanged knife, tang broken, point missing. SF544, 6162, post-hole 621, building 417. Phase II.2
9. (Not illustrated) Strip fragment, probably a knife blade fragment. A.S. notes that it may have traces of a sheath in an unspecified material. 43×18mm. SF298, 5776, ditch 361. Phase II.2

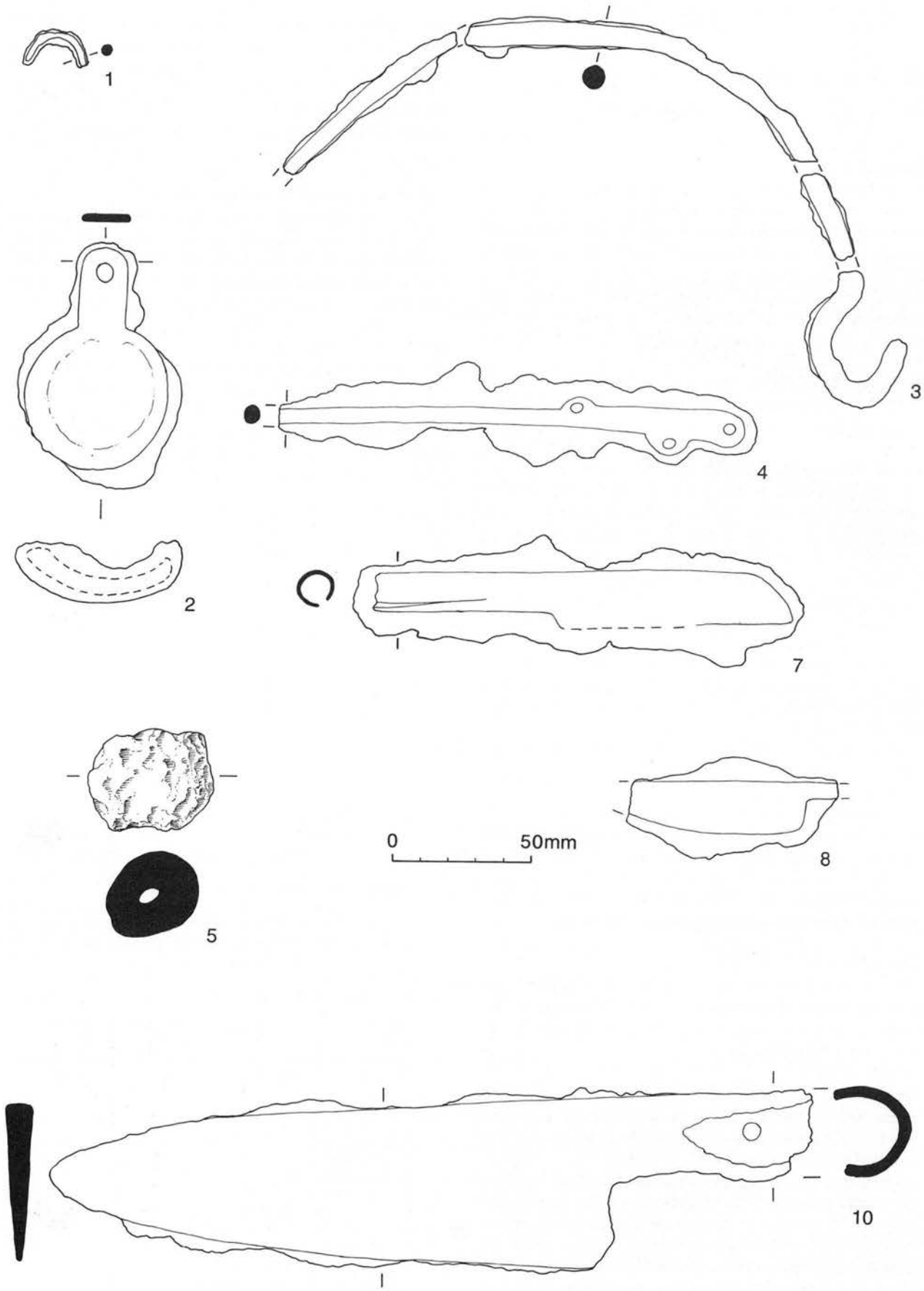


Figure 60 Iron objects

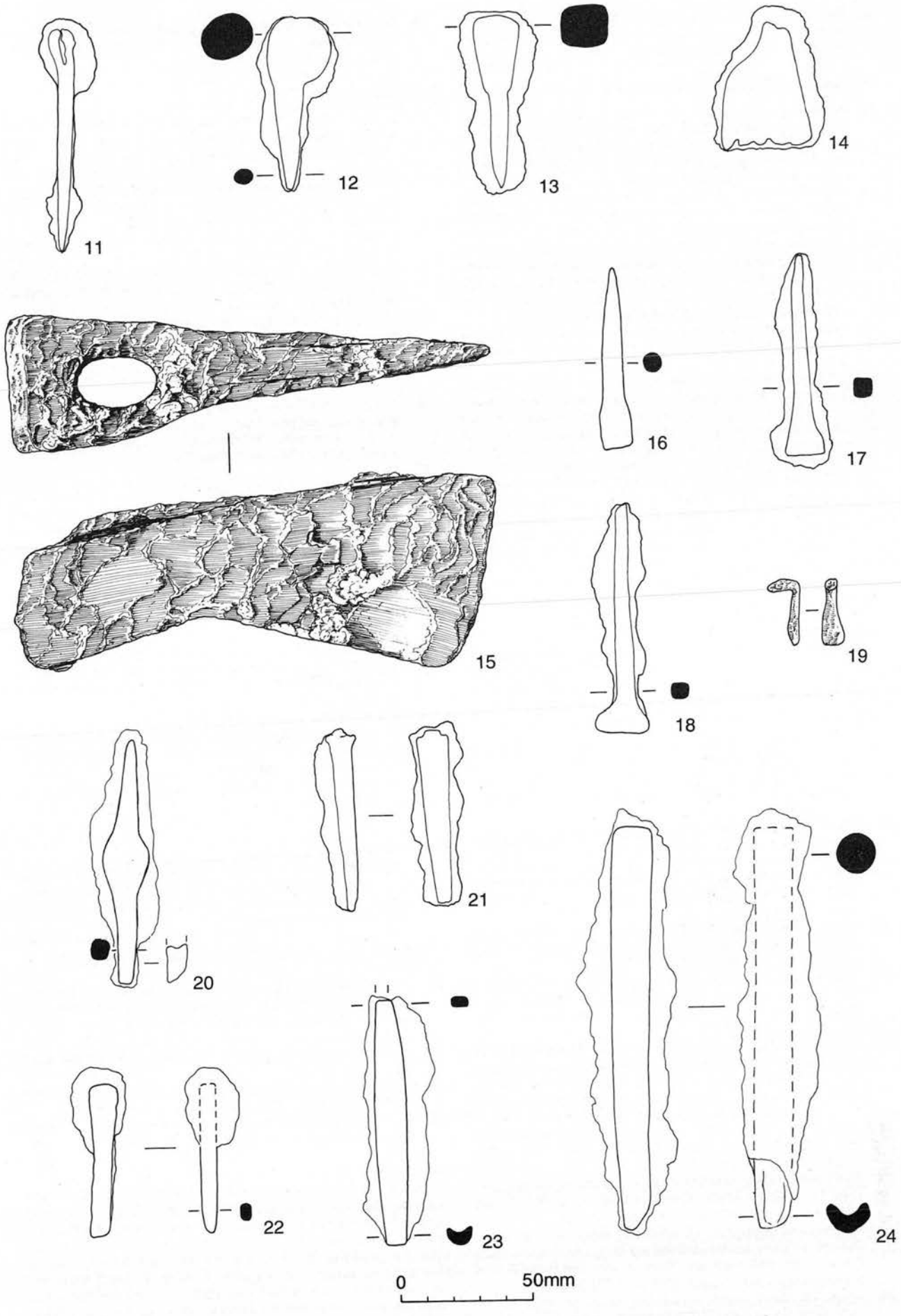


Figure 61 Iron objects

10. Socketed cleaver, Manning's Type 3 (1985, 122). The socket, which is slightly damaged, is open, and has a hole through it. SF387, 6396, ditch 441, segment 4174. Phase II.1

Tools possibly associated with leatherworking

11. Needle, eye end broken. The section is square, which is very unusual. This was probably used in leatherworking, resembling post-medieval needles used in harness making (Salaman 1986, 232 and 259), although these usually have curved tips. In general, a square sectioned needle is unsuitable for use with textiles, as the edges would tend to damage the threads; however, the modern canvas needle sometimes has a diamond-shaped section, although it is more normally triangular. SF185, 5569, ditch 302. Phase II.3

12. Awl, with an offset sub-cylindrical head and an oval shaft. The shape of the head is somewhat unusual, but can be paralleled on a bradawl from London (Manning 1985, 28, B78). The much smaller awl from Great Holts, however, is probably for leatherworking. SF229, 5617, ditch 312, segment 4080. Phase II.2

13. Awl, with a slightly offset square sectioned head, very similar to the awl from 5617, SF229. 5966, post-hole 496, building 416. Phase II.2–II.3

14. Plate fragment, original shape uncertain, now roughly triangular. The broader end was toothed, with most of the teeth now missing; there were probably six teeth originally. This is probably one of a class of objects of uncertain use, variously described as a tile comb (Brodribb 1987, 107), a weaving implement or a scraper. The present writer considers that they could be examples of a type of leatherworking tool known as a stabbing pricker, or prick iron, used to mark out a series of holes to guide the awl before sewing (Salaman 1986, 164), with the butt set into a handle. Other examples from Essex include one from a 1st/2nd-century context at Ardleigh (Major 1999b, 70), another from Buildings Farm, Dunmow (Major 1997, 85, no. 27), and one in copper alloy from Ivy Chimneys, Witham (Webster 1999). SF503, 6162, post-hole 621, building 417. Phase II.2

Tools

In addition to the tools listed below, a possible chisel point came from context 5656 (phase II.2), and there were probable fragments of punches from contexts 5156 (phase II.3), 5466 (phase II.2–II.3), 5602 (phase II.2), 5775 (phase II.3) and 6171 (phase II.2). Probable drill bit fragments came from contexts 5771 (phase II.3) and 5815 (phase II.2).

15. Axe head, Manning Type 2 (1985, 15). A fairly heavy duty axe with a broad blade. SF182, 5573, pit 300. Phase II.2–II.3

16. Probable chisel, with a pointed shaft, probably with a circular section, and a flattened, almost parallel sided blade. SF14, 5029, ditch 27, 4003. Phase II.1

17. Chisel. The type, with a simple triangular blade and short tang, is principally Iron Age, although there are examples from Roman contexts (Manning 1985, 24 and pl. 11). On this site there is little reason to suppose that it is not contemporary with its context. SF423, 5815, ditch 385. Phase II.2. A similar chisel (not illustrated) came from context 5776, ditch 361, also phase II.2

18. Chisel, with almost D-shaped, slightly asymmetrical, blade, apparently complete. Broken, square-sectioned shaft. 5790, ditch 302, segment 4106. Phase II.3

19. Small chisel? The form is as the 'simple' chisel, with a triangular head, but this example is unusually small for one of these objects. The point is bent. SF497, 6129, hollow 597, building 417. Phase II.2

20. Narrow-bladed chisel with bevelled blade (*cf.* Manning 1985, 22, B29). The tool is tanged, and thickened between the tang and blade. The section of this bolster is uncertain, but must be fairly flat; the width from the X-ray is 18mm, but the maximum thickness must be less than 12mm. SF310, 5776, ditch 361. Phase II.2

21. Small chisel or punch with a rectangular section, possibly thicker in the middle. The head is slightly shouldered. SF497, 6129, hollow 597, building 417. Phase II.2

22. Small metalworking punch or chisel with a rectangular sectioned shaft. The head is slightly flattened. *Cf.* Manning 1985, 10, nos A23–25. 5790, ditch 302, segment 4106. Phase II.3

23. Bar fragment, tapering at either end, and with a variable section. One end is broken, and the other has a D-shaped section. It is likely to be a drill bit; while the general shape of a spoon bit, the tip appears to be solid rather than cupped. 5801, ditch 371. Phase II.1

24. Gouge. The head is slightly flattened and the section round. SF256, 5662, ditch 229, segment 4077. Phase II.3

25. Wedge, with a flattened head and damaged point. Probably Roman. SF425, 5889, U/S

26. (Not illustrated) Block fragment, probably part of a tool such as a punch or wedge, or possibly part of a hammer. *c.* 32×30×22mm. SF183, 5569, ditch 302

Keys and latchlifters

27. L-shaped lift key, in three joining pieces, with three teeth, one of which is damaged. Unusually, the bottom of the key is not straight, although this could be damage. The flat handle is almost rectangular, and is stepped at the bottom, with a ridged top. The perforation is square, with slightly concave edges. The detailing on the handle is rare on a simple lift key, although fairly common on slide keys. SF311, 5776, ditch 361. Phase II.2

28. L-shaped lift key with two teeth, terminal loop missing. SF416, 5815, ditch 385. Phase II.2

29. (Not illustrated) L-shaped lift key with two teeth, one broken. The handle is missing. L. 68mm, W. of bit 27mm. SF497, 6129, hollow 597, building 417. Phase II.2

30. (Not illustrated) Key bit from a lever lock key, with four notches on the side. 22×19mm. SF557, 6210, slot 785, building 786. Phase II.2–II.3

31. Latchlifter handle, most of blade missing. SF25, 5029, ditch 27, segment 4003. Phase II.1

32. (Not illustrated) Two joining fragments of latchlifter, forming part of the handle and part of the curved rod. The handle appears to be a strip *c.* 14mm wide. The original L. was *c.* 240mm. SF546, 6162, post-hole 621, building 417. Phase II.2

Fasteners and fittings

Most of the objects in this category were fairly standard examples, and have not been illustrated. In addition to the objects below, there were fragments of a possible box or casket corner bracket from 5776 (phase II.2), a nailed plate fragment with mineralised wood on the back from 5305 (phase II.3), a probable hook from 5608 (phase II.1), flat topped staples from 5624 (phase II.1) and 5776 (phase II.2), a probable U-shaped staple from 5776 (phase II.2), a broken clamp from an object 33mm thick from 5584 (phase II.3) and a split spiked loop from 5624 (phase II.1).

33. (Not illustrated) Tack, with a solid sub-globular head, possibly decorative rather than purely functional. The point is missing. Original L. probably *c.* 30mm, head 15×10mm. SF309, 5776, ditch 361. Phase II.2

34. (Not illustrated) Angle bracket made from a strip bent lengthways into two unequal widths, complete and in good condition. The wider side has three perforations; the narrower arm was not X-rayed. L. 86mm, side W. 28mm and 18mm. Hole diams. 9mm. The condition and shape suggest that this is post-Roman, as Roman angle brackets usually have long, narrow arms. Occasionally, however, Roman brackets may be of this shape, as with a copper-alloy bracket from a box from the Butt Road cemetery, Colchester. SF524, 6199, pond 776. Phase II.2

35. Carpenter's dog. SF498, 6129, hollow 597, building 417. Phase II.2. Another carpenter's dog came from context 5722 (phase II.3), and fragments of possibly two others from 5161 (phase II.2–II.3) and 5679 (probably Roman).

36. (Not illustrated) Collar, made from a strip, W. 22mm, T. 3mm. External diam. 39mm. SF546, 6162, post-hole 621, building 417. Phase II.2

37. (Not illustrated) Hinge pivot, with square section, probably becoming circular at the pivot end. Arm L. 93mm and 48mm, max. section *c.* 14×14mm. 5515, surface of depression 318

38. (Not illustrated) Incomplete object, probably a cleat, W. *c.* 22mm, arms bent. *Cf.* Manning 1985 pl. 61, nos R54–59. SF304, 5624, ditch 310. Phase II.1

39. Loop-headed spike. The hole appears unusually small, about 6mm across. SF308, 5771, ditch 229, segment 4099. Phase II.3

40. Curved rod, probably a ring-headed pin, but possibly a split spike loop or a hook. SF602, 6462, well 567. Phase II.2

Iron nails

There was a total of 421 nails from the site, of which 286 were identifiable as to type. They were classified using the standard ECC type series. Most of the nails had heavy surface deposits, and were measured from X-rays. In these cases, it was not usually possible to say what the head shape was, other than 'roundish'. These nails have been designated as type A, but there may be considerable variation in shape. It would have been impossible to categorise the nail heads more closely without cleaning the nails, and it was considered that this was not worth doing. A complete catalogue is available in the archive.

All bar fragments which looked as if they could be nail shafts were included in that category. Inevitably, some other objects, such as small

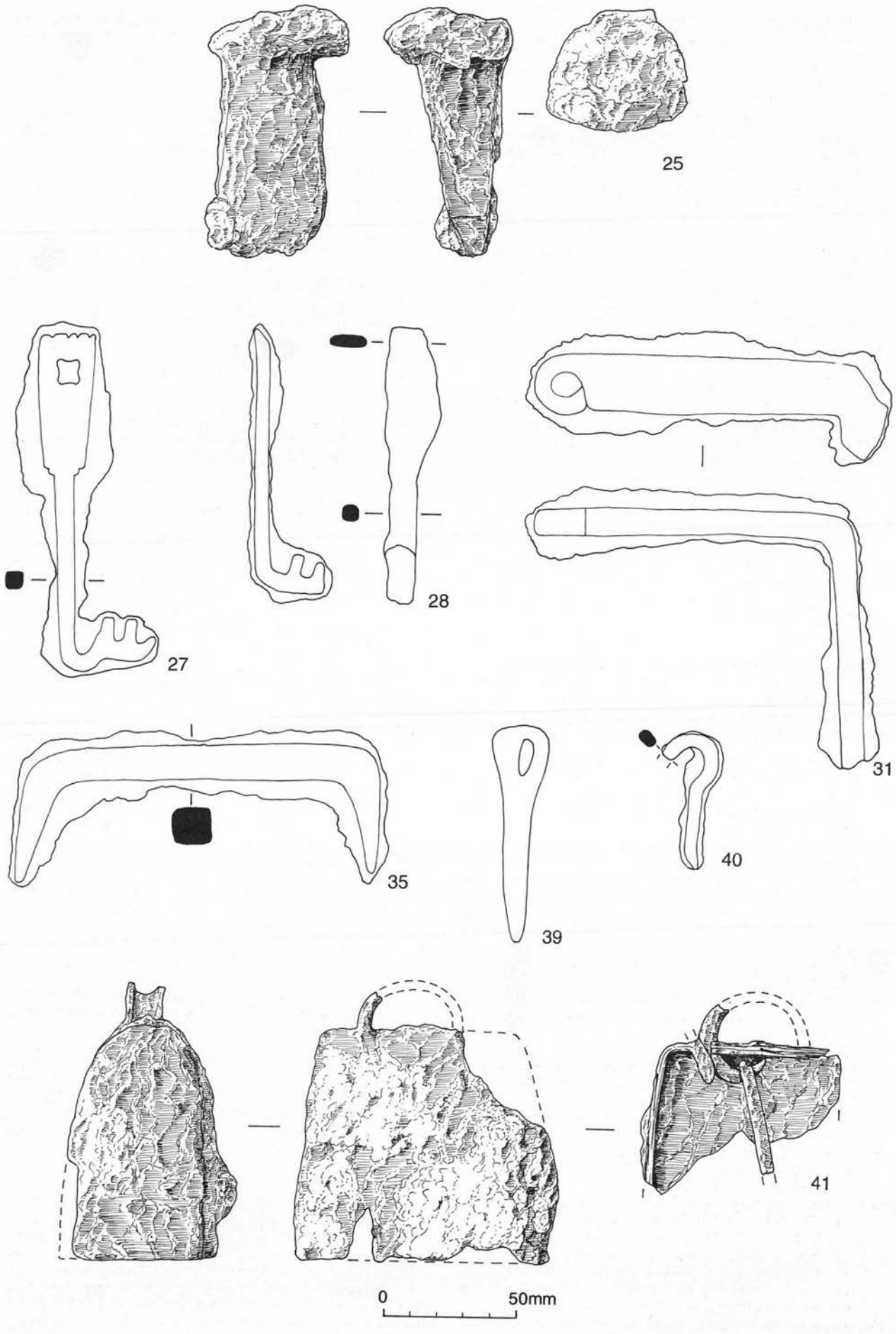


Figure 62 Iron objects

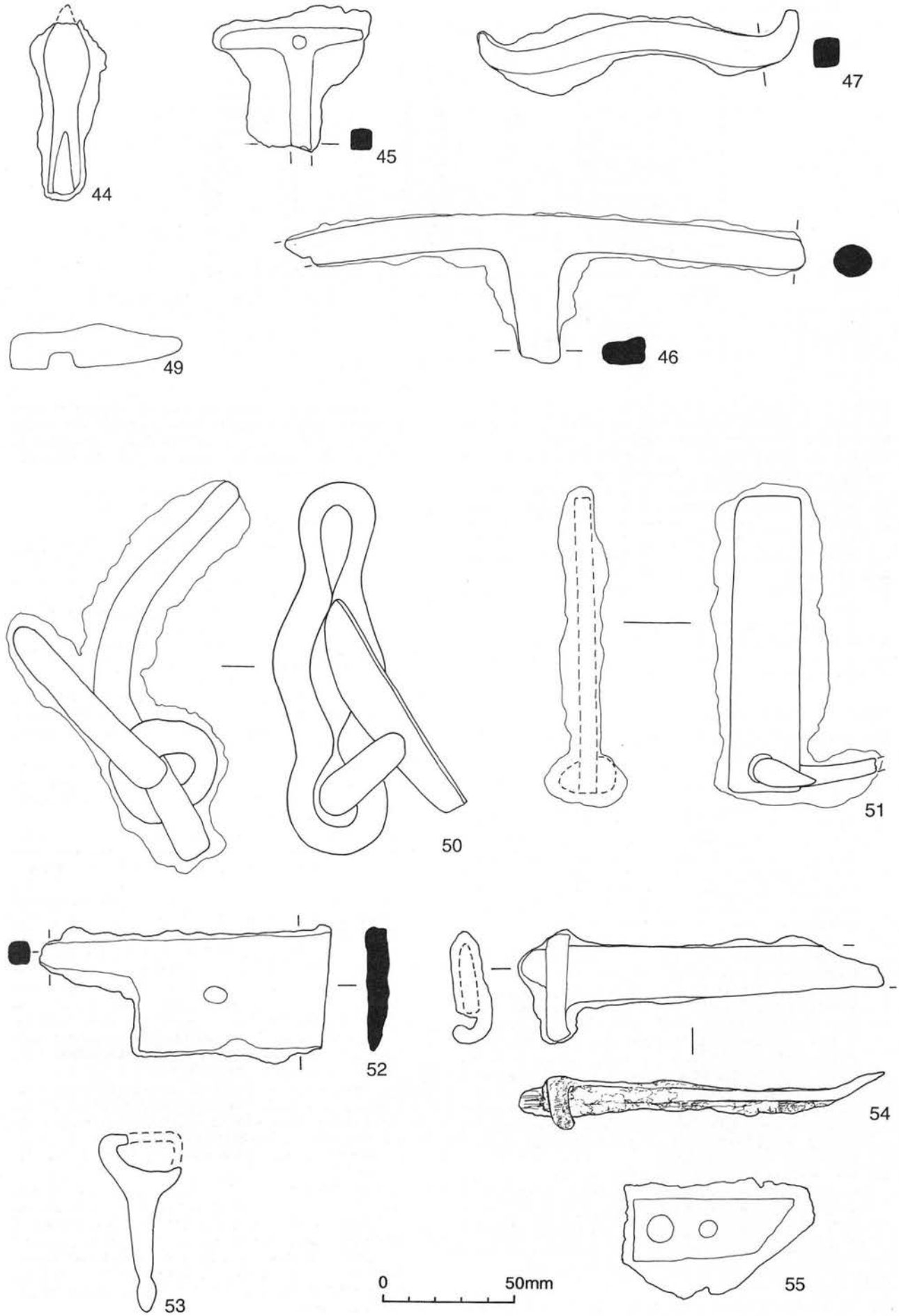


Figure 63 Iron objects

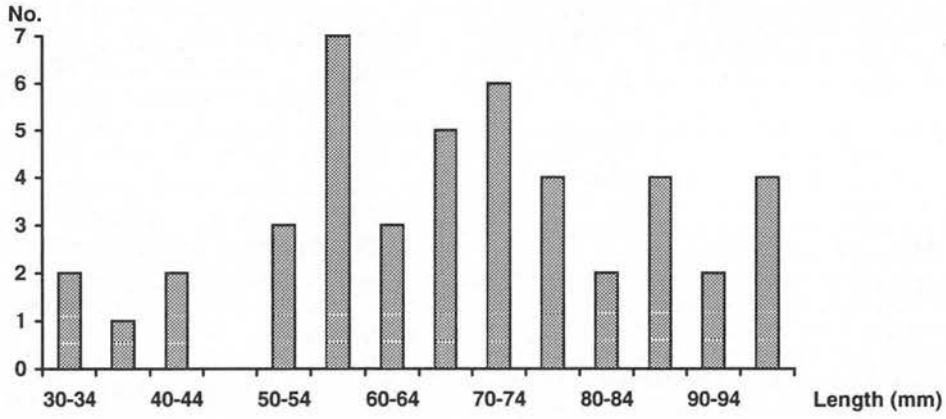


Figure 64 Length of type A nails

punches, broken tangs etc., will have been misidentified. However, unless there was some indication on the X-ray that the object might not be a nail shaft, it would be pointless cleaning every small bar to make sure. It is also likely that some of the 'nail shafts' are scrap from iron working, possibly even scrap from nail production.

As is normal for a Roman site, nails with round, flat heads (type A, 148 examples) were most common overall, although hobnails were almost as abundant on this site (112 examples). Many of the hobnails were found as groups, sometimes corroded together in such a way to suggest that they were attached to a shoe when deposited. In particular, there were groups from pit 169, ditch 187, ditch 298, oven 320, pit 347, and 198, and one of the surviving leather shoes from well 567 retained its hobnails.

There were few complete nails. Most were type A, a total of 45, with an average length of 68.8mm, and an average head diameter of 16.9mm. The distribution of the lengths is shown in Fig. 64. Since this was a relatively small group of nails, no further analysis was undertaken.

Objects connected with agriculture

41. Incomplete and fragmentary sheet-iron bell with a rectangular cross-section, tapering slightly to the top. Part of the iron suspension loop survives, with its internal end looped up to hold the clapper, the end of which is missing, and which hung slightly off centre. The suspension loop was wedged in place by an iron nail or pin, the top of which is missing. The lapped join appears to have been riveted with rivets of copper alloy or iron plated with copper alloy, and there are traces of copper-alloy plating on the rest of the bell. A.Sutherland notes possible traces of leather on the external surface near the top, and this may be the remains of a leather suspension strap. There are also traces of leather, or possibly cloth on the clapper, possibly wrapped round it to muffle the sound.

The context is undated, but this object could well be Roman, and the possible presence of a leather strap suggests that it was hung from an animal's neck. Bells are relatively rare in iron, but there are parallels from Dicket Mead (Rook 1987, 150, no. 33), Vindolanda (Jackson 1985, 147 no. 93), and one from a 4th-century context at Maiden Castle (Wheeler 1943, 288 & fig. 97). As with the present example, all employ copper alloy in their construction, the Dicket Mead bell having a copper-alloy loop, and the Maiden Castle and Vindolanda examples having traces of copper-alloy coating. SF38, 5088, natural feature? 65. Not dated.

42. (Not illustrated) Ox goad, incomplete but in good condition. This is probably a coiled goad of Rees Type I (1979, 76). Internal diam. 12mm, L. 36mm. SF574, 6358, post-hole 735, building 368. Phase II.2

43. (Not illustrated) Blade point, with straight edge and slightly thickened, rounded back. This is probably the tip from an agricultural implement such as a pruning hook, rather than a knife. L. 72mm, W. 25mm., SF29, 5029, ditch 27, segment 4003. Phase II.1

Weapons

44. Small socketed bolthead or arrowhead, point missing. It is unclear whether the socket is open or closed. In form, this is similar to Manning's type IIB boltheads (1985, 177); he classifies as arrowheads only tanged blades. However, given the apparently non-military context of this example, an interpretation as an arrowhead might be reasonable. The blade section is not visible, but the X-ray shows it to be unribbed. There is another small fragment of iron corroded onto the object. SF469, 6082, foundation trench 575, bath-house 414. Phase II.3

Objects of unknown or uncertain function

45. T-headed bar, with a hole at the junction. The shaft is broken, and possibly twisted. This is similar to a standard T-clamp, but the hole suggests that it may be something different. It could perhaps be a hook (as Manning 1985, pl. 59, R20), although this does not account for the hole. L 47mm, W 53mm, hole diam. 4mm, rect. section, *c.* 8x6mm. SF3, 5015, cut-feature 13. Phase II.3

46. T-shaped bar, one longer arm definitely broken, the other probably complete. The shorter arm may be broken. The section is variable. SF306, 5781, ditch 359. Phase II.3

47. Symmetrically curved rod, with an oval section, apparently complete. The ends are flattened, and slightly turned up. This is possibly a handle, although it seems rather flat for this purpose. SF186, 5569, ditch 302. Phase II.3

48. (Not illustrated) 'Butterfly' shaped plate fragment. The shape appears deliberate, and the edges of the wider end, at least, are original. This may, however, be just a piece of ironworking scrap. 5612, ditch 310. Phase II.1

49. Strip, section uncertain, tapering and incomplete. One side has a rectangular notch out of it, and the other may be broken across a notch. Possibly part of a lock bolt. SF276, 5765, ditch 198. Phase II.3

50. Tripartite loop, with a regular curve along its length, which appears original. It has another loop through one end, probably oval. A rectangular? plate fragment, possibly with a curved edge, and possibly perforated, is associated with the object, and is probably corroded onto, rather than directly connected with, the loops. The plate may therefore not be part of the same object. The interpretation of the object is dependent on whether the plate is an integral part of it, which it was not possible to establish; the X-rays do not entirely clarify the relationship. It may be part of a chain assembly for hanging an object such as a cauldron. SF307, 5771, ditch 229, segment 4099. Phase II.3

51. Rectangular strip, 110x26mm and no more than 5mm thick, apparently complete. One end has a hole, diam. 10mm, with the ?looped end of either a chain link or another strip, probably slightly narrower, through it. The shape would be compatible with a hinge, although there are no attachment holes. SF313, 5776, ditch 361. Phase II.2

52. Tanged blade? A parallel sided 'blade', broken in a straight line across the blade. There is a hole through the blade, diam. 7mm, and a slight suggestion of another hole at the break. The cleanness of the fracture suggests that this is cast iron, and the hole suggests that this might not be a blade, even though the section is triangular. As this is from a surface context, it is possibly post-Roman, and may be from modern farm machinery. SF460, 5850, surface cleaning over *praefurnium* 575.

53. Incomplete object, probably with a broken oval looped head, and a tapering shaft. This would appear to be a simple looped spike but for the fact that the end appears to be constricted just above the

point, which is rather rounded. In general shape, this is very similar to a flattened version of a trace hook illustrated by Manning (1985, pl. 29, H3), though it is slightly smaller. It is possible, perhaps, that this is an unfinished hook. 6395, ditch 442, segment 4179. Phase II.2

54. Tapering strip, broken at both ends. The narrower end is bent, possibly an original feature. The wider end has a strip applied at right angles, with one end hooked over and the other end missing. There is no indication that the two pieces were riveted together. This may be a reinforcement strip, perhaps from a bucket, given the context. SF601, 6462 , well 567. Phase II.2
55. Strip fragment with one squared end, the other end probably broken. It has two perforations of different sizes, set quite close together. SF515, 6162, post-hole 621, building 417. Phase II.2
56. (Not illustrated) Curved bar, in a flat C-shape, with a rectangular section. Both ends are rounded, and it appears to be complete. This is possibly an ironworking blank; a small amount of metallurgical slag was also recovered from this context (450g). L. 76mm, section 21×8mm. SF267, 5656, depression 318. Phase II.2
57. (Not illustrated) Ring, circular section. Internal diam. 58mm, external diam. 70mm. 5679 , surface cleaning, depression 350.
58. (Not illustrated) A large, roughly rectangular block with recent damage to the 'top' and ends. The surviving section is square. This might have been metalworking waste, or could have been part of a hammer or anvil. L. 86mm, max. surviving section 32x32mm. 6066, well 567. Phase II.3
59. (Not illustrated) Tapering bar fragment in good condition, wider end broken, other end pointed. The wider end is possibly flanged, although the section is still very square, and the 'flange' is more likely to be ancient damage. L. 57mm, max section 10×5mm. 6463, well 567. Phase II.2

IV. Metalworking evidence

by T. Finney

Introduction

A total of 54.5kg of industrial debris was recovered from various areas of the site, mostly as the fill of pits and ditches, and none from identifiable working areas (Table 1). No structural evidence for a metallurgical industry was recovered; although a number of 'ovens' were recovered, their usage is unclear.

Examination of industrial debris

The visual examination of metalworking debris allows it to be classified into various categories based on its morphology, density, colour and vesicularity. Of these categories only a small proportion are diagnostic of a particular metalworking process. Others can only be assigned to the working of a particular metal, whilst many can be produced by a wide range of high temperature processes.

All the debris from Great Holts Farm was individually weighed, visually examined, and classified to type. A detailed list of the assemblage can be found in Finney (1996).

Explanation of terms

Evidence for iron smithing is present in the form of *smithing hearth bottoms*. These are largely fayalitic (iron silicates) in composition and are formed during the smithing (hot working) of iron due to a high temperature reaction between the iron, the iron-scale, and silica from either the clay furnace lining or the sand used as a flux. Typically, they are plano-convex in form, characteristically having a rough convex base and a smoother vitrified upper surface, which can sometimes by slightly hollowed due to the downwards blast of air from the tuyère.

Hammerscale is also diagnostic of iron smithing and appears in two different forms. *Flake hammerscale* comprises of small 'fish scale' like fragments dislodged by mechanical or thermal shock when iron is forged. *Spheroidal hammerscale* forms from small droplets of liquid slag expelled from the iron during hot working, particularly during the fire welding of iron, and also as a result of the primary smithing of an iron bloom. During the examination of the debris, hammerscale was detected in the soil contained in the sample bags using a bar magnet. It was not quanitified, and therefore is only recorded as being present.

Undiagnostic ironworking slag is similar in density to smithing hearth bottoms, but has an irregular morphology and could have been produced by smithing or smelting. *Dense slags* are similarly non-diagnostic. In the absence of other evidence of smelting however, both categories are considered to be the product of smithing activities.

Vitrified hearth/furnace lining is produced by a high temperature reaction between the clay lining of a hearth or furnace, and the alkali fuel ashes or fayalitic slag. It can be formed by iron smelting, non-ferrous metal working or other pyrotechnical processes. This material usually shows a compositional gradient from un-modified clay on one side to a glazed surface surface or irregular cindery material on the other.

Cinder is also produced by fuel ash or slag attack of the clay lining of hearth or furnace. It resembles the more heavily reacted surface of a hearth/furnace lining.

Fired clay can be produced by any high temperature process. This includes industrial processes, domestic processes, and accidental burning.

Fuel ash slag is the result of a high temperature reaction between alkaline fuel ashes and silicates from soil sand, or clay. This reaction is shared with many other pyrotechnical processes and the slag is not diagnostic of ironworking or other metalworking processes. The slag is low in density, high in vesicularity and light grey/brown in colour.

Undiagnostic *iron concretion* working forms as the result of the redeposition of iron hydroxides, similar to the natural phenomenon of iron panning, although the process may be enhanced by the nature of the surrounding archaeological deposits, particularly iron-rich waste.

Discussion

The quantity of industrial debris recovered from Great Holts Farm is not large in comparison to other sites of the Roman period. The only process for which there is diagnostic evidence of is iron smithing, indicated by the large amount of smithing hearth bottoms recovered, and the small amount of hammer scale. The presence of spheroidal hammerscale in pit 89, however, may imply a more sophisticated level of working than just the simple forging (shaping) of iron. There is no diagnostic evidence for iron smelting. Roman smelting sites are characterised by the occurrence of the distinctive tap slag, formed by the liquid slag running out of the furnace when tapped, and solidifying into lava-like flows.

Although undiagnostic ironworking slag can be produced by both smelting and smithing, in the absence of clear evidence for smelting, it is also assumed to be the result of smithing.

There is no evidence for the working of non-ferrous metal. Diagnostic evidence for this comes in the form of

crucible and mould fragments, pieces of waste metal or non-ferrous corrosion products attached to debris.

The assemblage is distinctive in that such a large proportion of the material is diagnostic smithing hearth bottoms. The reason for this cannot be satisfactorily explained; perhaps the required conditions of formation for this particular slag were correct.

Table 2 shows the distribution of the 112 smithing hearth bottoms in terms of mass and dimensions. It is worth noting that, compared to other Roman sites, the smithing hearth bottoms from Great Holts Farm have a rather low mean mass.

Slag type	*Total weight (g)*
Smithing hearth bottoms	19491
Undiagnostic ironworking debris	21579
Dense slag	536
Fuel ash slag	494
Cinder	1370
Iron objects	2304
Vitrified hearth/furnace lining	5953
Stone	223
Iron concretion	128
Unified clay	7
Fired clay	2453
Plaster	4
Total	54542

Table 1 Quantities of iron smithing debris from Great Holts Farm

	Range	*Mean*	σ
Weight (g)	39–508	180	111.5
Length (mm)	40–120	74	16
Width (mm)	30–90	58	14
Depth (mm)	10–60	29	10

Table 2 Statistics of the smithing hearth bottoms from Great Holts Farm (n = 112)

Total	*31080g*	*Smithing hearth bottoms*	*13617g*
Breakdown of total:			
Fills of II.1 features			23482g
Fills of II.2 and II.3 features			7402g
Unstratified			196g

Table 3 Iron smithing debris from area A

Total	*16185g*	*Smithing hearth bottoms*	*3162g*
Breakdown of total:			
Fills of II.1 features			10391g
Fills of II.2 and II.3 features			5762g
Fills of Roman features			14g
Fills of possible post-Roman features			18g

Table 4 Iron smithing debris from area B

From the site plans, two loose, but discrete, areas of concentration of industrial debris were identified. Area A was concentrated on the north-east end of the phase II.1 enclosures E1 to E3, and area B on the II.2 to II.3 aisled villa and barn (416 and 368). Debris from these areas were sorted into categories in Tables 3 and 4 in order to try and identify differences in the nature or dating of the two groups.

A total mass of 47265g was located in these two areas, amounting to 87% of total debris from the site. The smithing hearth bottoms make up 44% of the total mass of debris recovered from area A, but only 20% of the total mass from area B. These two groups may be a result of a difference between practice or practitioners, or different disposal patterns.

Grouping of industrial debris temporally is difficult. It is often redeposited and re-used after it is produced, it can be found used as hardcore and as a building material, and is a useful source of rubble. Most of the debris from each area was found within the fills of II.1 features with a much smaller proportion filling II.2 and II.3 features. It is possible that most, if not all, the smithing activity took place in the earlier period, and the debris in the later fill is redeposited early material.

Conclusions

Iron smithing is the only metallurgical process that can be identified as having taken place at Great Holts Farm. In comparison to the length of occupation, the amount of debris recovered is small and either represents a short-lived period of smithing activity, or intermittent smithing over an extended period of time. The lack of any deposits of debris found at their source of production makes it difficult to conclude more about the nature of this smithing activity. It is possible that the smithing activity took place within the II.1 phase; however the small amount of hammerscale recovered within the soil surrounding the debris may indicate repeated redeposition of this material.

V. Stone objects

by H. Major with G. Lott
(Figs 65 and 66)

The petrology of a number of samples was reported on by Dr G. Lott of the British Geological Survey.

Querns

There were no definite saddle querns from the site, although three pieces may be re-used saddle querns (see, in particular, No. 14, below). All are parts of boulders, which could have derived from local glacial deposits; one has been used as a sharpening stone, and the others as coarse building stone.

Rotary querns were present in four stone types; puddingstone (one example), lava (from fifteen contexts), Millstone Grit (nineteen pieces from fifteen contexts plus U/S) and one example in Lower Greensand.

The puddingstone quern is a 1st-century type, and clearly residual in its late Roman context. There is very little other 1st-century material on the site, and this fragment may have been specifically brought to the site for re-use, as building rubble, for example, although it was not found in close proximity to the excavated buildings.

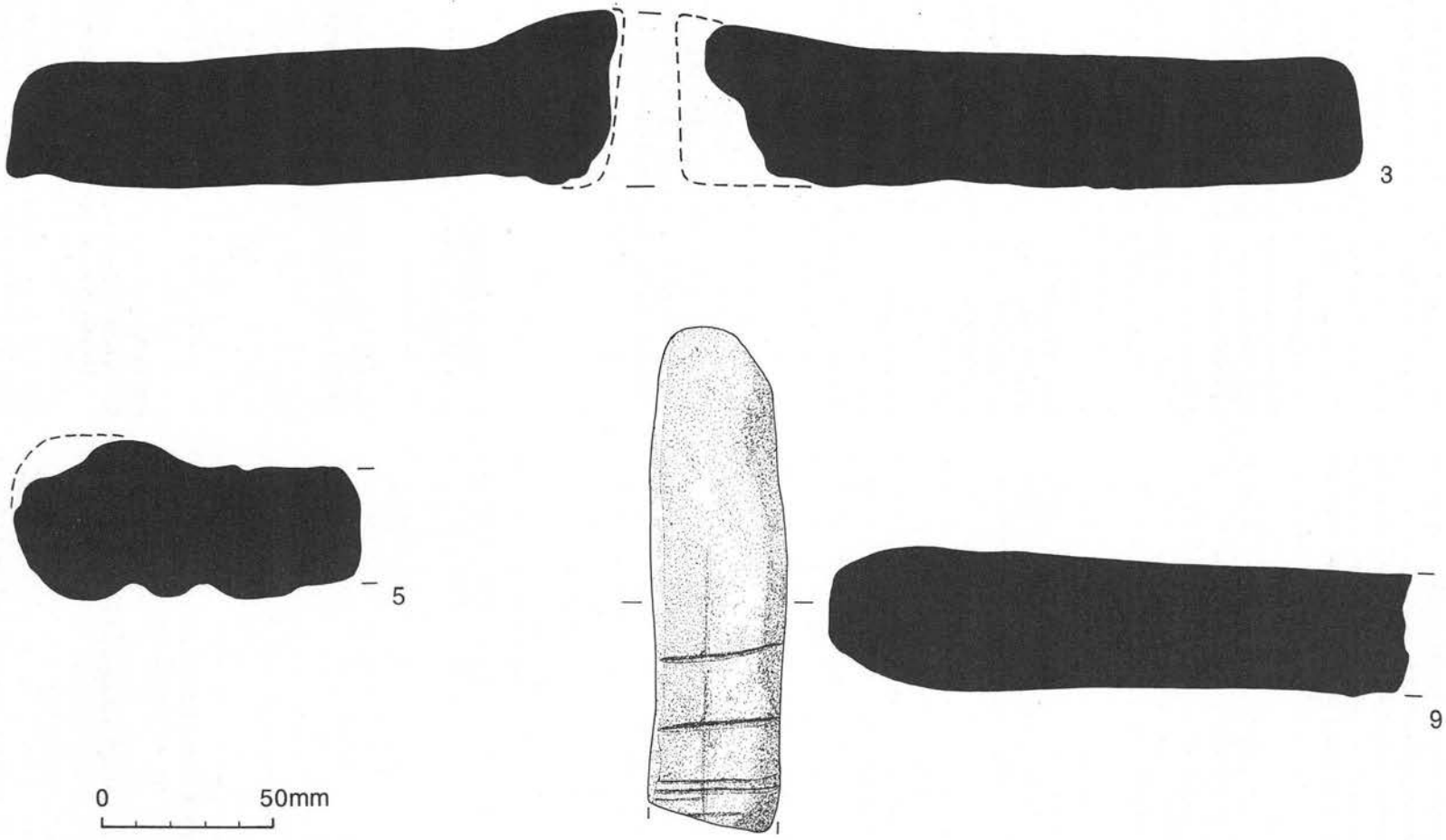


Figure 65 Querns

The lava was mainly in poor condition and fragmentary, and occurred in fifteen contexts, belonging to all Roman phases. It included one complete lower stone from a pre II.2 context (pit 26, No. 2 below), although this was in such poor condition that it disintegrated on lifting. Pit 26 also contained other pieces of utilised stone; two pieces of Millstone Grit quern, one re-used as a sharpening stone, a sandstone block, also used as a sharpening stone, and a sarsen fragment with possible wear. There was little other material in the feature, and the reason for depositing these pieces of stone in an apparently isolated pit remains obscure.

Nineteen fragments of Millstone Grit were recovered from sixteen contexts, spanning all the Roman phases. Three types of surface treatment were present; five pieces had grooved grinding surfaces, three (possibly four) had pecked grinding surfaces, and the remainder had smooth surfaces, some due to re-use. There was no correlation between the type of surface treatment and the date of the context containing the quern.

One fragment of a Millstone Grit upper stone possibly had a kerb, now damaged, imitating the lava form (5439, SF129, No. 5 below). Millstone Grit querns with kerbs are quite rare, but widespread. Examples have been found at Castleford, West Yorkshire (Buckley and Major 1998a) and Pakenham, Suffolk, and there are a number from Essex; from Chelmsford (Major in prep. a), Chignall St James Villa, near Chelmsford (Buckley and Major 1998b), Harlow (in Harlow Museum), Stebbing Green, near Dunmow (Major 1999a) and Elms Farm, Heybridge (Major in prep. c). Most are early Roman, although the Stebbing Green example is probably the same date as the associated building, 2nd to early 3rd-century, and two from Pakenham are from possible 3rd/4th-century contexts (but may be residual). The quern from Great Holts has a rather more rounded 'kerb' than most, as does the stone from Stebbing Green, and these querns may not be direct, deliberate imitations of the lava form. The Great Holts stone is also unusual in having deep, concentric grooves on the grinding surface, rather than radial grooves or harp dressing. A number of other pieces with kerbs have concentric grooves, and the two features may be associated.

Eleven out of the nineteen pieces of Millstone Grit were definitely or probably re-used, principally as sharpening stones and rubbers. On some fragments, the re-use has completely removed the original surfaces, and in a few cases, the stone may not have originated as a quern. Extensive secondary use of Millstone Grit is common, not only in stone-poor Essex, but elsewhere. At Dragonby, for example, Wright (1996, 371) comments that the fragments of gritstone querns are almost all disfigured by secondary use as whetstones, polishers or grinding slabs.

The single example of a Greensand rotary quern is a rarity in Essex. Greensand was used for querns from the Bronze Age onwards, but there are far more saddle querns than rotary querns known in the stone. Greensand was used extensively in Essex as a coarse building stone in Roman times, so it might be expected that Greensand querns would have been imported into the area as well. However, the writer knows of only five other sites in Essex which have produced fragments of possible or definite Roman greensand querns. These are: Chignall St James Villa (*op. cit.*), Elms Farm, Heybridge (*op. cit.*), Mucking (Buckley and Major in prep.), North Shoebury (Buckley and Major 1995, 73; possibly pre-Roman), and Crondon Park, Stock, near Chelmsford (found during field walking by Essex County Council Field Archaeology Unit). The importation of querns could be seen as being associated with, and an adjunct to, the trade in coarse building stone, but at Heybridge, at least, the greensand used for building was coming from a different source to the quern from Great Holts, and major sites such as Chelmsford and Colchester, which utilised Greensand building stone in some quantity, have no Greensand querns. The most we can say at present is that the supply of Greensand querns to Essex was at a low level compared to, say, Millstone Grit querns.

Puddingstone

1. (Not illustrated) Fragment from an upper or lower stone with part of the grinding surface present, but no outer surface. Wt. 298g. SF159, 5563, seg. 4057, ditch 365. II.3.

Lava

2. (Not illustrated) Lower stone, reportedly complete but in three pieces when found, but in such poor condition that it disintegrated on lifting, some parts completely crumbling away, and the remainder fragmenting into hundreds of small pieces. The shape appears to have been standard, with a grooved grinding surface. The diameter was not measurable, as it was not possible to identify any definite edge pieces. T. 15–25mm. Wt. 3850g. SF27, 5028, pit 26. II.1
3. Lower stone, *c.* 25%, with a perforating central hole. The grinding surface was probably pecked, as was the underside, and the edge has vertical grooves. This was quite a chunky stone. Wt. 1975g. SF295, 5745, depression 350. II.3
4. (Not illustrated) Upper stone fragment, broken across a handle hole through the low kerb, the handle hole also being worn through at the bottom. The grinding surface has narrow grooves, probably harp dressing, and there are vertical grooves on the edge and radial or cross-hatched grooves on the top. T. at edge 53mm, kerb 45mm wide, max ht.of kerb *c.* 10mm, diam. not measurable. Wt. 624g. 5853, surface cleaning

Millstone Grit

5. Fragment, possibly from an upper stone with a kerb in imitation of a lava quern. The grinding surface has very deep ?concentric grooves. Possibly re-used as a sharpening stone. Max. T. 45mm Wt. 384g. SF129, 5439, ditch 229. II.3
6. (Not illustrated) Edge fragment, probably a lower stone. Both faces are dished and very smooth due to re-use as a sharpening stone. The edge has three vertical knife sharpening grooves, with a shallow groove cutting them at right angles. T. at edge 39mm. Wt. 942g. SF8, 5028, pit 26. II.1
7. (Not illustrated) Edge fragment, probably an upper stone. Both faces are smooth, and have probably been re-used as sharpening stones. The stone appears to have been trimmed to a rough square, *c.* 110×110mm. T. 19–31mm. 568g. 5376, ditch 198. II.3
8. (Not illustrated) A large lump of Millstone Grit from the field surface. Both surfaces are smooth, and it was probably re-used. From its thickness (80mm) it is likely to be from a millstone, but it is not necessarily Roman. Wt. 4375g. unstrat. SF10. U/S

Greensand

9. Fragments from the edge of a flat upper or lower stone with a smooth grinding surface and a well finished other surface. T. 35mm. Wt. 232g. SF174, 5569, ditch 302. II.3

   Dr G. Lott writes: 'In thin section the rock is a medium to coarse-grained, ferroan calcite cemented sandstone, with abundant coarse, green, oxidised glauconite grains. The dominant framework grains are well rounded, monocrystalline quartz and coarse glauconite peloids with sparse bioclastic grains. The bioclasts include bivalve fragments and glauconite-replaced echinoid fragments. Similar sandstones occur relatively locally in the Lower Greensand (Lower Cretaceous) rocks of the Weald area in Southern England. Peacock (1987) has described Roman quern production from the Lower Greensand beds at Lodsworth in West Sussex.'

Other worked stone

Shale

10. Bangle fragment (9%), with bevelled inner face and decorative grooves round the outside. Internal diam. *c.* 60mm. 5457, SF136, pit 244, phase II.3

11. (Not illustrated) Plain bangle fragment (25%), with D-shaped section. Internal diam. 64mm, section 8x8mm. 5330, SF107, gully 182, II.3

Whetstones and sharpening stones

As noted above, there was extensive re-use of Millstone Grit querns as sharpening stones, and a number of local pebbles of suitable shape had also been utilised in this way. In addition, two purpose-made whetstones were found on the site. These are rather rare in Essex outside the principal towns, and those that have previously been examined by a geologist have proved to come from a variety of sources. It has seldom been possible to pin-point these sources with any accuracy, and the two whetstones from this site are no exception. One originated from the South-west, or the Southern Uplands, and the other from perhaps Dorset or Yorkshire. Colchester, in particular, has produced whetstones which may have come from similar areas (Crummy 1983, 111–3), and one might see the purpose-made whetstone trade in this area as being principally through that town. However, the largest group of Roman whetstones from the county is from Canvey Island (unpublished, but examined by the author), a total of over a hundred pieces, many with no sign of wear. Samples from this group were submitted to Dr Lott for comparison with the Great Holts stones, and he concluded that they were almost certainly from the same source as SF485 (No. 13, below). The large Canvey group may have derived from a wrecked trading vessel, suggesting the possibility that whetstones of this stone type (possibly from Dorset or Yorkshire) were being traded through London, and thence round the Essex coast.

12. Purpose-made whetstone, worn, with point sharpening grooves along the edge. Variable rectangular section. Wt. 60g. 5776, ditch 361, seg. 4102, II.2.

Dr G. Lott writes: 'In thin section the rock is a laminated, very fine-grained, argillaceous (clay-rich) sandstone. Subangular, monocrystalline quartz and feldspar grains dominate the framework of the rock, set in an argillaceous matrix. Micaceous grains, many undergoing alteration, are abundant. The sandstone has a very low porosity. This dense, indurated sandstone is likely to be from the lower Palaeozoic succession. The closest suitable Palaeozoic rocks are probably those in the Ardennes area, Belgium. In the UK it would have to be the Palaeozoic successions in Cornwall/Devon, Wales or the Southern Uplands.'

13. The end of a purpose-made whetstone with some wear evident, including a probably point sharpening groove. One face has the remains of a 'rib', probably formed during manufacture, with slight traces of a similar rib on the opposite face. This object may be compared with a large group of whetstones from Canvey Island, seen by the writer, which are probably in the same stone, with ribs on two sides, and apparently unused. Wt. 36g. SF485, 6082, foundation trench 575, bath-house 414, II.3.

Dr G. Lott writes: 'In thin section the rock is a laminated, very fine to fine-grained sandstone, cemented by pervasive ferroan calcite. The dominant framework grains are sub-angular to sub-rounded, quartz, feldspar, shell fragments with sparse muscovite mica grains. Thin-walled shell fragments are common through out and other bioclastic grains (echinoderm fragments) occur only sparsely. The mineralogy and texture of this calcareous sandstone suggests a probable marine Jurassic Sandstone source. The absence of glauconite rules out a source in the Lower Cretaceous Kentish Ragstone. The presence of the thin walled bivalves and echinoid debris together with the pervasive ferroan calcite cement are features of Lower Jurassic sandstones (*e.g.* Bridport Sandstone, Dorset and Blea Wyke Sandstone, Yorkshire; both coastal localities) but are not distinctive enough to pinpoint a single possible source area.'

14. (Not illustrated) Quartzitic sandstone block fragment, possibly a re-used saddle quern fragment. Two faces are very smooth, and a third has multiple point sharpening grooves. *c.* 72×90×92mm. Wt.1325g. SF20, 5028, pit 26. II.1

Other objects

Rubbers: a few pieces of stone had evidence of non-natural wear, and were probably utilised as rubbers. They were predominantly pebble and boulder fragments which could have derived from the local gravels, but included a lump of coarse grit, probably Millstone Grit, which may have originally been a quern, although it retains no features of one.

Slabs: the slab fragments from the site include possible fragments of veneer or inlay (Nos 17 and 18, below), one piece of which is from the bath-house, and suggests the possibility of decorative stone inlay in the building. There was also a fragment of probable foreign 'marble', a stone type rarely encountered in Essex, possibly from a palette.

15. (Not illustrated) Fragment from the edge of a slab, 21mm thick. 5570, ditch 816, seg. 4059. II.3

Dr G. Lott writes: 'In thin section the sample is a recrystallised limestone/marble consisting of an equicrystalline mosaic of medium-grained calcite crystals. The source of the stone is very

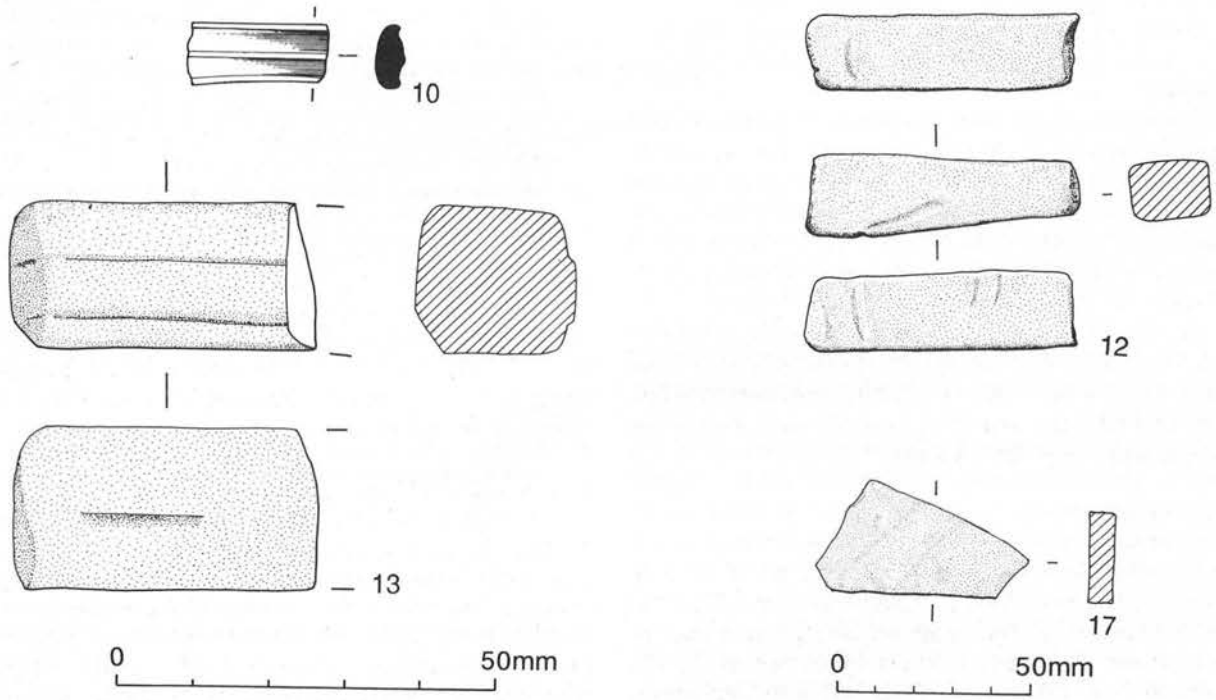


Figure 66 Worked stone

difficult to identify. It is most likely to be a foreign marble as most British 'marbles' usually have some distinctive features either in their colour, composition or structure and rarely show such an equicrystalline texture.'

16. (Not illustrated) Twelve fragments of very fossiliferous limestone, in poor condition, comprising slabby pieces up to 48mm thick, with no definite original surface surviving. It is likely that this was an object, presumably a complete slab. The largest piece is *c.* 260×75×48mm. Wt. 3864g. SF487, 6114, post-hole 857, phase II.2 to II.3. Fragments of similar stone came from two other contexts, one in the bath-house and one in drain 93.

    Dr G. Lott writes: 'In thin section the rock is a coarsely peloidal and bioclastic limestone. The main framework grains are coarse, micritized peloids (internally structureless spheroidal grains) together with bivalve, gastropod, sparse bryozoan and echinoid fragments set in sparry ferroan calcite cement. The limestone is probably a Middle Jurassic limestone from the Lincolnshire Limestone Formation. This outcrops extensively in from Stamford to the Humber. The Lincolnshire Limestone includes the famous Roman building stone quarries of Barnack and Ancaster, stones which were widely used from Lincolnshire to the east coast because river transportation from the quarries was relatively well organised via the Car Dyke and Rivers Nene and Welland. There are no components of the rock distinctive enough to pinpoint a specific source area within this outcrop area.'

17. A thin slab fragment, perhaps veneer. Wt. 18g. 6252, backfill of 798. III.1+

    Dr G. Lott writes: 'This is a finely laminated limestone with sparse bioclastic fragments (dominantly ostracods). This sample is difficult to source. It is possibly either Jurassic or Lower Cretaceous in age. The very fine nature of the sediment and the exclusive presence of thin walled, unornamented, ostracods suggests deposition in a quiet water (?lake) setting. If this is so then the sample may be a limestone from the Lower Cretaceous Wealden succession which has thin fresh to brackish water limestones throughout.'

18. (Not illustrated) Millstone Grit. A thin slab fragment, too thin to be from a quern, although it may be re-used quern fragment. Both faces are well finished and smooth. It appears to have been deliberately cut as a triangle with side lengths of *c.* 40mm, 40mm and 50mm, and could be a fragment of decorative inlay. T. 11mm. 5776, ditch 361, seg. 4102

VI. Worked flint

by H. Martingell
(Figs 67 and 68)

Summary and comment

A total of 413 worked flint artefacts was recovered from all areas of the site. Of these 237 were from excavated features of all periods and 176 were collected from the surface. Of the 237 artefacts from contexts, eleven were retouched, (4.6%), and of the 176 artefacts from the surface thirty (17%), were retouched or modified by secondary flaking.

The remarkable aspect of the flint artefacts from Great Holts Farm is the general casual, *ad hoc* appearance of the flakes. This suggests a later prehistoric to recent utilisation of the gravels in this area. There are, of course, exceptions and this report begins with these.

Late Mesolithic

A complete geometric microlith, a small triangle (Fig. 67.2, 5705), was collected from phase I.2 ring-ditch 313. In mainland Europe, these artefacts may occur in Neolithic contexts but none as late as the Bronze Age, so it must be assumed that this artefact occurs by chance in the fill. Geometric microliths were made for hafting to form arrows, one to form the tip and others to make the barbs. In the same form they could also be used as fishing spears.

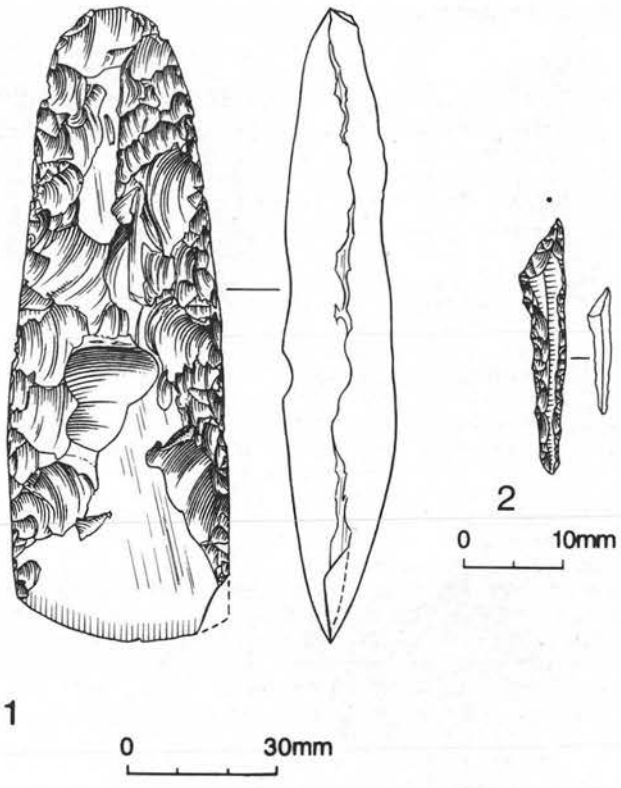


Figure 67 Worked flint

An end scraper on a blade (Fig. 68.1, unstrat.) is also likely to be of this date. It is patinated and has steep retouch across the distal end. But as this is a piece from the surface the date is uncertain.

Neolithic

A very fine partly polished flint axe head (Fig. 67.1, SF370) was recovered from the northern part of the site. It is complete apart from a corner of the blade. The good condition of this tool suggests that it has only recently appeared on the surface where it was found.

A bifacially worked triangular shaped piece is probably a 'roughout' for an arrowhead (Fig. 68.6, 5285). It has an area of pressure flaking across one surface. The artefact came from the fill of a Roman ditch (39) at the southern end of the site. This is an area of Early Iron Age and Roman features but a number of Neolithic and Bronze Age flint artefacts have come from these contexts.

A flake from a specially prepared core using a 'Levallois' technique came from phase III.3 ditch 125 in this area. These flakes and the cores they are from are smaller than the Middle Palaeolithic ones that they resemble and appear to belong in Neolithic contexts.

Bronze Age and Iron Age

The remaining tools are not clearly period specific. The nine recognisable scrapers are made of irregular quality flint, which accounts for their rough appearance; although 'scraper' technology is still apparent. Only one scraper (not illustrated, 5280) comes from a feature, an unphased pit in the southern part of the site (153). Another scraper (Fig. 68.7, 5524) was recovered whilst suface cleaning. Both these pieces are broken. The remaining seven scrapers were all collected from the surface and consist of

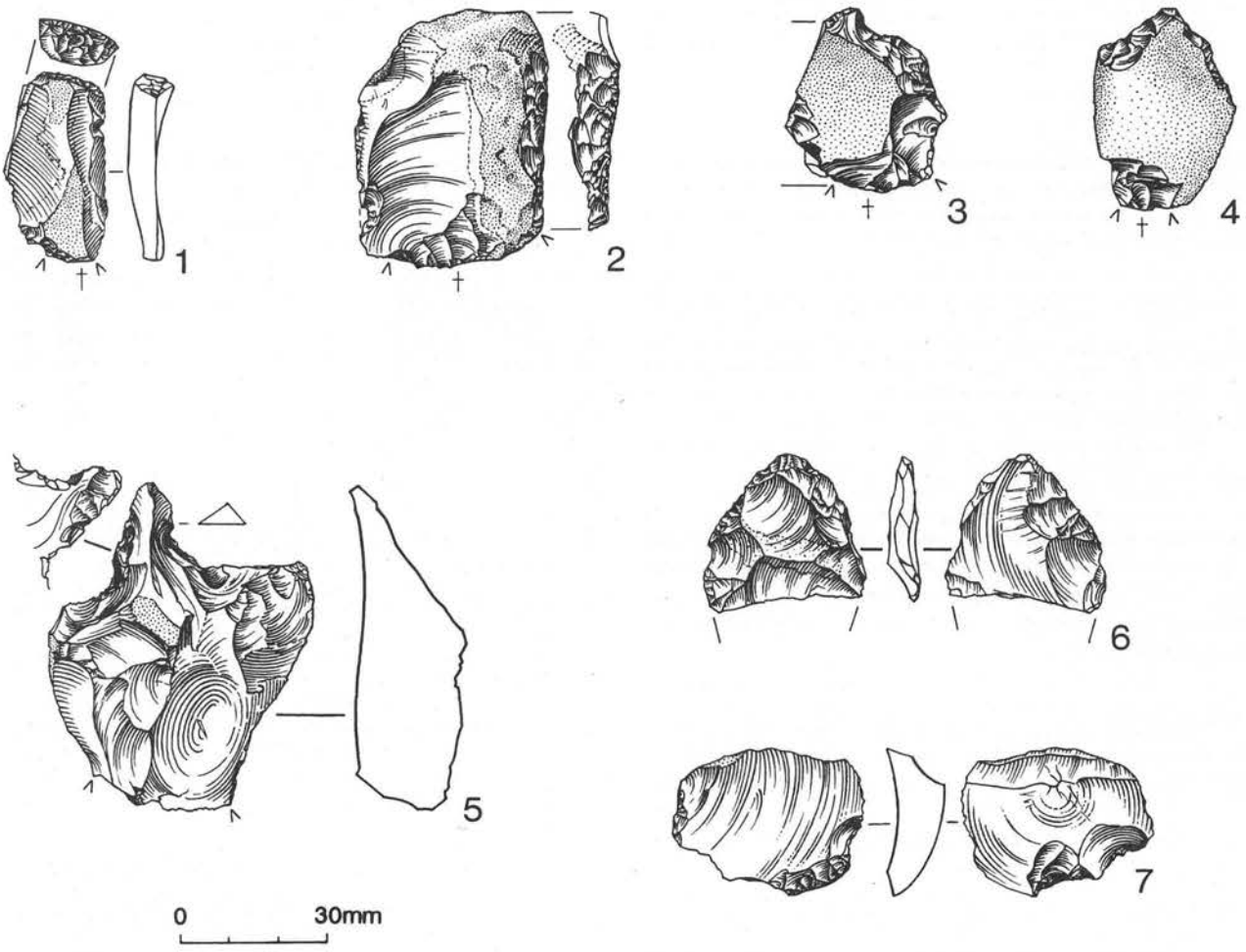


Figure 68 Worked flint

a variety of types. These are: a side scraper (Fig. 68.2, unstrat.), a denticulate scraper (Fig. 68.3, unstrat.), and a spurred scraper (Fig. 68.4, unstrat.). Four other scrapers, none of them illustrated, are all marginally retouched flakes.

Probably the most uncommon artefact from this site is the fine large piercer/borer (Fig. 68.5, 5260). This artefact came from a feature (142) in the Early Iron Age structure 146, and is very typical of its kind. These piercer/borers occur from the Neolithic and continue, at least, into the Late Bronze Age. This piece is unique in the assemblage in that it could be contemporary with structure 146 and, therefore, suggests an activity connected with it.

A small piercer (5867, not illustrated) was found in Late Bronze Age placed deposit 435 and could well be of this date.

Blades and flakes

Twenty-seven blades, bladelets and blade flakes, two of which have retouch, are a small part of the total collection. Some of these may be Mesolithic but it is more likely that they are all Neolithic.

Two hundred and ninety-two of the artefacts may be classified as flakes, flakelets and chippings, *i.e.* practically 71% of the total. Some of these must be waste flakes from general knapping activity. A few have small areas of retouch.

Two distinctive flake types have been identified in this assemblage:

1. The 'squat' flake, of which there are twenty-four good examples from Great Holts, is an artefact identified by J.G.D. Clark at West Harling in Norfolk (Clark and Fell 1953). It can be a frequent component of mixed period site assemblages. Squat flakes are very similar to gun-flint blanks and have been referred to as 'home-made' gun-flints. However, many of these squat flakes will be considerably earlier than gun-flints and are probably components of agricultural tools from the Iron Age onwards. Typically the widest part of the flake is the platform and usually this is plain. The angle of the platform to the ventral surface is obtuse and the greatest depth is at the bulbar cone. Frequently the platform width is greater than the flake length, thus giving a squat appearance. Another identification of these flakes was at Kimmeridge in Dorset, at the Roman shale bead-working site. Some of these later flakes, which have been studied, can be described as squat.
2. The 'salami' flake, of which there are five good examples from Great Holts including one that has been modified into a denticulate piece. The salami flake is of the most basic type of flake. A suitable nodule of flint, as near salami shape as can be found,

is knapped back in slices. The resultant flakes have cortex where the hammer has struck and no prepared platform; this will occur opposite a razor-sharp edge.

Conclusions

The worked flint from this site, consisting mainly of flakes of irregular character, suggests that the occupation phases date from the later prehistoric. There are only two tools from the Mesolithic and three of probable Neolithic date. It seems likely that nearly all the flints found in the features came with the fills and are not associated with the feature in any other way. We may assume, however, that the large piercer/borer (Fig. 68.5, 5620) does have some connection with the Early Iron Age structure 146 in which it was found.

It is interesting that a site known as a late Roman villa estate should yield such a quantity of appropriately casual lithic material. Late Iron Age and Roman worked flints have suffered from a form of analysis which removes the 'known' prehistoric material on mixed period sites and then concludes that the remainder must be late prehistoric. Constructive research to define lithic type fossils for this period is a priority.

VII. Glass

by J. Shepherd and Sasha Smith
(Fig. 69)

One hundred and seventy-one fragments of glass vessels and objects were recovered from the site. Of this total, thirty-one are from identifiable Roman vessel types (Nos 1–31), 104 are indeterminate body fragments (Nos 32–135), twenty-five fragments are window glass (Nos 136–160), eight are beads (Nos 161–168), one is an inset (No 169) and two are post medieval or modern in date (Nos 170–171). All of these, except 170 and 171, are catalogued below.

The assemblage is too limited, and many of the individual fragments are too small, to allow any definitive statements to be made about the supply of glass to the site. The presence of the late 1st-century colourless bowl or plate (No. 1) suggests supply at this date, although in the context of the rest of the assemblage, the possibility of this vessel being an heirloom is not remote. The bottle fragments (Nos 21–31) show supply of these utilitarian vessels during the late 1st century through to the 3rd, but their numbers are comparatively few and may represent just a couple of vessels — a meagre ratio for such a long period. What is probably more significant is the absence of any distinctive drinking vessels dating from the middle of the 2nd century (thin-walled, carinated types) to the early 3rd century (straight sided beakers with fire-rounded rims). This might suggest that supply of broadly dated types was during the late 1st and early 2nd centuries.

A couple of late Roman fragments are represented, although it should be added that the identification of only No. 4 is certain.

Vessel glass

Beakers

1. (Not illustrated) Small fragment from the lower part of the side of a bowl or plate. Cast; good colourless glass. Ground and polished on one surface. Late 1st century. 6171, SF520, pond 422, II.2.

   Although this fragment is small, the technique of finishing, *i.e.* ground and polished on one surface, and a slight raised lip at its edge, indicates that it came from the well-known range of colourless vessels dating from the late 1st century AD (see Grose 1991 for a recent summary of these forms). Unfortunately, it is too small to be able to be precise about the form but it is most likely that it comes from a wide-mouthed bowl form, similar to those from, for example, Lullingstone (Cool and Price 1987, 111, nos 325 and 326), St Thomas Street, Southwark (Townend and Hinton 1978, fig. 176, no. 101), Caerwent (Boon 1972–73, fig. 2, no. 19) Fishbourne (Harden and Price 1971, fig. 138, no. 26) and Caerleon (Boon 1972–3, 116).
2. (Not illustrated) Small fragment from the side of an indented beaker (*e.g.* Isings form 32/35). Free-blown; natural blue glass. Late 1st or 2nd century. 6030, SF433, robber/demolition cut 791, building 416, II.3
3. Two joining fragments from the rim and side of a straight-sided beaker. Free-blown; natural green glass. Cracked off, upright rim. Body decorated with bands of crudely abraded horizontal bands. Late 3rd or 4th century. 6030, robber cut 791, building 416, II.3.

   Small beakers with cracked-off, upright rims are well-known among assemblages that can be dated to the 1st and 2nd centuries. The metal of this example, however, and the crude manner of execution of the horizontal abraded lines, suggests that it belongs to vessels which come from the late Roman period.
4. Fragment from the rim and part of the side of a beaker (Isings form 106c). Free-blown; natural green glass. Rim slightly outsplayed and cracked-off. A single wheel-cut line below the lip. Late 3rd or 4th century. 5118, SF40, cut-feature 77, building 416, II.2 to II.3.

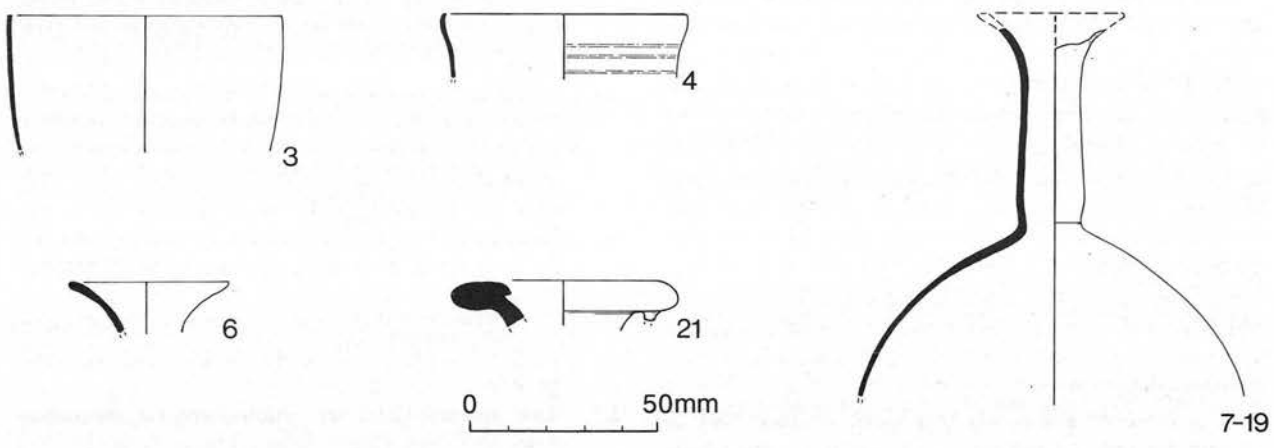


Figure 69 Glass

This vessel belongs to the very common type of late Roman drinking vessel which is a feature of every assemblage of that date. Parallels are numerous, including Cirencester (Shepherd 1986, 120–21, nos 625–6, 629, 632–3, 639 & 645, figs 86–8), Lankhills, Winchester (Harden 1979, 211–15 Classes 1 & 2, fig. 27) and Colchester (Cool and Price 1995, 88–92 for numerous references for the range of forms with such rim types).

Flask or jar

5. (Not illustrated) Fragment from the body of a flask or jar (*e.g.* Isings form 52/67c). Optic-blown; natural green blue glass. Decorated with a vertical raised rib. Late 1st to 3rd century. 6338, SF569, ditch 402, II.1.

This fragment is, once again, too small to allow a positive identification of its form. The method of decoration is common on flagons (Isings form 52) and jars (Isings form 67c), both products of the glasshouses in the northern provinces during the late 1st and early 2nd century (Price 1978, 74). There are, however, other forms, such as handleless flasks and small bowls, which were also decorated in this manner but are less common among Romano-British assemblages (*e.g.* Isings form 71).

Bottles and flasks

6. Fragment from the rim of a flask or bottle. Free-blown; natural green-blue glass. Fire-rounded and outsplayed rim. Roman. 6338, ditch 402, II.1.

7–19. Fragment from the neck of a bulbous-bodied flask or bottle. Free-blown; natural green-blue glass. The neck tapers inwards towards an outsplayed rim (missing). Twelve fragments of similar glass from the same context probably come from the body of this vessel. Roman. 6275, SF593, ditch 402, II.1

20. (Not illustrated) Fragment from the neck of a bottle or flask. Free-blown; natural green glass. The neck tapers upwards towards the rim. Late 3rd or 4th century. 5305, SF102, pit 169, II.3.

Fragments 6–20 come from three simple, probably bulbous-bodied flasks, examples of which are numerous throughout the Roman Empire. The metal of No. 20 suggests that it belongs to the late Roman period.

21. Fragment from the rim of a cylindrical (Isings form 51) or prismatic (Isings form 50) bottle. Free- or mould-blown; natural green blue glass. Rim folded inwards and flattened out. Late 1st or 2nd century. 6095, SF474, post-pit 573, building 368, II.3

22–26. (Not illustrated) Five fragments from the bodies of mould-blown, prismatic bottles (Isings form 50). Late 1st to 3rd century. 5815, SF418, ditch 385, II.2; 5849, SF461, surface cleaning; 6162, SF508, post-hole 621, building 417, II.2; 6330, SF567, ditch 719, ?II.2; 6366, SF594, wall-trench 558, building 416, II.2 to II.3.

27–31. (Not illustrated) Five fragments of natural green-blue glass from bottles (*e.g.* Isings 51, cylindrical or Isings 50, prismatic). Late 1st to 3rd century. 5316, SF99, ditch 177, II.3; 6074, SF573 (x4), robbing 798, bath-house 414, III.1+.

The prismatic, mainly square, sectioned bottle and the cylindrical bottle of the late 1st and 2nd centuries is by far the most common vessel type of that period. It is no surprise, therefore, to see that these forms are well-represented here. They functioned as not only storage vessels but also as in-transit containers for a wide range of liquid foodstuffs, perfumes and oils.

Indeterminate body fragments

32–33. (Not illustrated) Two fragments of blue glass from free-blown vessels of indeterminate form. 6196, SF548, slot 639, building 786, II.2 to II.3; 6348, hearth 730, bath-house 414, II.3.

34–91. (Not illustrated) Fifty-eight fragments of free-blown colourless glass, including thirty-eight small fragments from 6459 and many splinters from 6462, from free-blown vessels of indeterminate form. 5345, ditch 177, II.3; 5426, SF128, cremation 223, II.1+; 5945, SF604, post-hole 475, building 416, II.2 to II.3; 5950 (x8), post-hole 480, building 416, II.2 to II.3; 6082, SF463, foundation trench 575, bath-house 414, II.3; 6107, SF480, post-pit 857, building 368, II.2 to II.3; 6117, post-pipe 588, building 368, II.2 to II.3; 6129, depression 597, building 417, II.2; 6148, pond 422, II.2; 6179, SF521, drain 100, II.3; 6222, foundation trench 575, bath-house 414, II.3; 6323, robbing 798, III.1+; 6459 (x38), well 567, II.2; 6462, well 567, II.2.

92–111. (Not illustrated) Twenty fragments of free-blown, natural green blue glass from free-blown vessels of indeterminate form. 5148, SF47, post-extraction cut 842, building 368, II.3; 5164, post-extraction cut 842, building 368, II.3; 5392, SF134, post-hole 206, ?II.2 to II.3; 5530, post-extraction cut 827, building 294, II.2 to II.3; 5656, SF246, depression 318, II.2; 5895, SF411 (x9), surface finds, ditch 402, II.1; 6027, post-trench 553, building 416, II.2 to II.3; 6082, SF468, foundation trench 575, II.3; 6243, post-hole 673, unphased; 6338, SF569 (x2), ditch 402, II.1; 6338, ditch 402, II.1.

112–135. (Not illustrated) Twenty-four fragments of free-blown, natural green glass, including sixteen small fragments from 6459, from free-blown vessels of indeterminate form. 5891, pond 776, II.2; 5945, SF604, post-hole 474, building 416, II.2 to II.3; 6078, cistern 415, II.3; 6107, SF480, post-pit 857, building 368, II.2 to II.3; 6115, post-extraction 586, building 368, II.3; 6252, SF572, robbing 798, bath-house 414, III.1+; 6348, hearth 730, bath-house 414, II.3; 6459 (×16), well 567, II.2; 6463, well 567, II.2.

Window glass

Cast matt/glossy

136–139. (Not illustrated) Four fragments of natural green-blue, cast matt/glossy window glass. 5656, SF262, depression 318, II.2; 6122, drain 93, II.3; 6162, SF547 (×2), post-hole 621, building 416, II.2 to II.3.

140–149. (Not illustrated) Ten fragments of natural green cylinder-blown, double glossy window glass. 5118, SF41, SF42, SF43, cut-feature 77, building 416, II.2 to II.3; 5305, SF97 (x6), pit 169, II.3; 5656, SF247, depression 318, II.2.

150–159. (Not illustrated) Ten fragments of natural green-blue cylinder-blown, double glossy window glass. 6082, SF464, foundation trench 575, bath-house 414, II.3; 6459 (×9), well 567, II.2.

Double glossy

160. (Not illustrated) One fragment of colourless cylinder-blown, double glossy window glass. 6222, SF556, foundation trench 575, bath-house 414, II.3.

It is not possible to date closely the twenty-four fragments of cast matt/glossy glass from this site, but the double glossy fragment (No. 160) is more likely to belong to the 3rd or 4th centuries.

Objects

161. (Not illustrated) Small biconical bead, translucent mid blue glass (*e.g.* Guido 1978, 92, fig. 37,13). Guido places this type in the late Roman period — 4th to 5th century AD, citing as parallels beads found at the 4th-century cemetery at Lankhills (Winchester), in addition to continental parallels from Gaul, the Danubian provinces, Hungary and Norway (Guido 1978, 97). 5345, ditch 177, II.3.

162. (Not illustrated) Small biconical bead, opaque green glass (*e.g.* Guido 1978, 92, fig. 37, 13). Guido cites parallels from 4th and 5th-century graves at Lankhills and Cirencester, in addition to continental parallels from northern Europe. 5439, SF132, ditch 229, II.3.

163. (Not illustrated) Opaque green cylinder segment bead (*e.g.* Guido 1978, 92, fig. 37, 5). Prevalent in Britain throughout the Roman period but the cut segments are particularly common in late Roman necklaces from sites such as Lankhills (Winchester), Poundbury near Dorchester and Cirencester, dating from the 4th century (Guido 1978, 95). 5277, ditch 39, ?II.2.

164. (Not illustrated) Translucent blue cylinder segment bead (*e.g.* Guido 1978, 92, fig. 37, 5). As for No. 163. 6462, SF605, well 567, II.2.

165. (Not illustrated) Green bead as for No. 163. 5945, SF604, post-hole 475, building 416, II.2 to II.3.

166. (Not illustrated) Green bead as for No. 163. 6459, SF606, well 567, II.2.

167. (Not illustrated) Splinter from a green glass bead of indeterminate shape. 6463, SF608, well 567, II.2.

168. (Not illustrated) Green fragment as for No. 167. 6461, SF607, well 567, II.2.

169. (Not illustrated) Translucent pale blue glass roundel. Probably for a ring or pendant setting. 9998, unstratified.

VIII. Prehistoric Pottery

by N. Brown
(Figs 70–73)

A total of 1371 sherds weighing 16.972kg was recovered from the excavation, the great majority (829 sherds, weighing 14.245kg) being of Late Bronze Age date. The pottery was recorded using a system devised for prehistoric pottery in Essex (Brown 1988a). Fabrics present were:

		%No.	*%Wt*
A	Flint, S 2 well sorted.	5	2
B	Flint, S–M.	4	1
C	Flint, S–M 2.	35	16
D	Flint, S–L 2 poorly sorted.	40	73
E	Flint and sand, S–M 2.	3	2
I	Sand, S–M 2–3.	<1	<1
O	Quartz and flint and some sand S–L 2 poorly sorted.	<1	<1
P	Sparse very fine sand may have occasional M–L flint or void.	<1	<1
Q	Flint S–L, Grog S–M 2.	10	2
V	Flint S–M 1.	<1	<1
Y	Dense sand and S–L flint.	<1	<1
Z	Unclassifiable.	1	<1

Size of inclusions: S: less than 1mm diameter.
M: 1–2mm diameter.
L: more than 2mm diameter.

Density of inclusions: 1: less than 6 per cm^2.
2: 6–10 per cm^2.
3: more than 10 per cm^2.

Identifiable forms present were:

A. Jar, round bodied with short upright or flared rim.
E. Jar, slack shouldered with upright or slightly everted rim.
F. Jar, Tripartite, angular or rounded shoulder, flared rim.
H. Bowl, round bodied.
J. Bowl, round shouldered, flared, upright or everted rim.
M. Bowl, round bodied with flared or upright rim.

The earliest material was a group of Peterborough Ware sherds, recovered close together on the stripped surface, perhaps originally placed in a shallow pit. Three rim sherds were present (Fig. 70.1–3), all apparently from different vessels. The fragmentary nature and condition of the sherds makes attribution to a particular style problematic, but all may derive from Mortlake style bowls. This seems particularly likely for the rim sherds. The predominance of finger-pinched and impressed decoration can be matched amongst the Peterborough Ware from the Springfield Cursus (Brown 2001). However, unlike the Cursus material cord impressions are entirely absent at Great Holts, where body sherds are decorated with finger-impressed and/or pinched decoration. A representative selection of the techniques used is shown in Fig. 70.4–7, only one sherd has impressions not made with the finger (Fig. 70.4).

A small rim and body sherd of Grooved Ware were recovered from the fill of recut 820 in ring-ditch 313 (context 5636); both have a 'brittle' feel and appear to have been burnt. The rim with internal bevel (Fig. 70.8) and body sherd with deep grooved lines, the ridges between cut across by nail impressions, would both be appropriate for the Durrington Walls style (Longworth 1971), and the latter may be paralleled by material from one of the Grooved Ware pits at Springfield Lyons (Brown forthcoming a).

By far the largest quantity of pottery derived from a small group of pits south-west of ring-ditch 452. Together these features yielded 64% of all the prehistoric pottery from the site by sherd count and 91% by weight, the material being of Late Bronze Age date. The features included examples with deposits of sherd material clearly derived from several vessels (*e.g.* pits 426, 433, Figs 70.12, 70.13, 70.14, 71.16, and 71.17); features which produced assemblages largely comprising large parts of single pots, but with a few sherds, including occasional rims, of other vessels present (*e.g.* pits 435 and 436, Figs 72.18 and 73.19–22) and pits, which yielded large parts of single vessels (*e.g.* pits 413, 428 Figs 70.11 and 71.15, and pit 55, rim sherd only illustrated Fig. 70.10). Such variation reflects the ritual behaviour which structured selective deposition of artefacts and rubbish disposal during the Bronze Age (Barrett 1989; Needham 1993). The range of deposits found at Great Holts can be matched at other Late Bronze Age settlements, notably the Springfield Lyons enclosure 4km to the south-west. At the latter site, pits containing large parts of one or more pots clustered around the central roundhouse and features with more generalised ceramic deposits lay mainly in the south-west of the enclosure (Brown forthcoming a).

The predominance of simple jar- or bucket-shaped forms (*e.g.* Fig. 70.11–13, 71.16 and 72.18) and general lack of decoration would indicate a date and the transition from Deverel-Rimbury to post-Deverel-Rimbury ceramics. The range of forms present at Great Holts can be matched locally (*e.g.* Brown 1988b, 1995a and b, forthcoming b) and in assemblages further afield in south-east England (*e.g.* Bradley *et al.* 1980; Needham 1991). A date in the 10th or possibly early 9th century would be appropriate. The vessel from pit 428 (Fig. 71.15) is rather unusual. This general jar form, round bodied, with a short upright rim is widespread and frequent in LBA assemblages, and examples with cordons either plain or decorated at the neck (Bradley *et al.* 1980, fig. 35.30; Brown 1995b, fig. 64.63) are also known. However, pots like the Great Holts example, with a combination of a plain cordon, pinched out to produce a ledge-like effect, and a lug/handle, do not appear elsewhere, even in assemblages where lugged vessels are unusually common (*e.g.* St Mary's Hospital, Carshalton, Adkins and Needham 1985; Stansted, Brown forthcoming b). On the Great Holts pot, both ends of the lug/handle are simply luted in to the vessel wall; usually one end is luted and the other plugged into the wall. This latter technique is so common (*e.g.* Adkins and Needham 1985; Brown forthcoming a) it may be regarded as the standard method of attachment. Similarly, the applied cordon has simply been luted to the vessel wall, rather than partly inset, the more common method of attachment (*e.g.* Fig. 70.12). A large irregular hole made in the vessel wall, in antiquity, behind the lug/handle, might represent some kind of ritual destruction or 'killing' of the pot prior to its deposition.

The pottery from a post-built structure (146) in the southern part of the site includes a small part of a pedestal base of a fine bowl, typical of those which occur on certain Early Iron Age, Darmsden-Linton style bowls (*e.g.* Brown

Figure 70 Prehistoric pottery

1992, fig. 5 nos 1, 12 and 13). Other sherds from context 5278 and residual in context 5487, are also likely to be from vessels characteristic of the Darmsden-Linton style. This small quantity of Darmsden-Linton pottery is of some interest; this distinctive ceramic style is well known around the Blackwater Estuary (Brown 1988a, 1992) but has hitherto been notably absent from the Chelmer Valley (Brown and Lavender 1994).

Several sherds, mostly unabraded and apparently all from a single small jar, but of small size and with few joining sherds, from the upper fill of ring-ditch 313 may also be of Iron Age date.

Illustrated pottery
(Figs 70–73)

1. Finger-pinched impressions on exterior. Finger impressions on top of rim. Internally-expanded rim. Top and interior of rim abraded, interior of rim partly broken off. Fabric D. Peterborough Ware. 6282, feature 782. I.1
2. Most of top and interior of rim missing, traces of finger impressions on top of rim. Row of finger-pinched impressions immediately below rim on exterior. Deep rounded impression on neck which has caused interior to bulge out. Fabric D. Peterborough Ware. 6282, feature 782. I.1
3. Internally-expanded rim, with incised decoration on top of the interior. Most of the exterior of the rim is missing but traces of ?cord impressions survive on exterior. Fabric D. Peterborough Ware. 6282, feature 782. I.1
4. Row of finger impressions with vertical rows of angular stabbed impressions below. Fabric D. Peterborough Ware. 6282, feature 782. I.1.
5. Horizontal rows of 'crows-foot' impressions on exterior. Fabric D. Peterborough Ware. 6282, feature 782. I.1.
6. Sherd ?approaching base horizontal rows of 'crows-foot' finger impressions on exterior. Fabric D. Peterborough Ware. 6282, feature 782. I.1
7. Sherd ?approaching base, horizontal rows of finger-pinched impressions on exterior. Fabric D. Peterborough Ware. 6282, feature 782. I.1
8. Internally-bevelled rim, top of rim missing, fingernail impressions on exterior of rim and an internal bevel. Horizontal grooved lines

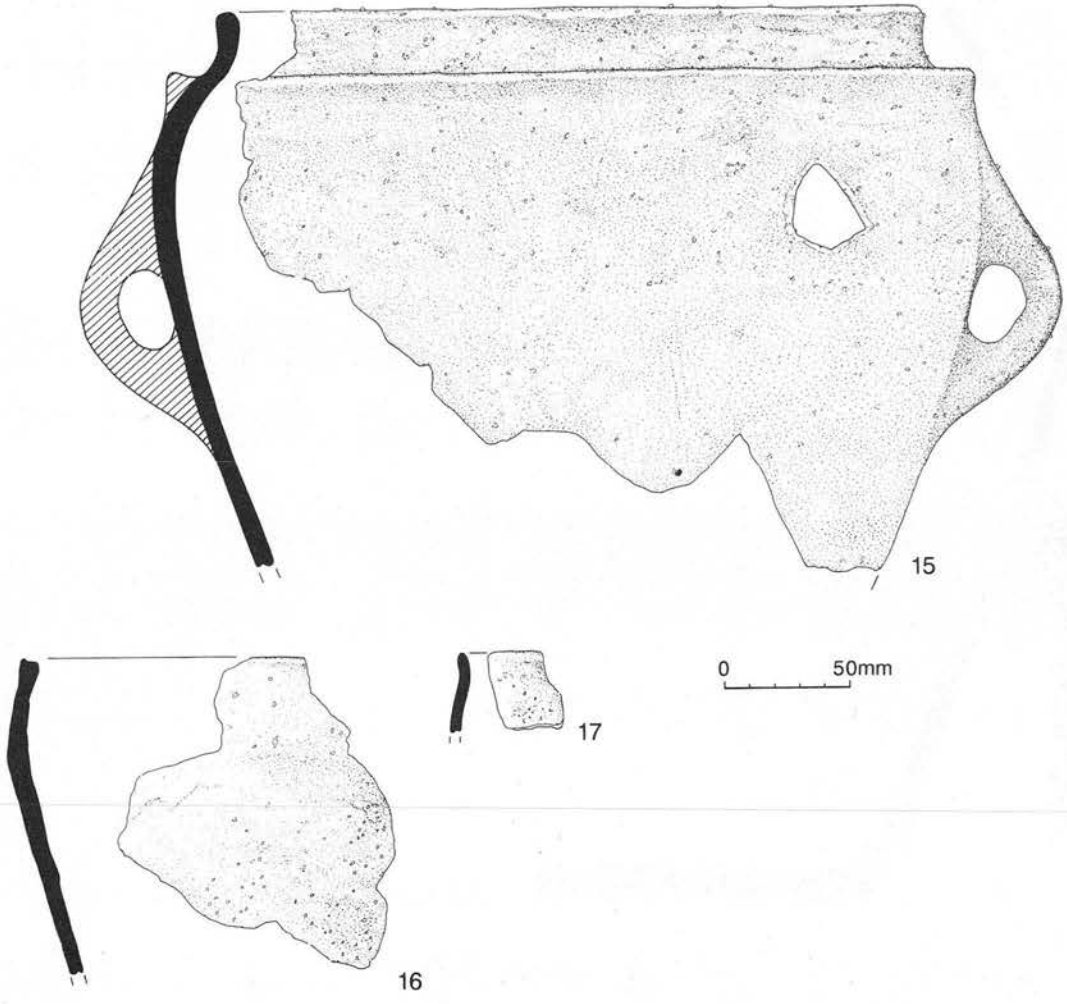


Figure 71 Prehistoric pottery

on exterior with fingernail impressions cutting across the ridges between grooves. Abraded and burnt. Fabric P. Grooved Ware. 5636, recut 820, ring-ditch 313, I.2

9. Horizontal grooved lines on exterior, with fingernail impressions cutting across the ridges between the grooves. Abraded and burnt. Fabric P. Grooved Ware. Possibly same vessel as 8. 5636, recut 820, ring-ditch 313, I.2
10. Irregular T-shaped rim, with internal bevel. Unsmoothed exterior, traces of vertical wiping. Form A. Fabric C. 5074, pit 55. I.3
11. Flat-topped, upright rim, with internal concavity. Exterior well smoothed with clear horizontal smoothing marks. Horizontal wiping on interior. Form Q. Fabric D. 5845, placed deposit 413, I.3.
12. Flat-topped rim, applied slash decorated cordon, partly abraded exterior. Form Q. Fabric D. 5868, pit 426, I.3
13. Flat-topped, slightly expanded rim abraded exterior. Form ?A. Fabric D. 5868, pit 426, I.3
14. Rounded rim, smoothed surfaces ?originally burnished partly abraded exterior. Form M. Fabric A. 5868, pit 426, I.3
15. Upright flat-topped rim slightly expanded on exterior. Applied plain ledge-like cordon, simply luted to exterior. Plain applied lug/handle. Sooting/black deposit on part of exterior of rim. Coil join visible in break. Large irregular hole *c.* 3cm diameter made in antiquity close to top of lug. Form A. Fabric D. 5870, pit 428, I.3
16. Slight internal bevel on rim, some deliberate roughening of surface, partly obscured by concretion. Form E. Fabric C. 5865, pit 433, I.3
17. Rounded rim, smoothed surfaces. Form M. Fabric A. 5865, pit 433, I.3
18. Complete base, part of rim and numerous body sherds of large jar. Rim and parts of body heavily abraded and apparently burnt. Base undamaged. Heavy finger wiping on exterior. Form A. Fabric D. 5867, placed deposit 435, I.3
19. Rounded rim, partly abraded exterior. Form J. Fabric C. 5867, pit 435, I.3
20. Irregular rounded rim. Fabric C. 5867, pit 435, I.3
21. Upright rim with slight internal bevel. Horizontal wiping and some concretion on exterior. Form A. Fabric B. 5861, slot 436, I.3
22. Internally bevelled rim. Extensive black deposit/concretion on exterior. Abraded. Form ?E. Fabric C. 5861, slot 436, I.3

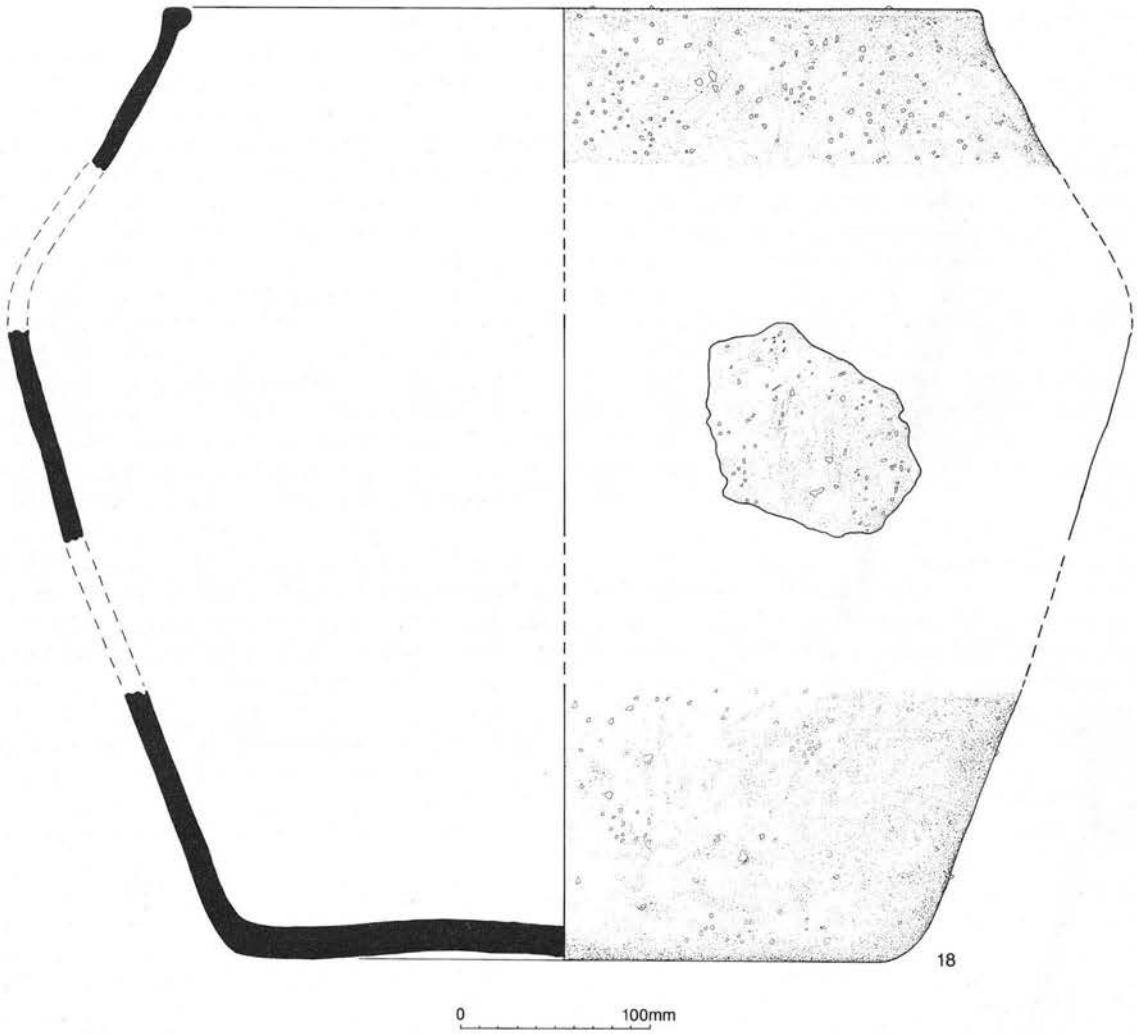


Figure 72 Prehistoric pottery

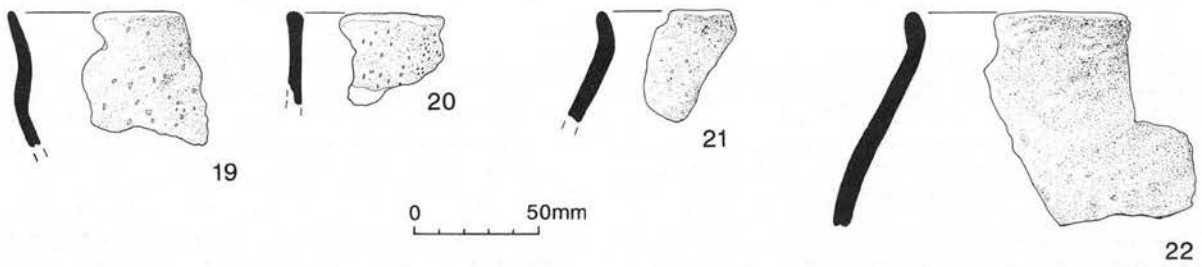


Figure 73 Prehistoric pottery

IX. Roman Pottery

by T.S. Martin
(Figs 74 to 96)

Introduction

The excavation produced a total assemblage weighing 227.3 kg. Of this, 85% (195 kg) of the pottery came from stratified Roman contexts, while 84% (191.1 kg) came from contexts that are reasonably securely dated either by pottery alone or because of their stratigraphic relationship with contexts that are. This sizeable assemblage was classified using the Chelmsford typology published by Going (1987, 2–54) which is the standard point of reference for Roman fabrics and vessel forms from Essex County Council Field Archaeology Unit sites within the county.

Where appropriate, reference is also made to a number of other typologies. These include Young's Oxfordshire corpus (Young 1977), Monaghan's north Kent volume (Monaghan 1987), and the still useful *Camulodunum* type series (Hawkes and Hull 1947, 215–73; Hull 1958, 279–92; 1963, 178–91). These works are referred to where a vessel form or fabric is not found in Going. However, to avoid any confusion, no new vessel form codes have been added to Going's original series, even when vessel types have been identified which do not appear in the original publication.

There are three main differences in approach to the Great Holts Farm assemblage compared with the work done by Going at Chelmsford. First of all, mnemonic codes have been adopted for the fabrics with Going's original numbers simply serving as references for descriptions. Mnemonic codes are used because it was felt that adding in numbers for new fabrics would have fitted in clumsily with Going's original scheme and may have created some confusion. Secondly, separate fabric codes have been created for the mortaria. These were separated out during the analysis so that they could be studied in greater depth. Thirdly the bulk of the fabrics with black-surfaces have been brought together (but excluding BB1, BB2 and Hadham black-surfaced ware) so that this important regional tradition could be analysed in more detail than has previously been attempted.

Analysis of the Great Holts Farm pottery is primarily concerned with identifying the variety of fabrics and forms, and providing dating evidence for feature fills. The information recorded allows for the detailed investigation of site chronology and changes in pottery supply to be identified. Quantification is by sherd count and weight (grams) by fabric. In addition the pottery from linear features and the lower fill of well 567 (context 6459) is also examined using Estimated Vessel Equivalents (EVEs) based on rim %. This can be justified in that these contexts provided some of the largest groups from the site and therefore the bulk of the material selected as 'key' groups.

In terms of size (227.3kg), the Great Holts Farm pottery compares well with other excavated assemblages from rural sites in Essex and other parts of East Anglia. From Essex, for example, Chignall St James produced 245.4kg (Wallace and Turner-Walker 1998, 98); Rivenhall, 180kg (Going 1993b, 64); Bulls Lodge Dairy, Boreham, 86.4kg, and Buildings Farm, Great Dunmow, 67.1kg (Wallace 1997, 66). From other East Anglian sites, for example, Spong Hill, Norfolk, produced 225kg including fieldwalking material (Gurney 1995, 94); Maxey, Cambridgeshire 155.3kg (Gurney 1985, table 19). It is, however, a poor relation compared to the very large assemblages recovered from the more extensively excavated sites at Ivy Chimneys, Witham, Essex, 450kg (Turner-Walker and Wallace 1999, 123–4); Gorhambury, Hertfordshire, 1290kg (Parminter 1990, 175); and Orton Hall Farm, Cambridgeshire, 740kg (Perrin 1996, 114). These figures suggest that the Great Holts Farm assemblage is not only one of the largest to be excavated from an Essex rural site, but is of adequate size and quality to provide detailed dating evidence for stratigraphic sequences and answer questions relating to pottery supply and use.

The importance of the site's pottery is two-fold. First and foremost, it constitutes one of a small number of substantial, well-excavated, assemblages from a central Essex site outside Chelmsford to receive detailed analysis. Secondly, because of the site's chronological bias towards the late 3rd and 4th centuries, the presence of groups with fairly little contamination from earlier material has not only yielded vital data about pottery-specific issues, but has also added to our general understanding of late and latest Roman central Essex. Although earlier material was present, this forms a minor aspect of the site, as 63% of the stratified pottery from closely dated contexts is dated to the later 3rd and 4th centuries.

Report structure

The report is divided into four sections. Firstly, the pottery is investigated to identify the site's main chronological trends, which are then related back to stratigraphic horizons. The second section examines the site's key groups that are discussed on a period by period basis in relation to the Chelmsford ceramic phases 1–8 (Going 1987, 106–16). Contexts that are pre-Roman or likely to be conquest period are grouped together as ceramic phase 0. Where two or more groups are presented for a period, this has been done because they show important differences which may have chronological implications within that period as well as the valuable information they might shed for making intra-site comparisons. Section three addresses the chief research themes. These comprise in-depth examinations of black-surfaced wares and depositional processes. The chronological differences in the way pottery was deposited are also discussed in relation to Going's Chelmsford ceramic phases. Many of the themes identified in the updated project design have not been examined in such detail as originally intended, simply because the data is not as good as originally thought. Intra-site comparisons are only possible for the 4th century (Chelmsford ceramic phases 7 and 8) since significant chronological biases towards this period occur in the data. The final section comprises general conclusions.

A large portion of the report is taken up with inter-site comparisons. These are attempted for each ceramic phase represented at Great Holts Farm. While Chelmsford is always taken as the starting point, information about other sites is discussed where appropriate. The number of sites outside Chelmsford where quantified data is available is fairly limited. Late 2nd to early 3rd-century groups from Great Dunmow and Rivenhall provide useful comparisons for Great Holts Farm Group 4. In spite of this, the bulk of the inter-site comparisons are restricted to groups that date to the late 4th century. For this period there is an abundance of recently published groups and much work in preparation. However, it is worth noting that although they produced substantial assemblages, the sites at Chignall St James and Ivy Chimneys, Witham, were not analysed using Going's typology, which makes reliable comparisons difficult. Consequently, comparisons with these sites are only made in passing.

The catalogue comprises 287 entries, the bulk of which are from the key groups. To avoid unnecessary duplication, not all of the vessels listed have been drawn. The catalogue is arranged in ceramic phase order with the primary fills of features (use horizons) placed first, followed by single fill features and top fills (disuse horizons).

The fabrics

A total of thirty-seven coarse and fine ware fabrics were identified, including the samian ware. Nine mortaria and a further three amphorae fabrics were also recorded. Of the 'new' fabrics identified at Great Holts Farm, the standard reference for Portchester D/Tilford/Overwey ware (PORD) is Fulford's Portchester Castle report (Fulford 1975, 299). This fabric is thinly distributed in Essex, but has been noted by Going at Chelmsford (Going 1992a, 111) and is also present at Sewardstone Hamlet (Huggins 1979, fig. 5.43). The forms present in Essex are generally restricted to triangular- and hooked-rimmed jars

with all-over horizontal body rilling (*cf.* Lyne and Jefferies 1979, Class 3C.11). A date range within the period *c.* AD 300–420 has been suggested for the production of this fabric. In Essex, however, it does not seem to have occurred before *c.* AD 360/70. A number of hand-made sherds, which look to have more in common with Middle Iron Age traditions have been classified as being simply Miscellaneous Iron Age coarse wares (MICW). These are entirely residual at Great Holts Farm. The following fabrics were identified (numbers in bold after Going 1987):

ASS	South Spanish Amphora	**55**
BB1	Black-burnished ware 1	**40**
BB2	Black-burnished ware 2	**41**
BSW	Misc. Black-surfaced wares	
BUF	Unspecified buff wares	**31**
BUFM	Unspecified buff ware mortaria	**31**
CGRHN	Central Gaulish Rhenish ware	**8**
CGSW	Central Gaulish samian	
COLB	Colchester buff ware	**27**
COLBM	Colchester buff ware mortaria	**27**
COLC	Colchester colour-coat	**1**
EGSW	East Gaulish samian	
ESH	Early shell-tempered wares	**50**
FWCS	Misc. fine white- or cream-slipped red-buff wares	**16**
GRF	Fine grey wares	**39**
GROG	Grog-tempered wares	**53**
GRS	Sandy grey wares	**47**
HAB	Hadham Black-surfaced ware	**35**
HAR	Hadham grey wares	**36**
HAW	Hadham white-slipped wares	**14**
HAX	Hadham oxidised red wares	**4**
HAXM	Hadham oxidised red ware mortaria	**4**
LSH	Late shell-tempered wares	**51**
MCA	?Local mica-dusted wares	**12**
MEK	Mayen ware/Eifelkeramik	**54**
MICW	Miscellaneous ?Iron Age coarse wares	
NKG	North Kent grey wares	**32**
NVC	Nene Valley colour-coat	**2**
NVCM	Nene Valley colour-coat mortaria	**2**
NVM	Nene Valley white ware mortaria	**24**
OWSWM	Oxfordshire white-slipped ware mortaria	**13**
OXRC	Oxfordshire red colour-coat	**3**
OXRCM	Oxfordshire red colour-coat mortaria	**3**
OXWM	Oxfordshire white ware mortaria	**25**
PORD	Portchester D ware	
RED	Misc. oxidised red wares	**21**
RET	Rettendon ware	**48**
RETM	Rettendon ware mortaria	**48**
SGSW	South Gaulish samian	
STOR	Storage jar fabrics	**44**
UCC	Unspecified colour-coats	
VRW	Verulamium Region wares	**26**
WCS	Misc. white- or cream-slipped sandy red wares	**15**

The key groups

A key group is here defined as a large assemblage that is both well-stratified and well-dated with the bulk of the pottery falling within a narrow date range; there will also be a correspondingly low residual component. It is also sufficiently large enough to provide reliable statistical information regarding pottery supply to the site. A total of fifteen key groups were recognised (Table 5), fourteen of which came from linear features, two of which are presented as a composite (Group 4). These groups cover Chelmsford ceramic phases 3 to 8 and represent all of the significant accumulations of pottery from the site and are also considered to be the most representative of the date range to which they are assigned. However, only twelve groups have been selected for detailed discussion, eleven of which are from linear features (Groups 1–6 and 8–12). A further group from well 567 (Group 7) is also discussed as a key group, not because of the data it provides on economic issues, but because it comes from what appears to be a structured deposit. The variation in the number of key groups selected between periods should be seen as a true reflection of the overall quality of the evidence since these groups account for nearly half (88.9kg) of the site's total stratified pottery assemblage. Groups dating to before the beginning of the 2nd century and of mid 3rd-century date have not been recorded at Great Holts Farm.

However, some of the statistical data derived from the key groups should be treated with caution as five of the key groups contain less than five EVEs. While groups of 50–100 sherds appear to be the minimum threshold from which reliable inferences can be drawn about fabric proportions on groups quantified by sherd count, the figure for EVEs is presently unknown. As Willis (1996, 182) has pointed out, the matter of how large a group

Group	*Ceramic phase*	*Context*	*Date range*	*Wt. (kg)*	*EVE*
–	2/3	ditch 382 (single fill)	*c.* AD 100–120	1.3	0.40
1	3	gully 441 (single fill)	*c.* AD 120–140	3.2	2.65
2	4	ditch 310 (single fill)	*c.* AD 140–180	22.5	14.63
3	4	ditch 402 (single fill)	*c.* AD 160–200	11.4	7.44
4	4/5	ditches 27 & 383 (top fills)	*c.* AD 180–230	6.7	4.21
5	6	ditch 361 (top fill)	*c.* AD 260–300	3.4	4.60
6	7	ditch 385 (single fill)	*c.* AD 300–330	4.5	5.69
7	7	well 567 (lower fill)	*c.* AD 300–330	7.0	6.23
8	7	ditch 819 (top fill)	*c.* AD 300/10–350/60	6.3	7.39
9	8	ditch 177 (single fill)	*c.* AD 360/70–400+	3.9	4.97
–	8	ditch 229 (all fills)	*c.* AD 360/70–400+	3.3	4.69
10	8	ditch 816 (top fill)	*c.* AD 360/70–400+	9.0	14.48
11	8	ditch 302 (primary fill)	*c.* AD 360/70–400+	3.8	4.68
12	8	ditch 302 (top fill)	*c.* AD 370/80–400+	14.5	16.81

Table 5 The twelve key groups from ceramic phases 3–8

should be in order that quantitative data can be considered to be reliable has not been fully resolved. Nonetheless, Going (1993b, 68) has suggested that groups should be a minimum of five EVEs. It should be noted, however, that Willis (1996, table 1) used some very small groups for his study of the Romanisation of pottery assemblages in the east and north-east of England, and in doing so gained some remarkably consistent results. These twelve groups from Great Holts Farm are thus offered as the best means of gaining a detailed insight into pottery supply to the site.

The earliest group, the fill of ditch 382, is dated to the end of ceramic phase 2 or the beginning of ceramic phase 3, *i.e.* the early 2nd century. However, much of the material is undiagnostic with little or no illustratable vessels, as is reflected in the low EVE figure of 0.40. This group is therefore not published in detail. The earliest group to be discussed in full is the fill of gully 441 that is dated to ceramic phase 3. Two groups are assigned to ceramic phase 4, the fills of ditches 310 and 402. These features each produced groups in excess of 10kg and are thus two of the largest from the whole site.

The first half of the 3rd century is covered by just two small groups, which are presented as a composite. These are from the fills of ditches 27 and 383, and are dated to the end of ceramic phase 4 and the first half of ceramic phase 5. While the early 3rd century is barely represented, the mid 3rd is seemingly entirely absent. The late 3rd century (ceramic phase 6) is also poorly represented. Only one group, from the top fill of ditch 361 has been identified. There are, however, a number of small groups that could fall into either this ceramic phase or the next. From the beginning of the 4th century, the number of key groups increases dramatically. There are three groups assigned to ceramic phase 7 (early to mid 4th century), the fills of ditches 385 and 819, and the lower fill of well 567. The end of the Roman occupation at Great Holts Farm, ceramic phase 8 (late 4th century), is marked by a wealth of data. It is represented by four key groups, the fill of ditch 177, the top fill of ditch 816, the primary fill of ditch 302 and the top fill of ditch 302.

The identification of the site's key groups and the analysis of their comparative state of preservation using a weight to EVEs ratio shows that the early groups all have a ratio below 1 EVE to 1kg. Given the large size of the assemblage from ditch 310 (ceramic phase 4), the exceptionally low EVE to weight ratio must be significant in terms of the nature of rubbish disposal in the early period. The later groups, *i.e.* dating from ceramic phase 6 onwards, generally have a ratio of above 1 EVE to 1kg by comparison. For the early groups, the low EVE to weight ratios shows that there are fewer rim sherds in these groups, consequently vessel forms are much harder to recognise and the dates assigned to them are to a great extent less secure. This indicates that the later groups are ordinarily the ones that are better preserved and better dated, an observation which is also confirmed when average sherd sizes are examined in detail. This provides useful information about the way pottery was deposited at Great Holts Farm, and the changes that took place as the site developed.

Detailed analysis of the site's pottery demonstrates that Great Holts Farm is essentially a late Roman settlement with by far the bulk of these features containing pottery attributable to ceramic phases 6 to 8. The pottery evidence as a whole strongly suggests an absence of domestic activity within the excavated area prior to *c.* AD 260/270 and that the main period of occupation is attributable to the 4th century. The chronological bias in the key groups towards ceramic phases 6–8 emphasises this point clearly.

Pottery and site chronology

This section explores the dating evidence at Great Holts Farm in depth and identifies the site's main chronological trends from the pattern of pottery deposition. Going's Chelmsford ceramic phases are used as a point of reference throughout. The discussion begins by examining the ways in which the pottery can be used to determine chronology, and the problems in applying the data to the site stratigraphy. It then describes, not only the main chronological trends of the site, but also the methodology used which allows them to be recognised. The section concludes with a discussion of how these trends may be related back to other aspects of the site evidence, in terms of defining what the principal archaeologically identifiable events are, and how they fit into a chronological scheme based on the pottery dating evidence.

One of the most important aspects of the pottery study concerns how the pottery data can be viewed in relation to stratigraphy. This is especially important when determining the site's chronology. During the post-excavation assessment, all contexts that could be considered to be reasonably well-dated from the spot-dating record were assigned a date regardless of stratigraphic relationships. This strongly suggested that the main period of pottery deposition belonged to the later Roman period with scarcely any securely dated contexts prior to the late 4th century (ECC 1996, table 3). While some early Roman horizons could be identified, the first impression of the site was thus one of its comparative lateness.

The compilation and analysis of the pottery dating evidence has confirmed the trends identified in the assessment, but has also revealed several significant chronological conundrums. First and foremost, the quality of the data collected from features relating to the construction of the buildings is sparse and often ambiguous. Much of the pottery comprises small, very fragmentary groups, while the added problems of residuality and absence of dating evidence from several 'key' contexts creates further problems. A second impediment concerns the relationship of the buildings to the field systems. Analysis of the pottery from linear features shows that much of it was derived from the latest fills within features or from features where no stratigraphic sequences were recognised. This means that the date of infilling or disuse of linear features is better established than their origin.

The crux of the problem is simple. We need to know exactly when the buildings were occupied. There are two methods of working this out. Firstly, since their construction date cannot be reliably identified from well-dated construction deposits, reliance has to be placed on their demolition date and working backwards. Secondly, we can attempt to establish the main period or periods of pottery deposition on the site and define their overall characteristics as well as seeing how they relate to each other. Of the two, although it provides a fixed point in time, the date of demolition might be misleading in that

the buildings could have been left abandoned for some time prior to demolition. Nevertheless, this does not appear to be the case when the evidence from the main villa structure (building 416) is examined in detail. However, the best way of ascertaining when the buildings were in use is to investigate the closely datable deposits of pottery to see if there are any obvious chronological tendencies independent of the structural evidence.

Methodology

Before chronological trends can be recognised from a site's pottery, and analysed in detail, it is necessary to establish what types of context are subject to pottery deposition and the types that are not (Table 6). It is also important to investigate what differing levels of pottery deposition represent. Given that Great Holts Farm appears to have been a consumer site, rather than a point of distribution, it seems safe to assume that pottery brought to the site was intended for use and indeed actually used there or nearby. Moreover, some of it at least must have been consumed by the occupants of the main villa during the life of building. Therefore, it is probably equally safe to assume that the deposits of broken pottery recovered from archaeological contexts represent, or are likely to represent, household debris, which reflect in some way the main period or periods of occupation on the site. Moreover, where datable contexts cluster within any specific date-band, these deposits of pottery will provide a reliable index of when the pottery was used and discarded, and thus when the main villa building was most likely to have been occupied.

It is possible to take this argument a step further by investigating the probable rate of pottery deposition in relation to context formation. Where large amounts of pottery of the same period are spread over a large number of contexts, it may be assumed that this symbolises a high level of activity at any one time. On the other hand, where small amounts of pottery of the same date are spread over a small number of contexts, it probably denotes low levels of activity. Knowing the type of context from which large amounts of pottery are found helps categorise this activity.

During the analysis, all Roman features were assigned to one of seven feature-categories (Tables 6 and 7). These were funerary (cremations), demolition (the robber cuts associated with the buildings), linear (ditches and gullies), pits, structural (walls, beamslots, post-holes etc.), water features (drains, ponds, wells etc.) and miscellaneous (hollows, unclassified cuts etc.). The aim was to tabulate the dating evidence for the whole site and show what types of context provided the best evidence. This demonstrated that structural contexts provided very little in the way of dating evidence, while linear features produced the majority of the site's pottery and therefore the best dating evidence. Demolition horizons also produced substantial quantities of pottery, while pits contained very little. This general absence of pottery from pit fills may be partly due to the relatively small number pits on the site. However, 51% of pit fills did contain pottery compared to 49% of

Category	*Sherds*	*Wt. (g)*	*% Wt.*	*Average wt.*	*No. Contexts*	*No. of Contexts with pottery*	*% of Contexts with pottery*
Linear	9362	133751	58.82	14.28	383	189	49.34
Pits	639	7625	3.35	11.93	82	42	51.21
Structural	408	5530	2.43	13.55	449	77	17.14
Demolition	889	18673	8.21	21.00	93	67	72.04
Funerary	199	2500	1.09	12.56	21	6	28.57
Water channels	922	14276	6.27	15.48	57	26	45.61
Miscellaneous	1468	17921	7.88	12.20	165	51	30.90
Misc. Post-Roman	*651*	*5002*	*2.20*	*7.68*	*56*	*20*	*35.71*
Unstratified	*1472*	*22078*	*9.71*	*14.99*	–	–	–
Totals	**16010**	**227356**	–	**14.20**	**1306**	**478**	–

Table 6 The trends in pottery deposition

Ceramic phase	*Category*														*Totals*	
	Linear		*Pit*		*Structural*		*Demolition*		*Funerary*		*Water channels*		*Misc*			
	sherds	*wt(g)*	*sherds*	*wt(g)*	*sherds*	*wt(g)*	*sherds*	*wt(g)*	*sherds*	*wt(g)*	*sherds*	*wt(g)*	*sherds*	*wt(g)*	*sherds*	*wt(g)*
2/3	170	1382	–	–	–	–	–	–	–	–	–	–	10	37	180	1419
3	260	3286	–	–	–	–	–	–	–	–	–	–	10	581	270	3867
3/4	1048	14491	–	–	–	–	–	–	–	–	–	–	60	541	2156	15032
4	2645	34025	–	–	–	–	–	–	–	–	–	–	–	–	2645	34025
4/5	479	7290	27	623	–	–	–	–	87	1804	–	–	–	–	593	9717
5	119	859	–	–	–	–	–	–	–	–	–	–	–	–	119	859
6	231	3535	–	–	–	–	–	–	–	–	–	–	–	–	231	3535
6/7	448	6711	144	1737	246	3096	–	–	–	–	465	4424	164	1564	1467	17532
7	747	11466	–	–	23	570	161	7270	–	–	440	9417	557	6319	1928	35042
7/8	15	143	13	108	7	161	–	–	–	–	–	–	–	–	35	412
8	2766	45140	390	4037	8	68	728	11403	46	484	–	–	308	3199	4247	64533
Totals	**8928**	**132715**	**574**	**6505**	**284**	**3895**	**889**	**18673**	**133**	**2288**	**905**	**13841**	**1760**	**17243**	**14522**	**191275**

Table 7 The pattern of Roman pottery deposition by ceramic phase and feature category

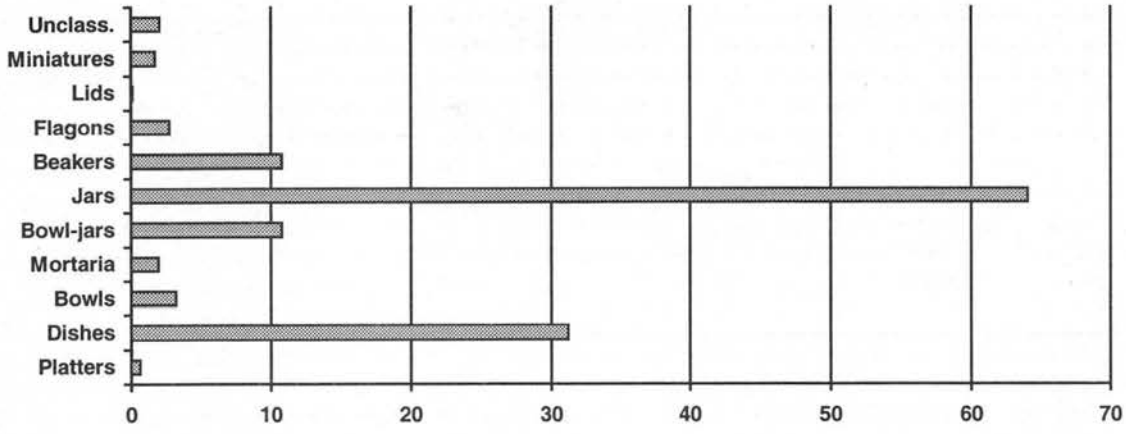


Figure 74 The pottery from all linear features and well 567 quantified by EVEs for each vessel class

linear features. This may suggest that a different type of rubbish was being deposited in pits compared to the linear features in that the pottery incorporated in pit fills had been left lying around for a much longer period of time. This is also suggested by the lower average sherd weight for the pottery from the pits. It is thus possible that the material recovered from the ditches represents debris from middens that was deliberately 'shovelled' into them during episodes of tidying. On the other hand, the material from the pits could represent what was left lying around after these episodes of tidying. Moreover, 72% of demolition contexts contained pottery suggesting that a large amount of ceramic rubbish was simply left lying around, although the average sherd weight for the material recovered from these contexts suggests that it is well-preserved. However, the time-consuming excersise of systematically searching for sherd-links was not carried out as deposit homogeneity cannot be proved.

Chronological trends have been identified within each category of feature and then compared (Table 7). To achieve this, the pottery dating evidence has been analysed using the Chelmsford ceramic phase sequence established by Going (1987, 106–17). This comprises eight separate ceramic phases covering the period from *c.* AD 60 to 400+. Pottery, because it is often closely datable, is a useful tool from which it is possible to study chronological issues. At Great Holts Farm, it is also by far the most common portable artefact type in terms of weight recovered from the site, apart from the brick and tile. By comparison, other closely datable artefact types are virtually absent, so it was not possible to use these in the same way as the pottery. Consequently, the importance of pottery as an indicator of the site's chronological trends is greatly enhanced.

The methodology adopted for the analysis of the dating evidence comprised:

1. the quantification of the dating evidence in terms of the volume of pottery present belonging to each ceramic phase for each feature category;
2. the detailed analysis of vessel classes that are particularly susceptible to typological change through time;
3. the identification of the number of well-dated contexts of each feature category in each ceramic phase.

A well-dated context is here defined as one that may be placed within one or two of Going's Chelmsford ceramic phases on the basis of the pottery types present. Stratigraphic relationships between contexts were also taken into account when assigning a date to a particular context. Dating was therefore not based exclusively on pottery criteria as it had been during the assessment. Although the Great Holts Farm assemblage is not large compared with urban sites like Colchester and Chelmsford, it is of sufficient size and quality in terms of the number of well-dated contexts available to allow a sound appreciation of the site's chronology.

Analysis of the linear features suggests that these were generally susceptible to the deposition of large quantities of pottery. While the pottery from linear features accounts for 58% by weight of all pottery recovered from the site, if the data from well 567 is also included the total EVE value stands at 128.98. Put another way, nearly 130 vessels are indicated by rim equivalents. This indicates that these features should provide sufficient data from which to examine the chronology of pottery usage at Great Holts Farm in considerable detail. By examining in detail the date ranges of those vessel types which seem to have been the most sensitive to typological change it is possible to gain a good appreciation of the chronology of pottery usage on the site.

The easiest way of looking at the chronology of pottery usage is to select a single vessel class that is both very common (Fig. 74) and has a widely appreciated susceptibility to typological change through time. At Great Holts Farm, although the jar category is the most common vessel class represented, many of the forms, like the G24 types, are not closely datable. On the other hand, the second most widespread vessel class, the dish, has several types where the typological pedigrees are well understood. For example, the pie dish types B2 and B4 first appeared towards the middle of the 2nd century, but during the mid 3rd century, it seems that it became fashionable to provide them with an incipient flange (B5.1). This development was evidently short-lived and by the end of the 3rd century the form had evolved into the bead and flanged B6 types. Another feature of these changes is the decline in importance of shallow dish forms like the B2.2, while the later B5.1 and B6 types are almost invariably deep vessels.

The incidence of datable dish types at Great Holts Farm (Fig. 75) suggests that these are predominantly late and latest Roman types, with the fully bead and flanged

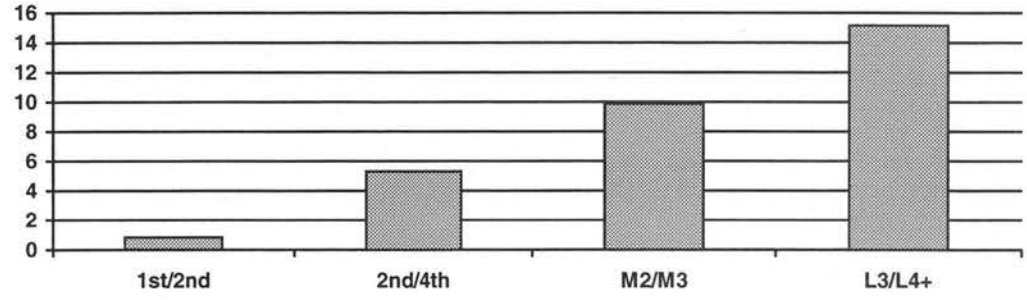


Figure 75 Histogram showing the quantities of platter and dish types within four broad date bands. Platters are exclusively 1st to 2nd-century, bead-rimmed dishes (B2/B4 types) have a mid 2nd to mid 3rd-century date range while bead and flanged dishes (B6) have a late 3rd to late 4th-century+ date range. Quantification is by EVEs

B6 types (late 3rd to 4th century) being the most common site find. Although the B1 'dog-dish' types are not all that closely datable, these were generally produced from the early 2nd to the end of the 4th century. On balance, at least 50% of these vessels ought to have reached the site in the late Roman period (*i.e.* from the late 3rd century onwards) given that B6 types are so common. This overall dominance of late Roman ceramic types is also seen on close inspection of the mortaria (pp.128–9), although it must be remembered that this vessel class is never common in any period at Great Holts Farm. Nonetheless, it can be viewed as further confirmation that we are dealing with a late and latest Roman site at Great Holts Farm.

The site's chronological trends

The results of the analysis suggest the following chronological trends. Not all feature categories are represented in each ceramic phase (Table 7). Ditches can be assigned to all periods, although most appear to belong to the period covered by ceramic phases 6 to 8 (late 3rd to 4th century). Pits too seem to belong largely to the same period; few can be assigned to an earlier date with any confidence. Two demolition horizons are visible; the first seems to have been a minor or partial episode in ceramic phase 7 (early to mid 4th century), the second a major episode in ceramic phase 8 (late 4th century). Leaving aside the problematical evidence from the main villa building 416, more noteworthy is the complete absence of well-dated structural evidence prior to ceramic phase 6/7. There is also a small but important body of data suggesting continued building activity into ceramic phase 8. Features associated with the site's water supply and drainage all belong to ceramic phase 6/7 or 7 where datable, although robbing or final infilling can all be placed within the main demolition period in ceramic phase 8. The bulk of the pottery recovered from the group of miscellaneous features also came from ceramic phases 6/7 to 8 contexts.

Not every ceramic phase is represented by well-dated contexts (Fig. 76), particularly in the early period (2nd and 3rd centuries). There are no certain well-dated contexts prior to ceramic phase 3 (1st to early 2nd century), although there is a hint of some overlap between ceramic phases 2 and 3. The number of well-dated contexts in this early period is minimal and judging by the low quantities

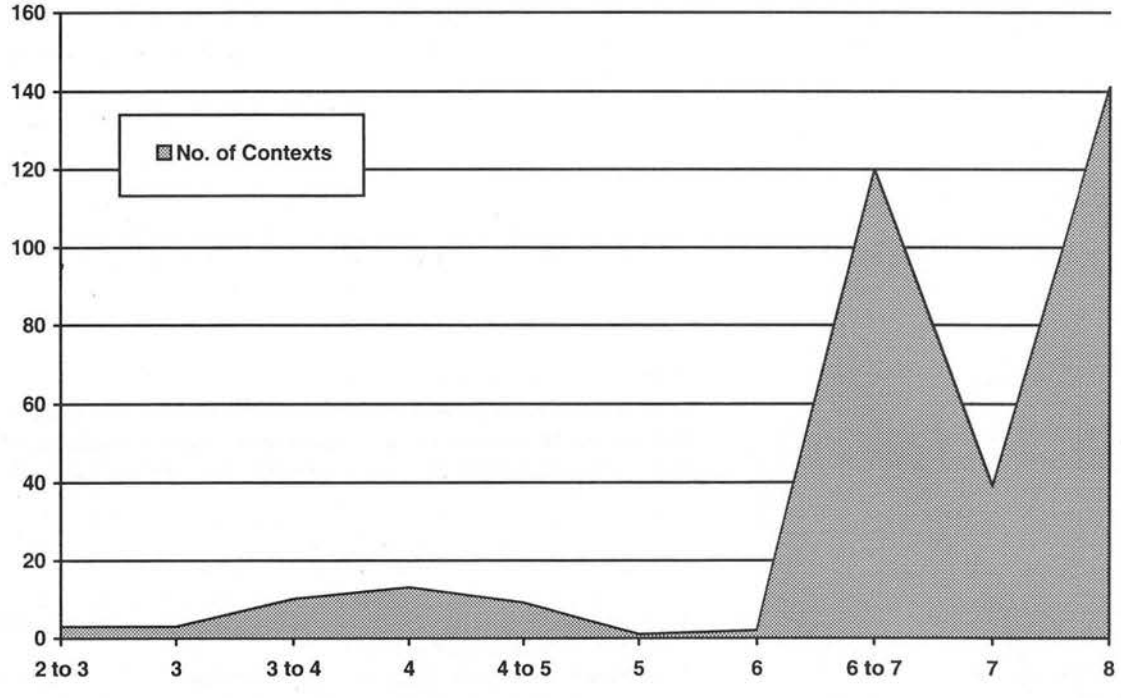


Figure 76 Histogram showing the number of contexts assigned to each ceramic phase based on spot-dates

of pottery in these contexts, this appears to signify a very minor episode in the site's ceramic history. Earlier pottery was identified during the spot-dating, but this is demonstrably from later contexts and is therefore residual. Ceramic phase 4 (later 2nd century) is characterised by a large quantity of pottery (34.0kg) but few contexts. Although this is the third largest period assemblage, it is derived entirely from linear features.

The 3rd century is not well represented although there appear to be several contexts that overlap with ceramic phase 4. Pottery attributable to ceramic phase 5 (early to mid 3rd century) is marginal and must represent particularly low levels of activity. During ceramic phase 6 (late 3rd century) there is a recovery in the amount of pottery being deposited at Great Holts Farm. However, diversity in the range of feature types is not seen until we start to deal with contexts that overlap with ceramic phase 7 (early to mid 4th century). A total of 35.0kg of pottery, the second largest period assemblage, came from contexts of this date. It is here that we encounter structural evidence for the first time. Nearly one third of the pottery (64.5kg) from the site's well-dated contexts came from ceramic phase 8 levels (late 4th century), the bulk of which is derived from linear features and demolition horizons.

The interpretation of the site's chronological trends

Having established the main chronological trends we must now turn our attention to their interpretation. It is these trends which will be used to place site episodes into a chronological scheme (Table 8). Above all, there is the matter of the earliest occupation on the site, its dating and what it represents. Pre-ceramic phase 2 pottery was identified on the site, although the amount is minimal and clearly not commensurate with intensive occupation. Indeed none of this material could be related to feature fills of this period with any confidence. It is clearly residual. The earliest features are a small number of ditches that were probably being infilled at the end of ceramic phase 2 or at the beginning of ceramic phase 3. This is the earliest direct evidence for a field system operating on the site, even if we are in effect dealing with disuse horizons.

This picture remains static throughout the rest of the 2nd and up to the mid 3rd century. Several significant deposits of Antonine pottery in the fills of ditches might imply that there was a peak in activity at this time. However, this seems to be a false impression as this material comes from a relatively small number of contexts. Nevertheless, there is a suggestion that significant re-modelling of the existing field system may have occurred in this period as represented by the infilling of redundant ditches. The early to mid 3rd century is something of a problem. Pottery attributable to this period (ceramic phase 5) is particularly hard to identify since the amounts are once again minimal. Moreover, there are practically no deposits that can be assigned to this period with any confidence. This may point to something of a hiatus in activity. The later 3rd century (ceramic phase 6) sees the start of a definite upturn in the amount of pottery being deposited on the site. However, much of the pottery characteristic of this period is also characteristic of the first half of the 4th century. Thus without stratigraphic controls, distinguishing between the pottery of ceramic phase 6 and that of ceramic phase 7 can be a problem (Fig. 76). Ceramic phase 6 appears to have seen further re-modelling of the pre-existing field system with lengths of ditches going out of use and perhaps others being cut. This process seems to have continued into the next ceramic phase as well.

The 4th century appears to mark radical change on the site. While it is possible that the main villa building 416 was constructed in ceramic phase 6, the volume of pottery on the site datable to ceramic phases 7 and 8 perhaps indicates a date at the very beginning of the 4th century. This is also the likely construction date for the bath-house 414. It is certainly the case that none of the buildings were constructed prior to ceramic phase 6. There is, therefore, compelling evidence to suggest a genuine construction horizon at the end of the 3rd century or very early in the 4th century. Modification of the field system continued throughout the 4th century as indicated by the continued deposition of substantial amounts of pottery in ditch fills. Whether this represents boundaries going out of use or simply the dumping of refuse in convenient hollows is another matter. The mid 4th century saw the going out of service of bath-house 414, represented by the final silting up of the ponds. These ponds almost were certainly the result of a failed drainage system from the bath-house, and their silting provides a useful end-date for the baths. Also in this period may be placed the first of the demolition horizons as represented by the partial demolition of building 368, which probably occurred before the baths went out of use. That these episodes must have occurred before the end of ceramic phase 7 can be ascertained from the total absence of any 'latest Roman' pottery from any of these deposits.

The late 4th century provides more pottery than any other period at Great Holts Farm. A minor construction or reconstruction horizon is identifiable in relation to the

Period	*Ceramic phase*	*Activity*
Mid 2nd to mid 3rd century	2/3 to 5	Field system; cremation; ovens; some pits.
Late 3rd century	6	Field system; earliest possible construction date of main villa building 416; some pits.
Early 4th century	7	Field system; likely construction date of main villa building 416; in-filling of well 567; construction of bath-house 414; likely construction date of buildings 368 & 417; some pits.
Mid 4th century	7	Field system; demolition of building 417; partial demolition of building 368; silting up of ponds (bath-house out of service); some pits.
Later 4th century (*c.* 360/370)	7/8	Field system; maintenance of main villa building 416; some pits.
Late 4th century (*c.* 370 to 400)	8	Field system and disuse; demolition/robbing of main villa building 416, bath-house 414 & remainder of building 368; robbing of drains; in-filling of cistern 415; silting up of ponds; cremations; some pits.
Early 5th century and ?later	8+	?final disuse of field system, clearly no domestic occupation.

Table 8 The chronological trends at Great Holts Farm in relation to discernible events as indicated by the pottery

main villa building 416, which suggests that the fabric of the building was being maintained at least until the end of ceramic phase 7 (mid 4th century), but more probably into ceramic phase 8 (later 4th century). The next important episode appears to be a major demolition horizon that embraces the main villa building 416, the bath-house 414 and the remaining portion of building 368. That this is a significant event can be shown by its all-embracing, even systematic, nature. After this point there is no datable evidence for structures of any kind on the site. A strong case can therefore be made for a radical change in site function, represented by a reversion to field systems not associated with domestic occupation within the site area, as had been the situation before the end of the 3rd century.

Conclusions

Pottery has provided a useful medium for the study of the chronology of Great Holts Farm. The results demonstrate all the main chronological trends quite clearly and indicate that the nature of the archaeologically identifiable occupation on the site underwent several important changes in the Roman period. Some light has been shed on the chronological conundrums identified at the beginning of this section that not only helps provide a better understanding of the site, but also solves in some way all of the main problems outlined above. Dating evidence shows that the buildings were placed within a pre-existing landscape which continued to undergo some radical changes while the villa complex was in use and in the period immediately after. The identification of the main chronological trends demonstrates that not only was the bulk of the pottery deposited in the late and latest Roman period, but also that the main villa building 416 could not have been constructed any earlier than the late 3rd century. Moreover, it is most probably of early 4th-century date. These trends also show that the building was probably occupied for most of the 4th century until it was finally abandoned and demolished at the end of the century.

Pottery supply to Great Holts Farm

Before ceramic phase 3

In the section describing the site's chronological trends it was shown that there were no identifiable well-dated contexts earlier than the Hadrianic (*i.e.* the end of ceramic phase 2 or the beginning of ceramic phase 3). It was also noted that a small amount of earlier pottery was identified and that this invariably consisted of a residual component in later contexts. This makes it very difficult to understand pottery supply and what it represents at Great Holts Farm in the period from the mid 1st to early 2nd century. Comments can be made, but those presented here must be viewed with extreme caution.

The late pre-Roman Iron Age and pre-Flavian periods

The pottery of this period comes entirely from later contexts and is characterised by the lack of fine ware imports such as terra rubra and terra nigra. Most of the pottery is grog-tempered and presumably locally made. Residual Grog-tempered wares (Thompson 1982), for example, which are datable to the Late Pre-Roman Iron Age and early Roman transition period (*i.e.* ceramic phase 1 and earlier), are among the earliest fabrics reaching the site. These are present in contexts that exhibit a diversity of dates stretching from the early/mid 2nd to late 4th centuries. In total forty-seven sherds (348g) of this pottery was identified from a total of twenty-two separate feature fills. Only one context, the fill of cut 24 produced exclusively Grog-tempered pottery and this comprised a single sherd. However, this by itself is not sufficient to suggest a Late Pre-Roman Iron Age or early Roman transition period date for the feature.

Ten sherds (184g) of Early Shell-tempered ware may also be of this period, although some probably continued to reach the site in ceramic phases 1 and 2. This material was recovered from three separate feature fills. These sherds form the only evidence of pottery reaching the site that has to have been made outside central Essex. It is also noteworthy that none of these sherds were found in association with Grog-tempered pottery, as would be expected on sites in this area occupied in the Late pre-Roman Iron Age and early Roman transition period. However, no vessel forms could be identified making closer dating of these sherds impossible. While the presence of these fabrics suggests something was happening in this period, the overall site quantities involved are minimal and clearly not indicative of intensive activity in this period. All that can be said is that there is a hint of activity in this period, although a good understanding of its character remains elusive. It may be related to the setting out of the original field system, but the evidence is not of sufficient quality to prove this beyond reasonable doubt. This pottery could quite easily have arrived on site with later material.

Chelmsford ceramic phases 1 and 2 (late 1st to early 2nd century)

Small amounts of pottery from this period are identifiable, mainly on the grounds of vessel form. The A2.1 platters in gully 441 and ditch 402 are typically Flavian and would be expected in horizons attributable to ceramic phases 1 and 2. However, these pieces were residual in Hadrianic and Antonine contexts respectively. Another readily identifiable vessel type current in this period is the high-shouldered necked jar (G16–20). Many of these forms were first introduced in grog-tempered fabrics and continued to be produced in a variety of black-surfaced and grey ware fabrics from the mid 1st until the early 2nd century. There are, however, only sixteen of these vessels recorded from ditch groups and none in the early grog-tempered fabrics; again a figure scarcely commensurate with intensive domestic activity in this or earlier periods. It should also be noted that these forms are also predominantly residual pieces in later contexts. This material provides only tentative evidence for the presence of a field system in this period and nothing else, a conclusion supported by the date and quantities of South Gaulish samian on the site. However, pottery of Flavian-Trajanic date does appear to be a lot more common on the site than material of earlier periods.

The earliest physical evidence for the infilling of ditches is provided by ditch 382. This contained a small group of sherds which seems to fit in to a date at the end of ceramic phase 2 or the very beginning of ceramic phase 3. However, the group is too small and fragmentary to present as a quantified group (only 1.3kg or 0.40 EVE) and discussed as a key group in the manner of those for later ceramic phases. There are only four fabrics present and 26% by weight comprised storage jar fabrics. The few

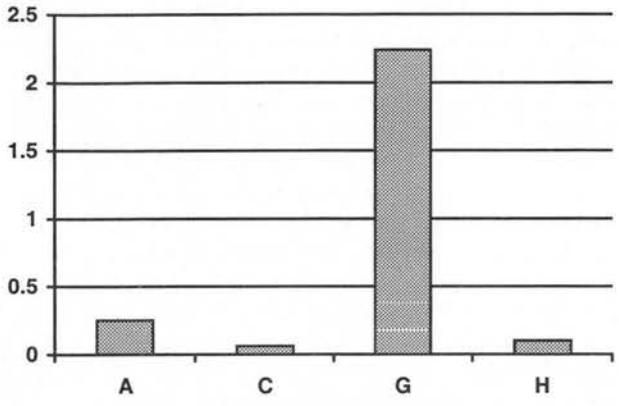


Figure 77 The incidence of vessel class by EVEs (Group 1)

grog-tempered ware sherds in the group were particularly fragmentary suggesting that they are residual. Moreover, there are few identifiable forms and those that were present are all jars. The array of jar forms comprises G17, G20 and G44.1 storage jars, none of which are out of place in contexts of this date.

Ceramic phase 3

Very little of the pottery can be assigned to ceramic phase 3 with any real confidence. The only significant assemblage from the site that is reasonably securely dated to this period comes from the fill of gully 441. Compared with assemblages of other periods, the quantity from this feature (3.2kg) is not large, but represents 84% of all ceramic phase 3 pottery by weight.

Group 1

(Figs 77, 89.1–9; Table 9)
(*c.* AD 120–140), early to mid 2nd-century (contexts 6304 and 6396, the fills of gully 441, enclosure E7)

Summary of the pottery dating evidence

The fill of gully 441, a single-fill sequence, was excavated in two segments. The range of forms and fabrics present are consistent with a Hadrianic or early Antonine date, making it the earliest of the well-dated ditch groups at Great Holts Farm. This dating is based on the presence of just three vessels, a worn and burnt Central Gaulish samian ware f27 cup, a BB2 G9.1 jar and a Sandy grey ware G11 jar. Otherwise the remaining vessels, which include several Black-surfaced ware high-shouldered necked jar types G19, would not be out of place in ceramic phase 1–2 horizons.

Residuality and assemblage condition

Group 1 contained a number of vessels that would not be out of place in contexts dating to ceramic phases 1–2 (later 1st to early 2nd century). Measured by EVEs, pottery of this date represents 47% of the total assemblage, with only 15% actually dating the context. This suggests high levels of residuality. The very low weight to EVEs ratio also suggests that this group is in remarkably poor condition. Moreover, only a small number of vessels provided EVEs measurements, again indicating a group in relatively poor condition. Consequently, there may be some statistical biases present in certain categories of pottery.

The fabrics

Black-burnished ware 2 (BB2)
83g; 5.66% EVE
This is a problem fabric in central Essex. It is sometimes very hard to distinguish BB2 from Black-surfaced ware products, where there is an overlap in vessel form. Jars often prove to be a specific problem area unless they are decorated with burnished lattice. Having said this, the only form present in this group was the early jar form G9.1, which is characteristically mid 2nd-century in date.

Black-surfaced wares (BSW)
815g; 60.75% EVE
This is a ware group rather than a specific fabric and corresponds, in this period at least, to Going's Romanising fabrics (Going 1987, fabrics 34 and 45). It is also by far the most common ware category in this period. Recent research has shown that the manufacture of these fabrics was relatively widespread (Going and Ford 1988, 65) with production attested at a number of locations including Chelmsford (Going 1992a, 97). Leaving aside the residual late 1st-century platter form A2.1, the range of forms present is restricted to jars, mainly G19.2 types (Fig. 89.2). The only other form present is the G40.1 type flask (Fig. 89.7). The absence of dishes in a group of this period is notable.

Colchester buff ware (COLB)
12g
In this group, Colchester buff ware is represented by an undiagnostic body sherd. The form is probably from a flagon. In this period and throughout the rest of the 2nd century, Colchester was the main mortaria producer and supplier to central Essex; the absence of this vessel class in this group is therefore quite noteworthy. It may be a symptom of the general absence of domestic activity at Great Holts Farm in this period.

Early shell-tempered ware (ESH)
122g
This fabric is common in small quantities on central Essex sites, but probably originated in South Essex or perhaps even northern Kent. All five sherds in this fabric come from a closed form of uncertain type, but probably a jar. These sherds are almost certainly residual in contexts of this period, however.

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
BB2	15	83	2.52	5.53	0.15	5.66
BSW	104	815	24.81	7.83	1.61	60.75
CGSW	1	8	0.24	8.00	–	–
COLB	1	12	0.36	12.00	–	–
ESH	5	122	3.71	24.40	–	–
GRF	22	149	4.53	6.77	–	–
GRS	53	569	17.32	10.73	0.59	22.26
MICA	2	7	0.21	3.50	0.10	3.77
NKG	27	98	2.98	3.62	–	–
STOR	27	1412	42.86	52.29	0.20	7.54
VRW	3	9	0.27	3.00	–	–
Totals	**260**	**3284**	–	**12.63**	**2.65**	–

Table 9 The pottery from ditch 441

Fine grey wares (GRF)
149g
This is another fabric group rather than a distinctive fabric. Only one vessel was represented, the base and lower half of a beaker decorated with zones of fine rouletting. A local kiln can also be envisaged for this vessel.

Sandy grey wares (GRS)
569g; 22.26% EVE
These fabrics formed the next largest group after the Black-surfaced wares, and like them are probably derived from a variety of presumably local kilns. Surprisingly, the range of open forms is restricted to a single flanged bowl; while the ubiquitous plain- and bead-rimmed dishes are absent. This is probably due to the absence of domestic occupation on the site in this period rather than any real chronological factor. Jars form the main vessel class and include a small storage jar (G44) type vessel as well as examples of G11.1 (Fig. 89.6) and G23. Other vessels included a jar of uncertain type and an unusual, although fragmentary, flanged bowl (Fig. 89.1), both of which may be residual. No other vessel classes are represented in Sandy grey ware.

Mica dusted wares (MCA)
7g; 3.77% EVE
These fabrics are essentially ordinary colour-coated wares that utilise a mica-enriched slip. The only forms present are the large globular H2 beaker types with everted rims (Fig. 89.5). Colchester may be a likely source.

North Kent grey ware (NKG)
98g
This source seems to have supplied a small quantity of H6 type poppy-head beakers to the site in the early Roman period and into the mid 2nd century. In North Kent, Monaghan (1987, 55–61) provides a very broad date range for the production of his A2 poppy-head type beakers stretching from *c.* AD 70 to 230. The vessel represented here is decorated with the classic barbotine dot motif but is too fragmentary for close dating.

Storage jar fabrics (STOR)
1412g; 7.54% EVE
Storage jar fabrics are the main assemblage component, measured by weight at 42%. This should properly be regarded as a fabric group rather than a separate fabric. Vessels in these coarse-tempered fabrics are likely to be derived from a variety of doubtless Central Essex sources, but are not distinctive enough for meaningful sub-division. The only form represented, the high-shouldered G44 type (Fig. 89.8), is particularly characteristic of this period.

Verulamium Region white ware (VRW)
9g
This distinctive coarse-textured fabric is found only in small quantities at Great Holts Farm and is not out of place in contexts of this date. The type represented in this group is a thin-walled closed form, probably a flagon. Although a major producer in this period, mortaria from this source, were not identified at Great Holts Farm.

Pottery supply c. AD 120–140

This group may be assigned a Hadrianic date and is therefore comparable with material from ceramic phase 3 at Chelmsford. Although the assemblage is small it does serve to illustrate certain important features relating to pottery supply in this period. As at Chelmsford, several trends are noticeable in the Hadrianic that continue right to the end of the Roman period, most notably the dominance of locally produced pottery and the relatively low incidence of fine wares and imports. Moreover, imports show little in the way of diversity being restricted to the standard types.

In terms of fabrics and trade, fine wares and imports are very rare with only Central Gaulish samian and Local mica-dusted ware being represented in very small quantities. The range of buff wares shows some diversity and comprises Colchester and Verulamium Region products with the former source the most important of the two. Both of these sources would be expected to figure in contexts of this date, however. The small amount of South Essex Early shell-tempered ware is almost certainly residual. Of the more utilitarian wares, Black-surfaced ware fabrics are dominant, while Sandy grey wares form a sizeable assemblage component, but not on the scale seen at Chelmsford (Going 1987, 110). Both of these fabric groups are almost certainly derived from a variety of undefined local sources. Leaving aside the fine wares and the Verulamium Region white ware, the only other fabric which does not appear to have been manufactured in Essex is the small quantity of North Kent grey ware. This industry appears to have been exporting a narrow range of beaker forms into Essex in this period and probably continued to do so into ceramic phase 4.

Several aspects of assemblage composition stand out. Firstly, the range of vessel classes present is narrow, being restricted to four classes: platters, bowls, jars and beakers. Moreover, only five out of the eleven fabrics are represented by EVEs. Jars dominate the assemblage and include a significant number of G44 type storage jars (Fig. 89.8) and high-shouldered necked G19.2 types (Fig. 89.2). Cooking-pot types such as the G9.1 are present, but not common, as are the neckless G11.1 (Fig. 89.6) and the bottle-like G40.1 (Fig. 89.7). The G9.1 vessel is the only vessel type to be decorated in this assemblage and may reflect a genuine absence of decoration in this period.

In this period, ceramic platters are represented by a small number of A2.1 type vessels. These were being replaced in Chelmsford at this time (Going 1987, 110) so the absence of dish forms and also of mortaria seems unusual in contexts of this date. This may again reflect the absence of domestic occupation on the site, the small size of the assemblage, or a combination of both. There is also very little indication as to the flagon types in use; but in all probability these did not differ greatly from those in use at Chelmsford and Colchester in this period. Some at least must have been derived from the Verulamium region. The range of beaker forms present is also limited, being confined to the large H2 type (Fig. 89.5) and the poppy-head H6 types, where form could be identified with any certainty. None of these beakers are imports.

Ceramic phase 4

(Figs 78, 88.18–27, 89.31–53; Tables 10 and 11)
There are only two well-dated groups belonging to the mid to late 2nd century worth detailed study. The first (Group 2) from the fill of ditch 310 appears to be slightly earlier than the second, the fill of ditch 402. Group 3 contains material that could have been deposited as late as *c.* AD 180–200. These two groups account for 26kg of pottery, the majority of the ceramic phase 4 assemblage, which totalled 34kg. Group 2 also provided some independent dating evidence in the form of a coin dated to AD 138–161.

Group 2

(Figs 78, 89.18–26; Table 10)
(*c.* AD 140–180), mid to late 2nd-century (contexts 5624, 5613 and 5612 (with contexts 5604 and 5608) the primary, secondary and top fills of ditch 310, enclosure E2)

Summary of the pottery dating evidence

The primary, secondary and top fills of ditch 310 produced a large and fairly homogenous group of sherds (22.5kg) suggesting infilling over a relatively short period of time. A mid to late 2nd-century (early to mid Antonine) date is

strongly suggested by the range of forms and fabrics present, although there is some residual material from ceramic phases 2 and 3. The latest identifiable pieces consist of a variety of bead-rimmed dishes (B2 and B4 types) in a range of fabrics, a Central Gaulish bowl f37 in the style of Cinnamus ii (dated *c.* AD 150–180), and a late variant of the poppy-head beaker (H6.3) in North Kent Grey ware. H20 type beakers, typically mid 2nd-century in date, are also well represented. Of the jars, types G5.4, G22 (Fig. 90.50) and G9 confirm the general dating of the group.

Residuality and assemblage condition

Group 2 contained a small amount of residual material, including H1.1 (Fig. 90.53) and H10 beakers and G19 type jars (Fig. 90.49). It is worth noting the absence of Grog-tempered and Early shell-tempered pottery in this group. Measured by EVEs, residual pottery accounts for 23% of the assemblage.

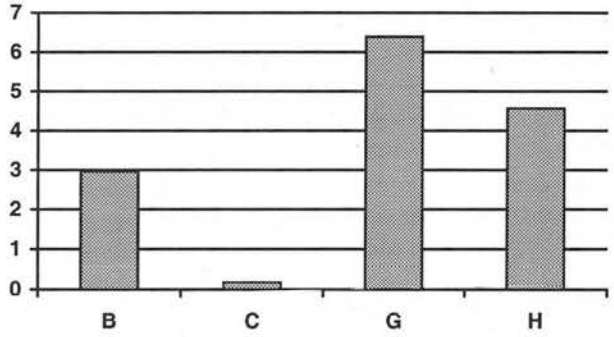


Figure 78 The incidence of vessel class by EVEs (Group 2)

The fabrics

South Spanish Amphorae (ASS)

1132g

Three sherds only are present in this fabric within Group 2. Amphorae of any kind tend to be rare site finds in Essex; the majority of amphora sherds at Great Holts Farm are from the globular Dressel 20 type, which carried olive oil. This is the case with the amphorae from ceramic phase 4 contexts at Great Holts Farm. There is no indication that these vessels were reaching the site any earlier than this period.

Black-burnished ware 2 (BB2)

523g; 6.76% EVE

Unlike the ceramic phase 3 group recovered from gully 441, the BB2 from this feature exhibited considerable diversity in form. A wide range of dish types were present, including the undecorated bead-rimmed B2.3 (*cf.* Monaghan 1987, type 5C4) and B4.2 types as well as the deep plain-rimmed B3.2 type (*cf.* Monaghan 1987, type 5F3). The latter were considered by Going (1987, 14) to have a 3rd to 4th-century date range at Chelmsford. However, Monaghan (1987, 152–3) provides a mid 2nd to 3rd-century date range for vessels of this type in northern Kent, a date bracket consistent with the evidence from Great Holts Farm and Brightlingsea, Essex (Martin 1996, 318). A single burnished wavy line is the only form of decorative motif found on the dishes (Fig. 89.20). While dishes are absent from gully 441, the range of jar types are confined to the typically mid 2nd-century G9.1 decorated with burnished acute-angled lattice. This is also the case with the BB2 jars in this group.

Black-surfaced wares (BSW)

8559g; 27.95% EVE

As with the ceramic phase 3 group from gully 441, Black-surfaced wares dominate the assemblage. These fabrics account for 37% by weight of all pottery. However, unlike the material from Group 1, these fabrics exhibit much greater variation in vessel form in this group. The dish types in evidence, the bead-rimmed B2.1 and B4.2 (Fig.89.18), are all typically Antonine and are present in fairly substantial numbers. Another vessel class showing considerable diversity in form is the jar. Leaving aside the residual G19 types, the range of forms include narrow-necked vessels with bifid rims, the necked G22.1 with 'wheat-ear' type decoration incised on the shoulder, the plain G23.3 (Fig. 90.50), the typically early to mid Antonine high-shouldered neckless G9.2 with flared rim, the lid-seated G5.4. A number of unclassified jar type vessels are also present. Moreover, relatively narrow-necked vessels, strongly reminiscent of the late Roman G35.2 types are also present in small quantities, and like the G33 types, also carry 'wheat-ear' style decoration. Larger vessels are also in evidence with the G45.1 storage jar present in this fabric. The only bowl form was a C1 type vessel (Fig. 90.47). However, this type is almost certainly residual in contexts of this period.

Unspecified buff wares (BUF)

84g

Two sherds are present in this fabric and it is possible that these are in fact Colchester products. No form is identifiable.

Colchester buff ware (COLB)

9g

Buff wares of any kind are never common in contexts of any period at Great Holts Farm. In this group, Colchester buff ware is represented by a single small body sherd. The presence of trituration grits indicates that this is from a mortarium. Although no form is identifiable, this is the earliest incidence of this vessel class in a dated context.

Colchester colour-coats (COLC)

133g; 3.41% EVE

This fabric forms a relatively minor assemblage component, although it was the second largest fine-ware fabric after samian. All the sherds present can be assigned to H20.1 vessels with rough cast decoration. This is one of the commonest Colchester colour-coat beaker forms in Essex.

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
ASS	3	1132	5.01	377.33	–	–
BB2	67	523	2.31	7.80	0.99	6.76
BSW	816	8559	37.90	10.48	4.09	27.95
BUF	2	84	0.37	42.00	–	–
COLB	1	9	0.03	9.00	–	–
COLC	45	133	0.58	2.95	0.50	3.41
GRF	20	328	1.45	16.40	1.06	7.24
GRS	386	3166	14.08	8.20	3.60	24.60
LOND	7	34	0.15	4.85	0.12	0.82
NKG	91	313	1.38	3.43	2.76	18.86
OBB	13	202	0.89	15.53	0.60	4.10
RED	12	82	0.36	6.83	0.18	1.23
STOR	190	7629	33.78	40.15	0.73	4.98
CGSW & EGSW	9	389	1.72	43.22	–	–
Totals	**260**	**3284**	–	**13.58**	**2.65**	–

Table 10 The pottery from ditch 310

Fine grey wares (GRF)
328g; 7.24% EVE
Compared with Group 1, miscellaneous Fine grey wares form a much higher proportion of the Group 2 assemblage. While beakers appeared in Group 1, in Group 2 the repertoire was more diverse and included a G19.3 type jar (Fig. 90.49), which is almost certainly residual, a B4.2 dish and a H2.1 beaker. The higher percentage of Fine grey wares is probably due to the differences in vessel class with the heavier jars showing a bias against the lighter thin-walled beakers.

Sandy grey wares (GRS)
3166g; 24.60% EVE
These fabrics formed the third largest group after the Black-surfaced wares and the Storage jar fabrics and, like them are probably derived from an assortment of presumably local kilns as in earlier periods. Sandy grey wares comprised 14% of the assemblage by weight. A wide variety of vessel forms are present, including dishes, jars and beakers. The dish types comprise the shallow bead-rimmed B2.2 and the deep bead-rimmed B4.2; both of these types are generally common in assemblages of this period. The jars also showed relatively diversity in types; G5.4 lid-seated jars, G23 and the G45.1 type storage jar are all represented. A number of unclassified jar type rims have also been recorded. Of the beakers, these were confined to the small H1.1 types (Fig. 90.53), which are by now almost certainly residual. These are more usually 1st-century forms and suggest a residual component to the assemblage is present which is not otherwise identifiable within the Sandy grey wares.

London type ware (LOND)
34g; 0.82% EVE
A single H10 type beaker (Marsh 1978, type 17) is present which is here assigned to a source in the London area. This is in marked contrast to Chelmsford that appears to have received only open forms in this fabric. This form also appears in North Kent grey ware. It is typically a 1st-century form in Essex.

North Kent grey wares (NKG)
313g; 18.86% EVE
This source continued to supply H6 poppy-head beakers to the site. In contrast to the example within Group 1, the vessel in this group exhibits the typically late or devolved deeper funnel-shaped rim of the H6.3 type. The only other North Kent grey ware beaker form in the group is a residual H10 type (Monaghan 1987, 2G2). These carinated or biconical vessels are copies of terra nigra forms and generally do not survive the 1st century AD.

Unspecified black-burnished wares (OBB)
202g; 4.10% EVE
Wheel-thrown Black-burnished wares are problem fabrics in Essex, especially on rural sites, and in other parts of East Anglia (*cf.* Darling 1993, 207–8). They seem to be part of a general Black-surfaced ware tradition that is quite distinct from the more typical grey wares. Vessels assigned to the category of Unspecified black-burnished wares share the same forms with BB2, but do not have the same highly polished surfaces and also lack the grog tempering that is characteristic of the miscellaneous black-surfaced ware. They are also much closer to BB2 in fabric but not finish. In this group, the range of vessels present is confined to the bead-rimmed dish with both the deep B4.2 (Fig. 90.46) and the shallow B2.1 (Fig. 90.43). There are no closed forms. These fabrics account for less than 1% of the assemblage by weight.

Miscellaneous oxidised red wares (RED)
82g; 1.23% EVE
By and large, a good proportion of these wares are simply oxidised versions of the Sandy grey ware fabric group, but are not as frequently encountered. Miscellaneous oxidised red wares comprise less than 1% of the assemblage by weight. The only forms identified were a flagon and a G23.3 type jar.

Storage jar fabrics (STOR)
7629g; 4.98% EVE
This was the second largest category in the group, measured by weight at 33%. Compared with Group 1, the range of rim forms exhibits much greater variation. G44 types with their characteristic 'wheat-ear' decoration are again present, but in this group they are also joined a G45.1 vessel. The latter are typically 2nd to 3rd-century at Chelmsford and so are not out of place in a group of this date.

Group 3

(Figs 79, 89 and 90.31–42; Table 11)
(*c.* AD 160–200), mid to late 2nd-century (contexts 6275 and 6338; fills of ditch 402, enclosure E6)

Summary of dating evidence
Ditch 402 was a single-fill feature in the two excavated segments. The latest forms present include a complete Central Gaulish samian f72 beaker which belongs to the second half of the 2nd century, an Oxidised red ware B10.1 dish, a BB2 bead-rimmed dish (B2/B4), and a Colchester colour-coat beaker H20.2 (Fig. 89.34). While the latter piece is attributable to the period *c.* AD 130–170, the Oxidised red ware dish is dated 2nd to 4th-century at Chelmsford. The G23 type jars are not necessarily out of place in a group of this date. Black-surfaced wares form a much lower proportion of the assemblage compared to Sandy grey wares which are now the main component. This also argues for a later depositional date compared to Group 2. On balance this group probably dates to the period *c.* AD 180–200.

Residuality and assemblage condition
There are several residual pieces including an early type of the poppy-head beaker (H6.1) in North Kent grey ware and a G20.2 jar in Black-surfaced ware, as well as a small number of Grog-tempered ware and South Gaulish samian sherds. Measured by EVEs, residual pottery accounts for just 14% of the assemblage. However, like Group 2, this group exhibits a low weight to EVE ratio.

The fabrics
Black-burnished ware 2 (BB2)
7g; 0.15% EVE
Compared with Group 2 the range of forms present in this fabric show a marked decline, with only bead-rimmed B2/B4 type dishes being in evidence. This may be a chronological factor, but is more likely to be a product of assemblage size.

Black-surfaced wares (BSW)
1495g; 29.34% EVE
These fabrics show a marked decline compared with the early/mid 2nd-century Group 1 and the mid 2nd-century Group 2. The range of forms includes a number of pieces that are undoubtedly residual, including an A2.1 platter (Fig. 89.31), a G20.2 jar (Fig. 89.33) and a possible G17 type vessel. Several unclassified jar types have also been

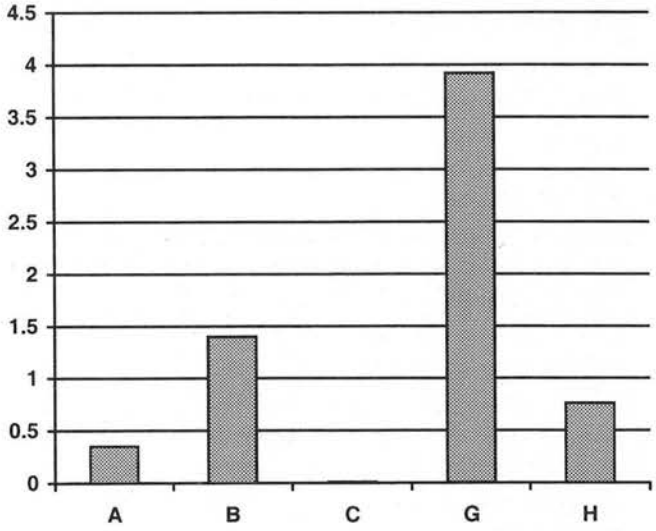


Figure 79 The incidence of vessel class by EVEs (Group 3)

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
BB2	1	7	0.06	7.00	0.01	0.13
BSW	240	1495	13.10	6.22	1.89	25.40
BUF	18	24	0.21	1.33	0.01	0.13
COLB	285	1013	8.88	3.55	–	–
COLC	2	14	0.12	7.00	0.35	4.70
GRF	4	10	0.08	2.50	–	–
GROG	12	89	0.78	7.41	–	–
GRS	320	4820	42.26	15.06	3.19	42.87
MICW	38	210	1.84	5.52	0.01	0.13
NKG	94	287	2.51	3.05	0.41	5.51
RED	15	295	2.58	19.66	0.57	7.66
STOR	55	2907	25.49	52.85	–	–
SGSW & CGSW	4	200	1.75	50.00	1.00	13.44
WCS	5	33	0.28	6.60	–	–
Totals	**1093**	**11404**	–	**10.43**	**7.44**	–

Table 11 The pottery from ditch 402

recorded, and these are also presumably residual. A B7.1 dish (Fig. 90.38) and a G23 type jar probably represent some of the more typical forms of this period. Noticeable, however, is the absence of bead- and plain-rimmed dishes (B2 and B4). Their absence is also likely to be a product of assemblage size rather than date.

Miscellaneous buff wares (BUF)
24g; 0.15% EVE
The only form identifiable in this fabric is a C1 type bowl. These are characteristically Flavian-Trajanic in date are therefore residual in this group. It is quite possible that this is a coarse Colchester product or was perhaps even locally made.

Colchester buff wares (COLB)
1013g
These fabrics again form only a minor assemblage component. The only form represented is a flagon.

Colchester colour-coats (COLC)
14g; 5.43% EVE
These fabrics show a slight increase compared with the quantities within Group 2, and now constitute the main fine ware. The only form identified, however, was the H20.2 type beaker with fine rough-cast decoration.

Fine grey wares (GRF)
10g
These fabrics also form a relatively minor assemblage component. No forms are identifiable.

Grog-tempered wares (GROG)
89g
These sherds form a small percentage of the total residual material present in the group. All sherds are in a coarse mixed tempered ware dominated by comparatively large particles of grog. No vessel forms are identifiable.

Sandy grey wares (GRS)
4820g; 49.53% EVE
While the Black-surfaced wares appear to go into decline, the Sandy grey wares increase in volume and now forms the dominant assemblage component, at 42% by weight. The range of forms present, however, is restricted to G23 type jars (Fig. 89.34–5) and G40 type flasks (Fig. 90.41). Some of the G23 vessels show traits that suggest that they are developing into the more common later G24 type. A number of jar rims of uncertain type (Fig. 90.39) have also been recorded. The absence of beakers and dishes, although present in earlier groups, is notable. Once more this is probably a product of assemblage size rather than any real chronological trend.

Miscellaneous Late Iron Age coarse wares (MICW)
210g; 0.15% EVE
Essentially these comprise a variety of hand-made fine sand tempered fabrics with a low incidence of other inclusions, including perhaps some incidental grog. Generally these fabrics, that are never all that widespread, appear to have more in common with Middle Iron Age traditions. In a group of this period they are residual, even though they are relatively strongly represented compared to the Grog-tempered wares. The only form present is a single example of a high-shouldered necked jar, probably comparable to G23 type jars.

North Kent grey wares (NKG)
287g; 6.36% EVE
This is another group, which on the basis of the range of vessel forms present exhibits a high level of residuality. The only form present is the early H6.1 type poppy-head beaker (Fig. 90.42) that had been superseded by the more developed H6.2 and H6.3 in the early and mid 2nd century respectively. This material is, therefore, seemingly residual.

Miscellaneous oxidised red ware (RED)
295g; 8.85% EVE
The only form present was a dish type B10.1. These are essentially imitation samian f36 and Curle 15s. The form is typical of the Hadham industry and this piece may be an early example from this source, although the fabric is atypical of Hadham.

Storage jar fabrics (STOR)
2907g
These fabrics are only represented by fabric weight and form the second largest component by this measure. No forms were recognised, although the G44 type is likely to have been the main type.

Miscellaneous white- or cream-slipped sandy red wares (WCS)
33g
These fabrics again form a minor assemblage component. Their presence probably indicates a decline in the availability of white clay for flagons and mortaria in the region. Only one vessel is represented, a flagon of uncertain type.

Pottery supply c. AD 140–200

Groups 2 and 3 may be placed in the mid-to-late and late 2nd century respectively and are therefore comparable with pottery from Chelmsford's ceramic phase 4. While exhibiting several common trends, they do, nevertheless, show several significant differences. This may be related to their different deposition dates and is not necessarily the product of their differing assemblage sizes, although it is admitted that this may also be an important factor. Group 3 does, however, appear to exhibit a number of peculiarities which cannot be readily explained at present and which show themselves as statistical biases in favour of, or at the expense of, certain fabrics. It is also worth noting that, while Group 2 has a ratio of roughly 1kg to 1 EVE, the figure for Group 3 is well below this threshold.

Nevertheless, these two groups exhibit tendencies that provide a useful overview of pottery supply in this period.

One readily noticeable trend is the decline in importance of Black-surfaced wares after the mid 2nd century, which occurs slightly later at Great Holts Farm than it does at Chelmsford (Going 1987, 110). Their market share is taken over by Sandy grey wares which come to dominate the site's pottery supply by the end of the Antonine period. By weight these fabrics account for between 21% at the beginning of the Antonine period to as much as 42% by the late 2nd century. The majority of the Sandy grey wares are undoubtedly derived from a number of local producers, although specific sources cannot be identified as yet. Colchester, though, remains a possibility. Prior to this, Black-surfaced wares in the Hadrianic and early Antonine periods are found in similar quantities but fall from 58% to a mere 13% when measured by weight during the course of the second half of the 2nd century.

This period also sees some relatively fine grey ware fabrics arriving at Great Holts Farm. These include North Kent grey wares and 'London' type grey wares, both of which are relatively uncommon. North Kent grey wares form roughly 2% of assemblages when measured by weight all through the Antonine period, while London wares are a mere presence in mid 2nd-century contexts. These kilns supply a number of beakers to the site, mainly the carinated H10 and the poppy-head H6. The H10 types are residual pieces from ceramic phases 1 and 2, and there is little to suggest their continued production beyond the Trajanic. By the end of the 2nd century these fabrics have all but disappeared and their presence is a sign of residuality.

Colchester colour-coats appear to dominate the fine ware end of the market alongside samian ware by the mid 2nd century and continue to increase in volume throughout the rest of the century. Mica-dusted wares and Nene Valley colour-coats are not present in either group, although the latter have been recorded at Verulamium in Antonine fire horizons (Howe, Perrin and Mackreth 1980, 7). Their absence at Great Holts Farm is perhaps not surprising, given that Going failed to note their presence at Chelmsford in this period (Going 1987, 3).

The range of buff and white wares shows some decline, perhaps due partly to the collapse of the Verulamium Region industry in the mid 2nd century, although very little pottery from this source ever reached Great Holts Farm. The effect was, nevertheless to leave the Colchester kilns more or less in control of this area of the market. Part of the gap in the market may have been filled in the later 2nd century by a range of white- or cream-slipped red wares. The evidence, however, is not all that conclusive.

The narrow range of vessel classes identified within Group 1 is a trend that continues throughout the Antonine period. In Groups 2 and 3 the level of Storage jar fabrics, and thus vessels of this type, seems to have been distorted by the presence of large numbers of undiagnostic body sherds. Indeed, Storage jars are not represented by EVEs in Group 3. However, jars as always remain the dominant vessel class, although both dishes and beakers are well-represented in Group 2. The supremacy of jars is also seen in Group 3, and even appears to increase in this group. At the beginning of the Antonine there is good evidence for diversity in Storage jar types, but later in the period these appear to diminish in importance. There is very little indication as to the types current at the end of the 2nd century, although presumably these did not differ greatly from earlier types. Other jar forms present include the G23 type (Fig. 89.34–5) which is by far the most common, replacing the now residual G19s and G20s. The G24 type vessels perhaps make their first appearance in this period, or at least vessels that are transitional between these and G23.

One key difference between Groups 2 and 3 lies in the proportion of dishes to beakers. Group 2 beakers are more numerous than dishes, while in Group 3 this trend is reversed. However, a good number of these vessels within Group 2, like the H10, are clearly residuals, which suggests that beakers may be over-represented. The Colchester colour-coat producers were supplying a number of rough-cast H20.2 beakers (Fig. 89.36) in this period, but there is little sign of anything else reaching the site. A number of H6.3 poppy-head type beakers were from North Kent.

Throughout the Antonine, bowls appear to form very minor assemblage components and are restricted to imitation samian forms. By this time, dishes have replaced platters, as Group 2 demonstrates. Although this vessel class appears in Group 3, these vessels are clearly residual. The range of dish types present in contexts attributable to the second half of the 2nd century cover almost all the common types, especially the triangular-rimmed B2 and B4 (Fig. 90.44–6). Noticeable absences, however, are the plain-rimmed B1 types even though they are generally commonplace in contexts of this date.

Ceramic phase 4/5
(Figs 80, 90; Table 12)

Group 4
(*c.* AD 180–230), late 2nd to early 3rd-century (top fills of ditches 27 (context 5029/5034) and 383 (contexts 5813 and 5944))

Summary of the pottery dating evidence
The first half of the 3rd century is a major problem at Great Holts Farm. On the whole pottery of this period is virtually invisible so very little material could be assigned to this period with any confidence. Two relatively small sized groups from ditches 27 (enclosure E10) and 383 (enclosures E12 and E13) have produced several pieces that suggest final deposition is likely to have occurred sometime between end of the 2nd and the early 3rd century. On their own they are too small to provide meaningful statistics relating to pottery supply and assemblage composition. These two groups are thus presented here as a composite, even though they are from two separate features some distance apart. Ditch 383 is assigned to this period chiefly on stratigraphic grounds and may be slightly earlier than 27 which is more securely dated to this period. Ditch 27 produced the best evidence in the form of a BB2 B3.2 dish (Fig. 90.54) and a Black-surfaced ware G35.1 type jar. Otherwise much of the pottery is comparable with the mass of ceramic phase 4 material.

Residuality and assemblage condition
Even though this is a composite group it is one of the smallest to be presented as a key group. Overall, only sixteen vessels are represented by EVEs. Moreover, the

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
ASS	3	115	1.69	38.33	–	–
BB2	39	332	4.88	8.51	1.06	25.17
BSW	261	3748	55.18	14.36	2.16	51.31
BUF	4	9	0.13	2.25	–	–
COLB	39	280	4.12	7.17	–	–
COLC	6	56	0.82	9.33	0.29	6.88
GRF	6	13	0.19	2.16	–	–
GROG	2	9	0.13	4.50	–	–
GRS	55	442	6.50	8.03	0.41	9.73
HAR	1	1	0.01	1.00	–	–
LRC	1	1	0.01	1.00	–	–
NKG	3	8	0.11	2.66	–	–
RED	1	7	0.10	7.00	–	–
STOR	29	1746	25.70	60.20	0.29	6.88
GGSW	2	25	0.36	12.50	–	–
Totals	**452**	**6792**	–	**15.02**	**4.21**	–

Table 12 The pottery from the top fills of ditches 27 and 383

group also exhibits an exceptionally low weight to EVE ratio. This suggests that these contexts are both fragmentary and relatively poorly dated compared with the other key groups. There is also a notable residual element in this group.

The fabrics

South Spanish amphorae (ASS)
115g
The presence of Dressel 20 sherds is to be expected in contexts of this date. Although only forming a minor assemblage component, they may indicate continued use of olive oil.

Black-burnished ware 2 (BB2)
332g; 25.17% EVE
Compared with the late 2nd-century Group 3, which contained remarkably little BB2, there is a dramatic increase in the amounts of this fabric reaching the site in this period. The levels even exceed those of the mid 2nd century (Group 2). This is a further indication that Group 3 exhibits certain statistical biases. The range of dish forms present includes the shallow bead-rimmed B2.3 with burnished lattice decoration and the B3.2 (*cf.* Monaghan 1987, type 5F6) with burnished wavy line decoration (Fig. 90.54), but jars are not in evidence.

Black-surfaced wares (BSW)
3748g; 51.31% EVE
These are by far the most important assemblage component and represent 55% of the total assemblage in terms of weight. Perhaps unusually for contexts of this period, they show a significant recovery in volume compared with the Antonine Group 3 where they appeared to be in terminal decline. Some of this may be due to the presence of several residual pieces such as a possible G20 type jar and the early C28–9 bowl form in ditch 383 (Fig. 90.60). The latter type is generally found in pre-Flavian and Flavian horizons. Pieces typical of this period are the G5.4 and G35.1 jars in ditches 383 and 27 respectively. G35 jars are considered to be 4th-century at Chelmsford, but this example appears in a context that is indisputably earlier. A similar date range for this type as that provided for the G36 vessels can now be envisaged. A miniature vessel was also recovered from ditch 383. This group thus demonstrates some diversity of vessel class that is not necessarily discernible in earlier assemblages.

Unspecified buff wares (BUF)
9g
Four very small, probably residual sherds were recovered from ditch 27. No vessel form could be identified and they are possibly Colchester products.

Colchester buff wares (COLB)
280g
These show a substantial drop in volume compared with the late 2nd-century Group 3, even though in neither group are these fabrics represented by EVEs. This decline is to be expected in contexts of this date as it corresponds to the beginning of the period when the scale and scope of pottery production appears to have undergone substantial change. The sherds are all from the same vessel and are from a closed form, probably a flagon.

Colchester colour-coats (COLC)
56g; 6.88% EVE
The decline in Colchester buff wares is not mirrored by the colour-coats, which continue to dominate the fine ware market and may even show a slight increase. H20 type beakers (Fig. 90.58) with rough-cast decoration remain the only form to reach the site in this fabric. However, several of the sherds in this group are heavily abraded which suggests that they are residual.

Fine grey wares (GRF)
13g
These again are barely represented and appear to be in almost terminal decline. No forms were identified.

Grog-tempered wares (GROG)
9g
Two small undiagnostic Grog-tempered ware body sherds were recovered from the fill of ditch 27. They are certainly residual.

Sandy grey wares (GRS)
442g; 9.73% EVE
Like the Black-surfaced wares the Sandy grey wares seem to show wide fluctuations in the amounts reaching the site from the mid 2nd to the early 3rd century. The late 2nd to early 3rd-century groups show a reversal of the trends exhibited by Group 3 in that the Sandy grey wares fall from 49% EVE to just 9% EVE, or if measured by weight, from 42% to just

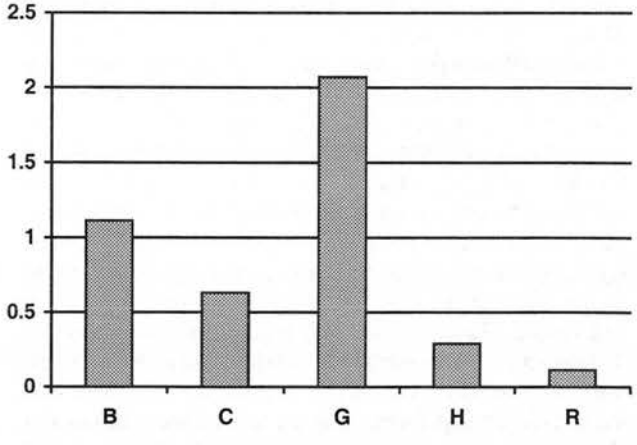


Figure 80 The incidence of vessel class by EVEs (Group 4)

6%, leaving them well behind the Black-surfaced wares. The reasons for this are unclear at present. Not surprisingly the range of forms is also narrow, being restricted to the shallow bead-rimmed dish B2, and two jar forms, the lid-seated G5.4 and the common G24 type. It is noteworthy that none of the typical early jar forms G16–20 and G23 are present in this group. This suggests a relatively low residuality in this fabric group.

Hadham grey wares (HAR)
1g
This fabric is represented by a single very small body sherd. However, given the size of the sherd it is likely to be intrusive. The vessel form was not identifiable.

Lower Rhineland colour-coats (LRC)
1g
This fabric is also represented by a single tiny body sherd that is residual. The vessel is likely to be a beaker.

North Kent grey ware (NKG)
8g
Just three body sherds in this fabric were present in the group. The figures clearly show continued decline from the late 2nd century suggesting by the early 3rd century supply had all but dried up. It is also probable that much this material is residual. No forms were identified.

Miscellaneous oxidised red wares (RED)
7g
This was another fabric group represented by a single sherd. No forms were identified.

Storage jar fabrics (STOR)
1746g; 6.88% EVE
Compared with earlier groups, storage jar fabrics appear to be in decline even though they are the second largest fabric group on 25% when measured by weight. The only forms present were a G45 and a G44 type vessel.

Pottery supply c. AD 180–230/50

At Great Holts Farm, analysis of the pottery of the first half of the 3rd century poses several significant problems. Firstly, groups attributable to this period are not always readily identifiable; secondly, the few groups that can be identified are generally small and fragmentary; and thirdly groups of this period normally display high levels of residuality. Only two groups of any size were picked out as having features that suggest that they were still accumulating in the early 3rd century. There were no definite mid 3rd-century contexts of any note, although the small amount of pottery of this date is present in later groups. Group 4 is also notable for the narrow range of fabrics represented by EVEs, while the weight to EVEs ratio is well below the reliability threshold as outlined above.

Group 4 may be dated to the late 2nd to early 3rd century, and is accordingly comparable with published groups from Chelmsford, Great Dunmow and Rivenhall. These comprise the pottery from ceramic phases 4–5 at Chelmsford, the period 3A reconstruction deposit from the filling of room 1A at Rivenhall (Going 1993b, 64–70), and the group from gravel pit 857 at Great Dunmow (Going and Ford 1988, 61–66).

Group 4 indicates that pottery supply in this period is once again dominated by a range of fabrics that were all doubtless locally made, a pattern also clearly seen at Great Dunmow and Rivenhall. Black-surfaced wares see something of a revival in this period and now represent 55% of the assemblage by weight. However, while residual material is present, it does not dominate the group, which indicates that the perceived recovery in Black-surfaced wares at this time might be a real one. The reasons for this are unclear but in marked contrast to the situation at Chelmsford, Great Dunmow and Rivenhall, where 'Romanising' grey wares are all relatively minor assemblage components.

The wide variation in the supply of Black-surfaced wares in the Antonine and early 3rd century are also matched by fluctuations in the amounts of Sandy grey wares at Great Holts Farm. These appear to take over from the former at the end of the 2nd century on the evidence of Group 3, only to fall behind again at the beginning of the 3rd century. Sandy grey wares amount to just over 6% of the assemblage when measured by weight, a figure that seems on the low side and is again in contrast to the situation at Chelmsford, Great Dunmow and Rivenhall. Group 4, however, has a marked absence of Sandy grey ware vessel forms that are certainly residual, which again indicates that this decline is also likely to be a real one. While there is a clear fall-off in the volume of Sandy grey wares, amounts of Fine grey wares remain at below 1%. This suggests no new supply in this period.

Of the grey wares coming into Essex in this period, the amounts of North Kent grey ware also decline to below 1%, which again points to no new supply in this period as well. This figure compares well with the situation at Great Dunmow, but is slightly different at Rivenhall, where North Kent grey wares represent over 4% of the assemblage when measured by EVEs. The dramatic increase in BB2 from below 1% in Group 3 to 4% by weight is hard to explain. BB2 is always difficult to identify and often exhibits considerable variation in finish. At Rivenhall (Going 1993b, table 13), BB2 accounted for just over 7% by EVE compared with 25% at Great Holts Farm. However, the levels of BB2 at Great Dunmow are closer to those found in Group 3 rather than Group 4 (Going and Ford 1988, table 1).

The Unspecified buff wares also decline to levels that indicate no new supply in this period, thus matching the situation at Rivenhall. Of the regional Romano-British products, the Colchester industry remains in pole position, although there is an apparent reduction in the quantities of buff wares reaching the site which have declined to 4% by weight compared with the 8% in Group 3. Colour-coats seem to be holding their own, although admittedly comprise less than 1% of the assemblage by weight. At Chelmsford these fabrics, like the buff wares, also decline in this period. However, when measured by EVEs, the levels of Colchester colour-coat (6%) fall neatly within the 4% at Great Dunmow and the 10% at Rivenhall.

Hadham wares are barely represented at Great Holts Farm in this period, with only a single sherd of grey ware being noted. This is in marked contrast to Chelmsford, Great Dunmow and Rivenhall. At Great Dunmow, Hadham oxidised red wares account for 5% and the grey wares 8% of the assemblage (Going and Ford 1988, table 1). Although the oxidised red wares are barely represented at Rivenhall, Hadham grey wares comprise just over 7% of the assemblage when measured by EVEs. The low incidence of fine wares generally at Great Holts Farm in this period, in favour of the more utilitarian coarse products, probably implies a continued absence of domestic activity on the site.

The range of continental imports remains fairly constantly on the low side. Dressel 20 amphorae from Southern Spain not surprisingly form the main component when measured by weight, although this stands at under 2% of the total assemblage. The amounts of samian are also minimal and represent less than 1% of the assemblage

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
BB1	3	26	0.74	8.66	0.01	0.21
BB2	5	168	4.84	33.60	0.28	6.08
BSW	39	671	19.34	17.20	0.89	19.34
BUF	12	155	4.46	12.91	0.58	12.60
CGSW&CGSW	5	65	1.87	13.00	N/A	N/A
COLB	2	150	4.32	75.00	0.14	3.04
COLC	2	4	0.11	2.00	0.01	0.21
GRF	12	126	3.63	10.50	0.51	11.08
GRS	112	1054	30.39	9.41	1.41	30.65
HAR	2	29	0.83	14.50	0.44	9.56
HAX	1	5	0.14	5.00	–	–
NVC	1	23	0.66	23.00	–	–
RED	1	13	0.37	13.00	–	–
RET	9	168	4.84	18.66	0.02	0.43
STOR	6	774	22.31	129.00	0.01	0.21
UCC	7	37	1.06	5.28	0.30	6.52
Totals	**219**	**3468**	–	**15.83**	**4.60**	–

Table 13 The pottery from the top fill of ditch 361

as measured by weight. These levels are once more contrary to the situation seen at Chelmsford and Rivenhall, but are much more closely paralleled at Great Dunmow where the levels of samian reach 1%. The Lower Rhineland colour-coat sherd is almost certainly residual.

In terms of assemblage composition, there are several important characteristics. Firstly, as in earlier groups, jars are the dominant vessel class and mainly comprise lid-seated G5.4 and the necked G16–20 types. There is also a single example of a black surfaced ware G35.1 type jar, the presence of which has led to the dating of the type being revised. This form may start about a century earlier than Going has suggested at Chelmsford and thus has a comparable date range to the G34 type narrow-necked jar. G24 types are also present in small numbers, while the range of storage jar includes G44 and G45 types.

In several respects the assemblage composition is much closer to that of Group 3 rather than Group 2, which suggests that these groups form a real chronological sequence, even though the edges seem to be blurred at times. Like Group 3, dishes are more important than beakers, although in marked contrast bowls are far more evident, even outnumbering beakers. Miniatures also appear for the first time. The range of dish types includes the bead-rimmed B2 and B4 types as well as the deep plain-rimmed B3. These are found in a range of coarse fabrics, chiefly BB2, Black-surfaced wares and Sandy grey wares. Dishes are often decorated with burnished lattice or a single wavy line; otherwise they are plain. Beakers are present only in Colchester colour-coat and are confined to H20 types with rough-cast decoration. Mortaria seldom occur in a group of this period.

The mid 3rd century at Great Holts Farm poses the greatest problem. No contexts that are indisputably of this period were identified. That pottery was still reaching the site in this period can be demonstrated, for example, from the small number of incipient bead and flange dishes (B5.1) that are present. However, there is incontrovertible evidence which shows that ceramic phase 5 saw a reduced level of pottery deposition compared with the previous period. This suggests that activity on the site, as indicated by the pattern of pottery discard, was on a much diminished scale.

Ceramic phase 6
(Figs 81, 90–91.63–78; Table 13)

Group 5
(*c.* AD 260–300), late 3rd century (context 5776; top fill of ditch 361, enclosure E14)

Summary of the pottery dating evidence
The top fill of ditch 361 contained a total of 219 sherds (3.4kg) of pottery which may be assigned to the late 3rd century on the presence of bead-and-flange dish types B6.2 and a Rettendon ware G24 type jar. This group may therefore be compared with ceramic phase 6 assemblages from Chelmsford. The late 3rd-century date rests primarily on the presence of the B6.2 dishes (Fig. 90.67–8) and small quantities of Rettendon ware, which is only found in small amounts on central Essex sites before the 4th century (Going 1987, 10).

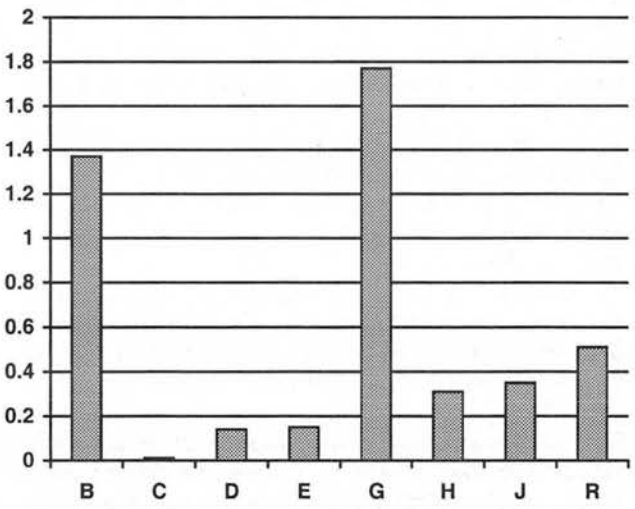


Figure 81 The incidence of vessel class by EVEs (Group 5)

Residuality and assemblage condition

Group 5 contains much that is obviously residual, including East Gaulish and Central Gaulish samian, Colchester colour-coat, BB2 and a number of early Roman jar forms. The actual level of residuality in this group is hard to work out and much depends on the end dates for B2 and B4 type dishes. However, it may be assumed that these forms did not continue much beyond the mid 3rd century.

The fabrics

Black-burnished ware 1 (BB1)
26g; 0.21% EVE
This is the earliest well-dated group in which this fabric occurs at Great Holts Farm. At Chelmsford it first appears in the mid 2nd century only to disappear again until the late 3rd century (Going 1987, 8). The only form identified is the B1 'dog-dish'.

Black-burnished ware 2 (BB2)
168g; 6.08% EVE
This fabric forms a relatively large, but probably residual element. At Chelmsford it is almost certainly residual in late 3rd-century contexts (Going 1987, table 9). The range of dish types is confined to B3.2 and B4.2 types (Fig. 90.66), and of these the latest type is the B3.2 (Fig. 90.64) which is perhaps the only vessel form represented that is likely to have carried on into this period. Jars are not present in BB2 in this group.

Black-surfaced wares (BSW)
671g; 19.34% EVE
Although these fabrics generally form the mass of the pottery in the groups so far described, they decline in importance compared with the Sandy grey ware category in the late 3rd century and never make any real recovery. However, Black-surfaced wares were still being produced, as can be shown by the presence of several bead-and-flanged dishes B6.2 (Fig. 90.67) and other late forms. The presence of Black-surfaced pottery in contexts of this date and later make it is awkward to continue to speak of 'Romanising' wares. But it is equally difficult to envisage a separate Late black-surfaced ware as such, when many aspects of the black-surfaced ware tradition seem to change very slowly through time and often show continuity in the use of grog tempering. Although the majority of these fabrics are probably from local sources, a number of pieces could be derived from the Hadham industry. The group is dominated by dishes, with both B1.3 and B4.2 types (Fig. 90.66) appearing alongside the bead-and-flanged B6.2s. Jars on the other hand are confined to the lid-seated B5.4 (Fig. 91.74) that is almost certainly residual like the B4.2 dish. A rim of an unclassified jar was also noted.

Unspecified buff ware (BUF)
155g; 12.60% EVE
Unusually, these form a high percentage within the group by EVEs and do not include flagons (Fig. 91.76). At Chelmsford Going suggested that this fabric is residual after the 2nd century (Going 1987, 7). A beaker sherd is also present but no exact form could be identified. This is also the case with a miniature vessel (Fig. 91.77). An E3.3 type bowl-jar is also present in this fabric.

Colchester buff wares (COLB)
150g; 3.03% EVE
These are represented by a single D11.1 mortarium. Hammerhead mortaria of this type were produced at Colchester in the period *c.* AD 160–220, and this piece is therefore residual.

Colchester colour-coats (COLC)
4g; 0.21% EVE
The quantities of Colchester colour-coats appear to decline markedly at this time, thus mirroring the situation at Chelmsford (Going 1987, 113–4). Two sherds in this fabric are present and only one form was identified, an H21 type beaker (*cf.* Hull 1963, fig. 57.2).

Fine grey wares (GRF)
126g; 11.08% EVE
Although these fabrics appear to show a marked recovery from their early 3rd-century low, this is in fact misleading in that the much of this material is clearly residual. However, the presence of an E3 bowl-jar in this fabric may suggest continuation of production, or supply from other sources than those reaching Chelmsford after this date. This vessel type would not be out of place in late 3rd- century and later horizons. Two jar types only were recorded. The G19.5 vessel is definitely residual in contexts of this date, while the frilled rim jar G26.1 (Fig. 91.72) is a rare form, but appears to have a date range spanning the whole of the 3rd and 4th centuries. These vessels were produced by the Hadham manufactory in this period and it possible that this piece may derive from this source. The fabric, however, is not sufficiently diagnostic to be certain of this.

Sandy grey wares (GRS)
1054g; 30.65% EVE
These dominated the assemblage. A wide variety of forms are represented, including the plain-rimmed B1.3, the deep bead-rimmed B4.2, and the bead-and-flanged B6.2 dishes (Fig. 90.68). A C2.1 bowl was also recorded but there were no bowl-jar types noted. The jar forms present also exhibit some variation and include the lid-seated G5.4, the common G24 type and the 'Braughing' type G21.1 (Fig. 91.71), as well as a number of unclassified jar types. The G21 may be a Hadham product, although the fabric is not diagnostic enough to be certain. Of these vessel types, several are clearly residual, while others have very broad date ranges. The B6.2 dish is the only form that was first introduced in this period. Of the other dish types represented in this fabric group, the B4.2 type is almost certainly residual. G21 type jars are not out of place in contexts of this date as is shown by the vessel illustrated by Wilson (1984, fig. 89.2177) from Insula XXVIII at Verulamium.

Hadham grey wares (HAR)
29g; 9.56% EVE
These form a very minor assemblage component. However, both of the sherds present could be assigned to vessel forms, a G40.1 type jar (Fig. 91.73) and a miniature vessel of R2 type (Fig. 91.78). This would account for the high EVE values. Both of the types identified would not be out of place in a group of this period.

Hadham oxidised red wares (HAX)
5g
This fabric makes its earliest appearance at Great Holts Farm in this group, but is only represented by a single sherd. No form can be identified.

Nene Valley colour-coats (NVC)
23g
Nene Valley colour-coat is another fabric that occurs for the first time in this group. This is also another fabric that is also represented by a single sherd. While no exact form can be recognised, the sherd clearly comes from a closed form, possibly a flagon or beaker. The sherd also carried rouletted decoration.

Miscellaneous oxidised red wares (RED)
13g
This is yet another fabric that is represented by a single sherd. No form can be identified.

Rettendon wares (RET)
168g; 0.43% EVE
This group sees the first appearance of this fabric. The quantities are low and the range of forms limited to G24 type jars. Given that this fabric was produced in central Essex, its presence on the site at the end of the 3rd century is to be expected.

Storage jar fabrics (STOR)
774g; 0.21% EVE
These form an important assemblage component when measured by weight; however, when EVEs are calculated they are insignificant. The only form recognised is a G44.5 jar which was considered to be an early type at Chelmsford by Going (1987, 27), although Horsley noted its presence in a group of this period at Braintree (Horsley 1993, fig. 9, nos 8–9). It is therefore probable that this vessel is residual.

Unspecified colour-coats (UCC)
37g; 6.52% EVE
A small number of colour-coated sherds are in a fabric that is insufficiently diagnostic to suggest a probable source. The only form recognised is a H27.1 type beaker (Fig. 91.75). These were current from the later 2nd until the end of the 3rd century at Chelmsford (Going 1987, 30) and were produced in Central and East Gaulish colour-coats as well as Romano-British wares. The Great Holts Farm sherds are almost certainly not imports and are thus more likely to be local products.

Pottery supply c. AD 260–300

The first noticeable trend is the dominance of locally made Sandy grey wares over Black-surfaced wares. Sandy grey

wares have now increased their market share to 30% of the total assemblage, while Black-surfaced wares have declined to 16% by weight. This is a reversal of the situation seen within Group 4, but mirrors that seen in Group 3. However, the Sandy grey wares exhibit a high level of residuality that might in part account for this. On the other hand a number of late forms are present. The same is true of the Black-surfaced wares, which confirms continued supply in this period. Group 5 sees the introduction of small quantities of Rettendon ware. This highly diagnostic flint-tempered fabric, which was made in central Essex from the late 3rd to the mid 4th century, forms just over 4% of the total assemblage when measured by weight, but displays a limited range of vessel types. The quantities of Rettendon ware in this group appear to be comparable with those seen at Chignall St James in this period. Here the total of 35g of this fabric identified in a group totalling just 1kg represent just over 3% of the total assemblage (Wallace and Turner-Walker 1998, table 17). Locally made fabrics thus continue to dominate pottery supply at Great Holts Farm with Storage jar fabrics accounting for a further 22% of the assemblage.

Turning now to the regionally traded wares and imports, the late 3rd century sees a significant increase in the variety of Romano-British regional types, principally in regard of the fine wares. Nene Valley colour-coats and Hadham oxidised red ware both appear for the first time, but only in very small quantities, generally forming under 1% of assemblages. This is roughly comparable to the levels that are seen at Chelmsford for the Hadham wares in this period (Going 1987, table 9). On the other hand Nene Valley wares are less common at Great Holts Farm than at Chelmsford. Moreover, the range of forms also appears to be limited, and, perhaps surprisingly, Nene Valley colour-coat beakers are ostensibly absent, a feature that is curious in contexts of this date. Also notable is the complete absence of Oxfordshire products. White ware mortaria from this region occur in contexts attributable to the mid-to-late 3rd century at Chelmsford (Going 1987, 6) and in contexts datable to the second half of the 3rd century at Braintree (Horsley 1993, 33). The absence of this fabric is therefore surprising.

BB1 also appears for the first time in this group, which again represents less than 1% of the total assemblage and with a limited range of forms. BB2, in contrast, declines to the levels that are comparable to the situation in the mid 2nd century and accounts for less than 5% of the assemblage. Imports are even rarer than in earlier groups. Both the Central Gaulish and the East Gaulish samian are residual by this time and there are no amphorae sherds.

In terms of assemblage composition, this group shows traits that are not present in earlier groups at Great Holts Farm. First and foremost is the dramatic increase in the variety of vessel types reaching the site that are represented by EVEs. A total of eight separate vessel classes were represented by EVEs compared with between four and five in earlier contexts. In all of the earlier groups the main vessel forms present are jars and this trend continues into the late 3rd century. The range of forms includes the necked G24 and G21 types (Fig. 91.71) and the by now residual lid-seated jar types G5.4 (Fig. 91.74). A small number of G44 type storage jars were also recorded, rather than the more typically late G42 and G43 types. This may suggest a high level of residuality among the storage jars in this group.

Next in importance are dishes, with fully flanged type B6.2 (Fig. 90.67–8) appearing for the first time. Notable is the absence of the incipient bead-and-flange type dish B5.1. Indeed this form is exceptionally rare at Great Holts Farm and may point to something of a hiatus in the accumulation of pottery deposits in the mid 3rd century. Consequently, the bulk of early and mid Roman residuals in ceramic phase 6 and later horizons are likely to belong to the Hadrianic and Antonine periods. That this is the case can be shown from the large number of B4 type dishes. Other dish forms present in ceramic phase 6 groups are the long-lived B1 and the B3 types. Both of these are typical of 3rd-century assemblages.

Beakers are present alongside very small numbers of bowl-jars, platters, bowls and miniatures. The only beaker type, however, was an H27.1 vessel (Fig. 91.75) from an unknown source. Flagons and mortaria were also identified but only in the guise of body sherds and are seemingly residual. The only mortarium form identified was a D11.1 vessel which is residual (Fig. 90.69). Not all of these vessel classes are present in all groups, however. The only bowl forms identified are residual C2 types, while the bowl-jar category is represented by several E3.3 type vessels. This is a form that is typically late Roman.

Ceramic phase 7

(Figs 82–84, 90, 91; Tables 14–16)

Three well-dated groups belonging to this period have been selected for detailed discussion. Group 6 comes from the top fill of ditch 385 and Group 7 from the lower filling of well 567 appear to be the earliest and are thus assigned to the early 4th century. The latter group is selected for other reasons, and not just dating and assemblage size. Its relationship with the main villa structure and its interpretation are a matter of some debate (Fig. 33). From a pottery viewpoint there are a number of peculiarities in the assemblage that suggest that it may be a ritual deposit. Group 8, on the other hand, is given a much wider, early to mid 4th-century date range. This group is characterised by the very limited range of fabrics present.

Two of these 4th-century groups produced independent dating evidence in the form of coins. Group 6 contained a dupondius of Hadrian dated 117–138 from the Rome mint, while Group 8 produced a copy of an Antoninianus of Carausius dated 286–293. Both of these appear to be residual given that the pottery evidence suggests that these contexts are, or most likely to be, 4th-century.

Group 6

(*c.* AD 300–330) early 4th-century (context 5815; top fill of ditch 385, enclosure E11)

Summary of the pottery dating evidence

The top fill of ditch F385 contained a total of 266 sherds (4.5kg) of pottery that is datable to the early 4th century. The latest vessels in the group are in Nene Valley colour-coat and included an H39 beaker and a C8 bowl, both of which are commonly attributed to the 4th century. Associated with these pieces are a number of typical late forms such as a B6.2 dish and E6 bowl-jars. Rettendon ware is also present in greater quantity that also indicates a 4th-century date.

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
ASS	6	311	6.76	51.83	–	–
BB1	3	70	1.52	23.33	–	–
BB2	1	14	0.30	14.00	–	–
BSW	60	756	16.44	12.60	0.56	11.94
BUF	4	143	3.11	35.75	0.01	0.21
CGRHN	3	8	0.17	2.66	0.17	3.62
CGSW	2	50	1.08	25.00	–	–
COLB	1	14	0.30	14.00	–	–
EGSW	1	1	0.02	1.00	–	–
GRF	27	426	9.26	15.77	0.55	11.72
GRS	110	1621	35.26	14.73	2.70	57.56
HAB	2	8	0.17	4.00	0.05	1.06
HAR	5	84	1.82	16.80	0.20	4.26
HAX	3	20	0.43	6.66	–	–
NVC	7	98	2.13	14.00	0.01	0.21
RED	2	26	0.56	13.00	–	–
RET	13	172	3.74	13.23	0.25	5.33
STOR	14	759	16.51	54.21	0.01	0.21
UCC	2	15	0.32	7.50	–	–
Totals	**266**	**4596**	–	**17.27**	**4.69**	–

Table 14 The pottery from the top fill of ditch 385

Residuality and assemblage condition

Although several residual pieces have been identified (including small quantities of Central Gaulish and East Gaulish samian as well as a number of early and mid Roman dish and jar forms) this component does not dominate the assemblage. Measured by EVEs, residual pottery accounts for 40% of the total assemblage. However, this figure includes a number of fragmentary lid-seated G5 type rims that could just as easily belong to E3 type bowl-jars. A wide range of fabrics is represented and some of these are clearly residual. Some of these have very low average sherd weights.

The fabrics

South Spanish Amphorae (ASS)
311g
Small quantities of this fabric continue to be deposited at Great Holts Farm. By now Dressel 20 sherds are almost certainly residual. However, Dressel 23 vessels replaced the latter in the late Roman period. It is possible that some of these sherds are of this form, but without diagnostic pieces it is not possible to be certain.

Black-burnished ware 1 (BB1)
70g
Small quantities continue to arrive at Great Holts Farm as at Chelmsford. No forms could be identified, however.

Black-burnished ware 2 (BB2)
14g
This fabric forms a very minor assemblage component. By now the supply of BB2 has virtually dried up. Again, no forms could be identified.

Black-surfaced wares (BSW)
756g; 11.94% EVE
These fabrics show continued decline, perhaps indicating lower levels of production. Indeed many of the identifiable forms appear to be residual, such as the bead-rimmed B4.2 dish and the G17.1 jar. Several unclassified jars are also noted. Vessels like the G35.2 jar with stabbed motifs on the shoulder are typically early to mid 4th-century in date at Chelmsford (Going 1987, 26), while the G26 type jar would not be out of place in contexts of this date. This suggests that black-surfaced wares were still being produced at this time.

Unspecified buff ware (BUF)
143g; 0.21% EVE
Of the two vessels represented in this fabric, the only identifiable form is a residual D3.3 mortarium. The other vessel represented by a single body sherd, is a closed form, presumably a flagon. It would seem that supply of these fabrics had all but dried up in this period.

Central Gaulish Rhenish ware (CGRHN)
8g; 3.62% EVE
By this time all of the imported fine wares present in this group are residual. The only form identified in this fabric is a beaker of uncertain form.

Colchester buff wares (COLB)
14g
This fabric is represented by a single sherd. Like the other buff ware category, this is also residual. No vessel form can be identified.

Fine grey wares (GRF)
426g; 11.72% EVE
These fabrics and the Black-surfaced wares are present in roughly the same quantities when measured by EVEs. While the latter continued to decline, the supply of Fine grey wares appears to have been relatively stable from the late 3rd into the early 4th century. Having said this, there is a level of residuality that is comparable to that found in the Black-surfaced wares. Residual pieces include B4.2 dishes and G19.2 jars. On the other hand, the latest pieces, an E2.2 bowl-jar (Fig. 91.102) and a G24.2 jar are not out of place in 4th-century contexts.

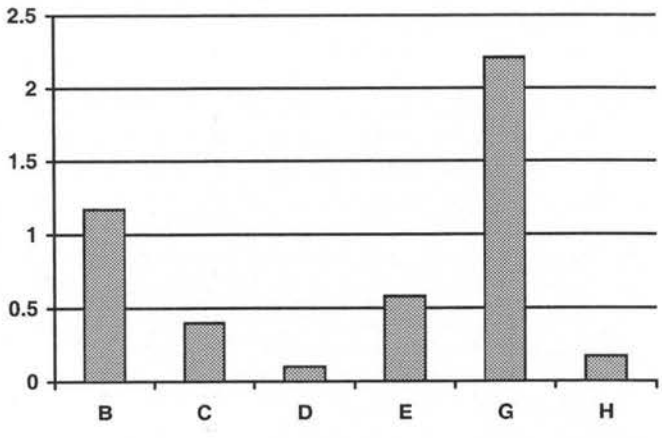


Figure 82 The incidence of vessel class by EVEs (Group 6)

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
BB1	1	55	0.78	55.00	0.18	2.88
BB2	1	35	0.49	35.00	0.11	1.76
BSW	9	6.38	9.08	70.80	0.52	8.34
CGSW	1	1	0.01	1.00	–	–
GRF	4	207	2.94	51.75	0.54	8.66
GRS	89	1815	25.83	20.39	2.17	34.83
HAB	4	491	6.98	122.75	0.57	9.14
HAR	1	16	0.22	16.00	–	–
HAX	1	8	0.11	8.00	0.14	2.24
RED	14	529	7.53	37.78	0.50	8.02
RET	58	3230	45.97	55.60	1.50	24.07
Totals	**183**	**7025**	–	**38.38**	**6.23**	–

Table 15 The pottery from the lower fill of well 567

Sandy grey wares (GRS)
1621g; 57.56% EVE
These fabrics increase in volume at the beginning of the 4th century and completely dominate the assemblage. With this dominance comes a wide variety of forms, B1 plain-rimmed type 'dog-dishes', B6.2 bead and flange dishes, E5.4 bowl-jars and various G24 type jars, none of which are out of place in a group of this period. A G45 type storage jar was also recorded along with a number of unclassified jars. Residuals are present, such as the C1.2 bowl, the G23 and the lid-seated G5.4 jars, but these are not a major assemblage component.

Hadham black-surfaced ware (HAB)
8g; 1.06% EVE
From the 3rd century onwards at Chelmsford, Going (1987, 113) noted the presence of a number of sherds in a fine black fabric which he assigned to the Hadham kilns. At Great Holts Farm this fabric first appears at the beginning of the 4th century in any meaningful quantity. In this group, although a single rim sherd of a B1 type dish is present, no other vessel forms have been recognised.

Hadham grey wares (HAR)
84g; 4.26% EVE
These form a relatively minor assemblage component in this group, but they are nonetheless the main product of the Hadham industry reaching the site. Two forms were identified, a B1 type dish and an E6.1 bowl-jar, both of which are typical of this period.

Hadham oxidised red wares (HAX)
20g.
Surprisingly, this fabric continues to be poorly represented. Three body sherds are present but no vessel form could be identified.

Nene Valley colour-coats (NVC)
98g; 0.21% EVE
Although forming a relatively minor assemblage component, the two forms identified, a C8 type bowl and an H39 beaker, were both late types. The H39 beaker is typically a 4th-century form and the bowl type is not out of place in contexts of this date.

Miscellaneous oxidised red wares (RED)
26g
These fabrics form a minor assemblage component once more. No vessel forms could be identified. Both sherds are presumably residual.

Rettendon wares (RET)
172g; 5.33% EVE
From the beginning of the 4th century, Rettendon wares, like the Sandy grey wares, appear to be steadily increasing their market share, seemingly at the expense of Black-surfaced wares. The range of forms, however, shows little sign of diversification in this group, being confined to G24 type jars.

Storage jar fabrics (STOR)
759g; 0.21% EVE
These fabrics appear to have stabilised in volume and show little change from the situation in the late 3rd century as provided by Group 5. The only vessel type present was a single G44 type jar, which is almost certainly residual by this time.

Unspecified colour-coats (UCC)
15g
The supply of colour-coats from unidentified sources declines to a mere presence suggesting residuality. No vessel forms were identified although the two sherds were presumably from beakers.

Group 7

(Fig. 83; Table 15)
(*c.* AD 300–330) early 4th-century (context 6459, a lower fill of well 567)

Summary of the pottery dating evidence
Of the total 438 sherds (9.4kg) of Roman pottery recovered from the ten well contexts, 183 (7.0kg) were reclaimed from context 6459. The dating of this feature, which is situated in the wall-line of building 416, is of considerable importance because of the possible association with the main villa building implied by the environmental evidence. Taken as a whole the pottery dating evidence seems to be very consistent with a very late 3rd or more probably early 4th-century date for its infilling.

Residuality and assemblage condition
Of all the 4th-century groups, this is the least well-preserved group in terms of the weight to EVE ratio; however, the level of residuality appears to be very low. The fact that several vessels in this group are represented by approximately 'half pots', might suggest that is a deliberate or structured deposit. This is the only deposit of

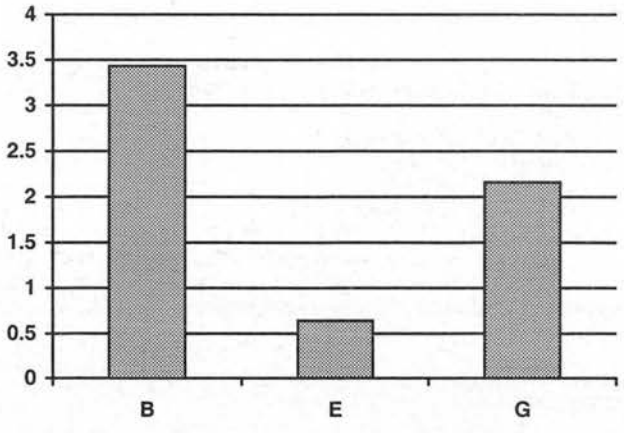


Figure 83 The incidence of vessel class by EVEs

this type where individual vessels are so complete. Several vessels also have X marks scratched on the underside of their bases *post cocturam* (Figs 91.110; 92.115 and 122), again suggesting that they were designated for a specific use. There is therefore tentative evidence that this group forms a ritual deposit. This interpretation is supported by the virtual absence of residual pottery in the group. Measured by EVEs, residual material accounts for just 3% of the total assemblage.

The fabrics

Black-burnished ware 1 (BB1)
55g; 2.88% EVE
This fabric is represented by a fragmentary B6.3 type dish (Fig. 91.108) decorated with burnished intersecting arcs. At Chelmsford, Going (1987, 15) dated these to the period *c.* AD 260 to 400+, but elsewhere they seem to have a slightly earlier start date. The form corresponds to Gillam (1976, figs 4.46–48).

Black-burnished ware 2 (BB2)
35g; 1.76% EVE
A single vessel is represented, a fragmentary B4 type dish (Fig. 91.110). There is now compelling evidence to suggest that bead-rimmed dish types did not outlast the 3rd century in Essex, given the absence of these types in 4th-century groups from Great Chesterford and Great Sampford (Martin 1998). This piece is, therefore, almost certainly residual.

Black-surfaced wares (BSW)
638g; 8.34% EVE
Surprisingly, this fabric was also represented by just a single vessel, a B6.2 dish (Fig. 91.110). This is the main late Roman dish type at Great Holts Farm. The example from this group was one of three vessels with an X scratched on underside of the base *post cocturam.* This suggests that this vessel may have been selected or marked out for some reason. The vessel is also decorated with heavy all-over horizontal burnishing.

Fine grey wares (GRF)
207g; 8.66% EVE
Another fabric group represented by a single vessel, a B6.2 dish (Fig. 91.111).

Sandy grey wares (GRS)
1815g; 34.83% EVE
A total of seven individual vessels were identified in these fabrics, by far the largest number for any fabric in the assemblage. Four of these are B6.2 dishes (Figs 91.112–4; 91.115) and two are G24.1 type jars (Fig. 92.122–3). The other vessel is a very fragmentary B2/B4bead-rimmed type dish (Fig. 92.116). One of the B6.2 dishes (Fig. 92.115) and a G24.1 jar (Fig. 92.119) had Xs scratched on the underside of their bases, *post cocturam.*

Hadham black-surfaced ware (HAB)
491g; 9.14% EVE
This is another fabric represented by a single undecorated vessel, a B6.2 dish (Fig. 92.117).

Hadham grey wares (HAR)
16g
This fabric was represented by a single sherd; no vessel form could be identified.

Hadham oxidised red wares (HAX)
8g; 2.24% EVE
This fabric was also represented by a single vessel, a fragmentary undecorated E3.3 type bowl-jar.

Miscellaneous oxidised red wares (RED)
529g; 8.02% EVE
This fabric is also represented by a single vessel. It comprises almost the whole top half of an undecorated E6.1 type bowl-jar (Fig. 92.120). This vessel may be a coarse Hadham product, although the fabric is not sufficiently diagnostic to be certain.

Rettendon wares (RET)
3230g; 24.07% EVE
Other than the Sandy grey wares, this is the only fabric to be represented by more than one vessel, a B6.2 dish (Fig. 92.118) and a G24.2 jar (Fig. 92.121). The dish is undecorated except for light all-over horizontal burnishing, while the jar is decorated with a zone of rilling underneath the neck comparable to that found on G21 jars. In terms of vessel shape the G24 type jars are, however, a much closer parallel.

Group 8

(Figs 84, 92.125–32; Table 16)
(*c.* AD 300/10–350/60) early to mid 4th-century (context 6288; ditch 819, enclosure E10)

Summary of the pottery dating evidence

The top fill of ditch 819 contained a total of 431 sherds (6.3kg) that are datable to the first half of the 4th century. A narrow range of fabrics is represented. Although a small residual component is present, this is generally in the form of fabrics rather than vessel forms. The presence of a number of late dish (B6.2) and bowl-jar (E5.2 and E6.1) forms, as well as an increase in the representation of both Rettendon ware and Hadham oxidised red ware, points to a date within the 4th century. However, forms that are exclusively 4th-century appear to be absent.

Residuality and assemblage condition

Although not represented by EVEs, the presence of residual material in this group is indicated by the small number of Colchester colour-coat and Grog-tempered sherds. However, measured by EVEs, the residual component within Group 8 stands at 6%. Furthermore, the rim of a J3.1 ring-necked flagon accounts for most of this. Mid 2nd- to 3rd-century dish forms B2 and B4 are virtually absent, thus confirming the presence of low levels of residuality. The group is well-preserved in terms of the EVE to weight ratio.

The fabrics

Black-surfaced wares (BSW)
545g; 12.99% EVE
The amounts of these fabrics reaching Great Holts Farm seem to remain roughly stable throughout the first half of the 4th century. A wide variety of forms have been recognised including B6.2 and B1 type dishes, and E5.2 bowl-jars. The other form identified is a necked jar of uncertain type. None of this material is definitely residual and the bulk of the identifiable forms are not out of place in contexts of this date.

Colchester colour-coats (COLC)
34g
These are reduced to a mere presence suggesting residuality. The two sherds recognised included the base and body sherd of beakers. Two vessels are represented.

Fine grey wares (GRF)
457g; 16.50% EVE
The quantities of these fabrics remain fairly constant throughout the first half of the 4th century and are roughly comparable to the amounts of

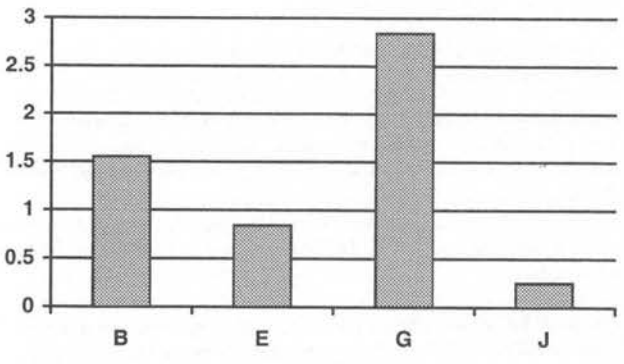


Figure 84 The incidence of vessel class by EVEs (Group 8)

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
BSW	38	545	8.52	14.34	0.96	12.99
COLC	2	34	0.53	17.00	–	–
GRF	28	457	7.15	16.32	1.22	16.50
GROG	2	22	0.34	11.00	–	–
GRS	177	1930	30.20	10.90	3.94	53.31
HAR	2	20	0.31	10.00	–	–
HAX	40	333	5.21	8.32	0.30	4.05
RED	1	5	0.07	5.00	–	–
RET	123	1785	27.93	14.51	0.57	7.71
STOR	18	1259	19.70	69.94	0.40	5.41
Totals	**431**	**6390**	**–**	**14.82**	**7.39**	**–**

Table 16 The pottery from the fill of ditch 819

Black-surfaced wares. A variety of forms are represented, E2.2 and E6.1 bowl-jar types, B1 (Fig. 92.125) and B6.2 dishes, and G34 type jars. None of these are residual.

Grog-tempered wares (GROG)
22g
These form a tiny part of the assemblage and are represented by just two abraded body sherds. No forms could be identified.

Sandy grey wares (GRS)
1930g; 53.31% EVE
Sandy grey wares remain by far the largest assemblage component. The range of forms consists of dishes, jars and flagons. None of the forms identified are out of place in 4th-century groups. Residual dish forms such as the bead-rimmed B2 and B4 types are conspicuous by their absence, which suggests relatively low levels of residuality. Indeed, the only piece that is clearly residual is the J3.1 flagon. The main dish types are all B6.2 variants, although a plain-rimmed B1 was also recognised, while the jars are overwhelmingly G24 types.

Hadham grey wares (HAR)
20g
Hadham grey wares appear to decline to a mere presence suggesting supply had all but dried up. No forms were recognised.

Hadham oxidised red wares (HAX)
333g; 4.05% EVE
The quantities of Hadham red wares reaching Great Holts Farm show a very tentative increase towards the mid 4th century. However, the range of forms present is confined to E6.1 type bowl-jars. A vessel with graffiti scratched *post cocturam* is also present (Fig. 92.132).

Miscellaneous oxidised red wares (RED)
5g
These are now reduced to a mere presence. Only one sherd was identified and no form could be identified.

Rettendon ware (RET)
1785g; 7.71% EVE
This is the most important fabric after the Sandy grey wares. Throughout the late 3rd and first half of the 4th century the quantities of Rettendon ware show a steady increase in volume. The range of forms present, however, remains largely confined to G24 type jars, with the large G24.2 type being particularly noticeable.

Storage jar fabrics
1259g; 5.41% EVE
Throughout the late 3rd and first half of the 4th century the quantities of Storage jar fabrics remain fairly constant with only minor fluctuations. In this group, these fabrics occur as a relatively small number of large sherds. Two forms were recognised; the G43 1 and G44.5 type jar. At Chelmsford, the G44.5 type jar was identified as an early type and is thus likely to be residual. The neckless G43.1 type (Fig. 92.131), however, was current throughout the 3rd and 4th centuries.

Pottery supply c. AD 300–350/60

The 4th century sees a number of significant changes in the amounts of pottery being deposited and in the overall quality of the assemblages. Group 7 in particular (well 567) provides tentative evidence for deliberate deposition and may be interpreted as part of a foundation rite given the position of the well in a wall line. This group not only exhibits a ratio of under 1 EVE per kilogram that is typical of pre-4th-century groups, but also the same narrow range of forms that are generally present in early groups. Consequently this group will only be referred to in passing in the following discussion.

Groups 6 and 8 provide a useful insight into pottery supply during the first half of the 4th century. They demonstrate the continued dominance of locally produced fabrics over traded wares. Using weights as an indicator of incidence, Sandy grey wares form around 30% to 35% of assemblages, while black-surfaced wares and fine grey wares fluctuate between 8% and 16%, and 7% and 9% respectively. Both groups demonstrate the continued decline in BB2. While it is present within Group 6, it has fallen to below 1% of the total assemblage and within Group 8 it is completely absent. This suggests that no new supplies of this fabric were reaching the site in the 4th century.

Rettendon wares are not well represented when measured by EVEs, in marked contrast to Chelmsford, and only account for between 5 and 8% of assemblages, although this is a noticeable increase compared with the late 3rd-century Group 5. Using weights, however, we are able to gain a clearer understanding of the development of these wares. In the early 4th century they account for as little as 3%, but by the middle of the century they have risen to 27%. This relatively low showing suggests that both of these groups may have started to accumulate in the early part of the 4th century. Storage jars appear to fluctuate in volume between under 16% and 19% by weight or between 1% and 5% by EVEs in this period. Again this does not appear to show the decline seen at Chelmsford (Going 1987, 115).

Of the fabrics that are imported into the region, Hadham wares are by far the most important, and appear to be steadily increasing in volume, as at Chelmsford, from the 3rd-century levels. Hadham oxidised red ware is barely represented in the early 4th century, but by the mid 4th century its levels have risen to as much as 5% by weight (4% by EVEs). Both Nene Valley colour-coats and

BB1 are barely represented and, surprisingly, there is no sign of any Oxfordshire products being present in this period on the evidence of Groups 6 and 8. However, it is likely that a number of white ware mortaria from the Oxfordshire potteries were in fact reaching the site from the late 3rd century onwards, as these form the main mortaria fabric at Great Holts Farm. This is in contrast to Chelmsford, where Going considered that the Nene Valley industry was the more important supplier of mortaria (Going 1987, 115).

Fine wares are generally poorly represented in this period. Colchester products are barely represented and are clearly residual; likewise the few Rhenish ware products observed within Group 6. At Chelmsford the market for Nene Valley colour-coats appears to have expanded in this period, a situation not indicated by the figures from Great Holts Farm. Indeed Nene Valley colour-coat products are conspicuous by their absence within Group 8, which is hard to explain. However, supply in this period is clearly attested by the presence of a number of 4th-century forms on the site, suggesting that the figures do not tell the whole story.

Assemblages of this period are dominated by jars as in earlier assemblages. These are mainly necked types, most typically G24 (Fig. 92.121), followed by G35 and G26. They occur in a variety of coarse wares, but mainly in Sandy grey wares. The storage jar types are mostly typical of the late Roman period in general and are not closely datable. Coarse-ware bowl-jars are far more common than ordinary bowl types, with E2.2, E5.4 and E6.1 vessels being particularly important. The only bowl forms present are imitation Drag.38s in Nene Valley colour-coat. Dishes of this period are confined to plain- and bead and flange types. Unlike at Chelmsford, the bead-and-flanged B6.2 vessels (Figs 91.110–4, 92.115) dominate the dish category; while these are supplemented by a number of B1 types (Fig. 92.125), the B3.2 type is virtually absent. Although B2 and B4 types are present in contexts of this date, these are often very fragmentary and difficulties are encountered when an attempt is made to separate the B2s from the B4s. As at Chelmsford, the fabrics used for these vessels are predominantly Sandy grey wares with occasional BB1, BB2, Black-surfaced ware and Nene Valley colour-coat examples.

In terms of assemblage composition, Group 7 exhibits two noteworthy features that are not paralleled elsewhere at Great Holts Farm. First and foremost, it is the only group where dishes predominate over jars; and secondly, it has a very limited range of vessel classes represented, with only dishes, bowl-jars and jars. This ascendancy of open forms over closed forms is unusual in groups of all periods. Another significant detail about Group 7 lies in the importance of B6.2 dishes. While B2 and B4 types are present, these are particularly fragmentary when compared with the B6.2 types, many of which are nearly complete. It would seem, from the evidence provided by this group, that B2 and B4 type dishes are residual by the early 4th century. The absence of B3 type dishes is also notable. Of the jars, these all correspond to G24 types, while the only bowl-jar types identified were the large E6.1 (Fig. 92.120) and the smaller E3.3 (Fig. 92.119).

Ceramic phase 8

(Figs 84, 92–95; Tables 17–20)

The latest Roman contexts are by far the richest ceramically at Great Holts Farm, having the largest amount of pottery and consistently the greatest diversity of vessel class. Much of this material was recovered from contexts which are assigned to the late 4th century on pottery evidence alone (Table 7). Contexts of this date are directly comparable with Chelmsford ceramic phase 8 horizons (Going 1987, 115–17). Moreover, this latest Roman period also provides the greatest number of contexts (Fig. 76). The late 4th century thus sees intensive on-site activity and with it the deposition of large quantities of pottery. A total of four groups have been selected for detailed discussion; the fill of ditch 177; the top fill of ditch 816; the primary fill of ditch 302; and the top fill of ditch 302. Together, these four groups account for 31.4kg of pottery or 48.9% of all late 4th-century material.

The selection of four groups for detailed discussion is a reflection of the overall quality of the data for this period. The first two, Groups 9 and 10, provide a useful general picture of pottery supply in the late 4th century. On the other hand, Groups 11 and 12 have been selected for detailed discussion because of their close stratigraphic relationship, which suggests that one must be earlier than the other. Although both groups are roughly the same date, meticulous analysis may help identify changes in the nature of pottery supply to the site within this late period. It is also worth pointing out that there was also a lack of obvious sherd links between the primary and top fills of ditch 302 which suggests that these two deposits represent two distinct phases of ditch infilling.

Two of the 'key' ceramic phase 8 groups produced coins. A coin of Constantine II dated AD 335–337 was recovered from the top fill of ditch 816, while four coins were retrieved from the top fill of 302 (context 5569). The latest coin in the group is dated to AD 343–345. In addition to these a coin of AD 335–341 came from surface cleaning above ditch 177. All of these mid 4th-century coins are likely to be residual given the date of the pottery.

Group 9

(Fig. 85, 92.136–143, 93.144–149; Table 17)
(*c.* AD 360/70–400) late 4th-century (context 5316/5322/5341/5345; ditch 177, enclosure E27)

Summary of the pottery dating evidence

The fill of ditch 177 produced a relatively small group of sherds (3.9kg) which included a range of fabrics and forms which indicate that it is datable to the late 4th century. Although this material was recovered from four separate segments, the bulk of it (3.2kg) came from context 5345. The mass of the pottery is what would be expected in contexts of this date, with Oxfordshire red colour-coat and late shell-tempered ware much in evidence. Surprisingly, no late beaker types were identified.

Residuality and assemblage condition

Despite the fact that the group contains some residuals, these form a very insignificant assemblage component and are generally represented by fabrics alone. Only the BB2 and the Colchester colour-coats are obviously residual. The only vessel form in the group that is clearly residual is a Black-surfaced ware G20.1 type jar. Furthermore, the group exhibits a high weight to EVE ratio that suggests that it not only have a low residual element, but that it is also well-preserved.

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
BB2	3	26	0.66	8.66	–	–
BSW	37	506	12.95	13.67	0.48	9.65
BUF	1	9	0.23	9.00	–	–
COLC	1	1	0.02	1.00	–	–
GRF	13	135	3.45	10.38	0.08	1.60
GRS	57	500	12.80	8.77	1.03	20.72
HAB	6	45	1.15	7.50	–	–
HAR	18	306	7.83	17.00	0.67	13.48
HAX	46	472	12.08	10.26	0.67	13.48
LSH	42	300	7.68	7.14	0.17	3.42
MEK	2	38	0.97	19.00	–	–
NVC	4	153	3.91	38.25	0.43	8.65
NVM	3	36	0.92	12.00	–	–
OXRC	10	179	4.58	17.90	0.26	5.23
OXSW	1	2	0.05	2.00	–	–
OXW	3	163	4.17	54.33	0.35	7.04
RET	50	886	22.68	17.72	0.77	15.49
STOR	5	148	3.79	29.60	–	–
Totals	**302**	**3905**	–	**12.93**	**4.81**	–

Table 17 The pottery from ditch 177

The fabrics

Black-burnished ware 2 (BB2)
26g
Three body sherds come from a closed form, probably a jar. The very small amounts of this fabric suggest no new supply in this period. Residual.

Black-surfaced wares (BSW)
506g; 9.65% EVE
These fabrics form a considerable group when measured by weight, although this is not reflected by the figure for EVEs. This presumably indicates a relatively high level of residuality. The range of forms comprised largely of B1.3 (Fig. 94.193) and B6.2 dish types. A single B3.2 type dish was also recovered, but this is likely to be residual. Jars were present, but apart from a residual G20.1 vessel, no other jar form could be securely identified. A single E3.3 bowl-jar was identified, however.

Unspecified buff ware (BUF)
9g
An abraded base sherd from an uncertain form. This sherd is presumably residual.

Colchester colour-coats (COLC)
1g
A single small body sherd with white-painted decoration, almost certainly from a beaker. Residual.

Fine grey wares (GRF)
135g; 1.60% EVE
Of all the grey wares, the miscellaneous fine grey wares form a relatively minor assemblage component. The only identifiable form was a B6.2 type dish.

Sandy grey wares (GRS)
500g; 20.72% EVE
The commonest fabric group measured by EVEs. The range of dish and jar forms identified including B6.2 type dishes (Fig 94.200), G24 and G34.1 type jars (Fig. 94.197). All of these forms are typical in late groups. The large number of unclassified jar forms recorded suggests that this is a particularly fragmentary group and may point to fairly high levels of residuality.

Hadham black-surfaced wares (HAB)
45g
This fabric comprises just six body sherds in a fine black-surfaced fabric similar macroscopically to Hadham grey and oxidised red wares. A single vessel is represented, belonging to a closed form of uncertain type.

Hadham grey wares (HAR)
306g; 13.48% EVE
A relatively high proportion of the grey ware sherds in this group exhibit typological traits characteristic of the late Hadham industry. Forms include plain rimmed B1.3 type dishes and the E6.1 bowl jar (Fig. 94.205). Other jars of uncertain type were also present.

Hadham oxidised red wares (HAX)
472g; 13.48% EVE
The volume of Hadham wares increases dramatically in most late 4th-century groups at Great Holts Farm. Unusually, oxidised and reduced wares are present in roughly equal proportions in this group. Elsewhere it is the oxidised wares that dominate. Open forms include fragments of plain-rimmed B1.3 type dishes and E6.1 type bowl-jars (Fig. 94.206). The only closed forms are a number of jars of uncertain form.

Late shell-tempered ware (LSH)
300g; 3.42% EVE
In Essex, shell-tempered pottery, possibly derived from the kilns at Harrold, Bedfordshire, or the Nene Valley region, first appears in contexts datable to *c.* AD 360/70. In this group, the bulk of the forms comprise necked jars with out-turned, slightly angular or undercut rims and rilled shoulders (Fig. 94.207). The form corresponds to G27 type vessels at Chelmsford. Most of the jar forms in this group correspond to the variety with out-turned, squared-off rims (G27.2). A B5.3 type dish, which is not all that common in Essex, has also been identified.

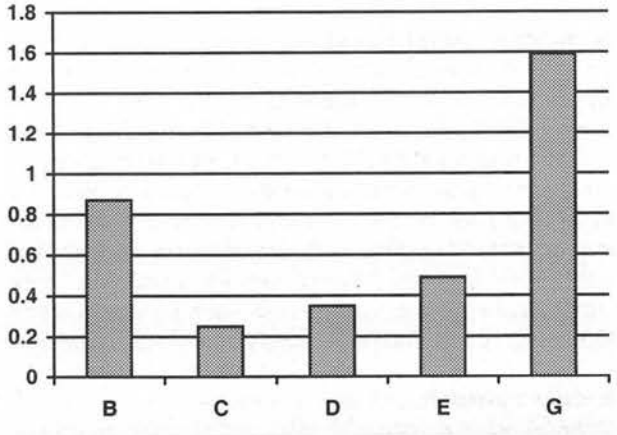


Figure 85 The incidence of vessel class by EVEs (Group 9)

Mayen ware/Eifelkeramik (MEK)
38g
This fabric is represented by two body sherds. These sherds belong to a closed form of uncertain type, possibly a jar. Continental imports are a rarity in any period at Great Holts Farm. The presence of Mayen ware/Eifelkeramik indicates the existence of commercial contacts with Germany in the late 4th century, albeit on a relatively small scale.

Nene Valley colour-coats (NVC)
153g; 8.65% EVE
These form the largest fine ware component. All of the identifiable vessels were open forms and included a B6.2 type dish (Fig. 94.199) and an E3.3 type bowl-jar (Fig. 94.204). Both of these forms first appear in this fabric during the 4th century in Essex. Surprisingly, beakers are not represented.

Nene Valley mortaria (NVM)
36g
Three sherds in this fabric were identified. No forms were recognised. Residual.

Oxfordshire red colour-coat (OXRC)
179g; 5.23% EVE
This is another fabric that first appears in Essex in the late 4th century. All of the identifiable types were variants of the C8 type bowl (Young 1977, types C51 and C52).

Oxfordshire white mortaria (OXW)
163g; 7.04% EVE
The Oxfordshire potteries were the main suppliers of mortaria to Great Holts Farm, particularly in the 4th century. All of the forms noted conform to Young's Type M22 (Young 1977). Two vessels of this type were present in this group (Fig. 94.202–3).

Oxfordshire oxidised white-slipped wares (OXSW)
2g.
A small mortarium body sherd. This fabric is typically late 4th-century in Essex. Vessels in this ware form the third most prevalent mortarium fabric at Great Holts Farm, behind Oxfordshire white wares and Colchester buff wares.

Rettendon wares (RET)
886g; 15.49% EVE
The quantities of Rettendon ware continue to increase in marked contrast with Chelmsford where they mainly occur in early to mid 4th-century contexts. However, the range of forms appears to remain largely limited to G24 type jars.

Storage jar fabrics (STOR)
148g
Small quantities of these fabrics continue to be deposited. However, they appear to show continued decline in the later 4th century in marked contrast to the situation at Chelmsford where something of a recovery was observed by Going (1987, 116). No forms were identified and presumably much of this material is residual.

Group 10

(Figs 86, 94–95.208–41)
(*c.*AD 360/70–400) late 4th-century (context 5570; top fill of ditch 816, enclosure E21)

Summary of the pottery dating evidence

The top fill of ditch 816 in segment 4059 contained a large group of sherds totalling 535 (9.0kg). This material can be assigned to the late 4th century on grounds of both fabric and form. The mass of the pottery is typical of Chelmsford ceramic phase 8 contexts with Oxfordshire red colour-coat and Late shell-tempered ware very much in evidence. Other late Roman types are also present, such as Mayen ware/ Eifelkeramik and Alice Holt/Farnham grey ware products.

Residuality and assemblage condition

Residual pottery has also been identified in this group, but this material is not a significant assemblage component. Small amounts of BB2 and Colchester colour-coat form less than 1% of the total assemblage measured by weight. Measured by EVEs, residual pottery accounts for 6% of the assemblage. Pottery exclusively of late 4th-century date accounts for just 9% of the total assemblage. The bulk of the material in this group falls within a broad late 3rd to 4th-century date band. The EVE to weight ratio also suggests that this is a well-preserved group.

The fabrics

Alice Holt/Farnham grey wares (AHL)
22g
This fabric formed a minor assemblage component and is represented by a single body sherd. No form could be identified, although the sherd is fairly thick-walled. This suggests that it may have been from a storage jar type vessel. The form probably corresponds to Lyne and Jefferies (1979) types 4.44 or 4.45.

South Spanish Amphorae (ASS)
241g
This fabric is represented by two body sherds. These may be from the late Dressel 23 amphorae rather than Dressel 20, but without rim sherds it is not possible to say for certain.

Black-surfaced wares (BSW)
1303g; 10.98% EVE
A variety of vessel forms were identified in these fabrics. The range of open forms comprises B1.3 (Fig. 94.210) and B3.2 (Fig. 94.209) plain-rimmed dishes, B6.1 and B6.2 (Fig. 94.213) type bead-and-flange dishes, and E3.3 (Fig. 94.223) and E6.1 bowl-jars. This diversity is not, however, seen in the range of closed forms. These are restricted to G34 narrow-necked jar types and unclassified jars. None of the forms identified in these fabrics appear to be residual, with B2 and B4 dish types noticeable by their absence apart from one fragmentary example.

Fine grey wares (GRF)
915g; 9.11% EVE
The recovery of the fabrics in this group appears quite marked and, judging by the absence of pieces that are obviously residual, a real one. Jars, beakers (Fig. 94.238) and dishes have all been identified, although exact forms could not in the case of the jars and beakers. The only open form present was the B6.2 type bead-and-flange dish (Fig. 94.238) that forms the most noticeable component within the miscellaneous fine grey wares.

Sandy grey wares (GRS)
3541g; 26.79% EVE
These fabrics form the main assemblage component and with this dominance a wide variety of forms have been identified. Leaving aside several residuals (*e.g.* the B4.1 dish and the G25 type jar), the bulk of the vessels are not out of place in late groups. These include the ubiquitous B6.2 bead-and-flange dish (Fig. 94.215–9), E3.3 bowl-jars (Fig. 95.226), and G21.1 (Fig. 95.227), G24.1 (Fig. 95.229) and G34.1 (Fig. 95.234) type jars. A single B1 type dish and a possible tazza (Fig. 94.220) have also been identified. The residual G25 type jar (Fig. 95.230) suggests that some of these wares, at least, may have been derived from the Colchester pottery. It also suggests that coarse-ware products from this centre were reaching Great Holts Farm in the 2nd to early 4th century, alongside the more readily identifiable buff wares and colour-coats. In the late period there are generally no such clues to the origin of these fabrics, although the presence of this vessel might suggest that the Colchester industry might have had a greater share of the market in earlier periods than hitherto acknowledged.

Hadham black-surfaced wares (HAB)
239g; 4.93% EVE
At least three vessels were noted, a B2 type dish (Fig. 94.212) that is clearly residual, several B1.3 plain-rimmed type dishes (Fig. 94.208), and a vessel of uncertain form with 'Romano-Saxon' style decoration. Although fragmentary, the design appears to correspond with that of Roberts' Class A3 (Roberts 1982, 17). Overall Hadham black-surfaced wares are a relatively unimportant assemblage component.

Hadham grey wares (HAR)
53g
Just seven sherds have been identified in this fabric. This is a surprisingly meagre showing judging by the larger incidence of these fabrics in other late groups. No forms were noted, only body sherds, one of which carries Romano-Saxon decoration. Although fragmentary, the design appears to correspond with that of Roberts' Class A3 (Roberts 1982, 17).

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
AHL	1	22	0.24	22.00	–	–
ASS	2	241	2.66	120.50	–	–
BSW	46	1303	14.38	28.32	1.59	10.98
GRF	57	915	10.10	16.05	1.32	9.11
GRS	198	3541	39.38	17.88	3.80	26.79
HAB	15	329	3.63	21.93	0.70	4.93
HAR	7	53	0.58	7.57	–	–
HAX	57	530	5.85	9.29	2.48	17.12
LSH	14	115	1.27	8.21	0.49	3.38
MEK	6	246	2.71	41.00	0.80	5.52
NVC	5	14	0.15	2.80	0.10	0.69
NVM	3	36	0.92	12.00	–	–
OXRC	13	82	0.90	6.30	0.32	2.20
RED	2	6	0.06	3.00	–	–
RET	111	1604	17.71	14.45	2.87	19.82
STOR	1	54	0.59	54.00	0.01	0.06
Totals	**535**	**9055**	–	**16.92**	**14.48**	–

Table 18 The pottery from the top fill of ditch 816

Hadham oxidised red wares (HAX)
530g; 17.12% EVE
These wares form the main Hadham product within Group 10. A wide range of forms has also been noted, including bowls, mortaria, bowl-jars, flagons and beakers. The bowls are limited to a single C8 type (Fig. 94.222), while the mortaria and beakers are represented by solitary D9 and H39 types. The bowl-jar category, however, is represented by a wide variety of types, including E3.2, E3.3 (Fig. 95.224–5), E5, and E6.1, all of which are typical of groups of this period. One of the E3.3 bowl-jars (Fig. 95.224) carries 'Romano-Saxon' style decoration which corresponds to Roberts' (1982, 26) Class A7, while the other had only horizontal burnishing on the exterior. The only flagon identified, a J11 trefoil-mouthed vessel corresponding to *Cam.* 379 (Fig. 95.240), is typically 4th-century at Chelmsford.

Late shell-tempered ware (LSH)
115g; 3.38% EVE
The low incidence of this fabric in this group is surprising, but may indicate a date fairly early in Chelmsford ceramic phase 8 rather than later. Unlike the Group 9 assemblage where B1 type dishes were present, this group contained only G27 type jars. The main form identified was the G27.2 (Fig. 95.232–3), although a single G27.1 vessel (Fig. 95.231) was also noted.

Mayen ware/Eifelkeramik (MEK)
246g; 5.52% EVE
As within Group 9, late Roman imports are again much in evidence. The only form represented was a G5 type (*Cam* 276) lid-seated jar (Fig. 95.237).

Nene Valley colour-coat (NVC)
14g; 0.69% EVE
Five sherds only were present in this fabric. Surprisingly this fabric is poorly represented considering that it was the main fine ware fabric within Group 9. Another contrast with Group 9 lies in the presence of a H41 beaker. Beakers of any type are absent from Group 9 but are the only identifiable vessel class within Group 10. Vessels of this type appear to date from the late 3rd century onwards.

Oxfordshire red colour-coat (OXRC)
82g; 2.20% EVE
These form the main fine ware component, with a total of 13 sherds. Only two vessel forms are present, a C25.2 type bowl (*cf.* Young 1977, type C81) and a tall funnel-necked (probably corresponding to either H39 or H41 type) beaker (Fig. 95.239). The bowl type (Fig. 94.221) is considered by Young (1977, 166) to be a typical 4th-century form, while the beaker is perhaps best paralleled by Young's C25 or C29 type beaker. C25s are a long-lived form that was current from the late 3rd century onwards, while Young suggests that the C29 did not continue into the later 4th century. However, in Essex, the form is very unlikely to date before the second half of the 4th century. The absence of anything other than the neck makes identification, and therefore close dating, impossible.

Miscellaneous oxidised wares (RED)
6g.
Two small body sherds belonging to a closed form of uncertain type. Possibly residual.

Rettendon wares (RET)
1604g; 19.82% EVE
The quantities of this fabric in this group are perhaps unusually large given the dating of the group. While some diversity in vessel form is present, this is restricted to two jar types and a miniature. The ubiquitous G24 type jar (Fig. 95.228) is the main form alongside G35.1 (Fig. 95.235–6) and several unclassified vessels. Both of the identifiable types are not out of place in late contexts. The miniature was an R2 type vessel (Fig. 95.241).
Storage jar fabrics (STOR)
54g; 0.06% EVE
These once again formed only a minor part of the assemblage. The single rim sherd is a G42 type vessel.

Group 11

(Figs 87 and 93; Table 19)
(*c.* AD 360/70–400) late 4th-century (context 5790; primary fill of ditch 302, enclosure E21)

Summary of the pottery dating evidence
The primary fill of ditch 302 produced a relatively small group of sherds (3.8kg) which included a range of forms and fabrics which are typical of latest Roman groups in Essex. The importance of this group lies in its stratigraphic

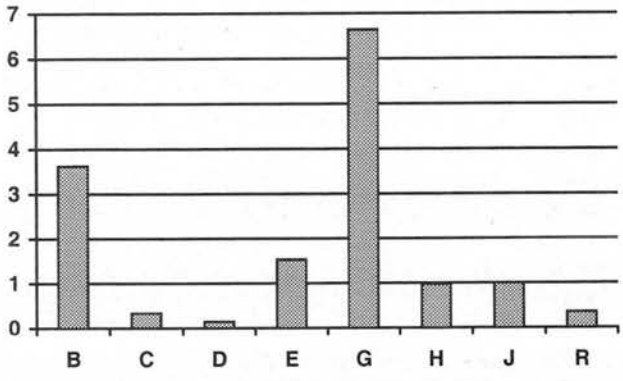


Figure 86 The incidence of vessel class by EVEs (Group 10)

relationship with Group 12, which must have started to accumulate at a later date and which must also have a later terminal date. As both groups clearly did not start to accumulate prior to *c.* AD 360/70, the differences between these groups may provide an important and valuable insight into the development of pottery supply to the site in the late 4th century.

Residuality and assemblage condition

Measured by EVEs, residual material accounts for 12% of the total assemblage. This figure seems to be on the high side considering that none of the fabrics represented in the group has to be residual. The group is, however, a small one, so the statistical data may not be reliable.

The fabrics

South Spanish amphorae (ASS)
310g.
Two body sherds only. Again, these sherds could belong to the late Dressel 23 form, but without rim sherds it is not possible to be certain.

Black-surfaced wares (BSW)
346g; 10.89% EVE
The quantities of these fabrics appear to be fairly stable throughout the later 4th century and this group provides confirmation of this. All forms present are open forms and are restricted to B1.3 (Fig. 93.145) and B6.2 dishes, and E5.2 bowl-jars (Fig. 93.151). Jars are surprisingly absent.

Fine grey wares (GRF)
96g; 7.05% EVE
These are poorly represented. The only forms noted are a residual B4.2 type dish (Fig. 93.147) and a G23/G24 type jar. Both of these vessels were undecorated except for horizontal burnishing.

Sandy grey wares (GRS)
1295g; 41.45% EVE
This fabric group dominates the assemblage to such an extent that almost 50% by EVE of all pottery is of this category. No other group exhibits this trend to this extent. A wide variety of forms have been recorded, including B1 (Fig. 93.144), B6.2 (Fig. 93.148) and B2 type dishes, the latter being residual. Where decoration was recorded it is restricted to horizontal burnishing and is largely exclusive to the dishes. Bowl-jars were also noted, but only three types are present, E3.3 (Fig. 93.150), E6.1 and E7. Other than the dishes, the E3.3 bowl-jar was the only vessel to be decorated. This and the E6.1 are typically late types, while the E7 is undated at Chelmsford.

Surprisingly, jars form a minor assemblage component, with only one type being noted, a G24 type. Other jars are present (Fig. 93.155), but these are often too fragmentary to identify type. The only other vessel class present was the miniature. Apart from an unclassified example only one type has been identified a necked R3 vessel.

Hadham black-surfaced wares (HAB)
58g
Two sherds only were present in this fabric. One of these, a body sherd that is presumably from a G31 type jar, was decorated with 'Romano-Saxon' style motifs. Although fragmentary, the design appears to correspond with that of Roberts' Class C12 (Roberts 1982, 72). This is found on jars with sloping shoulders and comprises bosses, either plain or with a single groove demarcating the edge, crosses of grooves, and dimples. The example in question has a groove demarcating the edges of several bands of decoration. In terms of distribution, all of the examples of this type cited by Roberts are from either Colchester or Chelmsford. The other sherd was the base of an open form, probably a dish.

Hadham grey wares (HAR)
164g
A group of eight body sherds and bases. No exact forms could be identified although at least one dish and a bowl-jar were present. The bowl-jar sherd had a band of burnished wavy-line decoration suggesting that it might be from a E5.4 type.

Hadham oxidised red wares (HAX)
243g; 9.40% EVE
A wide variety of vessel forms have been identified in this fabric. The most unusual piece is a small rim sherd of a so-called 'fish dish'. The form was also identified at Burgh Castle, Norfolk (*cf.* Johnson 1983, fig. 39.64). Unlike the latter vessel, however, the Great Holts Farm example does not appear to have burnished lattice decoration on the exterior of the side-wall. By far the main vessel type is the bowl-jar; these comprise E3.3 (Fig. 93.149) and E6.1 types (Fig. 93.153). Jars are absent.

Late shell-tempered ware (LSH)
31g; 2.35% EVE
Surprisingly, Late shell-tempered pottery is relatively poorly represented; only two sherds were recognised, but only one vessel form, a G27.1 type jar was noted (Fig. 93.156).

Nene Valley colour-coats (NVC)
132g; 2.13% EVE
A group of six sherds have been identified from this source. Although no exact form could be identified, what was there suggested the presence of beakers (at least one had a pedestal base with a band of rouletting like that found on H32 types), and a possible castor box lid or bowl. The latter is slightly abraded, however. Also, there are two large thick body sherds belonging to closed forms of some type, possibly jars.

Nene Valley mortaria (NVM)
46g
Two body sherds only are present. These are probably residual in a group of this date.

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
ASS	2	310	7.98	155.00	–	–
BSW	18	346	8.91	0.51	0.51	10.89
GRF	3	96	2.47	32.00	0.33	7.05
GRS	82	1295	33.37	15.79	1.94	41.45
HAB	2	58	1.49	29.00	–	–
HAR	8	164	4.22	20.50	–	–
HAX	16	243	6.26	15.18	0.44	9.40
LSH	2	31	0.79	15.50	0.11	2.35
NVC	6	132	3.40	22.00	0.10	2.13
NVM	2	46	1.18	23.00	–	–
OXRC	3	65	1.67	21.66	–	–
OXW	1	7	0.18	7.00	–	–
RED	1	9	0.23	9.00	0.05	1.06
RET	42	926	23.86	22.04	1.20	25.64
STOR	2	152	3.91	76.00	–	–
Totals	**190**	**3880**	–	**20.42**	**4.68**	–

Table 19 The pottery from the primary fill of ditch 302

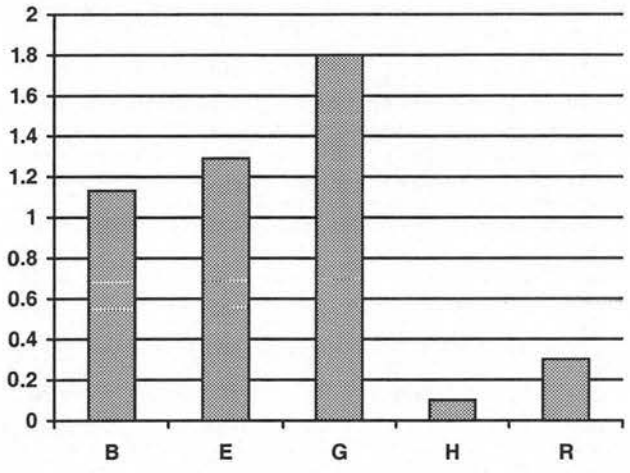


Figure 87 The incidence of vessel class by EVEs (Group 11)

Oxfordshire red colour-coat (OXRC)
65g
Like the Late shell-tempered ware, this fabric is relatively poorly represented; only three base sherds were recognised. These were very abraded and burnt. No vessel form could be identified.

Oxfordshire white mortaria (OXW)
7g
A single body sherd only.

Miscellaneous oxidised wares (RED)
9g; 1.06% EVE
A single sherd belonging to a B1.2 type dish, a form more commonly associated with Nene Valley colour-coats. This vessel is probably 4th-century in date.

Rettendon wares (RET)
926g; 25.64% EVE
Although Rettendon wares are the second largest assemblage component, the range of forms is very limited in marked contrast to the material from Group 10. The only forms noted are single examples of E3.3 and E5.4 bowl-jars (Fig. 93.152) and two G24.2 jars. Jars of unknown type are also present, but these were very fragmentary.

Storage jar fabrics (STOR)
152g
Body sherds only. In this group as within Group 9, these fabrics again fail to show the recovery in volume identified at Chelmsford by Going.

Group 12

(Figs 88, 95 and 96.242–87; Table 20)
(*c.* AD 370/80–400) late 4th-century (context 5569 and 5780; top fill of ditch 302, enclosure E21)

Summary of the pottery dating evidence
Stratigraphically this group is one of the latest identified at Great Holts Farm and must date to the very end of the 4th century. It comes from a context that seals Group 11, which is also assigned to the late 4th century. However, while latest Roman types like Oxfordshire red colour-coat and Late shell-tempered ware are present, the volume of these wares is relatively low, something not characteristic of well-dated latest Roman groups elsewhere in the county.

Residuality and assemblage condition
This group contained several residual sherds, including BB2 and Central Gaulish samian. However, these fabrics account for less than 1% of the total assemblage by weight. Measured by EVEs, residuality stands at 2%, while latest Roman pottery accounts for just 6% of the total assemblage.

The fabrics
South Spanish amphorae (ASS)
A single body sherd only.

Black-burnished ware 2 (BB2)
7g; 0.23% EVE
A single rim sherd of a B1 type dish. Residual.

Black-surfaced wares (BSW)
869g; 7.49% EVE
Although the quantities of these fabrics appear to be fairly stable throughout the later 4th century, in this group, which is probably one of the latest from the site, they seem to undergo a discernible reduction in volume. This is partly compensated by the expansion in the proportion of Rettendon ware. The range of forms is not wide, although B1.3 and B6.2 dishes as well as G40 type jars (Fig. 96.285) are present. A number of unclassified jars have also been noted. The only beaker form present was a H39 type vessel. Where decoration is present this takes the form of horizontal burnishing. In one instance this is restricted to the interior surface of a B1 type dish and in another, to the flange of a B6.2 type dish. It is possible that some of this material may have come from the Hadham kilns, the rest, presumably from local sources.

Fine grey wares (GRF)
589g; 5.47% EVE
Fine grey wares show something of a decline when measured by EVEs. On the other hand, if weight is used as the yardstick, they appear to grow in importance. The range of forms present is restricted to B1, B4.2 and B6.2 (Fig. 96.262–3) type dishes, and E3 (Fig. 96.269) and E6.1 bowl-jars (Fig. 95.247). All of these forms, apart from the B4.2 dish are typical of latest Roman groups. An unclassified jar rim has also been noted. Decoration comprised light all-over horizontal burnishing where present, but is confined to the dishes. The evidence seems to suggest continued supply of Fine grey wares to Great Holts Farm right up to the end of the Roman period.

Sandy grey wares (GRS)
3,458g; 31.70% EVE
These fabrics form the second largest fabric group. The range of forms present is both varied and large. Of the open forms, the B6.2 bead-and-flanged dish (Figs 95.243, 261 and 96.265–7) appears to be of particular importance, the only other dish type being small numbers of the plain-rimmed B1.3 (Fig. 95.259). The absence of B2 and B4 types points to relatively low levels of residuality. Of the bowl-jars, these are mainly E6.1 types alongside very small numbers of E5 types. The jar types included the ubiquitous G24 types (Fig. 96.278) and a number of vessels that correspond to the 'Braughing' type jar G21.1 (Fig. 96.277). A number of unclassified jar rims were also noted. No beaker forms have been identified although there are several miniatures (Fig. 96.287). The only forms of decoration present are restricted to rilling on the shoulders of the G21 type jars and light all-over horizontal burnishing on the dishes.

Hadham black-surfaced wares (HAB)
765g; 3.15% EVE
In this group, fine black-surfaced wares, here assigned to the Hadham manufactory, form a fairly prominent assemblage. The range of forms identified is limited, however, to dishes and a small number of beakers. Jars are not noted. B1.3 (Fig. 95.257) and B6.2 (Fig. 95.260) type dishes are much in evidence, while the only beaker form is an H39 type vessel (Fig. 96.286). A residual B4.2 was also recorded. All of the vessels in this fabric carried light all-over burnishing.

Hadham grey wares (HAR)
168g; 3.27% EVE
These formed a relatively minor assemblage component. The only forms noted are an E3.3 bowl-jar (Fig. 96.268) and unclassified jar and bowl-jar forms. Most of these were treated with light horizontal burnishing.

Fabric	*Sherds*	*Wt. (g)*	*% Wt.*	*Av. Wt.*	*EVE*	*% EVE*
ASS	1	252	1.72	252.00	–	–
BB2	1	7	0.04	7.00	0.04	0.23
BSW	58	869	5.95	14.98	1.26	7.49
CGSW	1	3	0.02	3.00	–	–
GRF	30	589	4.03	19.63	0.92	5.47
GRS	240	3458	23.71	14.40	5.33	31.70
HAB	23	765	5.24	33.26	0.53	3.15
HAR	22	168	0.39	7.63	0.55	3.27
HAX	58	600	4.11	10.34	1.07	6.36
LSH	24	844	5.78	35.16	0.67	3.98
NVC	7	41	0.28	5.85	–	–
NVP	2	24	0.16	12.00	–	–
OBB	1	7	0.04	7.00	0.05	0.29
OXRC	6	139	0.95	23.16	0.39	2.32
RET	319	6406	43.92	20.09	5.80	34.50
STOR	6	412	2.82	68.66	0.20	1.18
Totals	**799**	**14584**	–	**18.25**	**16.81**	–

Table 20 The pottery from the top fill of ditch 302

Hadham oxidised red ware (HAX)
600g; 6.36% EVE
The range of forms present is restricted to mortaria, bowl-jars and jars. Dishes are not noted. A number of bowl-jar types have been identified, including E3 with 'Romano-Saxon' decoration (Fig. 96.268) which in style may correspond to Roberts' (1982, 12) A1, E3.3 and E6.1 (Fig. 96.274). All of these are standard in late groups. The only jar form present corresponds to Chelmsford type G26 with its frilled rim. The mortarium is too fragmentary to be paralleled with any certainty.

Late shell-tempered ware (LSH)
844g; 3.98% EVE
The bulk of the forms in this group comprise G27.1 (Fig. 96.283) and G27.2 (Fig. 96.284) jars, as is typical of Essex sites. A plain-rimmed B1 type dish is also noted (Fig. 95.257). The latter is quite noteworthy in that these vessels are not at all common in this fabric in Essex, although others have been recorded from a number of latest Roman groups at Great Holts Farm.

Nene Valley colour-coats (NVC)
41g
Body sherds only. The only form noted is the late H42 type that is not necessarily out of place in a group of this date.

Nene Valley 'parchment' ware (NVP)
24g
Two body sherds are present in this fabric. No vessel forms can be identified.

Unspecified black-burnished wares (OBB)
7g; 0.29% EVE
A single rim sherd of a B1 type dish. This piece is presumably residual.

Oxfordshire red colour-coat (OXRC)
139g; 2.32% EVE
Again the volume of this fabric seems to be on the low side for contexts of this date as was noted in Group 11. Only six sherds in this fabric were recorded in this group. The only forms noted are two C8 type bowls.

Rettendon wares (RET)
6406g; 34.50% EVE
The dominance of Rettendon wares in this group is reflected by the wide variety of vessel forms. B1 type dishes, E3 and E5.4 bowl-jars (Fig. 96.273), G24.1 (Fig. 95.252; 96.263–5), G24.2 (Fig. 95.248; 96.282) and G35 type jars are all noted. A number of unclassified jar rims are also present. The high levels of this ware in this group seems to be unusual considering the date of the assemblage, but cannot be explained away as simply being the product of high levels of residuality. The bulk of these vessels are completely undecorated, although a burnished wavy line was recorded on the neck of the E5.4 bowl-jar and a G24.2 jar was provided with a narrow band of rilling on the shoulder. Light horizontal burnishing is also present on the B1.3 dish.

Storage jar fabrics (STOR)
412g; 1.18% EVE
Although only six sherds were noted, two vessel types were identified, the G42 and G43 jar types. Both of these are typically late forms, but not exclusively late 4th-century.

Pottery supply c. AD 360/70–400+

Like Chelmsford, this is a period of major change at Great Holts Farm. The range of ceramic types alters quite radically; for the first time the Oxfordshire potteries supply not only white ware mortaria, but also a variety of white-slipped and red colour-coated products. Also, we see the arrival of Late shell-tempered wares alongside very small amounts of Alice Holt grey wares (apparently exclusively G41 type storage jars), Portchester D ware from the Tilford/Overwey kilns in Surrey and Mayen ware/Eifelkeramik from Germany. The latter, apart from a few amphorae, comprises the only import from outside Britain to reach Great Holts Farm in the late 4th century.

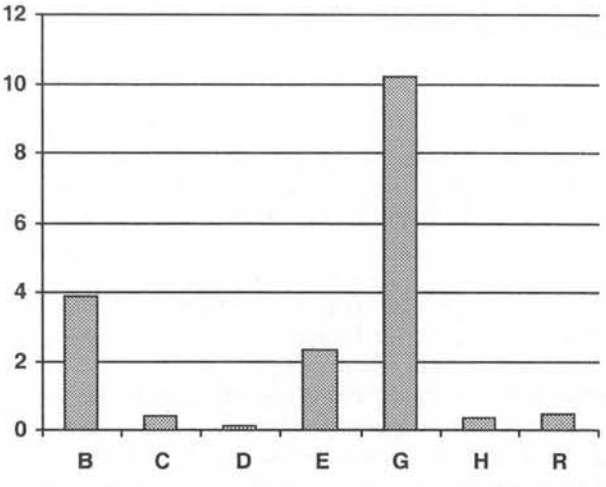


Figure 88 The incidence of vessel class by EVEs (Group 12)

Mayen ware/Eifelkeramik has been identified on a number of sites in Essex since Fulford and Bird (1975, 171–81) surveyed its distribution nationally. To the list may now be added Dawes Heath, Thundersley (Drury, Rodwell and Wickenden 1982, 66–68), Chelmsford (Going 1987, 10), Heybridge (Wickenden 1987, fig.22.159) and Ivy Chimneys, Witham (Turner-Walker and Wallace 1999) to name but a few. Overall the distribution of this ware is wide but sparse.

Not only is there greater diversity in the range of producers competing in the market place in the late 4th century, but also a considerable increase in the importance of fine wares as an assemblage component. Although the levels never reach the heights seen at, for example, the Late Shrine Group at Great Dunmow (Going and Ford 1988) or at Chelmsford (Going 1987). The Nene Valley industry is never able to take pole position regarding the supply of colour-coats, which always remain rare. The main colour-coat supplier is the Oxfordshire industry although the quantities are again never large. The amounts of the red colour-coat fabric from these kilns fluctuates between a mere presence (*i.e.* less than 1% by weight) to over 4%.

The Hadham industry appears to be important for the first time, especially the oxidised red wares. In this period these generally tend to oscillate between 9% and 17% when measured by EVEs or between 5% and 12% when measured by weight. However, in Group 12, when gauged by the figures for EVEs, they fall to as little as 6%, while the black-surfaced and grey wares stand at 3% each. Generally, the oxidised products are far more common than the reduced wares in the later 4th century. This seems to suggest that supplies of Hadham wares at the very end of the 4th century were beginning to dry up. Black-surfaced wares appear to have been reaching the site in roughly stable quantities throughout the 4th century, although there is a slight hint that in the final two decades of the 4th century that supply may have faltered. The incidence of Hadham black-surfaced wares is also low and never really matches that seen for the oxidised red wares.

In marked contrast to Chelmsford, which sees a distinct decline in Rettendon wares from the mid 4th century, Great Holts Farm sees this fabric steadily increasing in volume during the course of the 4th century. By the end of the century Rettendon ware appears to have commanded pole position in the supply of locally made grey wares. Sandy grey wares tend to fluctuate between 12% and 41% by EVEs of all pottery in late 4th-century assemblages, while the incidence of Rettendon ware vacillates between 15% and 34% by EVEs, but only reaches the latter figure at the very end of the century. It is quite possible that the close proximity of the Chelmsford sites used by Going for his discussion of pottery supply to a kiln site that produced Rettendon type wares, and which ceased production in the mid 4th century, may have skewed the picture slightly.

Another contrast with Chelmsford is that Storage jar fabrics never appear to recover in the late period. These fabrics are generally in short supply at Great Holts Farm after ceramic phase 4 (later 2nd century). In the later 4th century, storage jar fabrics fluctuate between being barely represented (*i.e.* less than 1%) to 3% by weight, but are never more than 1% by EVEs. At Chigborough Farm, Storage jar fabrics account for 18% of the total assemblage by weight in the late 4th-century group from a large pit (1705) in Area N (Horsley and Wallace 1998, table 7); in the Late Shrine group from Great Dunmow they amount to 28% of the total assemblage by weight (Going and Ford 1988, table 2). The high incidence of storage jar fabrics in this group might be due to the specialised function of the group. However, this is not necessarily the case as in the late 4th-century pit 421 at Buildings Farm, Great Dunmow, they form 26% of the total assemblage by weight (Wallace 1997, table 2). This suggests that the figures for Great Holts Farm are unusually low for this period.

Jars as always form the principle vessel class and are usually necked types and are present in a wide range of fabrics. The G24 types are particularly common in the Sandy grey ware fabrics as well as Rettendon ware and are mostly within the large G24.2 category. These are supplemented by smaller quantities of types G27 (Fig. 96.283–4), G25, G34, G35 and G40 (Fig. 96.285). The G27.2 is perhaps the most important new jar form of the late 4th century, although it is never all that common at Great Holts Farm. All the storage jar types are the typical late forms, G42 and G43, but are very sparse.

Next in importance to jars are dishes. Another contrast to Chelmsford in this period is in the predominance of B6.2 type dishes. These are found in the usual grey and black-surfaced wares as well as Nene Valley colour-coat. B1 type plain-rimmed vessels also continue to reach the site in large numbers, but are never as important as the B6.2. The range of fabrics in which they occur diversifies, however, with a small number of B1 types present in Late shell-tempered ware for the first time. B3.2 types are hardly represented at Great Holts Farm and do not appear to be a late Roman form at all. In northern Kent, Monaghan (1987, 150–4) suggested a terminal date of *c.* AD 300 for many of his 5F type vessels which are an equivalent vessel type. The evidence from Great Holts Farm would support a similar date being applied to the B3.2 in this part of Essex at least and perhaps elsewhere as well. Open forms are generally small and deep.

Bowl-jars tend to exhibit a similar range of types throughout the 4th century with E6.1, E3.3 and E5s being particularly important. This period also sees the introduction of 'Romano-Saxon' style decoration (Figs 95.224; 95.269), although this is limited to a handful of sherds at Great Holts Farm. All of the forms represented seem to be mainly bowl-jars and can be shown, for the most part, to be Hadham products. The only bowl types noted in the key late 4th-century groups are the C25.2 type (Fig. 94.221), a flanged C8 type both in Oxfordshire red colour-coat (Fig. 94.201) and a possible tazza (Fig. 94.220). The fill of ditch 229 did produce two other bowl forms. These correspond to Young's C75 and C78 types (Young 1977).

The range of flagons represented was confined to a single example of a trefoil-mouthed J11 in Hadham oxidised red ware. Beakers appear to been supplied largely by local black-surfaced ware producers, the Hadham kilns, the Oxfordshire industry and the Nene Valley. Folded H39 type vessels with their tall tapering necks, low bulbous bodies and restricted pedestal bases are the main form recorded in fabrics other than Nene Valley colour-coat. In this period too, the Nene Valley also appears to have supplied a small number of painted H41 type beakers, although the bulk of these vessels are represented by body sherds only.

Like flagons and beakers, mortaria are never all that common in any period at Great Holts Farm. The supply of mortaria in this period was completely dominated by the Oxfordshire potteries. This industry supplied a range of white, white-slipped and red colour-coated vessels. All the forms correspond to Young's M22, WC7 and C100 types (Young 1977). As at Chelmsford, the Nene Valley industry does not seem to have supplied any vessels after the mid 4th century. The only exception might be a single D12 type in a colour-coated fabric, but equally this vessel could have arrived on the site any time in the 4th century.

Research themes

The mortaria

Although the pottery from the site was classified using the Chelmsford typology, for purposes of this study the mortaria were recorded separately by fabric to provide figures for both form and fabric incidence. An estimate of the minimum number of vessels, as is usual for mortaria reports, was not attempted and the evidence for context cross-joins was also not investigated systematically. There was, however, only one incidence of a cross-context join noted. Taken as a group, the coarse-ware mortaria formed a relatively minor assemblage component, totalling just 120 sherds weighing 4.689kg. The total, quantified by Rim Equivalents was 4.87%. None of the vessels carried maker's stamps. This small assemblage was analysed to investigate four research themes, firstly to ascertain the principal suppliers, secondly to identify any chronological changes in the provision of mortaria, thirdly to assess the relative importance of minor suppliers, and fourthly to investigate the way mortaria were deposited over the site.

Table 21 provides an indication of the main trends in mortaria supply, as well as identifying the presence of nine separate fabrics. The main factories supplying Great Holts Farm were, in order of importance: Oxfordshire, Colchester (Essex), Much Hadham (Hertfordshire) and the Lower Nene Valley (Cambridgeshire). Occasionally local manufacturers like the Rettendon kilns also managed to break into the market. Continental imports, other than a few Central Gaulish and East Gaulish (including Rheinzabern) samian vessels (Table 32), were not identified. Also noteworthy is the complete absence of Verulamium region vessels. This is probably chronologically significant and can be taken as a further indicator that domestic activity at Great Holts Farm is essentially a late Roman phenomenon. The range of coarse-ware mortarium fabrics present at Great Holts Farm seems to be limited compared with other sites in the region. At Chignall St James, for example, Hartley (1998, 108) identified a total of fourteen fabrics including several not represented at Great Holts Farm. These included Verulamium region, Mancetter-Hartshill (Warwickshire), *Gallia Belgica* as well as a variety of unspecified East Anglian fabrics.

Vessel forms were identified only for four sources, Colchester, Much Hadham, the Lower Nene Valley and Oxfordshire. The latter source provided the largest number of vessels although not the widest range of types. All of the Oxfordshire white ware vessels correspond to Young's M22 type. Many of these were recovered from contexts of late 4th-century date (Figs 93.167, 181; 94.202–3). However, it was the Colchester kilns that supplied the greatest variety of actual vessel forms (Figs 89.28; 90.79). Of the samian vessels, the only form identified was a Central Gaulish Drag. 45 (Table 45). This is attributable to the period *c.* AD 170–200.

From Table 22, it appears that the Colchester industry virtually monopolised supply from *c.* AD 160 to 200/20. Vessels of earlier date were not present at Great Holts Farm. The importance of Colchester is perhaps slightly over-emphasised in the quantification figures in that vessels in this fabric tend to be more robust than their later counterparts and are thus less likely to exhibit high levels of fragmentation. Having said this, several examples do show signs of extensive wear. From the late 3rd century onwards, the Oxfordshire potteries dominate — although supply shows considerable diversity — with vessels also coming in from the Lower Nene Valley and Much Hadham. The bulk of the site's mortaria would fit well into a 4th-century date range, however.

In marked contrast to Chelmsford, white-slipped Oxfordshire products (Fig. 93.159) form an important component of the assemblage and points to intensive domestic activity in the second half of the 4th century. There is some evidence that the Colchester industry was still producing small quantities of mortaria in this period as well, judging from the presence of a *Cam* 508 type vessel. However, the mass of the sherdage from this centre is clearly residual by this time.

The Rettendon ware vessel is again likely to be 4th-century in date. While the exact form was not identifiable from the surviving sherds, a vessel from the kiln site at Inworth, Essex (Going 1987, fig. 41.6), corresponded to Young's Oxfordshire mortarium type

Factory	*Factory quantification*			*Fabric*	*Fabric quantification*		
	Sherds	*Wt. (g)*	*EVE*		*Sherds*	*Wt. (g)*	*EVE*
Unlocated (?East Anglian)	2	25	–	BUFM (31)	2	25	–
Colchester	38	1713	1.60	COLBM (27)	38	1713	1.60
Much Hadham	4	170	0.50	HAXM (4)	4	170	0.50
Lower Nene Valley	9	303	0.02	NVCM (2)	1	34	0.02
				NVM (24)	8	269	–
Oxfordshire	64	2440	2.86	OXRCM (3)	7	75	0.05
				OXSWM (13)	19	765	1.02
				OXWM (25)	38	1600	1.79
Rettendon (Central Essex)	2	38	–	RETM (48)	2	38	–
Totals	**120**	**4689**	**4.98**	–	**120**	**4689**	**4.98**

Table 21 The quantification of mortarium fabrics (whole site). Numbers in brackets after Going 1987

Factory	*Fabric*	*Form*	*Date range*	*EVE*
Colchester	COLBM	D13.2	*c.* AD 160–200	0.87
		D2.2	*c.* AD 160–200	0.20
		D11.1	*c.* AD 160–220	0.24
		D11.2	*c.* AD 160–220	0.11
		D	undated	0.08
		Cam 508	4th century	0.10
Hadham	HAXM	D	*c.* AD 260–400+	0.10
		D7.2	*c.* AD 260–400+	0.26
Lower Nene Valley	NVCM	D12	?4th century	0.02
Oxfordshire	OXRCM	C100	*c.* AD 360–400+	0.05
	OXSWM	WC7	*c.* AD 360–400+	1.02
	OXWM	M22	*c.* AD 240–400+	1.79

Table 22 Quantification of vessel form by fabric and EVEs

Quantification	*Ditches*	*Pits*	*Misc.*	*Water*	*U/S*	*Demolition*	*Structure*
Sherd count	50	12	9	8	21	14	5
Weight (g)	1596	601	146	737	1020	480	109
% Weight	34.03	12.81	3.11	15.71	21.75	10.23	2.32
EVE	1.91	0.65	0.10	0.48	1.29	0.55	–
% EVE	38.35	13.05	2.00	9.63	25.90	11.04	–

Table 23 Mortaria and deposition at Great Holts Farm

M22. Although not recorded as being in Rettendon ware, Going (1987, 85) noted that the trituration grits comprised crushed angular flint similar to the tempering used in Rettendon ware. The fact that local manufacturers were imitating Oxfordshire types is further evidence of the stranglehold that this industry had achieved over the Essex mortaruim market in the 4th century. A Rettendon ware mortarium was recovered from a late 4th-century context at Rawreth (Drury 1979, 41). This vessel had multicoloured flint trituration grits unlike the example from Great Holts Farm that had mainly white flint trituration.

The ascendancy of the Oxfordshire industry in the supply of mortars in the 4th century begs several fundamental questions. Although Oxfordshire provides the bulk of the mortaria in this period, this dominance is not reflected in the other products from this industry, which are always rare at Great Holts Farm. This is also the case at the very end of the 4th century when red colour-coated ware products are first attested. However, Late shell-tempered ware and Oxfordshire red colour-coat are generally not present at Great Holts Farm in such large quantities as has been noted at Great Dunmow and Chelmsford, for example. Indeed Oxfordshire red colour-coat mortaria comprise the least common Oxfordshire mortaria fabric at Great Holts Farm.

Another aspect of mortaria supply to Great Holts Farm is the dominance of Oxfordshire products over those of the Much Hadham manufactory. This is perhaps surprising given that Much Hadham is much closer to the site than the Oxfordshire industry. The high cost of road transport does not seem to have been an important factor in the distribution of mortaria. It may well be the case that the Oxfordshire industry had a much more developed marketing network for its mortaria than for its other products. This certainly appears to be the case when compared with its competitors.

Study of mortaria distribution patterns in the region is hampered by the lack of quantified data. This is particularly true of Essex sites. The dominance of the Oxfordshire potteries is a striking feature of the Great Holts Farm mortaria and something that seems to be at variance with other sites in East Anglia. At Spong Hill (Norfolk), Hartley (1995, 98) noted that locally made vessels dominated supply throughout the Roman period, even keeping the Nene Valley down to a minimum. A similar situation was identified among the mortaria of 3rd to 4th-century date at Caister-on-Sea, Norfolk. Here, locally produced grey ware vessels accounted for as much as 47% by weight, while the Nene Valley and the Oxfordshire potteries are poorly represented by comparison (Darling 1993, 201).

The bulk of the mortaria was recovered from ditch fills and thus mirrors the overall pattern of pottery deposition over the site. However, a large amount came from unstratified contexts, which negates its value as dating evidence. Other than this fairly significant quantities came from pit fills and contexts associated with water supply (wells and drains *etc*). None of the mortaria was recovered from funerary contexts.

Black-surfaced wares: an East Anglian ceramic tradition

Several broad ceramic traditions are discernible: firstly, white and buff wares used for flagons and mortaria; secondly, colour-coats and glazed wares used for fine table wares; thirdly, there are oxidised red wares; fourthly, reduced grey wares; and fifthly, black wares. These latter three categories were commonly used for cooking as well as on the table. In East Anglian pottery assemblages of the Late Iron Age and Roman period, all these traditions are present at some time, although their relative importance to each other often differs quite markedly.

It is generally not common practice among pottery specialists to divide the black wares from the mass of

reduced wares unless specific fabrics are being referred to like BB1. However, it has been felt for some time that in Essex a better appreciation of the region's coarse wares would be achieved if this was done more systematically. Amid the mass of coarse reduced wares these very broad fabric categories can be identified on the basis of surface colour. First, there are those that are in a light-to-mid grey sand-tempered fabric, and second, there are those that are very dark grey or black in colour. The bulk of the fabrics which make up both categories range from relatively fine to fairly coarse, and seem to have been produced at various kiln sites whose market area is assumed to have been fairly localised. However, none of them, particularly the sandy grey wares, appear to be sufficiently diagnostic to allow identification of individual kiln sources amongst the sherdage encountered on occupation sites. Consequently, wider distribution cannot always be ruled out, although positive evidence for it is mostly lacking.

Although by far the most common of the two categories, the sandy grey wares are in many respects more standardised in terms of fabric and finish. Compared to the ubiquitous sandy grey wares, fabrics with black surfaces are seemingly less important, particularly from the late 2nd or 3rd century onwards, although apparently more important in the 1st century, judging by the evidence from Chelmsford (Going 1987, table 9). However, there is some reason to believe that some of these figures may be slightly biased in favour of the ordinary grey wares in the later period and that the true picture of supply may be slightly different. The reasons for thinking in this way are examined in detail below.

Essentially, a Black-surfaced ware is a wheel-thrown fabric, which is mainly sand-tempered with a black surface and orange core. A variant on this theme has the black surface with black core and orange margins. In all cases the sand temper is accompanied by varying quantities of grog, with some fabrics having very little, while others may be close to genuine grog-tempered fabrics. There may be some chronological development in the use of grog within the Black-surfaced ware tradition, and the evidence for this will be discussed in detail below. In Essex, there are five fabric labels used to describe the various components of the Black-surfaced group. These are BB2 (*cf.* Farrar 1973, 67–103), 'Fine Romanising' ware (*cf.* Going 1987, fabric 34), Hadham Black-surfaced ware (*cf.* Going 1987, fabric 35), Romanising grey wares (*cf.* Going 1987, fabric 45) and Late Black-surfaced ware (*cf.* Horsley and Wallace 1998, 151). However, differentiation between the Romanising grey wares and Late Black-surfaced ware is often problematical, especially when dealing with sherdage.

The range of Black-surfaced wares

Having noted that there are several fabrics or fabric groups making up the Black-surfaced ware category, as well as difficulties in attempting any clear and decisive differentiation between some of them, it is now time to examine this problem in depth. Each of the fabric labels identified in the introduction is examined in detail using published data from a range of sites in Essex, East Anglia and south-east England generally. Following from this, the Black-surfaced ware tradition is studied using the data from Great Holts Farm.

Romanising wares: Going identified two types within this category, a fine ware group (fabric 34) and a coarse sandy ware (fabric 45) group. At Chelmsford (Going 1987, table 9) these wares appear to have been current between ceramic phases 1 and 4 (later 1st and 2nd centuries), thereafter declining considerably, even though there is some form of recovery in ceramic phase 6 (late 3rd century). The origins of these wares probably lie in the late pre-Roman Iron Age 'Belgic' grog-tempered wares as defined by Thompson (1982). There seems some reason to believe that Going's so-called 'Romanising wares' are the post-conquest continuation of these fabrics, judging by the overlap in the range of forms present in both fabrics. However, several forms, such as pedestal jars, are not found in these wares, which suggests that the situation may be more complex. The development of these wares has received some comment in several reports; the evidence from the region is discussed briefly with reference to three sites, Gorhambury (Hertfordshire), Maxey (Cambridgeshire), and Fison Way, Thetford (Norfolk).

At Gorhambury, 'Belgic' pottery was present throughout the site and was most common in period 3–5 horizons (*i.e.* *c.* AD 20–43), but continued into post-conquest levels. Here it was noted that the fabric of the later pottery gradually became sandier and the vessels more 'Romanised'. Grog was still present but more finely crushed (Parminter 1990, 177–8). At Maxey, in the Welland Valley near Peterborough, Gurney (1985, 122) included a range of gritty grey/brown/black wares in his fabric 7 which was considered to have lasted until the mid 2nd century AD. These included all of the sandwich-fired fabrics, whether they had a black or red surface. The source for these was not specified but considered to be non-local. In Norfolk, early Black-surfaced wares were recorded at the Fison Way site at Thetford (Gregory 1991). However, in contrast to Gorhambury, these were not grog-tempered, although it was suggested that they owed their origins in part to the grog-tempered ware tradition of south-east England (Gregory 1991, 170). The Black-surfaced wares were seen as a Romanising influence, with many of the fabrics being wheel-thrown versions of earlier handmade fabrics.

Late Black-surfaced ware: it was noted by C.R. Wallace that many accepted late forms, such as the B6.2 type bead-and-flange dish and folded beakers are also present in a fabric akin to the so-called 'Romanising' grey wares (Going's fabrics 34 and 45). To get round the problem of having a 'Romanising' ware in the late period, the term 'Late Black-surfaced ware' has been coined. This is seen simply as a late variant of Going's fabric 45. However, unless specifically late forms can be identified, it is not always possible to make clear and consistent differentiation between genuine residual early sherds and late material when dealing with undiagnostic body sherds. The presence of this fabric at Chelmsford probably accounts for the recovery of Going's 'Romanising' grey wares in ceramic phase 6 (late 3rd century) as mentioned above.

From the 2nd century, a range of new forms appear within the Black-surfaced ware tradition. Many Black-surfaced ware forms, particularly the dishes, are akin to those produced by the Thameside BB2 kilns. Indeed, unless these are in a classic BB2 fabric with its silky finish, it can be almost impossible to distinguish between related BB2 type fabrics and other Black-surfaced wares. This may indicate that much of the BB2 type production was intended for export rather than

local consumption. Additional changes occurred in the mid and later 3rd century with the production of Going's B5.1 and B6.2 dish types respectively. The latter form continued throughout the 4th and perhaps into the early 5th century. In terms of fabric, there is little change, although in some cases the use of sand temper comes to dominate with the use of grog declining to levels that suggest largely incidental inclusion. The sandwich effect with black surface and core separated by red margins remains an important feature, particularly where dishes are concerned. On some jar forms the sandwich effect might be partial, or there may be simply a black slip covering an orange fabric.

The range of variants indicates a genuine regional multi-faceted Black-surfaced ware tradition in Essex and East Anglia. However, the main hindrance to our understanding of these wares is that specialists have not always differentiated Black-surfaced sherds from the mass of coarse reduced wares. Where Black-surfaced wares have been identified, the coverage has been rather patchy. At Spong Hill, Norfolk, two Black-surfaced fabrics were identified in late 2nd to late 3rd- century contexts (Gurney 1995, 101, fabrics 19 and 20). Both of these fabrics had a black slip. The forms present included a variety of jars, bowls and dishes. Black-surfaced wares have also been recognised elsewhere in Norfolk, at Weeting (Gregory 1996) and Leylands Farm, Hockwold cum Wilton (Gurney 1986). At both of these sites the Black-surfaced wares were assigned to the Nar Valley, but were not divided from the rest of the reduced wares from this source.

Hadham Black-surfaced ware: it is probable that some of the Black-surfaced ware vessels found on Essex sites came from the Hadham manufactory. As sherdage, vessels are often hard to distinguish from 'fine Romanising' fabrics, and when abraded, from the mass of fine grey wares (Going 1987, 7). The fabric has a black-red core, dull reddish-black margins and a very dark grey or jet black surface. Surface treatment consists of regular burnished horizontal strokes to produce a high overall gloss. Decoration comprises occasional burnished lattice, or a variety of 'Romano-Saxon' motifs. At Chelmsford, Going (1987, 7) noted that while this fabric was more common than either BB1 or BB2, it first occurred in ceramic phase 5 (early to mid 3rd century) and persisted until the end of the Roman period.

BB2: the relationship between BB2 and the rest of the coarse Black-surfaced wares is problematical. A number of sand-tempered fabrics with black surfaces, like BB2, seem to form part of a broad tradition that involves not only the production of a black surface, but also burnishing. The late R.A.H. Farrar (1973, 78) noted that compared with the northern military sites, the BB2 found in the south-east of England did not display the same homogeneity in form. Moreover, styles in decoration found on the cooking-pot types also showed important differences (Farrar 1973, 99). A number of vessels appear to be in black-burnished fabrics but are not seemingly typical of BB2. These fabrics also form an important part of the Black-surfaced ware tradition from the 2nd century AD onwards.

BB2 can be difficult to distinguish from the mass of coarse Black-surfaced wares unless it is found in its classic form as defined by Farrar (1973). He described it as having a black or dark grey surface enhanced by burnishing prior to firing. A slip was occasionally applied or worked up with the hand (self slip) from the body before burnishing. A variety of burnished motifs were applied. In the case of the jars this was within an unburnished reserved zone, while with the bowls and dishes it was applied over an evenly burnished surface. At Mucking a range of forms were produced in BB2 which do not find their way to the northern frontier region (Jones and Rodwell 1973), while at North Shoebury (Essex), R.S. Leary (1995, 93) included BB2-type wares in her GRYS1 group. At Weeting (Norfolk), the late Tony Gregory (1996, 30) noted that there were difficulties when it came to making consistent demarcation between Nar Valley grey wares (RW1) and BB2. His overall conclusion was that the situation regarding BB2 in East Anglia was even more problematical than had been previously appreciated. Of the BB2 types found in the region, the bead-rimmed dishes with lattice (Going 1987, types B2 and B4) are the most readily identifiable. However, the jar types can be especially difficult to separate from other ceramic types with black surfaces particularly when dealing with body sherds.

At Caister-on-Sea (Norfolk), Darling (1993, 163) also found definition of BB2 vessels problematical. This was considered to be a result of variable fabrics representing different kilns and the accepted definition of the ware based on pottery from the northern frontier. At Caister-on-Sea, four separate 'BB2' and allied fabrics were recognised; each was considered to derive from different sources, but all working within the same tradition in the Essex/Kent area from the late 2nd to the mid/late 3rd century. Variations in fabric were thought to be a result of differences in clays used as well as changes in clay preparation techniques. Classic BB2 forms are present in Black-surfaced wares suggesting that they may be part of the same tradition. Similar variations in the BB2 at Brancaster (Norfolk), were also identified (Andrews 1985, 93, fabric RW11).

Black-surfaced wares at Great Holts Farm

It has become clear that there are major difficulties in defining the boundaries between several apparently once well-defined fabrics found on Essex sites. Both of the so-called 'Romanising' wares and the Late Black-surfaced ware categories were largely defined using vessel form rather than any perceptible differences in fabric and finish. However, experience has shown that it is not always possible to distinguish between these categories in a consistent manner when dealing with undiagnostic sherdage or where the material comes from sites that have been affected by adverse soil conditions. This was also a major problem at Great Holts Farm. Therefore, with these problems in mind, the bulk of the pottery with a black surface was defined simply as 'Black-surfaced ware'. The only exceptions were where classic BB2 sherds were identified and where very fine Black-surfaced fabrics were present which compared well with other Hadham products, either because they bore 'Romano-Saxon' style decoration, or were in fabrics which were compatible with other known products from this source. This approach has two advantages: firstly it does not assume residuality in late contexts where form could not be identified with any certainty; and secondly, it provides the basis for a detailed

investigation of the Black-surfaced ware tradition as a whole.

This is perhaps not the best site from which to study the development of Black-surfaced wares in detail, by virtue of the site's late *floruit*. However, some insight is possible, not only because some early material is present alongside the later pottery, but also because the size of the assemblage means that useful comparisons may be made with other Essex sites, particularly Chelmsford.

Study of the ditch groups from Great Holts Farm revealed the presence of seven separate vessel classes in Black-surfaced fabrics: platters, dishes, bowls, bowl-jars, jars, beakers and miniatures. Mortaria were not identified. Dishes are the most important vessel class followed by jars; the remaining classes are almost insignificant by comparison. It is probable that this is due to the chronology of the site, and that where occupation spanned the whole of the Roman period, platters and bowls may form a higher percentage of the total assemblage.

Platters: two vessels only were recognised, both of Going's A2.1 type (Fig. 89.31). Platters of any type are exceedingly rare at Great Holts Farm. These undecorated vessels were considered to be pre-Flavian and early Flavian in date at Chelmsford and are thus entirely residual.

Dishes: fifty-nine vessels have been identified in ditch contexts. The earliest dish type is a single B7.1 (Fig. 90.38), which is broadly 1st to 2nd-century in date. However, by far the bulk of the dishes are B1.3 (Figs 93.145; 94.188, 94.192–3, 94.210, 95.256) and B6.2 types, as would be expected of a site with a late period *floruit*. Several bead-rimmed B2.1 (Fig. 89.12) and B4.2 (Figs 89.19, 89.44–5, 89.66) vessels are present, although the numbers were not large. Production of both of these forms is typically mid 2nd to mid 3rd-century, before petering out at the end of the 3rd century. A single groove-rimmed B3.2 dish was also identified (Fig. 94.209). This is a form most typical of the 3rd century. Of the other forms introduced in the 2nd century, the plain-rimmed B1 'dog-dish' is a long-lived type. While some of these must have been deposited in this early period, the bulk must date to the period after *c.* 260/70, judging by the prevalence of the fully flanged B6.2 type. Incipient bead-and-flange dishes, B5.1, appear to be entirely absent in Black-surfaced ware at Great Holts Farm.

The presence of B6.2 dishes (Figs 90.67, 91.110, 94.213, 95.260) in substantial quantities is a good indicator that Black-surfaced wares continued to be produced right to the end of the Roman period, as does the presence of a B1.2, which is strongly reminiscent of Nene Valley colour-coat vessels. This example may be of 4th-century date. On all of these Black-surfaced ware vessels decoration as such is absent, with none of the motifs that are associated with comparable BB1 and BB2 vessels which have been observed at Great Holts Farm. The only surface treatment present is horizontal burnishing of variable quality, occasionally only on the interior, but more often than not on both surfaces. Otherwise these vessels are plain.

Bowls: a total of three bowl types have been recorded, each represented by a single vessel. The earliest, a C28–9 type (Fig. 90.60), corresponds to *Cam* 230 and would not be out of place alongside the A2.1 platter mentioned above. Both types appear to have a similar date range. The other two vessels comprise a C1.2 flanged bowl (Fig. 90.47) reminiscent of Marsh (1978), types 34–5 and a fragment of a C13 type Drag. 29 imitation (too fragmentary to illustrate). Both of these vessels are attributable to the late 1st to early 2nd century. They are decorated with external burnishing and three bands of rouletting respectively. The C13 bowl may be a local attempt at imitating 'London ware' type vessels.

Bowl-jars: although typically late Roman, this class, characterised by deep profiles and wide mouths, is not represented by any more than four vessels, using the number of rims as a measure. Three types were recognised: the small-necked E3.3 type (Fig. 94.223), the S-profiled E5.2 (Fig. 93.151) and the large-necked E6.1. Of these, the E5.2 is the earliest, first appearing in the mid 3rd but only lasting until the mid 4th century. The other two forms first occur in the late 3rd and continue throughout the 4th century. All vessels of this class are either plain or partly burnished, particularly on the shoulder, neck and rim.

Jars: a wide variety of jar types were recorded which cover most of the Roman period. At least thirty-seven vessels were recognised where a specific vessel type could be identified. Of these, fifteen were early Roman types, three spanned the early to mid Roman period, six were mid Roman types, five were mid to late Roman types, and a further ten are late Roman types. This trend is in marked contrast to the dishes where mid and late Roman types are dominant and early Roman types barely represented.

The mass of the early jar types, G17–20, are forms which Going identified as being common in his 'Romanising' wares, all of which are common in the period from the mid 1st to early 2nd century. These are generally, but not invariably, necked jars with out-turned bead rims and have a raised cordon dividing the high-shouldered body from the neck. Five vessels fall into the G17 category, which have their cordons decorated with burnished lines or lattice. Much rarer are the biconical G18 types; only one vessel was recorded. The G19 group (*cf.* Fig. 89.2) is perhaps the most diverse category, although only three vessels are identified. Finally, there are also three examples of the plain G20 type (Fig. 89.33). These high-shouldered types with concave necks lack the cordon, which is common to all the other categories.

One vessel form that spanned the 1st and 2nd centuries is the G23 type jar (Fig. 89.30). Three vessels of this type were recorded. The form appears to have gradually developed into the G24 type (Fig. 93.182), which continued right to the end of the Roman period (Fig. 92.142). Of the six mid Roman vessels recorded, these fall into the G5.4 lid-seated category (Fig. 91.74), the G45 storage jar and the G9.2 high-shouldered neckless jar with bead-rims. The G22.1 type jar (Fig. 90.50) with its band of distinctive stabbing on the shoulder is also typically mid Roman. These forms are generally assigned a 2nd to mid 3rd-century date range.

Of the five late Roman jar types recorded, the earliest were the tall ovoid body and cavetto rimmed G9.3 type. These are dated from the 3rd to early 4th century at Chelmsford. Also occurring at the same time, but probably continuing to the end of the Roman period, are the plain narrow-necked G34 types. Specifically 4th-century types were also present and comprised the frilled rim G26 type

and the narrow-necked G35.2 (Fig. 90.48). These vessels, which resemble the G34 types, may be either undecorated or have a zone of burnished line decoration and stabbing. The other late jar type is the G40 type flask or bottle (Figs 89.7; 96.285), a form which is also not out of place in 4th-century horizons.

Beakers: the only vessel of this class identified in Black-surfaced ware is a H39 type beaker (Fig. 96.286). These tall-necked folded vessels are generally considered to be 4th century. Body sherds belonging to other folded vessels were also present, but no other exact vessel form was recognised.

Miniatures: one small vessel of uncertain type was identified, but is too fragmentary for illustration. Presumably the range of types is not different to those found in Sandy grey wares (*cf.* Fig.95.241).

Discussion

At North Shoebury (Essex), Leary (1995, 96) suggested that the scarcity of BB2 cooking pots on settlement sites might be due to the fact that jars were probably being produced for consumption outside the region. The overall scarcity of BB2 products on Essex sites like Great Holts Farm and Bulls Lodge Dairy seems to confirm this. However, the situation is more complicated than this, and it is probable that many of the miscellaneous coarse Black-surfaced wares described above may well include both BB2 and their so-called allied products. This uncertainty is one of the reasons why sherds, unless they are in the classic BB2 fabric, have been lumped together in the Black-surfaced ware group during the cataloguing and analysis of the Great Holts Farm assemblage.

At Great Holts Farm, statistical information is only available from the early 2nd century onwards and there appears to be a significant gap in the mid 3rd century. It would also seem that the 4th century was the main period, or even the only period of domestic activity on the site, which again creates certain biases in the data and suggests that the dataset is reliable only for the late and latest Roman ceramic phases. Bearing these caveats in mind, the following conclusions may be drawn about the chronology of Black-surfaced wares and their relationships with other coarse utilitarian fabrics at Great Holts Farm.

In the early to mid 2nd century Group 1, Black-surfaced wares are the main fabric measured by EVEs (60%). However, when measured by weight they account for only 24% of the assemblage and are second to storage jar fabrics on 42%. Storage jar fabrics are barely represented by EVEs (just 7%). The bulk of the Black-surfaced wares reaching Great Holts Farm in this period almost certainly fall within Going's 'Romanising' category as can be seen from the range of jar forms recorded and are comparable to those types produced at Colchester and Ardleigh in this and earlier periods. In ceramic phase 1 at Chelmsford (later 1st century), because the forms made in fabrics 34 and 45 were considered to be closely akin to the Colchester type series (Hawkes and Hull 1947; Hull 1958; 1963), Going (1987, 106) has suggested that the Colchester/Ardleigh region was a likely source for much of this material. BB2 forms just 2%, although the Sandy grey wares form 17% by weight. The Fine grey ware category stands at a mere presence. This dominance of Black-surfaced wares over Sandy grey wares is also seen at Chelmsford (Going 1987, table 9).

The two mid to late 2nd-century Groups 2 and 3 show wild fluctuations in the amounts of Black-surfaced wares reaching the site in this period. In Group 2, Black-surfaced wares have increased in volume when measured by weight to 58%, although when EVEs are calculated there is a decline to 27%, which seems to suggest that this is a particularly fragmentary assemblage. The incidence of Sandy grey wares makes a slight increase to 21% by weight, while BB2 has also slightly increased its share to 3% and the Fine grey wares stand at 2%. The situation shown by Group 3 is very different. Here, although Black-surfaced wares have increased to 29% when measured by EVEs, there is a real decline in weight (13%), while the Sandy grey wares now stand at 42%. BB2 and the Fine grey wares have both declined to a mere presence (less than 1%). The reasons for this may be chronological in that Group 2 is dated to *c.* AD 140–180, while Group 3 is placed in the period *c.* AD 160–200. However, this seems to be contradicted by the late 2nd to early 3rd-century Group 4. Here Black-surfaced wares stand at 55% of the assemblage by weight, while Sandy grey wares are represented by a meagre 6%. Perhaps surprisingly, BB2 amounts to a mammoth 25.17% by EVEs but only 4% by weight. The wide variation in the incidence of BB2, depending on which measure is used is almost certainly related to the difficulties in distinguishing this fabric from the mass of ordinary Black-surfaced wares. Hadham ware is absent from all of these early and mid Roman groups.

These fluctuations in the relative quantities of Black-surfaced wares require some explanation. Assemblage size may be a factor, although preservation is likely to be more significant. Of the groups examined above, only one has an EVE to weight ratio greater than 1 EVE to 1kg. This suggests that we are not dealing with primary refuse deposits associated with domestic occupation at Great Holts Farm. Domestic occupation does not begin at Great Holts Farm until the later 3rd century at the earliest and is more likely to have commenced at the beginning of the 4th century. In all of the groups dated late 3rd and 4th-century, the EVE to weight ratio is above 1 EVE to 1kg, apart from the well group (Group 7) which is likely to be a structured deposit anyway. This group adds little to our overall understanding of Black-surfaced wares at Great Holts Farm and is discussed no further.

The fluctuations present among the Black-surfaced wares in the early and mid Roman period are not a feature of the late and latest Roman groups at Great Holts Farm. This period also marks a watershed in the supply of coarse Black-surfaced wares to the site. The range of forms first occurring in the late 3rd century are those which continue, by and large, to the end of the Roman period. While the occasional bowl-jar or jar with Romano-Saxon style decoration does occur at Great Holts Farm in Black-surfaced fabrics, the bulk, if not all of these late 4th-century vessels can be assigned to the Hadham industry with some confidence. In the late 3rd century Group 5, Black-surfaced wares comprise 19% of the assemblage by both weight and EVEs, while the Sandy grey wares stand at 30% and the Fine grey wares at 3% by weight. BB2, almost certainly residual by this time, stands at a rather high 4%. Rettendon wares appear for the first time, but these are represented by just 4% by weight and

are barely represented by EVEs (under 1%). The low incidence of Rettendon wares seems to confirm that this is indeed a late 3rd-century group, rather than one of 4th-century date.

Into the early 4th century, Group 6 shows that Black-surfaced wares go into decline, falling to 16% by weight. On the other hand Hadham black-surfaced ware appears, but accounts for just 1.06% by EVEs. The Sandy grey wares now dominate, taking as much as 35% of the assemblage and the Fine grey wares 9%. BB2 is now represented by weight only, having fallen to a mere presence, while Rettendon ware now stands at 5.33% by EVEs. The early to mid 4th-century Group 8 is unusual in the low number of fabrics represented. Here, Black-surfaced wares amount to just 8% by weight, Fine grey wares 7% and Sandy Grey wares 30% by weight. The amounts of Rettendon ware show a significant increase and now stand at 27%. All of these figures, apart from the increase in Rettendon ware, appear to be compatible with those found within Group 6.

The late 4th century sees the quantities of Black-surfaced ware generally continuing to show some decline when measured by EVEs, although by weight the fluctuations are much narrower (12% in Group 9, 14% in Group 8% and in Group 11). In contrast, the amounts of Rettendon wares present continue to increase (22% in Group 9, 17% in Group 10 and 23% in Group 11). The incidence of Sandy grey wares does show some fluctuation, and ranges from 12% and 39% in Groups 9 and 10, to 33% in Group 11, although the Fine grey wares fluctuate considerably (3% in Group 9, 10% in Group 10 and 2% in Group 11). This shows significant decline from the levels attained in the early and mid 4th century. Hadham black-surfaced wares only appear as very minor assemblage components within Groups 9 and 11, but represent 3% in Group 10.

Group 12 is perhaps the latest of the late 4th century groups identified at Great Holts Farm and is considered to be no earlier than *c* AD 370/80 on stratigraphic grounds. At this point it is worth noting that the volume of Black-surfaced wares is much greater in the period *c*. AD 360/70 than at the end of the century. In Group 12, coarse Black-surfaced wares have declined to just 5% by weight, while Rettendon wares (43%) have now overtaken Sandy grey wares (23%) in a fairly dramatic manner. Hadham black-surfaced wares account for just 5% of the assemblage and Fine grey wares 4%. The dominance of Rettendon wares in the late groups seems to contradict what was happening at Chelmsford at this time. It is possible that the presence of Rettendon ware production at Chelmsford in the early to mid 4th century has introduced some form of statistical bias in the data from this site.

The longevity of Black-surfaced ware production in the region as well as its diversity is both unusual and remarkable. This points to a strong regional ceramic tradition and a substantial demand over a long period of time for pottery that is black in colour. It was able to survive the demise of the likes of the Ardleigh pottery near Colchester in the early Roman period, but also the growth of the Thameside BB2 industries of northern Kent (Monaghan 1987) and Essex at sites like Mucking (Jones and Rodwell 1973). Going noted that few, if any, of the industries which appear to have flourished in the Antonine period in eastern England appear to have revived in the mid and later 3rd century (Going 1992b, 100). The Thameside BB2 industries of northern Kent appear to have become simply local potteries, while the Mucking kilns seem to have shared a similar fate. This is in contrast to the pottery at Much Hadham which appears to have revived quite strongly, and may have been the principle supplier of Black-surfaced wares to central Essex in the late and latest Roman periods. Supply of Black-surfaced wares seems to have continued right to the very end of the Roman period, although there is some evidence for decline in the final period.

Thin sectioning
by D.F. Williams

Introduction
A small thin-section programme was undertaken on nine samples of Black-surfaced ware from Great Holts Farm. These are all coarse-ware vessels, cooking-pots, bowls and dishes, based for the most part on standard BB1 and BB2 forms. The main purpose of the analysis was to see how the fabrics of these sherds compared with a similar range of black-surfaced pottery known to have been made at the nearby kilns at Ivy Chimneys, Witham. Both sites are situated on London Clay, covered in part by Boulder Clays and Brickearth (Geological Survey 1" Map of England Sheet No. 241).

Petrology of Black-surfaced pottery from Great Holts Farm (Table 24)
With one exception, two broad fabric varieties were noted in the hand-specimen and this division was confirmed by thin sectioning. Fabric 1 is quite rough to the touch, containing grains of quartz and pieces of flint, which protrude through the surfaces. In thin sectioning, the clay matrix can be seen to contain a moderately frequent

Sample no.	*Fabric*	*Form*	*Dating*	*Context*	*Fig. no.*
1	1	G24.2	2nd to 4th century	5578	Fig. 91.134
2	2	B1.3	2nd to 4th century	5570	Fig. 93.194
3	2	B6.2	late 3rd to 4th century	5570	Fig. 93.198
4	2	B6.2	late 3rd to 4th century	5780	Fig. 94.244
5	2	B4.2	mid 2nd to mid 3rd century	5624	Fig. 88.18
6	3	B1.3	2nd to 4th century	5571	Fig. 92.174
7	3	G19.2	mid 1st to early 2nd century	6304	Fig. 88.2
8	3	B1.3	2nd to 4th century	5579	Fig. 90.85
9	3	B4	mid 2nd to mid 3rd century	5569	Not illustrated

Table 24 The samples of Black-surfaced ware from Great Holts Farm analysed by thin sectioning

groundmass of silt-sized quartz grains and a scatter of larger rectangular subangular grains of quartz ranging up to 0.60mm across. Also present are some angular pieces of flint of variable size, sherds of mica and a little opaque iron oxide. The sharp edges of many of the fragments of flint suggests that these may have been deliberately crushed and added to the clay as a form of temper.

Fabric 2 contains a high quartz content but, except in the case of sample number 5, which is somewhat roughly burnished, is generally well-burnished, making for a smoother touch than with Fabric 1. Thin sectioning shows a fairly clean clay matrix containing frequent ill-sorted subangular quartz grains within the size-range 0.10–0.70mm. Also present are a few sherds of mica, a little opaque iron oxide and the odd piece of flint.

Fabric 3 is well-burnished and very smooth to the touch, containing less visible quartz than is the case with the previous fabric, with a smaller size-grade as well. Thin sectioning shows a groundmass of frequent silt-sized quartz grains, with the occasional slightly larger grain, some sherds of mica and the odd piece of flint.

Petrology of Black-surfaced pottery from Ivy Chimneys, Witham

Four samples of pottery from this site were provided for examination (Table 25). All the sherds are in a hard, sandy fabric, dark grey in colour.

Fabric A is smooth, well-burnished and fine-textured. Thin sectioning shows a groundmass of moderately frequent silt-sized quartz grains with a scatter of larger grains ranging up to 0.60mm in size. Also present are aherds of mica, some siltstones and small pieces of opaque iron oxide.

Fabric B is rough, unburnished with frequent quartz grains protruding through the surfaces. Thin sectioning shows a fairly fine-textured groundmass containing frequent ill-sorted subangular quartz grains, ranging up to 0.80mm in size, sherds of mica, cryptocrystalline limestone and small pieces of opaque iron oxide.

Comments

The petrological results from the Great Holts Farm material suggests that the majority of the samples can be grouped into two broad fabric divisions, on the basis of frequent silt-sized quartz component as opposed to a much coarser quartz content. The exception was Fabric 1, which contained ?crushed flint temper. A comparison with the four samples from the Ivy Chimneys kiln site failed to show any significant fabric similarities to suggest, on this evidence, that the Great Holts Farm Black-surfaced wares utilised the same clay or temper sources. The four Ivy Chimney sherds were divisible into two fabric groups of two sherds each. Both sherds in Fabric A contained siltstones, while both sherds in Fabric B had a small limestone content. Neither of these inclusion types has been noted in any of the Great Holts Farm sherds. Due to the common nature of the inclusion types in the Great Holts Farm sherds and the general sameness of the geology covering both sites, it is difficult at present to make any useful comments about alternative origins.

Sample no.	*Fabric*	*Form*
10	A	bodysherd
11	A	B3.2
12	B	G9
13	B	G

Table 25 The samples of Black-surfaced ware from Ivy Chimneys, Witham, analysed by thin sectioning

Late Roman Essex

The size of the late and latest Roman pottery assemblages allows several important pottery-specific issues to be examined in depth. Aspects studied include a synthesis of our current state of knowledge about Roman pottery supply in this period, and a review of the dating of specific forms and fabrics which are characteristic of the late Roman period. There is also a detailed discussion of the evidence for cremation burials in the late 4th century.

The importance of the site's pottery lies in the valuable insight that it provides into the late Roman period, particularly the 4th century. It is not often that there is an opportunity to study pottery assemblages on a site where the earliest domestic occupation is in the late Roman period. While earlier Roman pottery was present on the site, apart from the two main Antonine deposits, it comprises fairly minimal amounts. We are thus able to examine 'late' and 'latest' Roman pottery assemblages that have low or relatively low residual components.

The late 3rd century

The late 3rd century (ceramic phase 6) was a period of major change ceramically, and corresponds with an economic upturn as identified by Going (1992b, 100). In Essex, this is represented by the adoption and production of a variety of new vessel forms, including B6.2 bead and flange dishes and E6.1 bowl-jars, and the production of new fabrics like Rettendon ware and the first arrival of Oxfordshire white mortaria. At Great Holts Farm, as exemplified by Group 5, we are able to discern a difference in the quality of the pottery evidence; groups now almost invariably tend to be reasonably well preserved using the criterion of the 1 EVE to 1kg ratio. From this period onwards we also find that the overall numbers of contexts starts to rise dramatically as well as the amounts of pottery being deposited on the site.

Contexts dating exclusively to ceramic phase 6 are often difficult to identify at Great Holts Farm. The reasons behind this lie in the fact that many of the forms of this period are also common to ceramic phases 7 and 8, while both ceramic phase 6 and 7 exhibit a similar range of fabrics, albeit usually in varying quantities. That many of the groups are small in size, *i.e.* under thirty sherds, compounds the situation further. For this reason only one, relatively small, key group for this period was identified. The conclusions drawn from this group, which weighed just 3.4kg, can be nothing more than tentative. While the low incidence of Rettendon ware seems to confirm its late 3rd-century date, there are several unusual features that need to be mentioned. Generally in Essex, as at Chelmsford, for example, this period sees the Nene Valley industry dominating the supply of colour-coats at the expense of the Colchester kilns. Group 5 does not show this, but what it does show is that fine wares are particularly scarce. This aspect of pottery supply also continues throughout the 4th century.

The first half of the 4th century

The period marked by Chelmsford ceramic phase 7 probably sees the commencement of domestic activity at Great Holts Farm. This is indicated by an increase in the number of feature types represented containing pottery that is diagnostically late Roman. While many of the fabrics and forms are identical to those current in the late 3rd century (ceramic phase 6), there are, however, a number of subtle indicators which can be used to identify 4th-century groups. However, the absence of published quantified early and mid 4th-century assemblages outside Chelmsford remains a major hindrance to our understanding of this period in Essex. The reasons for this may be partly due to much of the first half of the 4th century being a period of economic stagnation with few new ceramic types being introduced (Going 1992b, 101) and discernible recovery only being identifiable at the end of the period. Also, unless there are good stratigraphic controls, early to mid 4th-century assemblages are difficult to distinguish from late 3rd-century groups and vice versa.

The expansion in the supply of Rettendon wares in this period was well documented by Going at Chelmsford (Going 1987, table 9). Here it is suggested that Rettendon wares began to decline from the mid 4th century onwards after a period of rapid expansion in the first half of the century. Throughout the 4th century the importance of these fabrics appears to increase at Great Holts Farm, until by the final decades of the 4th century they appear to be superseding Sandy grey wares. The distribution of Rettendon ware is principally in central Essex, close to its production sites. Outside this core area, this fabric is much rarer, but may have been marketed further afield in the 4th century.

Another indicator of an early to mid 4th-century date seems to be the presence of Nene Valley colour-coat open forms, such as B1.2 and B6.2 dish types, although these are never common at Great Holts Farm. The presence of a B6.2 type dish in slot 108 suggests that building 368 underwent some form of reconstruction in this period. At Chelmsford, Going (1987, 21) suggested that his E1 globular bowl-jar category was exclusively of this period. However, this type has not been identified at Great Holts Farm with any certainty.

The late 4th century

In Essex, the late 4th century sees a radical transformation in the range of ceramic types coming into the region. Late 4th-century horizons are readily recognisable at Great Holts Farm and other sites in the county because of this. The producers that survived the first half of the 4th century all expanded their markets after *c.* AD 360, resulting in the range of fabrics finding their way onto consumer sites in Essex and eastern England becoming greater than at any time since the mid 2nd century (Going 1992b, 101). Late shell-tempered wares are found alongside an increased range of Oxfordshire products. The latter industry now supplies table wares as well as mortaria. From southern England, the Alice Holt/Farnham and the Tilford/Overwey kilns begin to break into the Essex market for the first time supplying very small quantities of grey and buff wares respectively. Non-amphorae continental imports are once again present in the form of Meyen ware/Eifelkeramik and Ceramique à l'éponge (the latter not identified at Great Holts Farm), although imports do not reach Essex in anything like the quantities seen in the 1st to mid 3rd century.

It has recently been suggested that Late shell-tempered ware may have been coming into central Essex in the half century before the generally accepted dating (Clarke, C.P. 1998, 42). However, this suggestion was partly made on the presence of a single mid 4th-century coin at Chignall St James. Moreover, there is now a strong body of evidence which suggests that there are problems in coin-dating latest Roman deposits (*cf.* Wallace and Turner-Walker 1998). These problems are at their most severe on rural sites where extensive undisturbed occupation horizons generally do not survive post-Roman agricultural practices. Although several of the late 4th-century groups described above contained residual Constantinian coins, they cannot, however, be used as a means of re-dating the arrival of latest Roman pottery types in Essex. The dating suggested by Going at Chelmsford (1987, 110), which is also supported by the evidence from London and a host of other sites in East Anglia, holds true for Great Holts Farm as much as it does elsewhere in Essex when all the evidence is taken into account (Wallace 1993b).

During the second half of the 4th century, a number of important changes took place. Firstly, the late 4th century coincides with the deposition of the bulk of the stratified pottery. Secondly, this period also sees a plethora of well-dated contexts within a wide range of feature categories, especially ditch fills and demolition horizons. This is exemplified by the large number of groups that were of sufficient quality to be quantified by EVEs. Because of the superabundance of large groups, this is probably the most informative period regarding not only site development, but also ceramic usage and pottery supply.

At Great Holts Farm, the two late 4th-century assemblages from the fill of ditch 302 are of regional significance because they represent two phases of infilling in this period. Detailed discussion of these groups is justified because few sites provide evidence for a sequence of late 4th-century Roman stratigraphy. These high value groups are examined in relation to a number of recently published quantified groups (Table 26) from the county. Rather than examine individual fabrics, more general trends based on ware groups/types and production centres are attempted. Discussion is centred on the weights of each of the defined categories. These groups compare well with contemporary groups from other rural sites in Essex, including Buildings Farm, Great Dunmow (Wallace 1997), Chigborough Farm in the Lower Blackwater Valley (Horsley and Wallace 1998), and Shillingstone Field, Great Sampford (Martin 1998). Moreover, the late Shrine at Great Dunmow (Going and Ford 1988, table 2), and groups from ditch T71/80 and gully S35 at Chelmsford (Going 1987, table 8), are also useful in this respect.

A regionally significant late 4th-century group has recently been excavated at Shillingstone Field, Great Sampford. Here a fairly substantial group of sherds (4.5kg; 6.31 EVE) came from the filling of the recut of ditch 9 (Martin 1998, table 3). This group is remarkable because of the virtual absence of residual material and thus has high potential to provide an important insight into late Roman ceramics. All the evidence thus points to a deposit accumulating over a relatively short time. This is unusual because latest Roman groups are highly prone to

Pottery	*Great Holts Farm Group 11*		*Great Holts Farm Group 12*		*Shillingstone*		*Gt Dunmow Shrine*		*Buildings Farm*		*Chigborough Farm*	
	Wt. (g)	*%Wt.*	*Wt. (g)*	*%Wt.*	*Wt. (g)*	*%Wt.*	*Wt. (g)*	*%Wt.*	*Wt. (g)*	*%Wt.*	*Wt. (g)*	*%Wt.*
Black-surfaced wares	346	8.91	869	5.95	630	13.82	160	1.62	336	5.46	210	1.59
Continental imports	310	7.98	525	3.59	–	–	40	0.40	55	0.89	287	2.18
Hadham wares	465	11.98	1533	10.51	681	14.94	2075	21.11	1062	17.27	1325	10.07
Late shell-tempered	31	0.79	844	5.78	36	0.78	1180	12.01	84	1.36	560	4.25
Misc. grey wares	1391	35.85	4047	27.74	2564	56.25	1275	12.97	2226	36.20	6638	50.48
Nene Valley wares	178	4.58	65	0.44	95	2.08	625	6.36	63	1.02	497	3.77
Other regional imports	–	–	7	0.04	9	0.19	1340	13.63	2	0.03	–	–
Other wares	161	4.14	419	2.87	437	9.58	2795	28.44	2254	36.66	2666	20.27
Oxfordshire wares	72	1.85	139	0.95	106	2.32	380	3.86	28	0.45	665	5.05
Rettendon wares	926	23.86	6406	43.92	–	–	550	5.59	–	–	310	2.35
Totals	**3880**	**–**	**14584**	**–**	**4558**	**–**	**9825**	**–**	**6148**	**–**	**13149**	**–**

Table 26 Great Holts Farm Groups 11 and 12 compared with other quantified later 4th-century groups from Essex. Figures after Martin 1998 (Shillingstone), Going and Ford 1988 (Great Dunmow Shrine), Wallace 1997 (Buildings Farm) and Horsely and Wallace 1998 (Chigborough Farm)

contamination from pottery of earlier phases, *e.g.* at Chelmsford.

The absence of B3.2 and the B4.2 dish types in the Shillingstone Field group, for example, indicates that these forms have terminal dates before the late 4th century. Going (1987, 14–15) suggested that the B3.2 had a broad 3rd to 4th-century date range while the B4.2 was current from *c.* AD 140 onwards, although the more shallower types are likely to have gone out by *c.* AD 350/60. A revised dating for this form is strongly supported by the evidence from Great Holts Farm. B3.2 dishes are only present in very small quantities, while B4.2 types generally appear to be very fragmentary compared with other late dish types when they occur in groups of late 3rd and 4th-century date. It seems that none of these vessels continued into the 4th century and are likely to have gone out of production in the middle of the 3rd century.

Shillingstone Field not only provides important data about the range of latest Roman forms, but also useful comparative material when it comes to examining pottery supply in this period (Table 26). The quantities of Late shell-tempered ware in this group and in Great Holts Farm Group 11 appear to be comparable, and likewise the range of forms. Black-surfaced wares are more common at Shillingstone Field (13%) than at Great Holts Farm (8%). This may indicate that the Hadham kilns were a more important supplier of these fabrics than the figures show, a conclusion supported by the slightly higher incidence of diagnostic Hadham wares at Shillingstone Field (14%) compared with the 11% at Great Holts Farm. The figure for Great Holts Farm compares well with the amounts reaching Chigborough Farm (10%), but is dwarfed by the 21% from the Late Shrine group at Great Dunmow and the 17% from Buildings Farm, Great Dunmow. At both Shillingstone Field and Great Holts Farm, miscellaneous grey wares form the main assemblage components. The 35% at Great Holts Farm is supplemented by 23% Rettendon ware, while at Shillingstone Field miscellaneous grey wares account for 56% of the total assemblage. At Chigborough Farm, the amounts of miscellaneous grey wares are much closer to Shillingstone Field (50%), while at Buildings Farm, Great Dunmow the levels (36%) are comparable with Great Holts Farm. However, the figure of 12% for the Late Shrine group seems remarkably low and not paralleled elsewhere at present.

At Shillingstone Field, Oxfordshire products account for 2% of the assemblage and at Great Holts Farm the figure stands at just below 2%. These figures compare well with the 3% from the Late Shrine group at Great Dunmow, but are surprisingly lower than the 5% at Chigborough Farm. Moreover, Nene Valley products comprise a larger assemblage component at Great Holts Farm (4%) than they do at Shillingstone Field (under 1%) and also include a wider range of vessel forms. Colour-coat beakers were not recorded at Shillingstone Field, but they were at Great Holts Farm. At Shillingstone Field, Nene Valley products were restricted in scope, being confined to colour-coats, but at Great Holts Farm, residual white-ware mortaria were also present. The absence of these vessels at Shillingstone Field is unusual and may indicate that there was little in the way of early and mid 4th-century activity here in marked contrast to what was taking place at Great Holts Farm.

Turning now to comparisons between Great Holts Farm Group 12 and Shillingstone Field, while the former group is much larger than either Group 11 or Shillingstone Field, useful comparisons can be made between these groups. If anything, the differences between Group 12 and Shillingstone Field are even more dramatic than they were for Group 11. Less than half the quantity of Black-surfaced wares that occur at Shillingstone Field (13%) appear to be reaching Great Holts Farm (5%). However, Hadham wares, seem to have held their own at 10%. Of the other traded wares, Late shell-tempered ware forms a significant assemblage component in Great Holts Farm Group 12 (5%). Although this fabric still does not reach the same levels as in the Late Shrine Group from Great Dunmow (12%), the amounts are, however, more comparable to the situation at Chigborough Farm (4%). Perhaps, not

surprisingly, the quantities reaching Shillingstone Field (just under 1%) and Buildings Farm, Great Dunmow (1%) do not differ greatly, but are much lower than elsewhere.

Oxfordshire products appear to be in decline at Great Holts Farm with the levels exhibited within Group 12 being much lower than for Group 11. The figures for Group 12 are more comparable with Buildings Farm, Great Dunmow than they are for the other groups. At both of these sites they represent less than 1% of the assemblage. Perhaps surprisingly, these wares are best represented at Chigborough Farm, where they form 5% of the total assemblage. Of the other fine traded wares, Nene Valley products decline to less than 1%, well below levels seen elsewhere.

Analysis of the Great Holts Farm latest Roman assemblages has resulted in much important new information being made available for this period, which adds to the emerging picture of sub-regional diversity within the county. Geographical location seems to have been a significant factor in determining the volume of a particular ceramic type reaching a particular site. Great Holts Farm is close to a major centre, Chelmsford, which would have acted as an important centre for the redistribution of manufactured products. The site is also close to the main London to Colchester road that passed through Chelmsford, which may have had a significant effect on the range of ceramics available. In marked contrast, Shillingstone Field is distant from both major centres and routeways. This probably accounts for the high quantities of Sandy grey wares in this group, and also at Chigborough Farm. At Great Holts Farm, Rettendon ware occurs in considerable quantities, but at Shillingstone Field this highly distinctive fabric is completely absent. Rettendon ware is generally rare outside its core central Essex distribution zone, so its absence at Shillingstone Field is not unexpected. However, it does find its way into the group from Chigborough Farm where it forms approximately 2% of the total assemblage.

Site status too may have played its part, judging by the differences between the Late Shrine Group from Great Dunmow and the other groups. Here, ritual may have governed what types may have been consumed, with some types being acceptable while others were not. Chronology may also play a part as can be shown from the differences between Great Holts Groups 11 and 12. However, other latest Roman sequences comparable to those recovered from ditch 302 need to be studied in detail to establish how far these latest Roman groups at Great Holts Farm can be regarded as typical.

Late 4th-century cremations in Essex

A total of sixteen cremations were located at Great Holts Farm, but only seven were associated with pottery, and none of the vessels was sufficiently complete to indicate function as a cremation urn. Overall, the pottery associated with the cremations is highly fragmentary and often very abraded. It would seem likely that most, if not all, of these cremations belong to the later Roman period to judge from the presence of Oxfordshire red colour-coat and Late shell-tempered ware in cremations 122 and 185. These two at least were deposited at the end of the 4th century at the earliest. It is possible that these cremations could relate to the occupation of the villa, or even to the period after the villa had been abandoned, but there is at present no way of ascertaining their relationship. What seems likely is that, if the status of the villa is taken into account, these cremations are the final resting places of pagan estate workers and not those of the owner and his kin.

Late 4th-century cremations are known elsewhere in Essex, at Old House, Church Langley, Harlow (Martin 2000) and Billericay (Weller 1974). Burials of this date have also been recorded associated with Oxfordshire red colour-coat at Chigborough Farm (Horsley and Wallace 1998, 151) and Late shell-tempered ware at Kelvedon (Rodwell, K.A. 1988, 114), for example. Myres (1986) believed that not only were late cremations particularly rare, but that cremation had been superseded by inhumation throughout the Empire with the dominance of Christianity, although the pagan Germanic people, incoming from the late 4th century onwards, still practised cremation. In reality, this interpretation seems to over-estimate the significance of Christianity in late Roman Britain. The evidence seems to suggest that for sections of the indigenous Romano-British population, in Essex at least, paganism was far from dead.

The Harlow and the Billericay cremations are noteworthy in that they are associated with vessels which bear 'Romano-Saxon' decoration. The dating and origins of this style have been much debated and much depends on the background of the authority as to whether it is seen as being purely Roman in origin (*cf.* Gillam 1979) or of Anglo-Saxon inspiration (*cf.* Myres 1986, 89–96). At Great Holts Farm, pottery with this style of decoration occurs rarely and none is associated with any of the cremations. That this style was current in the late 4th or early 5th century can be seen from the Billericay cremation where a very abraded and fragmentary Oxfordshire red colour-coat bowl, probably of Young 1977, type C73, was apparently used as a lid. A few sherds of this pottery is also present in several of the late 4th-century groups at Great Holts Farm, but not in large quantities.

The latest Roman/earliest Anglo-Saxon interface

During the assessment, the presence of early Anglo-Saxon sherds in some feature fills was highlighted as having potential to provide important information on the transition from Roman Britain to Anglo-Saxon England. On this basis it was suggested that there was good evidence for continued activity of some kind into the sub- or post-Roman period and that there was some potential to shed light on the change from mass- produced Romanised ceramics to (crude by comparison) hand-made Anglo-Saxon wares. However, given that only a small amount of Anglo-Saxon pottery (twelve sherds) was recovered, this conclusion now seems to have been premature. By and large the excavated Anglo-Saxon sherds appear to be very small and abraded; none of the sherds weighs above 12g and most are below this figure, while only two contexts produced more than one sherd. It would seem that the bulk of these sherds, if not all of them, are best considered as being intrusive.

That this is the case can be shown by the presence of a single sherd in the top fill of ditch 382 and two sherds in the fill of ditch 402. The sherd recovered from ditch 382 weighed just 4g and was associated with pottery that cannot be dated any later than Chelmsford ceramic phase 3. The sherds from ditch 402 weighed only 9g in sum and came from a deposit that cannot be any later than Chelmsford ceramic phase 4.

Very small quantities of Anglo-Saxon material were recovered from contexts relating to the demolition or robbing of buildings 368 and 417, and bath suite 414. A single sherd came from post-extraction cut 588 (building 368), but weighed just 4g, and was associated with Roman pottery that could not be closely dated. The sherd from post-hole 482 (building 417) again weighed only 4g, but was associated with a substantial group of late 3rd or 4th-century material. Of greater interest are the two sherds recovered from robber trench 798 (bath suite), which however, have a total weight of only 10g. A further two sherds (8g) were recorded from the robbing of drain 100, while a single sherd, the largest from the whole site, came from drain 620. It weighed 12g.

The small size, abraded and fragmentary nature of the Anglo-Saxon pottery assemblage and the inclusion of sherds in contexts that are undoubtedly early or mid Roman in date suggests that this material is intrusive and does not represent intensive activity on the site. These sherds probably become incorporated in these contexts at a much later date, perhaps when the site was being levelled for agricultural purposes. Consequently, the Anglo-Saxon pottery assemblage tells more about site formation processes than it does about the nature of on- or off-site occupation.

Context formation processes

It is widely appreciated that on Romano-British rural sites, problems often occur in providing dates for features that are (relatively) low in pottery. This in turn has important implications for the selection of groups for quantification by EVEs and may mean that, for some sites at least, no meaningful statistical data can be presented in support of any discussion of issues relating to pottery supply and use. At Great Holts Farm, large groups are the exception rather than the rule, and consequently when such groups are encountered, there remains the possibility that something out of the ordinary has occurred that led to the accumulation of a large deposit of discarded pottery. An example of this is the structured deposit from the lower fill of well 567 (Group 7). Moreover, even where 'normal' assemblages are present, their overall worth can be severely affected by high levels of residuality. Thus the study of context formation processes is a prerequisite to understanding chronology on Romano-British rural sites. Great Holts Farm is a useful site for this kind of study simply because so much of the landscape has been recorded archaeologically. This has also meant that a variety of different feature types are available for analysis.

As discussed above, the first step in attempting to understand the mechanisms by which pottery entered the archaeological record at Great Holts Farm is to establish what type of context or contexts tend to produce large assemblages. The second is to ascertain if there are any chronological biases or changes in the trends identified. Although the first is a relatively simple task, there are problems relating to the second, which affects the balance of the overall picture. Great Holts Farm was not occupied for the whole of the Roman period. It is essentially a late Roman site with the mass of the pottery dating from the period after *c.* AD 260/70 and, moreover, there is strong reason to believe that the site's main period spanned only the 4th century. Although we are unable to study the whole of the Roman period in the same way, we are able to examine the mechanisms which resulted in the deposition of large quantities of pottery in the late and latest Roman phases in some detail.

The validity of using pottery to examine depositional processes rests partly on the premise that the range and quantity of material from a site is likely to reflect the amounts of materials brought on to a site, used, disposed of and deposited there, in any given period. There is, however, no way of saying how much material was taken away and disposed of elsewhere or whether this varied through time. It would not be supportable to quantify the number of vessels present from the excavated sherdage and use the resulting figure to estimate the total number of vessels consumed on a site, and this has not been attempted for the Great Holts Farm assemblage. Indeed, the methods of analysis, quantification and recording of the pottery deliberately avoided any possibility of estimating a minimum/maximum number of vessels ratio.This is because minimum/maximum vessel counts add a high degree of subjectivity to the anlysis, whereas quantification by weight and EVEs is entirely objective.

The overall pattern of pottery deposition

The importance of understanding site chronology is fundamental to any study that attempts to make sense of depositional processes. Ability to assign features to their correct chronological horizon is of paramount importance in quantifying change and approaching the question of site development. The starting point for dating is pottery. An individual assemblage may be allocated a ceramic phase or range of ceramic phases, although problems arise trying to date contexts with few sherds or with sherds that are completely undiagnostic (*i.e.* where closely datable vessel forms and fabrics are not present). In general, the larger the group the more precise the dating and the less likely it is for residual pieces to affect the final date range provided. Detailed study of the site's chronology through its pottery has demonstrated that before the turn of the 4th century, pottery occurs in a very narrow range of feature types (Table 7). The bulk of the ceramic dating evidence was recovered from ditches, while pits and miscellaneous features provided little in the way of pottery. Pits are infrequent in all periods, but those which seem to be earlier than the late 3rd or 4th century are exceptionally rare, with a good many dating to the late 4th century. Prior to ceramic phases 6, 7 and 8 (late 3rd to the end of the 4th century), there is no direct evidence for structures at Great Holts Farm and consequently no evidence for demolition horizons either.

Although 190.9kg of pottery recovered from feature fills could be assigned a date range within the boundaries of between one and two of Going's Chelmsford ceramic phases, as much as 69.51% of this came from ditches. To put this in perspective, the next largest source of pottery on the site were the demolition horizons, which produced just 18.5kg, or 9.70% of the total assemblage. Pits accounted for a paltry 6.5kg or 3.40% of the assemblage. The pattern of deposition at Great Holts Farm suggests that by and large pits were not dug for the purpose of depositing large quantities of pottery. On the other hand ditches seem to have been constructed as boundaries, or quarries for the construction of banks which served as boundaries, and were later used as convenient holes for dumping unwanted broken pottery.

Overall assemblage condition

Although a number of very large deposits of pottery were excavated, by far the bulk of pottery came from deposits that produced less than one hundred sherds. Only thirty-two stratified groups contained one hundred or above sherds, while over three hundred contexts produced between one and thirty sherds. This suggests that the curation of broken pottery, through its incorporation into middens prior to being in the fields has resulted in very broken pottery being widely distributed over the site. To a certain extent, erosion through post-Roman agricultural activity — which has led to the loss of all floor levels associated with the main villa building — has increased the level of brokeness of the assemblage. While it is not feasible to examine brokeness using average sherd weights for all contexts, analysis of the site's key groups using this method (Table 27) provides some very useful data, which helps understand this aspect of site formation.

Analysis of average sherd weights helps identify certain basic depositional trends that are of some significance regarding this aspect of site interpretation. Firstly, if all pottery is used, large heavy vessels like amphorae and storage jars produce a very distorted set of figures. While the ritual deposit in well 567 stands out clearly, the differences between early period and late Roman assemblages are not so clear cut, although two of the latest Roman groups appear to be particularly well preserved. However, if the amphorae and storage jar fabrics are left out of the equation we are provided with a very different picture. Leaving aside the group from well 567 (Group 7), which still stands out as being particularly unusual, the large Antonine assemblages from ditches 441 and 402 (Groups 1 and 3) are very poorly preserved, while the later assemblages (Groups 5–12) are all relatively well-preserved. Although Groups 2 and 4 look to buck the trend slightly, this does not contradict the general observation that groups have a progressively higher average sherd weight through time. Group 2 has the lowest weight to EVE ratio of any of the key groups. The late 4th century thus sees the best preserved pottery being deposited. This suggests that, even though large deposits of pottery are present in early and mid Roman contexts, these are not primary rubbish deposits. The figures also imply that the only candidates to be classified as primary rubbish deposits occur at the end of the 4th century.

Pits

Before examining the pattern of pottery deposition in ditches, further discussion of the pits at Great Holts Farm will help broaden the overall perspective. Although the bulk of the pottery comes from ditches and very little was recovered from the pits (only 3% of pottery from Roman period feature fills), this does not necessarily mean that pits were not dug for the disposal of rubbish. Approximately forty-three features designated as pits were excavated and pottery was recovered from all but fourteen of these. Only four pits where pottery was present could not be assigned to a ceramic phase. Put another way, of the eighty-two pit contexts sampled, a little over 51% of fills produced some pottery, while of the three hundred and eighty-three ditch fills examined, just over 49% contained pottery (Table 6). These figures show that ditches are more common than pits, but pottery is more likely to be recovered from a pit than a ditch fill, albeit in relatively insignificant quantities. What the figures also show is that pit fills are not primary rubbish deposits if pottery is used as the point of definition. Moreover, the low number of pits on the site may signify that they were deemed largely unnecessary for the disposal of domestic rubbish. The fact that pits contained few artefacts may also suggest that any rubbish disposed in them was not archaeologically recoverable. Although there are no strong indications that pits may have been used for ritual purposes at Great Holts Farm, at least one appears to have been used for storage.

The incidence of pitting may have chronological implications. Great Holts Farm is a late Roman site; on early Roman sites the general feeling is that pits often appear to be a far more common feature type, although this is difficult to quantify. Having said this, where datable, the bulk of the pits appear to be late 4th-century, with very few reliably dating earlier.

Group	*ceramic phase*	*Date (c)*	*No. of vessel classes*	*Including Storage jars/Amphorae*			*Excluding Storage jars/Amphorae*		
				sherds	*Wt (kg)*	*Average sherd weight*	*sherds*	*Wt (kg)*	*Average sherd weight*
1	3	AD 120–140	4	260	3.284	12.63	233	1.872	8.03
2	4	AD 140–180	4	1662	22.583	13.58	1472	14.954	10.15
3	4	AD 160–200	5	1093	11.404	10.43	1038	8.497	8.18
4	4/5	AD 180–230	5	452	6.792	15.02	420	4.931	11.74
5	6	AD 260–300	8	219	3.468	15.83	213	2.694	12.64
6	7	AD 300–330	6	266	4.596	17.27	246	3.526	14.33
7	7	AD 300–330	3	183	7.025	38.38	183	7.025	38.38
8	7	AD 300/10–350/60	4	431	6.390	14.82	413	5.131	12.42
9	8	AD 360/70–400+	5	302	3.905	12.93	297	3.757	12.64
10	8	AD 360/70–400+	8	535	9.055	16.92	532	8.760	16.46
11	8	AD 360/70–400+	5	190	3.880	20.42	186	3.418	18.37
12	8	AD 370/80–400+	7	799	14.584	18.25	792	13.920	17.57

Table 27 Assemblage characteristics of the key groups in relation to average sherd weights showing comparisons with and without Storage jar and amphorae

The ditches

A total of 68% of all pottery by weight recovered from Roman period feature fills was derived from linear features, compared with the 68% recovered from comparable features at Bulls Lodge Dairy. At Spong Hill, Norfolk, Gurney (1995, 102) noted that as much as 81% of all pottery in stratified Roman contexts came from linear features, at a site where structural remains were virtually non-existent. These comparisons seem to demonstrate that ditches are commonly associated with large deposits of broken and discarded pottery and consequently, detailed study of the pottery recovered from these features will provide the bulk of the information required to analyse issues relating to chronology and pottery supply. Moreover, the reasons why linear features acted as dumps for such a significant amount of pottery also require some explanation.

There is a strong possibility that a number of biases may have been introduced into the data due to the way and conditions under which it was collected. None of the ditches was completely excavated, so the analysis of the ditch groups has been made using a very small sample of the original (now destroyed) resource. It is possible that if more samples had been excavated, and in a more systematic manner, a slightly different picture might have emerged. In addition, some ditches were excavated in more than one place, while others had only one segment examined. A good understanding of the processes by which material remains arrived in the archaeological record is essential to the interpretation of excavated data. Not all of the pottery recovered from a context need be contemporary with the deposition of that context. It must also be remembered that levels of residuality are also determined by the nature of a site's varied context formation processes, and are thus site-specific.

At this point it is worthwhile considering why ditches were dug in the first place. Although ditches may be boundaries in their own right, and thus define territory, they are almost certainly of secondary importance to the bank. It is the bank that is the real boundary, the ditch being simply the quarry which allowed the construction of the bank, which may or may not have been hedged and/or fenced to reinforce the concept of the boundary. Large-scale truncation at Great Holts Farm has removed all traces of these banks. At Spong Hill, Norfolk, the longitudinal profile of one boundary ditch suggested that it had been dug in sections, perhaps indicating 'gang-lengths' (Rickett 1995, 6). At Great Holts Farm, where excavation strategy did not allow for longitudinal profiles to be recorded, differences in ditch depth and contrasting ditch profiles are generally interpreted as evidence of partial recutting. Furthermore, study of deposition relies on accurate and consistent definition of deposit status, particularly when dealing with ditch fills. The point is that any interpretation of deposition based on a site's pottery or any other artefact type for that matter, may be influenced by site interpretation as a whole.

By far the bulk of the pottery recovered from the ditches at Great Holts Farm was derived from the top fills (here defined as being the latest surviving stratigraphically) of features or from single-fill features (*i.e.* where only one fill was recognised during excavation). The category next in importance was that of the primary fills of ditches (Table 28). Only small quantities of pottery were recorded from the secondary fills or other intermediate fills. This indicates that the disuse or infilling of ditches is much better dated than the period of their construction and maintenance as open features. That this is so may mean that ditches, or some at least, were regularly cleaned out, or large quantities of refuse were only deposited in ditches that were already old. It may also indicate that large deposits of pottery are associated with particular events such as wholesale clearance of domestic rubbish.

There are a number of significant chronological trends. First and foremost the most important period for accumulation of pottery in ditch fills corresponds to Chelmsford ceramic phase 8, the late 4th century. At this time substantial deposits of pottery are not only present in single fill features and the top fills of features, but also in primary fills as well. The second most significant period of pottery deposition in ditches coincides with Chelmsford ceramic phase 4, the Antonine period. Again pottery is present in the primary as well as top fills and single fill features. These two periods, based on pottery deposition in ditch fills, must represent periods of radical change given the volume of pottery involved. Both periods provided evidence for a broad sequence of ditch infilling (with pottery also recorded as coming from secondary and intermediate fills), perhaps indicating disuse of boundaries.

Before and between these main periods, relatively little pottery appears to find its way into ditches. The only other period where a full sequence of infilling has been identified is in Chelmsford ceramic phases 6/7. This is a broad period which embraces the late 3rd and early to mid 4th century. These periods proved very difficult to distinguish, which accounts for the poor individual showing of Chelmsford ceramic phases 6 and 7. What the pottery from these contexts represents is a quite radical change in the nature of the site. This change comprised the transformation of the site from fields to settlement.

Types of deposition

Table 28 demonstrates the presence of three types or phases of deposition at Great Holts Farm. The first is the fragmentary early period assemblages (Groups 1–3), the second is the relatively well-preserved late Roman deposits (Groups 6–12), and the third is the extraordinary deposit from well 567 (Group 7). It seems that the most likely interpretation of the bulk of the discarded pottery recovered from Great Holts Farm is that it represents rubbish derived from off-site domestic activity prior to the 4th century and on-site activity in the 4th century. The ditch deposits encountered produced little evidence for structured deposition, *i.e.* the deliberate burial of vessels as a ritual offering. Evidence for ritual involving pottery vessels is present at Great Holts Farm in the form of an unusual deposit recovered from well 567. This feature contained a number of near-complete vessels and is thus a context very unlike anything else on the site. Two other complete or near-complete vessels were recovered from the site, but these seem to be isolated examples and are not necessarily ritual depositions. Neither is associated with any of the cremations recorded on the site.

The large groups of pottery in the Antonine ditch fills are not primary rubbish deposits. They appear to be relatively fragmentary, with a low weight to EVE ratio, and the bulk of the sherds appear to be abraded. By comparison, the large 4th-century groups appear to be

well-preserved. This suggests that the depositional processes prevailing in the early Roman period were very different to those of the late period. Moreover, although 34kg of pottery came from contexts of Antonine date, 26kg came from the fills of just two features, 310 and 402, and more than half of the pottery seems to be accounted for by storage jars and amphorae anyway. The data indicates that activity in this period, as represented by the distribution of dated deposits of pottery, was sparse but in large concentrations. All of this is in marked contrast to the late 4th century where deposits of pottery are both abundant and widespread. Pottery of this date is also found in large concentrations, as well as in other types of feature fill.

The spatial patterning of pottery deposition

By studying the site's chronology through the pattern of pottery deposition, a number of significant trends have emerged. Importantly, one major contrast between pre-ceramic phase 6 (late 3rd century) and post-ceramic phase 6 pottery is their relative volumes recovered. There are only small amounts of pre-ceramic phase 6 pottery at Great Holts Farm and the bulk of this came from just one feature (Group 2). On the other hand late and latest Roman pottery is abundant and has been recovered from virtually all parts of the excavated area, albeit in variable quantities. This suggests that pottery, when discarded, could travel some distance away from its original point of consumption. While this is most evident in post-ceramic phase 6 pottery, the same must also have been true in earlier ceramic phases. The poor condition of Group 2 confirms this. Consequently it would be dangerous to speculate on the whereabouts of a putative 2nd to 3rd-century domestic building in the vicinity of the later villa at Great Holts Farm from the relatively small amounts of pottery of this period.

Conclusions

The overall picture at Great Holts Farm, if measured by the deposition of pottery, is one of a late Roman landscape. A burst of activity clearly look place in the Antonine period, but when put in perspective against the nature of the later occupation, it seems to pale into insignificance. The pottery of all periods being discarded on the site has the feel of domestic refuse, whether for primary or secondary rubbish deposits. Evidence of ritual deposition is minimal and largely rests on the nature of the deposits in well 567.

Comparisons with Bulls Lodge Dairy

Introduction

The presence of a second well-excavated site *c.* 1km to the south-west of Great Holts Farm at Bulls Lodge Dairy provides an important opportunity to analyse a relatively confined area of the Romano-British landscape in some detail. Both of these settlements were of moderate size, fairly unpretentious and apparently self contained. This is also reflected in the excavated pottery assemblages that are largely derived from local sources in all periods represented and it implies that the two settlements were on the whole comparable in social and economic status.

At Bulls Lodge Dairy, unlike at Great Holts Farm, the absence of large well-dated groups means that there is no scope to examine function and status through the study of vessel form. Consequently, it is not feasible to investigate assemblage composition and pottery use in the manner presented above (pp.104–28). Because of this, comparisons between the two sites are only possible by investigating depositional and chronological trends. Study of the Bulls Lodge Dairy site and its pottery illuminates our understanding of Great Holts Farm in several important ways. Firstly, examination of depositional trends highlights a number of similarities between the two

Period	*Deposit status*											
	Primary		*Secondary*		*Intermediate*		*Top*		*Single*		*Totals*	
	Sherds	*Wt (g)*	*Sherds*	*Wt (g)*	*Sherds*	*Wt (g)*	*Sherds*	*Wt (g)*	*Sherds*	*Wt (g)*	*Sherds*	*Wt (g)*
early to mid Roman	5	748	9	251	–	–	18	66	149	702	181	1764
2–3	–	–	–	–	–	–	138	858	32	524	170	1382
3	–	–	–	–	–	–	–	–	260	3286	260	3286
3–4	–	–	55	703	–	–	951	12735	42	1053	1048	14491
4	250	2650	73	1451	133	1940	786	13909	1403	14075	2645	34025
4–5	–	–	–	–	–	–	198	3443	28	3487	479	7290
mid Roman	1	3	–	–	–	–	25	545	4	19	30	567
5	–	–	–	–	–	–	119	859	–	–	119	859
6	–	–	12	67	–	–	219	3468	–	–	231	3535
6–7	66	2026	3	102	10	91	228	256	141	1926	448	6711
mid to late Roman	4	133	6	125	–	–	45	574	8	158	63	990
7	5	53	31	422	–	–	711	10991	–	–	747	11406
7–8	–	–	–	–	–	–	–	–	15	142	15	142
8	358	7450	105	2376	75	1182	1475	25603	683	8200	2766	45140
early to late Roman	38	612	–	–	–	–	28	381	52	558	118	1551
P/R	15	189	–	–	–	–	34	287	45	593	94	1069
Totals	**742**	**13864**	**294**	**5497**	**218**	**3213**	**4961**	**75935**	**3092**	**34792**	**9423**	**134279**

Table 28 The pattern of pottery deposition within ditches at Great Holts Farm quantified by sherd count and weight displayed chronologically. Well-dated horizons are shown using one or two of Going's Chelmsford ceramic phases. Poorly dated horizons are indicated by date ranges. Pottery from post-Roman contexts is indicated by P/R. In addition

sites on the one hand, while comparison of their chronologies shows just how dissimilar they are. Secondly, analysis of these trends permits us to scrutinise a small area of Roman Chelmsford's hinterland and glimpse the range of changes that occurred in the rural settlement pattern. Furthermore, it provides an outline of the potential for future study in the region.

The pattern of pottery deposition
(Table 29)
The Bulls Lodge Dairy excavations produced an assemblage of 10253 sherds weighing 86.4kg. Of this 8504 sherds, weighing 72.3kg, were from Late Iron Age and Roman contexts, while 7002 of these sherds (60.7kg) were recovered from closely datable contexts. This material is reported on by Wallace (1993a), but was quantified by sherd count and weight by fabric for the purpose of making comparisons with Great Holts Farm.

As at Great Holts Farm, the bulk of the pottery recovered from Bulls Lodge Dairy came from ditches (68% by weight). This pattern has also been observed on a number of other Romano-British rural sites to such an extent that this appears to comprise the normal pattern of deposition on sites of this type in Essex. However, unlike at Great Holts Farm, a much higher proportion of the pottery was recovered from pits (22% compared with 3%). Indeed pits seem to be a much more prominent landscape feature at Bulls Lodge Dairy than they are at Great Holts Farm. By and large pits are not important landscape features on Romano-British rural sites in Essex, although there are exceptions to this rule.

Another noticeable depositional trend at Bulls Lodge that is unlike the pattern observed at Great Holts Farm is the relatively minor significance of demolition horizons, although here structural deposits are far more important sources of discarded pottery than they are at Great Holts Farm. This may indicate the presence of less *de facto* rubbish at Bulls Lodge Dairy. However, compared with Great Holts Farm, the range of features represented at Bulls Lodge Dairy is much narrower. There is a conspicuous absence of evidence for wells, ponds and cremations, for example. Furthermore, there is also no evidence for structured or deliberate deposition of pottery. This suggests less diversity in activities taking place at Bulls Lodge Dairy compared to Great Holts Farm.

The sites' chronological trends
(Table 30)
Using the same methodology described above (pp.100–1), it is possible to discern a number of chronological trends that are radically different to those seen at Great Holts Farm. Firstly, the Bulls Lodge Dairy site has a much longer chronology. There is even evidence for Late Iron Age and early Roman (pre-Flavian) activity in the form of ditches and also tentative evidence for some form of structure on the site in this period. The digging of pits is first attested at the end of the 2nd or beginning of the 3rd century at Great Holts Farm, but at Bulls Lodge Dairy this type of activity seems to have commenced in the Flavian period. However, as we are dealing with very small amounts of pottery that is also highly fragmented in the earliest Great Holts Farm pits, it is likely that these are in fact slightly later in date.

Although linear features are found in all periods from the early 2nd century at Great Holts Farm, at Bulls Lodge Dairy they seem to fall within two very broad periods. The first period covers the Late Iron Age to the mid 2nd century, while the second falls within a 3rd to early 4th-century date bracket. The apparent late 2nd-century hiatus in ditch infilling at Bulls Lodge Dairy is in marked contrast to what was happening at Great Holts Farm and is especially striking given the large amounts of pottery recovered, albeit from a limited number of ditch contexts (Table 7). At Bulls Lodge Dairy, the bulk of the pottery recovered from the fills of linear features appears to belong to the period covered by the early 3rd to early 4th century (Table 28). All this suggests that the 3rd century was a period of major change — marked by the infilling of ditches — in contrast to what was occurring at Great Holts Farm in this period. While the 3rd century as a whole appears to been something of a hiatus at Great Holts Farm, this was clearly not the case at Bulls Lodge Dairy, although it is difficult to categorise it. What seems to have occurred at Bulls Lodge Dairy in the second half of the 3rd century, is that the landscape was levelled prior to the construction of the main masonry building in phase III.

Although there is tentative evidence for early structures at Bulls Lodge Dairy, like Great Holts Farm the main period of structural activity lies firmly in the late Roman period. However, there is good reason to believe that at Bulls Lodge Dairy this commences slightly earlier than at Great Holts Farm. Rettendon ware is present

Category	*Bulls Lodge Dairy*				*Great Holts Farm*			
	Sherds	*Wt. (g)*	*% Wt*	*Av. Wt*	*Sherds*	*Wt. (g)*	*% Wt*	*Av. Wt*
Linear	5251	49289	68.13	9.38	8928	132715	68.05	14.86
Pits	2230	16177	22.36	7.25	574	6505	3.33	11.33
Structural	324	2442	3.37	7.53	284	3895	1.99	13.71
Demolition	315	1650	2.28	5.23	887	18528	9.50	20.88
Funerary	–	–	–	–	133	2288	1.17	17.20
Water channels/drainage	–	–	–	–	905	13841	7.09	15.29
Miscellaneous	384	2780	3.84	7.23	1760	17243	8.84	9.79
Totals	**8504**	**72338**	**–**	**8.50**	**13471**	**195015**	**–**	**14.47**

Table 29 The stratified pottery from all Late Iron Age and Roman period contexts from Great Holts Farm and Bulls Lodge Dairy

Ceramic phase	Category										Totals	
	Linear		Pit		Misc.		Structural		Demolition			
	sherds	wt. (g)	sherds	wt. (g)	sherds	wt. (g)	sherds	wt. (g)	sherds	wt. (g)	sherds	wt. (g)
0	267	3083	–	–	–	–	23	191	–	–	290	3274
0/1	21	220	–	–	–	–	–	–	–	–	21	220
1/2	9	46	24	163	–	–	–	–	–	–	33	209
3/4	52	520	53	574	–	–	–	–	–	–	105	1094
4	–	–	102	890	–	–	–	–	–	–	102	890
4/5	382	3236	99	660	–	–	–	–	–	–	481	3896
5	485	4484	–	–	–	–	–	–	–	–	485	4484
5/6	2043	19236	6	60	100	786	–	–	–	–	2149	20082
6	188	2365	–	–	–	–	200	1110	–	–	388	3475
6/7	982	9273	1608	11404	6	228	38	588	207	1031	2841	22524
7	–	–	–	–	–	–	–	–	107	618	107	618
Totals	**4429**	**42463**	**1892**	**13751**	**106**	**1014**	**261**	**1889**	**314**	**1649**	**7002**	**60766**

Table 30 Bulls Lodge Dairy, Boreham. The Roman pottery by period and feature category (closely dated Late Iron Age and Roman deposits only)

(*contra* Wallace 1993a, 8) but in very small quantities, which argues strongly for a late 3rd to early 4th-century date rather than one wholly in the 4th century. The main structure in this period at Bulls Lodge Dairy is the masonry building A in phase III (Lavender 1993, fig. 7). This appears to have been relatively short-lived judging by the character of the pottery recovered from the demolition horizons, which points to a date no later than the early or mid 4th century for its destruction. Latest Roman horizons are completely absent at Bulls Lodge Dairy, again in marked contrast to Great Holts Farm. Indeed, pottery typical of the late 4th century was completely absent, even in unstratified contexts. This suggests that there may have been occupation simultaneously at both sites in the early 4th century, but not much earlier or later.

Conclusions

The depositional and chronological patterning at both sites may be usefully compared. This aids the construction of a detailed picture of the shifting face of the Romano-British landscape, as recognised from the changing patterns in pottery deposition through time, in a relatively small part of Essex. Although the main period of occupation at both sites was relatively short, the site at Bulls Lodge Dairy had a much longer life-span compared to Great Holts Farm. While some of the differences between the sites may be down to purely chronological factors, not all of them are easily explained away in these terms. Function, given that one site was clearly domestic on account of its bath-house, may also be just as significant here.

While it is obvious that the two sites did have very different histories, they do have, nonetheless, a number of common chronological trends. The main period of occupation at both sites lies in the late Roman period (ceramic phases 6–7). This seems to suggest that old established dwelling places were being abandoned in favour of fresh sites at this time. The same is true also for the latest Roman period (from the end of ceramic phase 7 onwards), given that the structures at Great Holts Farm appear to have been systematically demolished at the end of the 4th century.

These comparisons are important because they help provide a greater understanding of the relationship between the late Roman villa at Great Holts Farm and its immediate environment. The evidence seems to suggest that the late Roman landscape changes observed at Great Holts Farm were not site-specific. Moreover, analysis of the overall pattern of pottery deposition at both sites also suggests that the Romano-British countryside may have been in a constant state of flux, in this part of Essex at least.

General conclusions

While the Great Holts Farm site has produced a substantial excavated assemblage of Roman pottery, its main area of interest lies not in its ceramic diversity, but in its overall lateness. Chronology is a theme that has appeared throughout this report and I make no apologies for this. It is not often that the opportunity arises to study large late Roman pottery assemblages that exhibit low or relatively low levels of residuality. Because of this, it has been possible to tighten up the dating of several late Roman ceramic types. For several dish forms where it was once thought that they might have continued into the late Roman period, it can now be shown that they did not.

The assemblage recovered from Great Holts Farm is in many ways typical of material excavated from other rural Romano-British sites in Essex. Assemblages are dominated by jars, with dishes being the next most common vessel class, while unusual forms like feeding bottles and strainers are exceedingly rare or completely absent. Amphorae and mortaria are also rare, although there is some evidence to suggest that these increase in diversity in the 4th century. In all periods, grey wares predominate, although black-surfaced wares are more common than other coarse reduced ware types in the early Roman era. Fine wares by comparison are never common, and traded wares in any period are rare.

Catalogue of illustrated pottery

* = key groups

Ceramic phase 3

Ditch 441, enclosure E7

*Context 6304, seg. 4153, disuse horizon, mid-2nd century

1	C (flanged)	GRS	
2	G19.2	BSW	
3	G23	GRS	Not illustrated
4	G9.1	BB2	Not illustrated
5	H2	MCA	

*Context 6396, seg. 4174, disuse horizon, mid-2nd century

6	G11.1	GRS	
7	G40.1	BSW	
8	G44	STOR	
9	H6	NKG	Not illustrated

Ceramic phase 3/4

Ditch 311, enclosure E1

Context 5030/5031, seg. 4001, disuse horizon, mid- to late 2nd century

10	G10	NKG	
11	B1.3	BSW	Not illustrated
12	B2.1	BSW	
13	B4.2	GRS	Not illustrated
14	G22.1	GRS	

Context 5638, seg. 4076, disuse horizon, mid- to late 2nd century

15	G5.4	GRS	
16	G22.1	BSW	Not illustrated
17	H6.2	NKG	Not illustrated

Ditch 376, enclosure E10

Context 6383, top fill, seg. 4173, disuse horizon, mid- to late 2nd century

18	G5	GRS	

Ceramic phase 4

Ditch 310, enclosure E2

*Context 5624, primary fill, use horizon, late 2nd century

19	B4.2	BSW	
20	B3.2	BB2	
21	H1	GRS	
22	G9	BB2	Not illustrated
23	B2.3	BB2	
24	G5.4	GRS	Not illustrated

*Context 5613, secondary fill, use horizon, late 2nd century

25	B4.2	BB2	Not illustrated
26	H1.1	GRS	(residual)
27	H20.1	COLC	Not illustrated

Ditch 390, enclosure E11

Context 6189 (secondary fill, seg. 4132), use horizon, late 2nd century

28	D2.2	COLB	
29	G9.1	BB2	

Context 6189 (secondary fill), use horizon, late 2nd century

30	G23.3	BSW	

Ditch 402, enclosure E6

*Context 6275, seg. 4140, disuse horizon, late 2nd century

31	A2.1	BSW	
32	B2/B4	BB2	Not illustrated
33	G20.2	BSW	
34	G23.1	GRS	
35	G23.3	GRS	
36	H20.2	COLC	

*Context 6338, context 6275, seg. 4166, disuse horizon, late 2nd century

37	B10.1	RED	Not illustrated
38	B7.1	BSW	
39	G	GRS	
40	G23.2	GRS	
41	G40	GRS	
42	H6.1	NKG	

Ditch 310, enclosure E2

*Context 5612, top fill, disuse horizon, late 2nd century

43	B2.1	OBB	
44	B4.2	BSW	
45	B4.2	BSW	
46	B4.2	OBB	
47	C1.2	BSW	
48	G narrow-necked	BSW	
49	G19.3	GRF	
50	G22.1	BSW	
51	G5.4	GRS	Not illustrated
52	H6.3	NKG	Not illustrated
53	H1.1	GRS	

Ceramic phase 4/5

Ditch 27, enclosure E10

*Context 5029, seg. 4003, use horizon, late 2nd to early 3rd century

54	B3.2 variant	BB2	
55	B2 type	GRS	Not illustrated
56	G24	GRS	Not illustrated
57	G35.1	BSW	Not illustrated
58	H20	COLC	

Ditch 383, enclosures E12 and E13

*Context 5813, top fill, disuse horizon, late 2nd to early 3rd century

59	B2.3	BB2	Not illustrated
60	C28–9	BSW	(residual)
61	G5.4	GRS	Not illustrated
62	G5.4	BSW	Not illustrated

Ceramic phase 6

Ditch 361, enclosure E14

*Context 5776, top fill, disuse horizon, late 3rd century

63	B1	BB1	Not illustrated
64	B3.2	BB2	
65	B4.2	BB2	
66	B4.2	BSW	
67	B6.2	BSW	
68	B6.2	GRS	
69	D11.1	COLB	
70	E3.3	BUF	Not illustrated
71	G21.1	GRS	
72	G26	GRF	
73	G40.1	HAR	
74	G5.4	BSW	
75	H27.1	OCC	
76	J	BUF	
77	R	BUF	
78	R2	HAR	

Ceramic phase 6/7

Ditch 243, enclosure E23

Context 5438, seg. 4040, primary fill, use horizon, late 3rd to early 4th century

79	B1	GRS	Not illustrated
80	B6.2	GRS	

Ditch 818, enclosure E21

Context 5574, seg. 4059, primary fill, use horizon, late 3rd to early 4th century

81	B1	GRF	Not illustrated
82	B6.2	GRS	
83	E5.1	GRS	

Ditch 302, enclosure E21

Context 5579, secondary fill, use horizon, late 3rd to early 4th century

84	B1.3	HAB	
85	?G42	HAR	

Context 5585, primary fill, use horizon, late 3rd to early 4th century

86	base with graffito	HAX	
87	B6.2	GRS	
88	B1	HAR	Not illustrated
89	B1	GRS	Not illustrated
90	B1	BSW	Not illustrated
91	G24.1	GRS	

Ditch 187, enclosure E22

Context 5357, seg. 4029, top fill, disuse horizon, late 3rd to early 4th century

92	H40.1	GRF	

Ditch 272, enclosure E10

Context, 5521, seg. 4053, top fill, disuse horizon, late 3rd to early 4th century

93	H17	HAX	

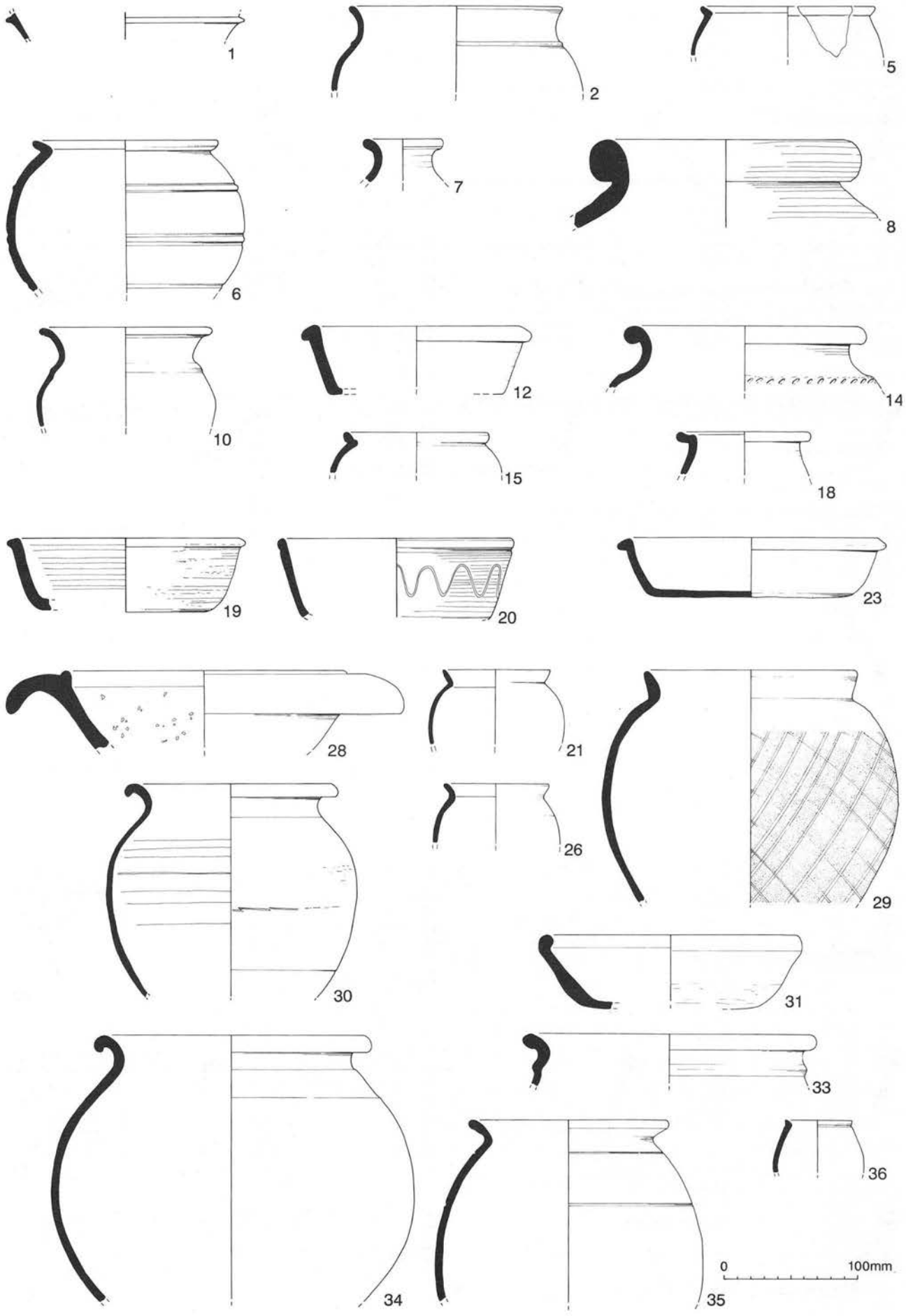


Figure 89 Roman pottery

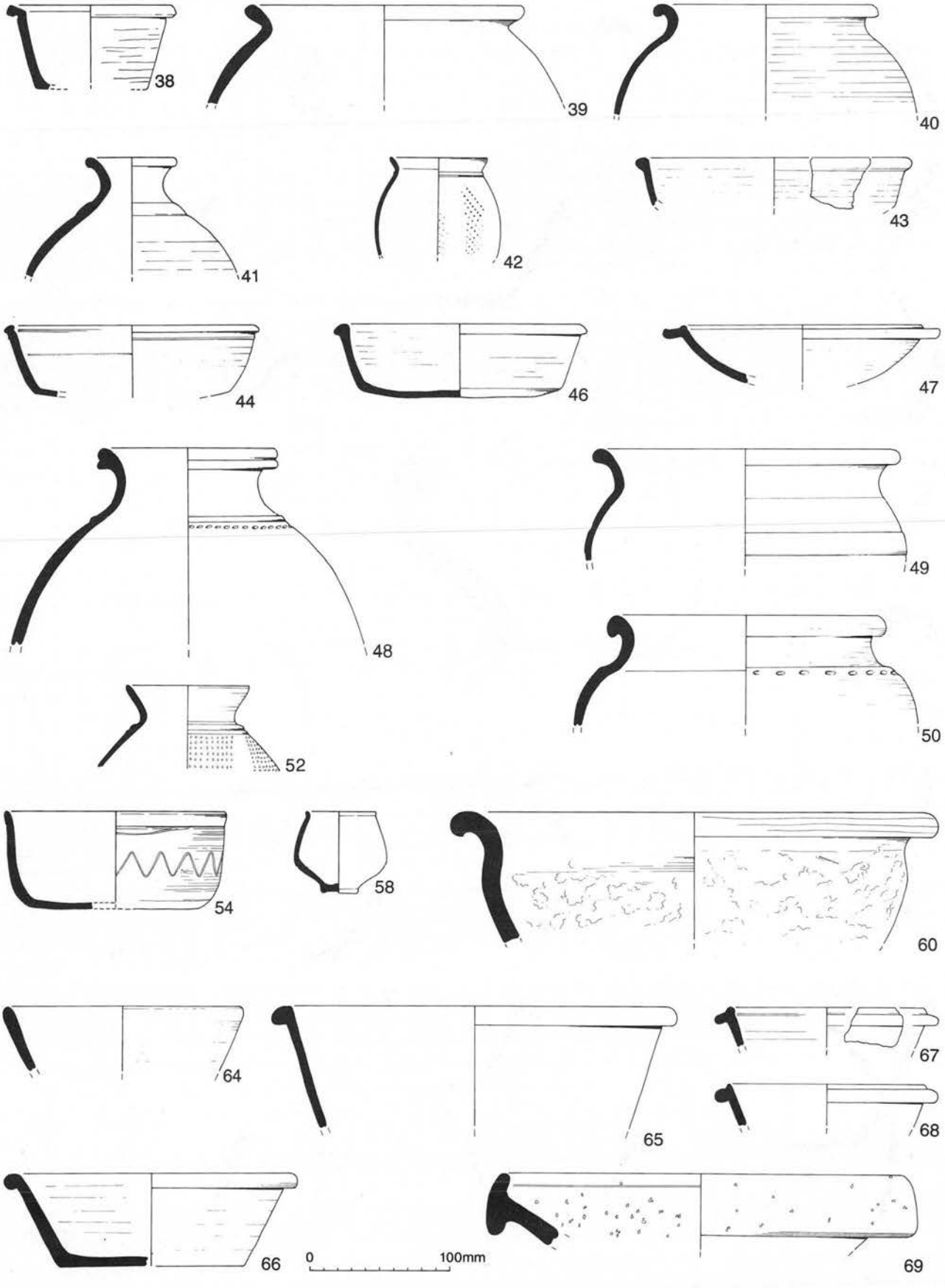


Figure 90 Roman pottery

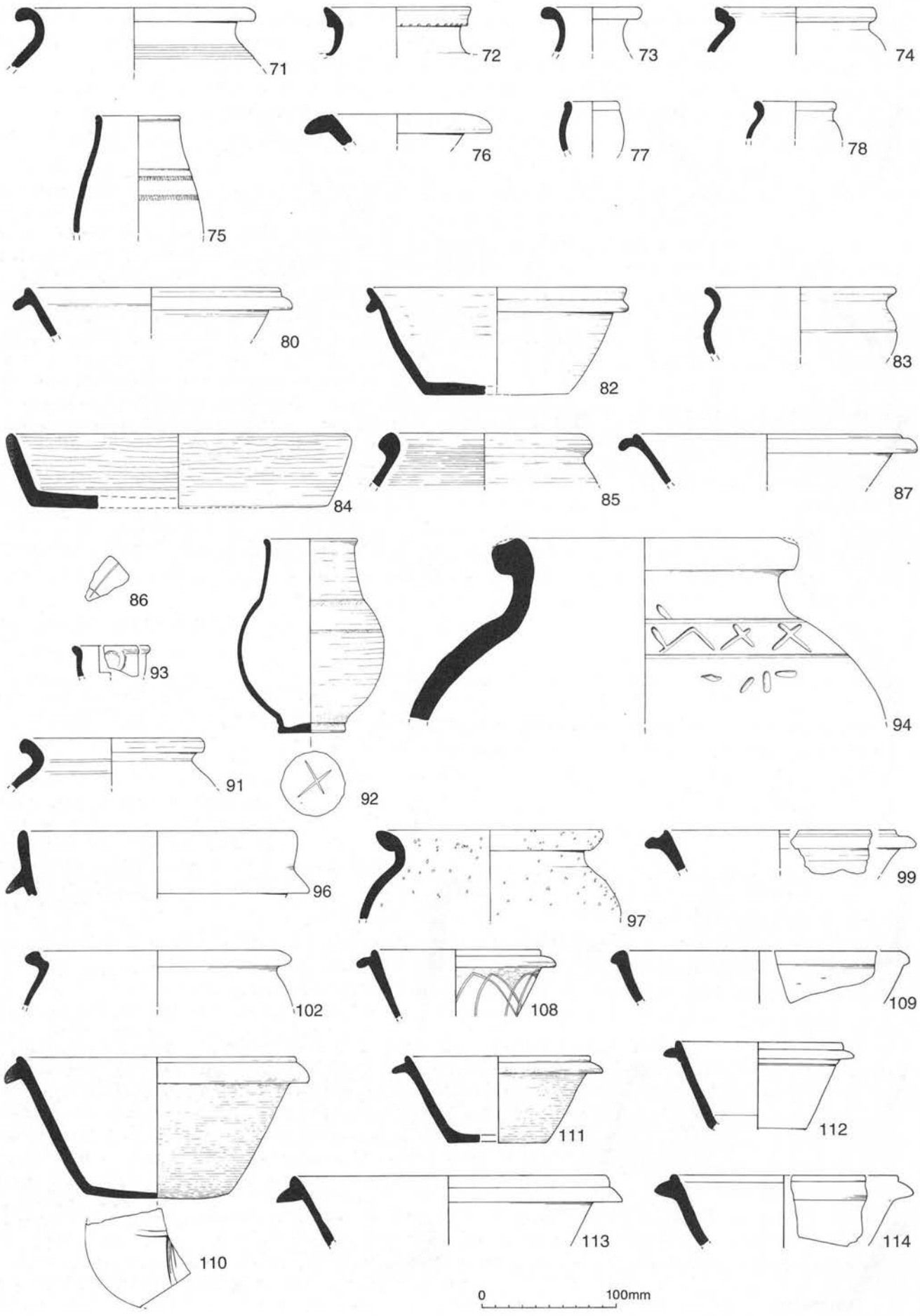


Figure 91 Roman pottery

Post-extraction cut 829, building 294

Context 5494, late 3rd to early 4th century

94	G44.2 variant	STOR	

Ditch 359, enclosure E30

Context 5781, disuse horizon, late 3rd to early 4th century

95	B1	GRS	Not illustrated
96	C8	GRS	
97	G24	RET	
98	G35/G36	BSW	Not illustrated

Ditch 174, enclosure E22

Context 5310, top fill, disuse horizon, late 3rd to early 4th century

99	B6.2	GRS	

Ceramic phase 7

Ditch 385, enclosure E11

Context 5815, top fill, disuse horizon, early to mid-4th century

100	B1.6	HAR	Not illustrated
101	B6.2	GRS	Not illustrated
102	E2.2	GRF	
103	E5.4	GRS	Not illustrated
104	E6.1	HAR	Not illustrated
105	G24.2	RET	Not illustrated
106	G35.2	BSW	Not illustrated
107	H39	NVC	Not illustrated

Well 567

Context 6459, lower fill, disuse horizon, early to ?mid-4th century

108 dish B6.3 decorated with burnished arcs, BB1. Unabraded.
109 dish B4, fragmentary, BB2.
110 dish B6.2 with X scratched on underside of base *post cocturam*. Unabraded. BSW
111 dish B6.2, GRF. Unabraded.
112 dish B6.2, GRS. Unabraded.
113 dish B6.2, GRS. Unabraded.
114 dish B6.2, GRS. Unabraded.
115 dish B6.2 with X scratched on the underside *post cocturam*, GRS. Unabraded.
116 dish B2/B4, slightly abraded and fragmentary, GRS.
117 dish B6.2, HAB. Unabraded.
118 dish B6.2, RET. Unabraded.
119 bowl-jar E3.3, HAX. Unabraded.
120 bowl-jar E6.1, RED. Slightly abraded.
121 jar G24.2 with cheese wire marks on underside of base, RET. Unabraded.
122 jar G24.1 with cheese wire impression on underside of base over which a crude X has been scored *post cocturam*, GRS. Unabraded.
123 jar G24.1, GRS. Unabraded.

Wall-trench 108, building 368

Context 5183, early to mid-4th century

124	B6.2	NVC	

Ditch 377, recut 819, enclosure E10

*Context 6288, top fill, disuse horizon, early to mid-4th century

125	B1	GRF	
126	B6.2	BSW	Not illustrated
127	B6.2	GRS	Not illustrated
128	B6.2	GRF	Not illustrated
129	E2.2	GRF	Not illustrated
130	E6	HAX	Not illustrated
131	G43.1	STOR	
132	base with graffito (post-firing)	HAX	

Ditch 302, enclosure E21

Context 5578, quinary fill, disuse horizon, early to mid-4th century

133	B1.2	NVC	Not illustrated
134	B1.3	BSW	Not illustrated
135	B6.2	NVC	
137	B62	HAB	
138	E6	HAR	Not illustrated
139	G24.1	RET	
140	G24.1	RET	
142	G24.2	BSW	
143	H	NVC	

Ceramic phase 8

Ditch 302, enclosure E21

*Context 5790, seg. 4106, primary fill, use horizon, late 4th century

144	B1	GRS
145	B1.3	BSW
146	B2	GRS
147	B4.2	GRF
148	B6.2	GRS
149	E3.3	HAX
150	E3.3	GRS
151	E5.2	BSW
152	E5.2	RET
153	E6.1	HAX
154	E6.1	GRS
155	G	GRS
156	G27.1	LSH
157	G	RET
158	R3	GRS

Ditch 63, enclosure E10

Context 5095, primary fill, use horizon, late 4th century

159	D	OXSWM

Ditch 856, enclosure E21

Context 5662, primary fill, use horizon, late 4th century

160	G24	GRS

Ditch 250, enclosure E23

Context 5364, primary fill, use horizon, late 4th century

161	B1	BSW	Not illustrated
162	E3.3	RET	Not illustrated
163	H39	NVC	

Contexts 5371 and 5390, primary fill, use horizon, late 4th century

164	B6.2	GRF
165	G34.1	GRS
166	B6.2	GRS

Ditch 365, enclosure E10

Context 5594, seg. 4060, secondary fill, use horizon, late 4th century

167	D7.1	OXWM	
168	G27.2	LSH	Not illustrated

Ditch 229, droveway

Context 5646, seg. 4077, disuse horizon, late 4th century

169	E	NVC

Context 5439, disuse horizon, late 4th century

170	B5.3	LSH
171	D	OXWM

Context 5771, seg. 4099, disuse horizon, late 4th century

172	B1	LSH	Not illustrated
173	C	OXRC	
174	E3 with bifid rim	HAX	Not illustrated
175	E4.2	OXRC	Not illustrated
176	E6.2	GRF	
177	G24.1	RET	
178	G27.2	LSH	
179	G36	GRS	

Ditch 250, enclosure E23

Context 5363, top fill, disuse horizon, late 4th century

180	B1	GRS	Not illustrated
181	D7.1	OXWM	

Ditch 273, enclosure E10

Context 5495, top fill, disuse horizon, late 4th century

182	G23/24	BSW

Ditch 360, enclosure E10

Context 5778, seg. 4102, disuse horizon, late 4th century

183	B6.2	GRS

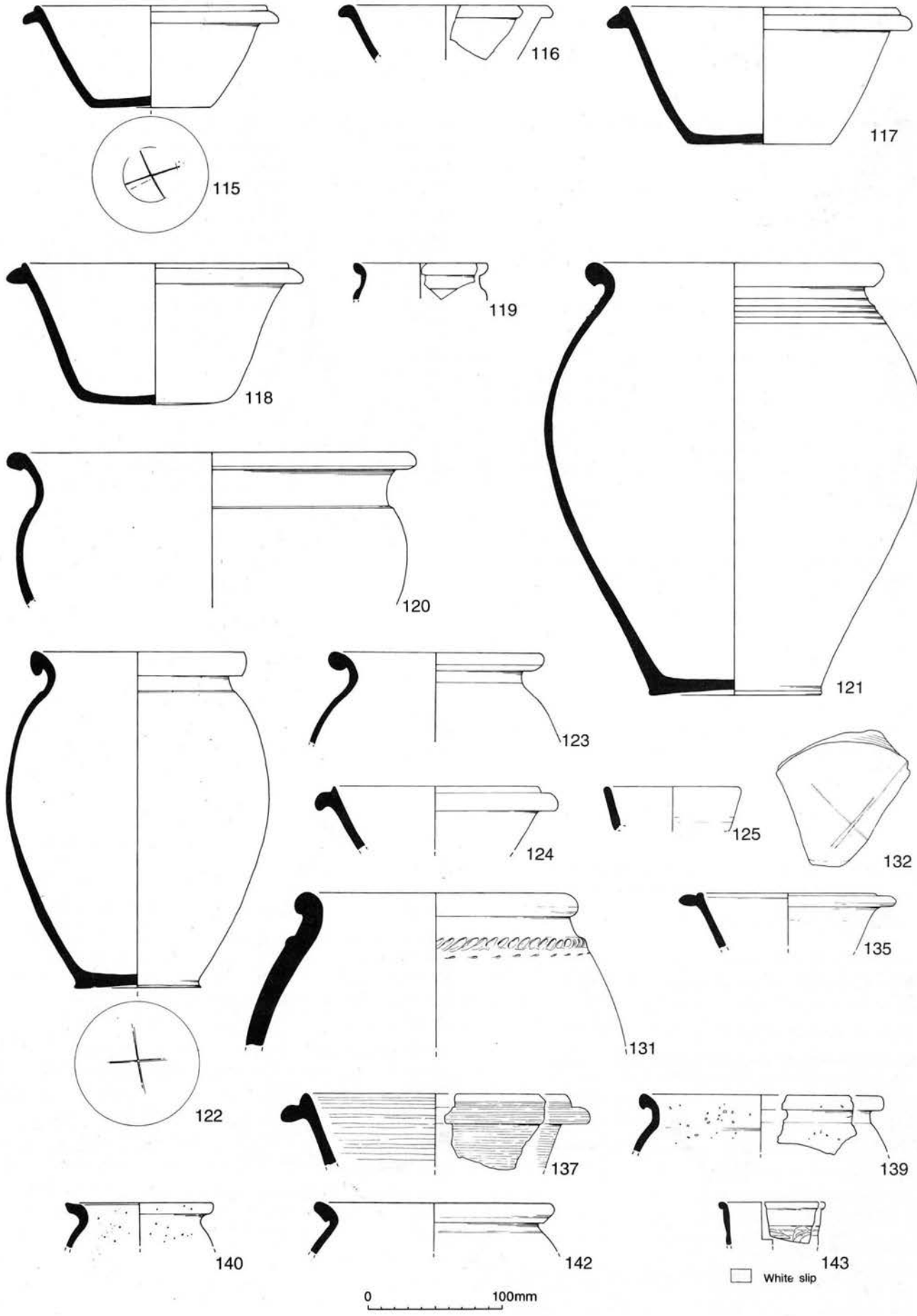


Figure 92 Roman pottery

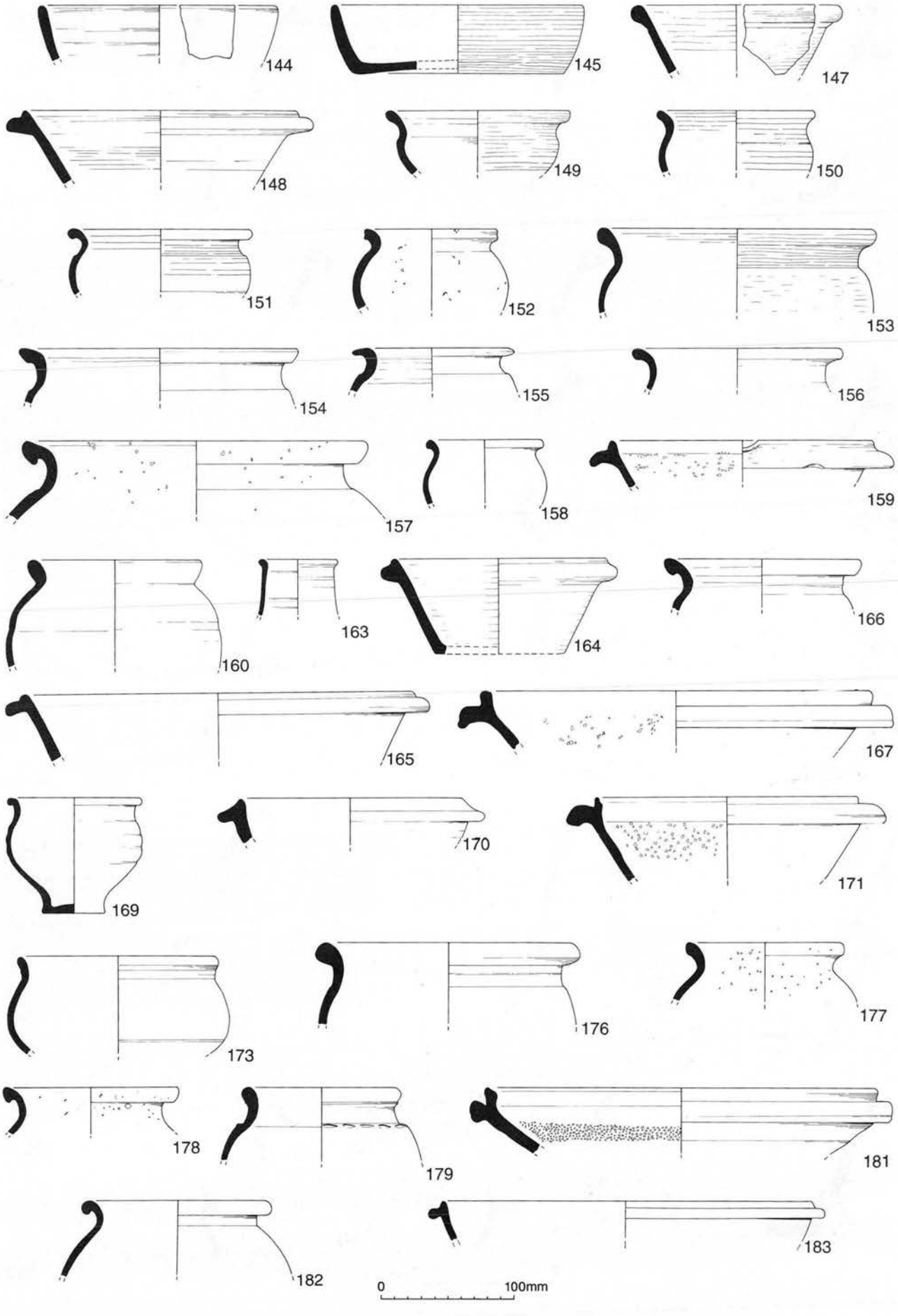


Figure 93 Roman pottery

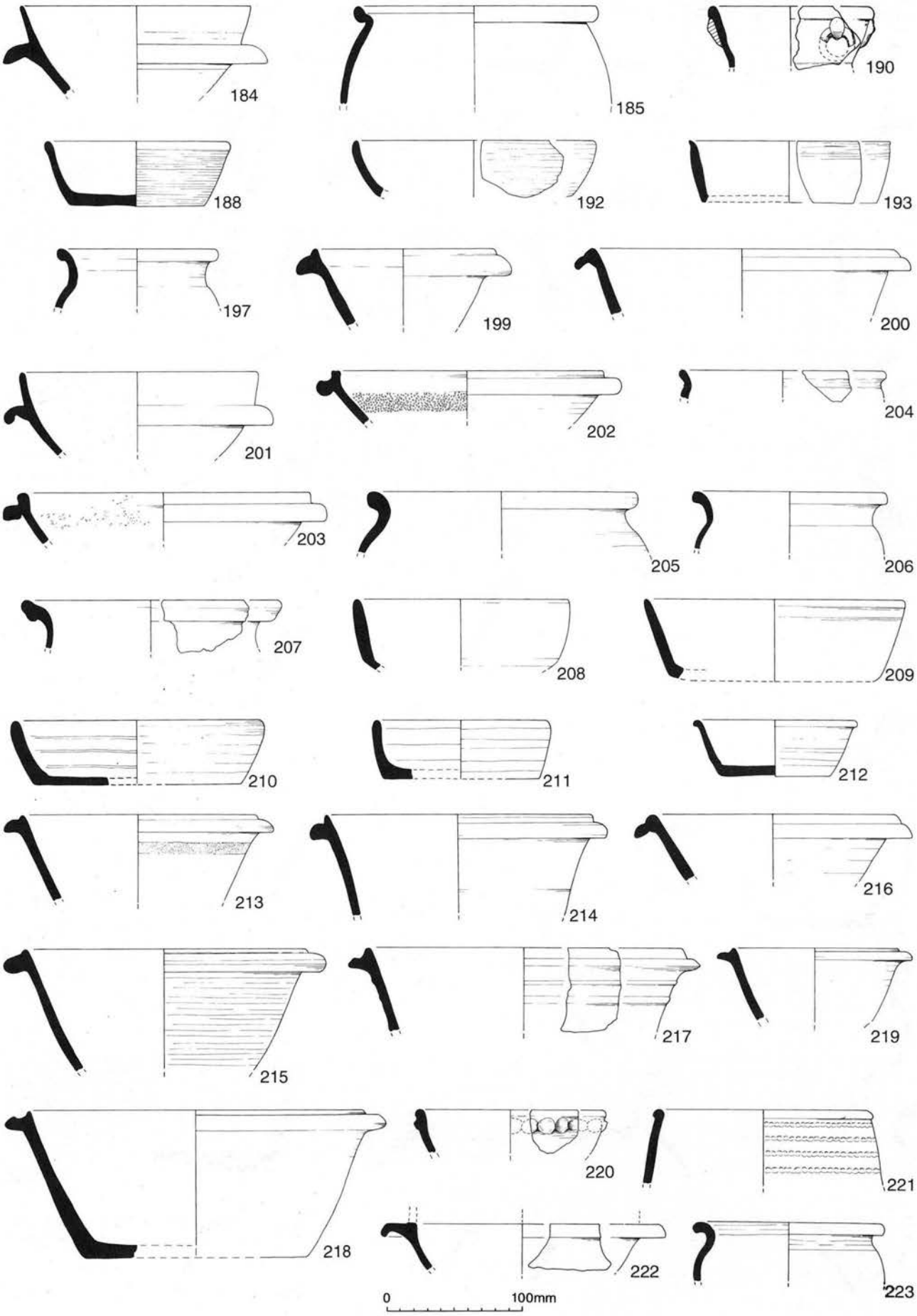


Figure 94 Roman pottery

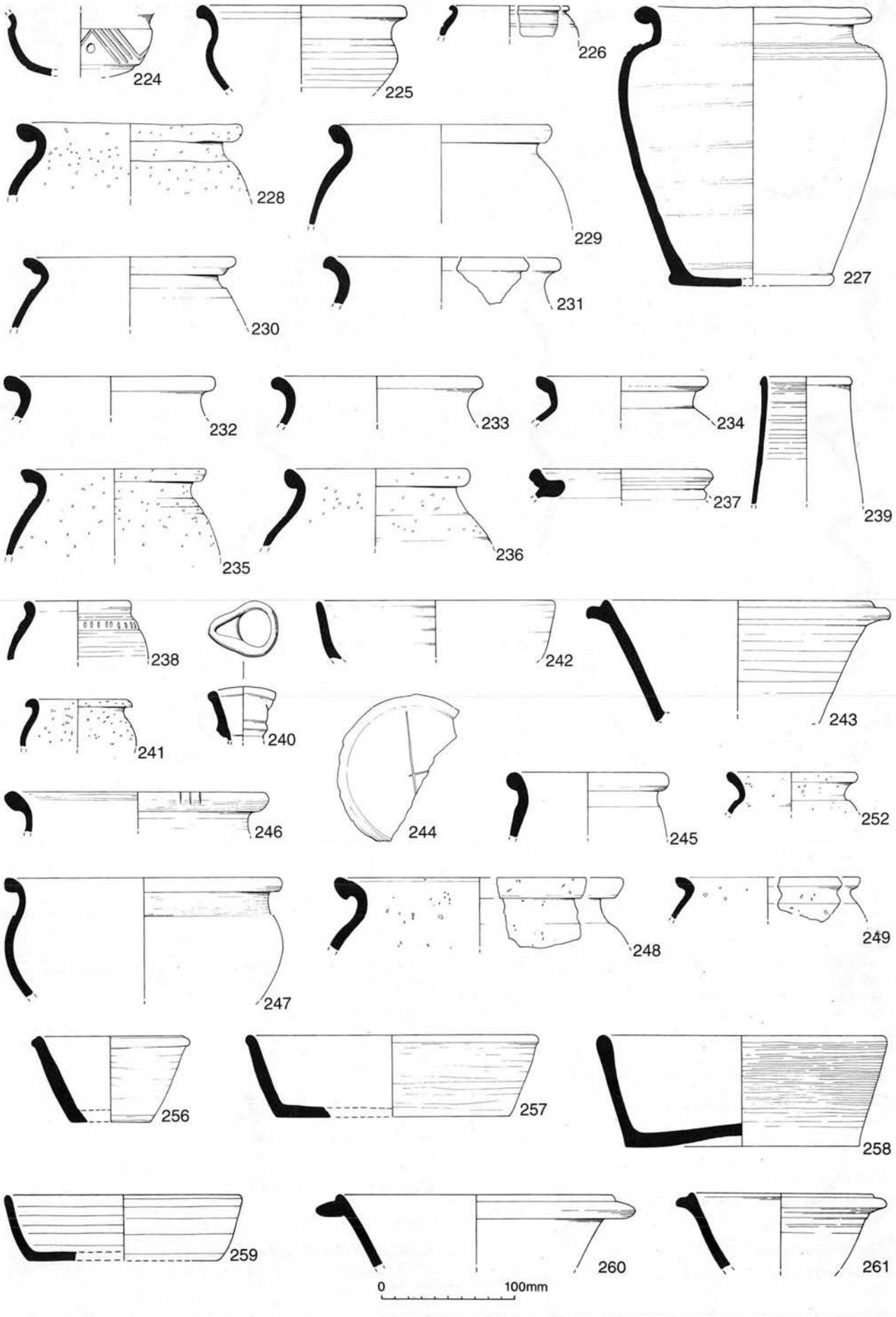


Figure 95 Roman pottery

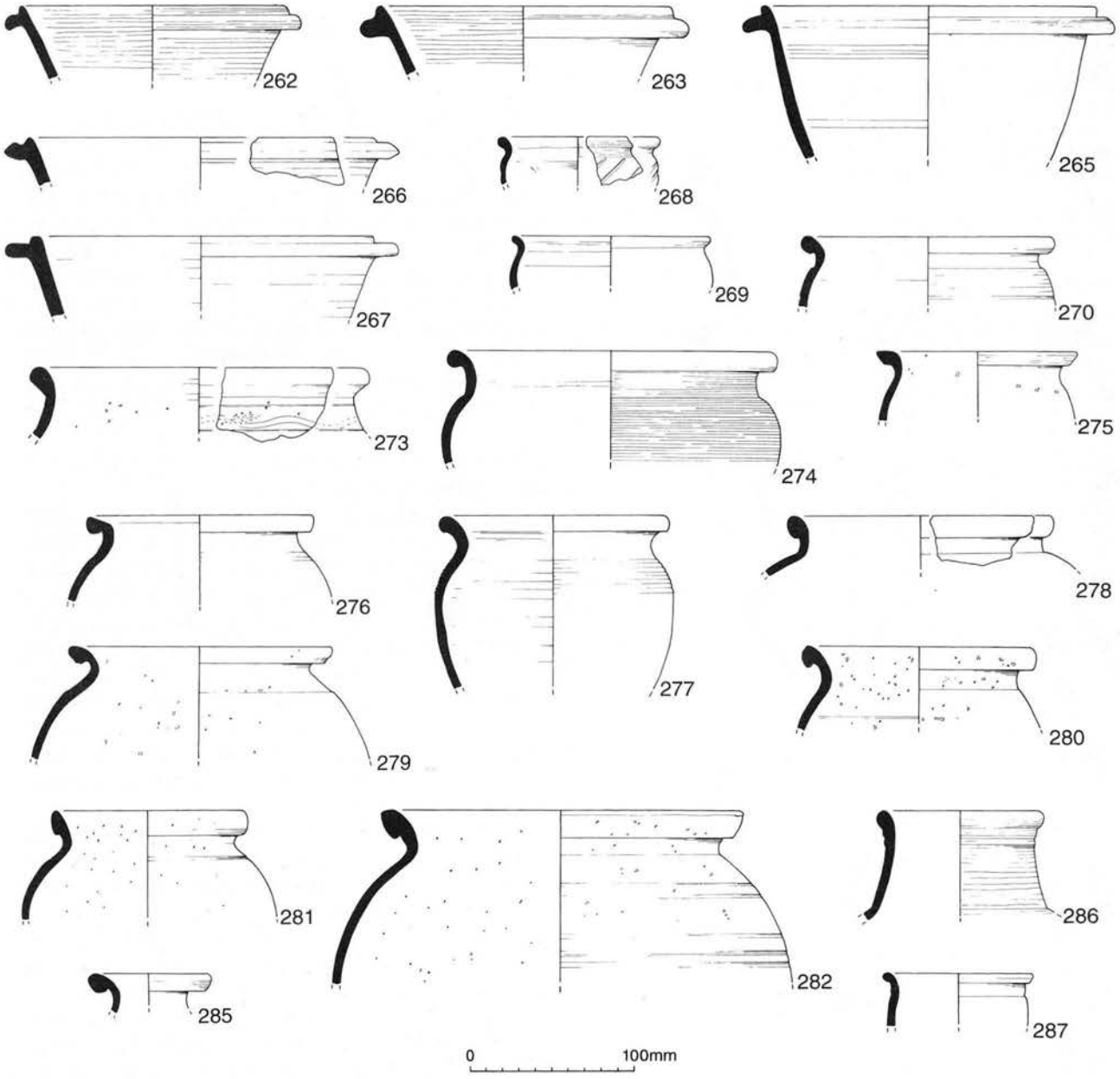


Figure 96 Roman pottery

184	C8.3	OXRC	
185	E2.2	GRS	
186	G24.2	BSW	Not illustrated
187	G24.1	RET	Not illustrated

Ditch 817, enclosure E21

Context 5571, seg. 4059, disuse horizon, late 4th century

188	B1.3	BSW	
189	B6.2	GRS	Not illustrated
190	G	HAX	
191	G27.2	LSH	Not illustrated

Ditch 63, enclosure E10

Context 6296, top fill, disuse horizon, late 4th century

192	B1	BSW	

Ditch 177, enclosure E27

*Context 5322, seg. 4029, disuse horizon, late 4th century

193	B1.3	BSW	

*Context 5341, seg. 4033, top fill, disuse horizon, late 4th century

194	B6.2	GRS	Not illustrated
195	B6.2	GRF	Not illustrated
196	C8.2	OXRC	Not illustrated
197	G34.1	GRS	

*Context 5345, seg. 4030, disuse horizon, late 4th century

198	B5.3	LSH	Not illustrated
199	B6.2	NVC	
200	B6.2 variant	GRS	
201	C8.1	OXRC	
202	D7.2	OXWM	
203	D9.1	OXWM	
204	E3.3 variant	NVC	
205	E6.1	HAR	
206	E6.1	HAX	
207	G27.2	LSH	

Ditch 816, enclosure E21

*Context 5570, top fill, seg. 4059, disuse horizon, late 4th century

208	B1.3	HAB
209	B3.2	BSW
210	B1.3	BSW
211	B1.3	HAB
212	B2	HAB
213	B6.2	BSW

214	B6.2	GRF	
215	B6.2	GRF	
216	B6.2	GRS	
217	B6.2	GRS	
218	B6.2	GRS	
219	B6.2	GRS	
220	C (?tazza)	GRS	
221	C25.2	OXRC	
222	C8	HAX	
223	E3.3	BSW	
224	E3.3	HAX	
225	E3.3	HAX	
226	E3/R2	GRS	
227	G21	GRS	
228	G24	RET	
229	G24.1	GRS	
230	G25	GRS	
231	G27.1	LSH	
232	G27.2	LSH	
233	G27.2	LSH	
234	G34.1	GRS	
235	G35.1	RET	
236	G35.1	RET	
237	G5 variant	MEK	
238	H	GRF	
239	H39	OXRC	
240	J11	HAX	
241	R2	RET	

Ditch 302, enclosure E21

*Context 5569, top fill, disuse horizon, late 4th century

242	B1	GRS	
243	B6.2	GRS	
244	base with graffito	HAB	
245	E5	GRS	
246	E6	HAX	
247	E6.1	GRF	
248	G24.2	RET	
249	G	RET	
250	G	RET	
251	G42	STOR	Not illustrated
252	G24.1	RET	
253	G27.1	LSH	Not illustrated
254	G27.2	LSH	Not illustrated
255	R3	GRS	

*Context 5780, seg. 4106, top fill, disuse horizon, late 4th century

256	B1	BSW	
257	B1.3	HAB	
258	B1	LSH	
259	B1.3	GRS	
260	B6.2	BSW	
261	B6.2	GRS	
262	B6.2	GRF	
263	B6.2	GRF	
264	B1.3	GRF	Not illustrated
265	B6.2	GRS	
266	B6.2	GRS	
267	B6.2	GRS	
268	E3	HAX	
269	E3	GRF	
270	E3.3	HAR	
271	E3.3	HAX	Not illustrated
272	E6.1	BSW	Not illustrated
273	E5.4	RET	
274	E6.1	HAX	
275	E3	RET	
276	G	GRS	
277	G21	GRS	
278	G24	GRS	
279	G24.1	RET	
280	G24.1	RET	
281	G24.1	RET	
282	G24.2	RET	
283	G27.1	LSH	Not illustrated
284	G27.2	LSH	Not illustrated
285	G40	BSW	
286	H39	BSW	
287	R	GRS	

Amphorae

by D.F. Williams

The most interesting aspect of this small assemblage is the presence of a rim and six body sherds from the 'almond-rimmed' amphora form (Arthur and Williams 1992). Thin sectioning and study under the petrological microscope confirms that the Great Holts Farm sherds, all from ceramic phase 6/7 (II.2) and perhaps from a single vessel, originate from Campania (Arthur and Williams 1992, possibly fabric B). This form has only comparatively recently been classified and has as yet been identified at a relatively small number of sites in this country. To date, the majority of the British finds have come from military sites in the north of the country and in contexts which seem to be dated from the mid 3rd to the mid 4th century AD (Williams 1994; 1997; together with some unpublished material).

As far as the writer is aware, the Great Holts Farm vessel(s) is the most southerly found in the country. Future discoveries of this mid Imperial form should show whether or not the distribution has a distinct military bias. This seems, for example, to have been the case with wine amphorae from the Rhodian Peraea on early military sites, though even here the form is found on civilian sites as well (Peacock 1977). It is possible, of course, that the amphora(e) which reached Great Holts Farm did not actually carry intact the original contents, thought to have been wine, but was 're-used' in the province as a suitable container for something else.

The majority of the amphorae sherds recovered are from heavy, globular shaped, Baetican (south Spanish) olive-oil amphora Dressel 20, the most common amphora form imported into Roman Britain (Peacock and Williams 1986, Class 25). A single rim (6084/567) can probably be matched in the scheme established by Martin-Kilcher for the development of the Dressel 20 rim series (1987, Beilage 2, G). The remainder of the Dressel 20 material, part of a handle and 30 featureless bodysherds, are much more difficult to date. The fabrics represented by 5656/318, 6155/422, 5570/816, 5780/302, 5815/385 and 5790/302 appear to the writer as being representative of the later series of vessels, *i.e.* 3rd century AD, and occur in ceramic phases 6/7, 7/7 and 8/8 (II.2 to II.3). A small plain body sherd represents the only other amphora form which occurs in the assemblage, in all probability the flat-bottomed southern French wine amphora Gauloise 4 (Peacock and Williams 1986, Class 27). This is another long-lived amphora commonly found in Roman Britain.

	By weight (g)	*By count*
Almond-rimmed	195	7
Dressel 20	4649	38
Gauloise 4	37	1
Totals	**4881**	**46**

Table 31 Amphorae

Samian ware

by B. Dickinson
(Fig. 97)

Where there are several sherds per vessel they are shown thus: 1/5 = 5 sherds from a single vessel, 3/7 = 7 sherds from 3 vessels, *etc.*

5069 Forms 18/31 and 27 (1/6), Central Gaulish. Hadrianic or early-Antonine. Form 31, East Gaulish (Rheinzabern). Late 2nd or first half of 3rd -, Central Gaulish, almost certainly from the same vessel as 5073 and 5515. Ditch 52, II.1.

5073 Form Curle 21 (1/3), Central Gaulish. *c.* AD 150–200. Other sherds in 5515 and, probably, 5069. ditch 311, seg. 54, II.1.

5169 Form 33, Central Gaulish. Antonine. ditch 91, ?II.1.

5515 Form Curle 21, see 5073. Form 31(?), Central Gaulish and mid-to-late Antonine, if samian at all. Surface cleaning, depression 318.

5548 Form 33 (1/6), Central Gaulish, stamped VE[RECV]NDI; Verecundus iii of Lezoux, Die 1a. *c.* AD 160–190. ditch 269, seg. 4055, II.2.

5608 Form 31, Central Gaulish, stamped M\[. Mid Antonine. Form 33 (1/5), Central Gaulish. Mid or late Antonine. ditch 310, seg. 4065, II.1.

5612 Form 37 (1/2), Central Gaulish, in the style of Cinnamus ii. *c.* AD 150–180. Form 33, East Gaulish (La Madeleine). Hadrianic–Antonine. Joins 5614. Ditch 310, II.1.

5614 Form 33, see 5612. Surface cleaning, depression 318.

5615 Form 31R (1/3), Central Gaulish. Mid-to-late Antonine. Surface cleaning, ditch 311.

5616 Form 31 or 31R, Central Gaulish. Antonine. Form 31 (1/2), Central Gaulish. Mid-to-late Antonine. Ditch 311, seg. 4074, II.1.

5649 Form 80, Central Gaulish. Mid-to-late Antonine. Surface cleaning, depression 318.

5656 Form 42, Central Gaulish. Hadrianic or early Antonine. Depression 318, II.2.

5725 Form 33(?), Central Gaulish. Antonine. Ditch 337, seg. 4088, II.3.

5776 -, Central Gaulish. Hadrianic or Antonine. Forms 40 and Curle 23, Central Gaulish. Antonine. Form 37, East Gaulish, in the style of Primiti(v)us of Rheinzabern. *c.* AD 200–250. Ditch 361, seg. 4102, II.2.

5780 Form 18/31R or 31R, Central Gaulish. Antonine. Ditch 302, seg. 4106, II.3.

5802 -, Central Gaulish. Antonine. Ditch 372, II.1.

5815 Form 33 (1/2), Central Gaulish. Antonine. -, East Gaulish (Rheinzabern). Late 2nd or first half of 3rd. Ditch 385, II.2.

5849 -, East Gaulish (Rheinzabern). Late 2nd or first half of 3rd. Surface cleaning.

5857 Form 37, South Gaulish. Flavian–Trajanic. Surface cleaning.

5895 Dish (1/2), Central Gaulish. Hadrianic or Antonine. Ditch 402, surface cleaning.

5898 Form 45 (1/5), Central Gaulish. *c.* AD 170–200. Pond 421, ?II.1.

5936 Dish or bowl, Central Gaulish. Antonine. Post-hole 466, building 416, II.2–II.3.

5944 Form 33 (1/2), Central Gaulish. Drilled for riveting. Antonine. Ditch 383, surface cleaning.

6115 Bowl, East Gaulish (Rheinzabern). Late 2nd or first half of 3rd. Post-extraction cut 586, building 368, II.3.

6116 Form 18/31 or 31, Central Gaulish. Antonine. Post-extraction cut 858, building 368, II.3.

6123 Dish or bowl, Central Gaulish. Antonine. Post-pit 600, building 368, II.2.

6129 Gritted samian mortarium, Central Gaulish. *c.* AD 170–200. Heavily worn inside and out. Gritted samian mortarium, East Gaulish (Rheinzabern). Late 2nd or first half of 3rd. Heavily worn inside and out. Probably with 6155. Hollow 597, building 417, II.2.

6155 Gritted samian mortarium, East Gaulish. Heavily worn inside and out. See 6129. Pond 422, II.2.

6171 Form 45 (1/2), Central Gaulish. *c.* AD 170–200. Heavily worn inside and out. Pond 422, II.2.

6190 Form 31 (1/2), Central Gaulish. Mid-to-late Antonine. Cut feature 638, building 417, II.2.

6275 Form 37, South Gaulish, in the style of Biragillus i of La Graufesenque. *c.* AD 85–110. Form 33, Central Gaulish. Antonine. Form 72, Central Gaulish. Complete, in pieces, without incised decoration, but with an uneven double groove half-way up the outer wall. *c.* AD 150–200. Ditch 402, seg. 4140, II.1.

6296 Form 18/31R (1/2), Central Gaulish. Early-to-mid Antonine. Probably with 6302. Ditch 63, seg. 4149, II.3.

6302 Form 18/31R, see 6296. Ditch 63, seg. 4149, II.3.

6354 Form 33, Central Gaulish. Antonine. Surface finds.

6357 Form 31, East Gaulish (Rheinzabern). Late 2nd or first half of 3rd. Post-hole 734, building 368, II.2–II.3.

6358 -, Central Gaulish. Hadrianic or Antonine. Post-hole 735, building 368, II.2–II.3.

6396 Form 27, Central Gaulish. Worn inside and burnt. Hadrianic or early Antonine. Ditch 441, seg. 4168, II.1.

6459 -, Central Gaulish. Hadrianic or Antonine. Well 567, II.2.

Decorated ware

D. = figure-type in Déchelette (1904), O. = figure-type in Oswald (1936–7), and Rogers = motif in Rogers (1974).

1. 6275 Form 37, South Gaulish. The decoration is very faint, but a trident-tongued ovolo and a horizontal wreath of trifid motifs (Hermet 1934, pl. 14, 42) can be seen. Both are on a signed bowl of Biragillus i of La Graufesenque, from Vaison-la-Romaine (Mees 1995, Taf. 11, 3). *c.* AD 85–110. Ditch 402, seg. 4140, II.1. (Not illustrated.)
2. 5857 Form 37, South Gaulish. The surviving decoration shows a boar to left (Hermet 1934, pl. 27, 42) over the top of a grass-tuft (*ibid.*, pl. 14, 87). Both occur on a bowl from London in the style of Mercator i (Museum of London 4662G, Box 49). *c.* AD 85–110. Surface cleaning. (Not illustrated.)
3. 5612 Form 37, Central Gaulish. A bowl in the style of Cinnamus ii of Lezoux, with three repeated panels 1A) a double festoon with a hare on a log (not illustrated by Déchelette or Oswald); 1B) Pan mask (D.675 = O.1214). 2) double medallion with stag (D.852 = O.1720), partly impressed, with acanthus tips masking the hind quarters. 3) A candelabrum (Rogers Q43). The hare and the

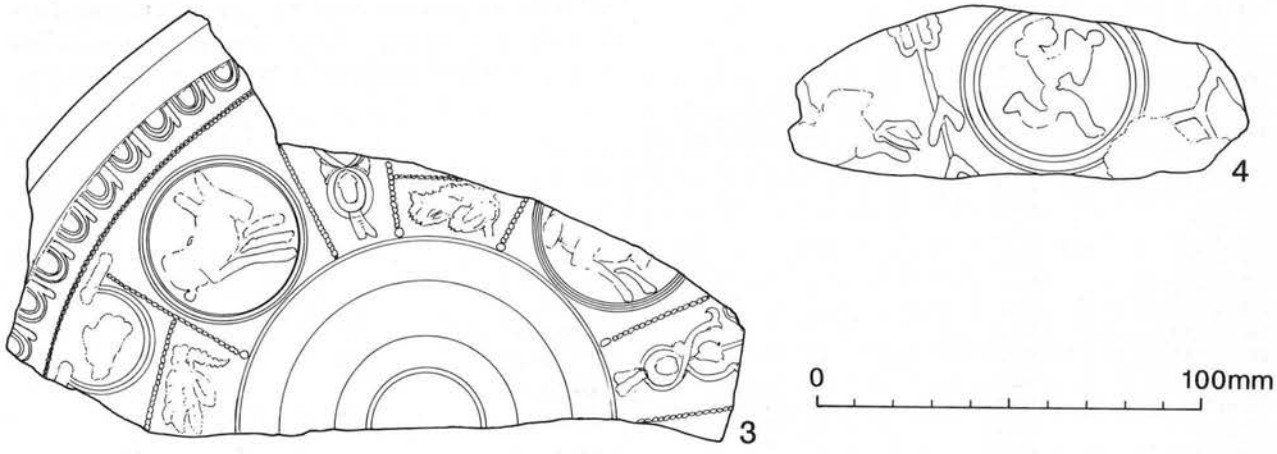


Figure 97 Samian

medallion and its contents are on a stamped bowl from a pit at Alcester, filled in the 150s (Hartley, B.R. *et al.* 1994, D15). Another bowl from the same context shows the mask (*ibid.*, D13). The candelabrum is on a bowl from Strageath (Hartley, B.R. 1989, 215, fig. 105, 2). *c.* AD 150–180. Ditch 310, II.1.

4. 5776 Form 37, East Gaulish, with an animal leaping to left and an archer (Ricken and Fischer 1963, M174c) in a double medallion. The figures are separated by vertical dividers with double leaves (*ibid.*, P142a) and, on one, a pendant motif, impressed upside down (*ibid.*, O212). No single potter is known to have used all the details, but similar decoration, with the archer and leaf, occurs on a bowl from Rheinzabern in Style II of Primiti(v)us (Ricken 1948, Taf. 195, 14). *c.* AD 200–250. Ditch 361, seg. 4102, II.2.

Potters' stamps

1. 5548 Form 33, stamped VE[RECV]NDI; Verecundus iii of Lezoux, Die 1a (Dickinson 1986, 196, 3.218–9). This potter's stamps have been recorded from Hadrian's Wall and from other northern forts recommissioned in the 160s. This particular stamp occurs at Malton, Chesters and South Shields. It was used on forms 31R and 79, both introduced in the second half of the 2nd century. *c.* AD 160–190. Ditch 269, seg. 4055, II.2.
2. 5608 Form 31, stamped M\[, Central Gaulish. Mid Antonine. Ditch 310, seg. 4065, II.1.

Summary

The samian ranges from the late 1st century to the late 2nd century or the first half of the 3rd. It comprises an approximate maximum of forty-eight vessels from eighty-two sherds, from the following sources:

	Vessels	Percentage
South Gaul	2	4.2%
Central Gaul	38	79.2%
East Gaul	8	16.7%

The forms comprise:

Form	*South Gaul*	*Central Gaul*	*East Gaul*	*Total*
18/31	–	1	–	1
18/31 or 31	–	1	–	1
18/31R	–	1	–	1
18/31R or 31R	–	1	–	1
27	–	2	–	2
31	–	4	2	6
31 or 31R	–	1	–	1
31R	–	1	–	1
33	–	8	1	9
37	2	1	1	4
40	–	1	–	1
42	–	1	–	1
45	–	2	–	2
72	–	1	–	1
80	–	1	–	1
Curle 21	–	1	–	1
Curle 23	–	1	–	1
Mortarium	–	1	1	2
Dish	–	1	–	1
Dish or bowl	–	2	–	2
Bowl	–	–	1	1
unidentified	–	5	2	7
Total	**2**	**38**	**8**	**48**

Table 32 Samian

The South and Central Gaulish ware is all from La Graufesenque and Lezoux, respectively. One of the East Gaulish vessels was made at La Madeleine; the rest are from Rheinzabern.

The range of forms is neither wide nor particularly unusual, though there is one Central Gaulish cup of form 40, which is not a form commonly found in Britain.

A continuous, increasing supply of samian to the site is possible, though far from certain. The Trajanic period might be covered by the South Gaulish ware, but there is no accompanying contemporary Central Gaulish ware from Les Martres-de-Veyre, which would be expected on a British site occupied in the early 2nd century. In addition, there is no certainly Hadrianic material, and the bulk of the collection clearly belongs to the second half of the 2nd century, or later. However, it should not be forgotten that this is a relatively small assemblage, and the absence of samian discarded at any given period is not necessarily significant.

For the same reason, the status of the site is not easy to assess. The proportion of decorated ware, 8.3%, is perhaps slightly lower than average for Britain, though not markedly so for a rural site. The most striking aspect of the material is the proportion of samian mortaria, which account for 10.4% of the samian. No other types of vessel seem to have been used for grinding, as often happened on impoverished sites, but it should be stressed that all the gritted mortaria were well worn inside and that there were no examples of form 38, the most common substitute for the true mortarium. A site of modest to average status is likely, therefore.

X. Anglo-Saxon pottery

by S. Tyler

Only a small amount of Anglo-Saxon pottery (twelve sherds, 58g) was recovered. The sandy fabrics and 'Schlickung' surfaces are diagnostically early (*i.e.* 5th century) and there is no organic tempering that would suggest a later date.

1. Abraded body sherd of coarse sandy fabric. Abundant small to large quartz-sand. Dark grey ware. Wt. 4g. ?intrusive in 5812, ditch 382, II.1.
2. Body sherd of hard black sandy fabric. Well-sorted small to medium quartz-sand. Inner surface has sooting or carbonised food residues. Wt. 4g. ?intrusive in 5952, post-hole 482, ring-ditch 452, I.2.
3. Two body sherds of very coarse soft fabric. Abundant large to medium quartz-sand. Surfaces reddish-brown. Core black. Wt. 3g. ?intrusive in 5824, storage pit 394, II.2 to II.3.
4. Body sherd of fairly hard sandy fabric. Well-sorted small to medium quartz-sand. Outer light brown. Inner and core black. Carbonised food residue on inner. Wt. 6g. 6072, robbing 798, bath-house 414. III.1+
5. Base sherd, abraded. Fairly hard fabric with sparse small quartz sand. Oxidised. Wt. 4g. ?intrusive in 6116, post-extraction cut 858, building 368. II.3.
6. ?Base sherd, abraded. Reduced fabric with sparse large shell inclusions and sparse small quartz sand. Wt. 4g. ?intrusive in post-hole 621, building 417. II.2.
7. Rim with rather crude lid-seating. Fairly soft sandy fabric with sparse large quartzite inclusions. Light reddish-brown throughout. Wt. 12g. ?intrusive in 6163, drain 620. II.2 to II.3.
8. Base sherd and body sherd in hard black to brown sandy fabric. Abundant small to medium quartz-sand. Wt. 9g. ?intrusive in 6275, ditch 402. II.1.
9. Two very abraded ?body sherds in light grey reduced fabric. Fairly soft. Sparse small quartz-sand but outer surface on one sherd has abundant small to large quartz-sand applied in a slip referred to on continental sites as 'Schlickung'. Wt. 8g. ?intrusive in 6179, drain 100, II.2 to II.3.
10. Rim with ?side lug. Fairly hard reddish-brown fabric with common small and sparse large quartz sand. Outer surface has traces of ? 'Schlickung'. Wt. 4g. 6252, robbing 798, III.1+.

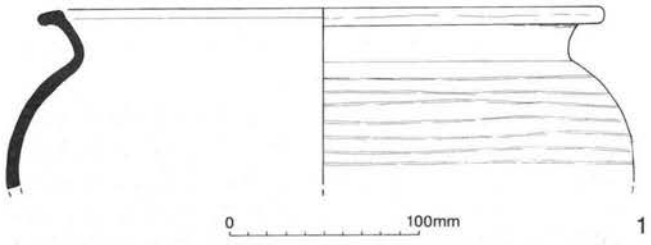


Figure 98 Medieval pottery

XI. Medieval and post-medieval pottery

by H. Walker
(Fig. 98)

Only a small amount of pottery (forty-four sherds weighing 703g) was excavated and is summarised in Table 33. The material has been classified using Cunningham's typology (Cunningham 1985, 1–4) and her fabric numbers and rim codes are quoted in this report.

Small amounts of early medieval shell-tempered and shell and sand-tempered ware (Fabrics 12A and 12B) were recovered from features belonging to building 440; no rims are present and the sherds could date anywhere between the 10th and 13th centuries.

The largest group of pottery was excavated from pit 714, and includes several large sherds from an early medieval ware cooking-pot (Fabric 13), the rim and shoulder of which have been drawn (Fig. 98.1). It probably dates from the 12th to earlier 13th centuries and is typical of cooking- pots found in Essex. A second similar cooking-pot rim was also found but has a smaller diameter than that of Fig. 98.1, measuring about 240mm. Shell-tempered ware is also present in this context and there is one small fragment of thickened everted cooking-pot rim (sub-form B1). The sherds of shell-tempered ware found here may belong to the same vessels as those from context 6265 in building 440, although no cross-fits were noted.

Other finds comprise an unfeatured sherd of medieval coarse-ware (Fabric 20) from hollow 597, this ware dates from the 12th to 14th centuries and could be contemporary with, or later than the rest of the pottery. Found during surface cleaning was a sherd of pearlware (Fabric 48P), showing a blue transfer-printed floral pattern and probably dating to the early 19th century. A second modern sherd was excavated from cut 252, a porcelain knob from the lid of a jar or perhaps a teapot (Fabric 48B) dating from the late 18th to 20th centuries.

1. Cooking-pot: early medieval ware (Fabric 13); red-brown surfaces and grey core; fire-blackened on sides and around rim. 6325, pit 174, phase III.2.

Fill	*Feature*	*Part of*	*Fabric*						*Wt (g)*
			12A	*12B*	*13*	*20*	*48B*	*48P*	
5466	Cut feature 252	–	–	–	–	–	1	–	5g
5848	Surface cleaning	–	–	–	–	–	–	1	2g
6129	Hollow 597	Building 417	–	–	–	1	–	–	4g
6247	Post-hole 678	Building 440	–	4	–	–	–	–	14g
6265	Post-hole 689	Building 440	8	–	–	–	–	–	86g
6266	Post-hole 690	Building 440	1	–	–	–	–	–	6g
6325	Pit 714	–	6	–	22	–	–	–	586g

Table 33 Quantification of medieval pottery from Great Holts by fabric, feature and sherd count

XII. Baked clay

by H. Major
(Figs 99–101)

The prehistoric baked clay

Baked clay objects

1. Fragments from a block-shaped loomweight with a horizontal perforation. If symmetrical, the original width would have been *c.* 94mm. The weight is very similar to a more complete example from the late Bronze Age enclosure at Springfield Lyons, Chelmsford (Major 1987), and is of a form loosely termed 'truncated pyramidal', although in neither this weight nor the one from Springfield do the sides slope to any degree. The type is late Bronze Age, possibly going into the early Iron Age (Barford and Major 1992). Wt. 484g. SF408 5867, placed deposit 435, phase I.3.

2. (Not illustrated) Fragment from a perforated clay slab in a flint gritted fabric, with part of a single perforation present, diam. *c.* 18mm. 16mm thick. Perforated clay slabs are a late Bronze Age artefact of unknown function, but fairly common in Essex, with examples from at least six other sites. A number of examples were found at Springfield Lyons (*op. cit.*). 5861, slot 436, phase I.3.

Other baked clay

The baked clay from Late Bronze Age and Early Iron Age contexts is in similar fabrics to the Roman baked clay; two fabrics were present, corresponding to the Roman fabrics B and D, and, as with the Roman contexts, fabric B was the most common (Table 34). Thirty-five fragments (351g) came from Late Bronze Age contexts; most were amorphous, with only three exhibiting roughly flattened surfaces. The Early Iron Age baked clay (seventy-two fragments, 727g), all from structure 146, included pieces with wattle impressions with diameters between 8mm and 22mm.

The medieval baked clay

There was a total of 151 fragments (687g) of baked clay from the post-holes of building 440. There were no wattle traces present, but eleven fragments had flat surfaces. There were two fabrics present, corresponding to Roman fabrics B and D; in contrast to the prehistoric and Roman periods, fabric D was more common than B.

The Roman baked clay

Introduction

A total of 2024 pieces of baked clay was recovered from Roman contexts, weighing 21231g, most of which probably derives from structural daub. There was also a single, unstratified, piece of a possibly Roman object, which has been included in this section.

A total of ninety-eight features contained baked clay (excluding the unstratified material). The average amount recovered per feature was twenty fragments, weighing 205g. Eighty-four per cent of the features contained less than this average weight, and in fact there were only four features with more than 1kg, an amount which might be considered significantly large for this class of material. These four features are cut-feature 77 in building 416, and three post-extraction pits in building 368; 588, 841 and 842. Baked clay cannot be considered to be particularly abundant on this site; there are no large dumps of material from burnt buildings, and little in the way of substantial demolition debris with the exception of building 368. The information which can be gained from the baked clay is therefore somewhat tentative, as it is based on rather small amounts, but it can nevertheless be used to shed light on the techniques used in some of the buildings, and contribute to the formulation of hypotheses on the development of the site.

Fabrics

Six fabrics were identified macroscopically, principally on the abundance of the inclusions. The colour was very variable, according to the conditions and degree of firing, and was not taken into account in identification of the fabrics. The fabric descriptions are as follows:

A A fine clay with sparse sand and common vegetable temper.
B Fairly sparse sand, sparse vegetable temper and occasional iron-rich flecks. The texture is somewhat variable.
C Similar to B, but with common sand
D A fine fabric, with few inclusions and occasional iron-rich flecks.
E Similar to B, but with common calcium carbonate flecks. These flecks may be the result of contact with plaster, rather than deriving from the presence of chalk in the matrix .
F Fairly sparse sand, fairly common small chalk fragments up to *c.* 4mm diam.

As Table 34 demonstrates, fabric B was by far the most common on the site, not only for the Roman period, but for the prehistoric baked clay as well. Wattle impressions were commonest in this fabric, and the combed daub was all in this fabric, suggesting that it was the principal clay mixture used for wall daub. The buildings produced higher proportions of fabric B than the average for the site; building 368, for example, had 97.2% of its baked clay fragments in fabric B.

	Prehistoric		*Roman*		*Medieval*		*% by weight*		
Fabric	*No.*	*Wt*	*No.*	*Wt.*	*No.*	*Wt.*	*Prehist*	*Roman*	*Med*
A	0	0	3	159	0	0	0	0.7	0
B	87	954	1540	18728	16	98	81.3	88.2	4.3
C	0	0	44	326	0	0	0	1.5	0
D	20	124	419	1892	135	589	18.7	8.9	85.7
E	0	0	14	95	0	0	0	0.4	0
F	0	0	4	31	0	0	0	0.1	0
Totals	**107**	**1078**	**2024**	**21231**	**151**	**687**			

Fabric C may be a variant of fabric B, being similar but sandier. The distribution suggests that, unlike fabric B, its use may not be directly connected with the principal buildings on the site; thirty of the forty-four fragments come from contexts not associated with these buildings.

Fabric D, which contained few inclusions, probably represents the natural, unadulterated clay of the site; a sample from a context described on site as 'baked natural', from the base of oven 626, is in this fabric, and other fragments from the ovens in this material probably also represent scorched natural, as could fragments from elsewhere. However, the material was also being used for daub, though not perhaps as frequently as the other fabrics; a single piece bore a wattle impression (context 6463, well 567), and a group of slabby pieces from post-hole 621, building 417 (the largest concentration of fabric D on the site) have traces of whitewash or plaster on the surface.

There are very minor amounts of fabrics A, E and F, and there is no evidence to suggest that these fabrics had particular uses, although some pieces were clearly from daub.

There is no indication of which fabric(s) might have been used for clay flooring. Barring discovery *in situ*, fragments with flat surfaces and no wattle impressions may equally be floor or wall daub.

Distribution

The bulk of the baked clay came from buildings 368, 416 and 786, with 52.3% by weight coming from 368 alone. It is likely, therefore, that most of the daub found in the immediate area, from contexts of the appropriate date, also came from these structures. The evidence of the wall plaster, virtually all from the baths, suggests that the bath block was completely plastered, with little if any use of daub, and the daub found in the baths is likely to have derived from the adjacent buildings.

The average weight per fragment has been shown in Table 35. This figure is influenced by a number of factors; the highest average weight here, for example, is for the unstratified material, and the high figure is due to selective retention of interesting-looking pieces by the excavators. Other factors include the friability of the material, the degree to which it has been baked, and residuality; fragments of baked clay which were lying around prior to deposition are more likely to have been abraded, and are therefore smaller on average. Despite the different factors which may have influenced the average size, it is a useful figure for assessing the likelihood of a group of material being residual, and its potential for providing information. The material from feature group 418, for example, has a very small average size (2g), and is unlikely to be informative.

Context group	*No.*	*Wt. (g)*	*% by wt.*	*Av. wt. per fragment (g)*
Building 368	674	10601	52.3	16
Building 416	399	2903	14.3	7
Building 786	204	1997	9.8	8
Ditches/gullies (later Roman)	79	877	4.3	11
Ovens	137	732	3.6	5
Building 294	30	623	3.1	21
Well 567	93	557	2.7	6
Baths and assoc. features	44	550	2.7	13
Building 417	135	391	1.9	3
Pits	48	340	1.7	7
Ditches/gullies (earlier Roman)	14	258	1.3	18
U/S	7	204	1.0	29
Cremations	9	88	0.4	10
Feature group 418	36	88	0.4	2
Depression 318	4	46	0.2	12
'Cuts', various	3	10	0.0	3
Post-holes, non-associated	2	8	0.0	4
Pond 422	3	6	0.0	2
Totals	**1921**	**20279**		

Combed daub

Seventeen contexts produced fragments of daub with combing on the surface, a total of 111 fragments, none very large. Almost all of this material came from contexts within building 368, mainly post- extraction pits, with single pieces from backfill of the baths, post-hole 539, ditch 397 and cut 638, all features in the vicinity of 368. All the material was very similar in aspect, and undoubtedly came from the same building. It therefore seems likely that the combed daub was part of the structure of building 368. Some of the daub was heavily burnt, and partly vitrified, which appears to have occurred after the break-up of the daub, and does not necessarily imply that the structure burnt down. There was no trace of a surface coat of mortar or plaster over the combing, although such traces could have been lost.

The combed daub was all in fabric B. The combing was made by an implement with broad, shallow teeth, producing a surface with narrow ridges about 10mm apart, and about 2mm high. Most surfaces are now rather abraded, but one piece which is part vitrified has ridges which are quite sharply defined. The majority of the pieces have simple straight lines, but a few have combing in two directions; unfortunately, none of these pieces are large enough to shed any light on the overall pattern.

The presence of combing on the surface of the daub is unusual. It is quite distinct from the stamped daub found at some sites, and particularly common in Essex (see Russell 1990), whose use had in any case ceased around AD 200. The combing may have acted as keying for a finishing coat to the wall, all trace having been lost through abrasion; alternatively, since we do not in this case know whether it was from an interior or exterior face, it may have been decorative, representing an early form of pargetting.

Illustrated
(Fig.99)

3. Combed daub with a wattle impression on the back. 5156, post-extraction pit 842, building 368, phase II.3
4. Daub with combing in two directions. 6116, post-extraction pit 858, building 368, phase II.3

Other surface treatments

Many of the fragments had flat or roughly flattened surfaces, but few retained traces of any other surface treatment. Fragments from contexts 6162 (post-hole 621, building 417) and 5211 (cremation 122) have traces of a pale wash on the surface. Traces of mortar on some of the daub from 6459 (well 567) may not be original. One fragment (from cut-feature 77) has a line drawn across the flat surface, possibly deliberately.

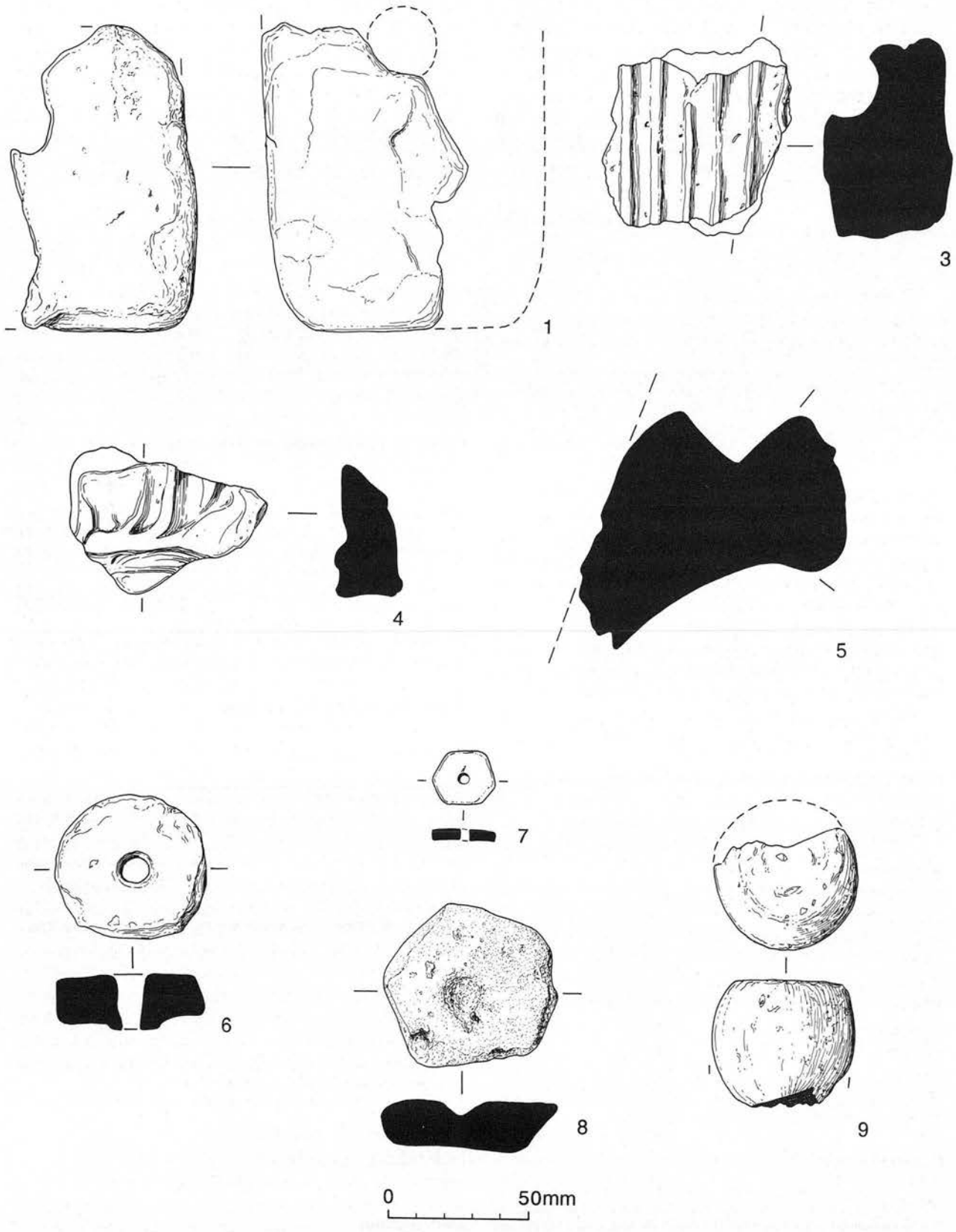


Figure 99 Baked clay and ceramic objects

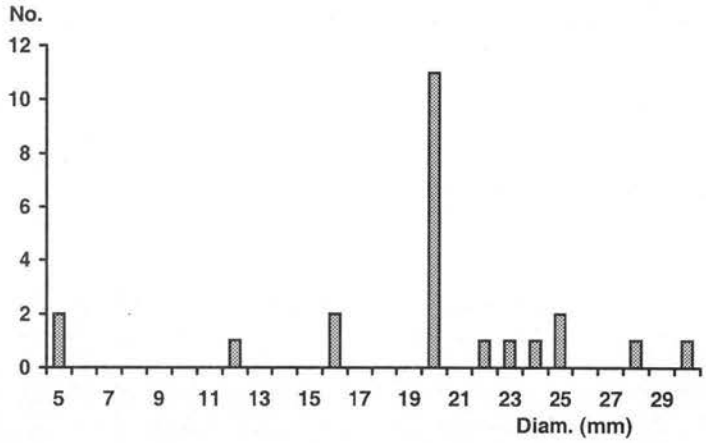


Figure 100 Great Holts Farm: Roman wattle diameters, building 368

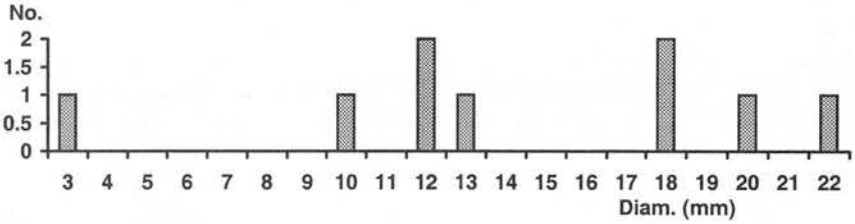


Figure 101 Great Holts Farm: Roman wattle diameters, contexts other than building 368

Wattle and other impressions

Sixty-nine fragments had definite or possible wattle impressions, less than 4% of the total number of fragments. On thirty-two of these pieces, the diameter of the wattles could be measured, ranging from 3mm to 30mm. Twenty-three of these pieces were from structure 368, principally post-extraction pits 841 and 842. The graph of the distribution of wattle sizes within 368 (Fig. 100) shows a strong peak at 20mm diameter, which is absent on the graph of wattle diameters from other contexts (Fig. 101). While the amount of data in both cases is rather small, it is possible that building 368 utilised a more standardised size of wattle. It should be noted that the very small wattles (3mm and 5mm diam.) are all dubious, and may be fortuitous twig impressions.

A few sherds have shaped surfaces, usually slightly convex. An unstratified fragment in fabric A may be from the edge of a window or doorway, with the impression of two wattles on the back, although, unfortunately, the surface on this piece is too eroded to be confident about its shape. The fragment from 6016, which is illustrated, has a fairly complex profile, but it is difficult to suggest where in the structure it might have come from.

Illustrated
(Fig. 99)

5. Fragment of daub (fabric B) with the impression of one flat surface, an angled surface and a concave surface. SF432, 6016, post-hole 532, partition 530, building 416, phase II.2–II.3

Ceramic objects

6. Weight or counter made from a piece of tile trimmed into a crude circle. There is a central circular hole, made before firing, so presumably this was cut down from a *tegula* with a nail hole already present in it, although it is rather thin for a tegula (15mm). Wt. 54g. SF409; 5887, top fill of pond 421, phase ?II.1
7. Pierced disc, made from a Hadham Ware sherd. This is really too small to be a spindle whorl, although it is possible that it was part of a miniature or model spindle. Wt. 2g. SF518, 6163, drain 620, seg. 4131, phase II.3
8. Fragment of hard fired yellow baked clay, in fabric B, with a partly vitrified surface. The object is flat and roughly pentagonal. It has possibly been deliberately trimmed into this shape, but the surface is too poor to be certain. There is a depression set slightly off centre, possibly original, and this may be an unfinished attempt at a rather crude spindle whorl. Wt. 57g. SF435, 6044, wall-trench 558, seg. 4116, building 416, phase II.2–II.3.
9. Fragment in fabric B, with a rather sandy surface, probably the end of a cylindrical object, diam. 36mm. SF351, 9998, U/S

XIII. Building materials

Coarse building stone

by H. Major

Representative samples of 'building rubble' from contexts 6073 and 6074 were examined. All the stone types except one could have been collected locally, and include chalk and limestone nodules from the boulder clay, tufa, sandstone boulder fragments and unworked flint nodules. There were also two possible fragments of saddle quern re-used as building rubble. The non-local stone present was Barnack-type limestone, similar to the slab fragment from 6114 (No. 16, above), which may have originally been an object, but which seems to have been re-used as building rubble; it is unlikely that it was imported from Lincolnshire specifically for use on this site. It is noted that there was no septaria, a stone commonly used as coarse building rubble in Essex.

Roman brick and tile

by H. Major and R. Tyrrell
(Figs 102 to 108)

Introduction

The excavation provided an opportunity to examine a large collection of tile, mostly from late Roman contexts, and mostly derived from a single small bath-house. In addition, there was a substantial group of tile associated with a building interpreted as a granary (294), which may

	Imbrex	*Tegula*	*Brick*	*Box flue*	*Spall*	*Total*
No. of pieces	5241	7586	2887	751	29063	**45528**
Wt (g)	465043	1219410	1082947	94313	584990	**3446703**
Average wt. per sherd	89	161	375	126	20	

Table 36 Gross numbers and weights by tile type

have burnt down. There was a total of 45,528 pieces of tile, weighing 3,446,703g (3.4 tonnes). The distribution by tile type is given in Table 36.

This group of tile is one of the largest from a single site in Essex. In a comparison of the amounts of Roman tile from all excavations undertaken by Essex County Council in the last twenty years, Great Holts Farm rates second only to Elms Farm, Heybridge (Major and Tyrrell in prep.), which produced over 7 tonnes, with the third largest group coming from Chelmsford bath-house (1.5 tonnes: Major in prep. b). Unlike many sites excavated in the past, where only selected tile was retained and analysed (usually only large or interesting looking pieces), all excavated tile was washed and examined. In particular, this has facilitated the production of meaningful data regarding the distribution of the tile across the site, enabled detailed analysis of the box flue tile, and provided information on the way that the tile was used in the structures. Very little of the fabric of the bath-house survived *in situ*, but study of the tile has yielded important information about, for example, the use of recycled building material.

All excavated tile was catalogued as far as possible, and a sample taken from the surviving structure. The tile was catalogued by type and fabric, by the authors, and selected tile kept for deposition at Chelmsford Museum. A more detailed report is available in the site archive.

In this report, 'brick' refers to flat tiles of various sizes, generally used in the fabric of the building. Tile with no distinguishing features was sub-divided for the purposes of analysis into brick, *tegula* and *imbrex* on the grounds of thickness. These categories overlap in thickness, but the parameters for each type can be chosen so that the proportion of fragments potentially wrongly assigned is the same for each type, thus cancelling out misidentifications. For this site, the thicknesses of the definite *tegulae* and *imbrices* for one of the largest contexts (5923) were analysed, and the parameters used were; *imbrex,* thickness <18mm; *tegula,* thickness 18–27mm; brick, thickness >27mm. Some of the tile classified in this way as *imbrex* or *tegula* would have actually derived from box flue tile, but since this category forms a relatively small proportion of the identifiable tile, it is thought likely that its exclusion from breakdown by type of the 'other tile' would not seriously bias the statistical analyses. Box flue tile with no other distinguishing features could often, in any case, be recognised by internal sooting, or by the fairly distinctive finer sanding on the back.

All statistical analysis used sherd counts rather than weight.

The fabric types

Eight fabrics were identified. The identifications were made macroscopically, apart from fabrics G and H, and are therefore not stringent; indeed, the writer doubts whether stringent identification without extensive thin sectioning is possible in Essex, where even tiles made from the same clay deposits can be quite variable due to the nature of these deposits in the county. The clay is often rather poorly mixed, with the sand or other inclusions not uniformly spread throughout the tile. In addition, particularly with *hypocaust* tiles, burning or repeated heating may produce spurious changes of texture and colour in the tiles.

The principal inclusions present at Great Holts were chalk and sand in varying quantities. The chalk is a natural inclusion in the boulder clays; while its presence normally indicates that the tile was made from boulder clay, its absence does not necessarily imply that the clay used was not boulder clay.

Fabrics B and C were by far the most common, with other fabrics occurring only in small quantities. The gross quantities found, by number of sherds, are listed in Table 37, and the proportions within each tile type in Table 38.

Colour was generally ignored in identification of the fabric, as the tiles could be variable in colour across a single tile; most were shades of reddish-orange or red. The exceptions were the distinctively pale tiles ('Gault' tiles) grouped under fabrics G and H.

Fabric A; chalky

This fabric was characterised by the noticeable amount of small chalk fragments in the fabric, although the chalk inclusions were never particularly abundant, and the fabric was not as chalky as, for example, the chalky fabrics from Bulls Lodge, Boreham. The presence of chalk is a characteristic of tiles made from boulder clay. All the tile in this fabric is from phase II.2 or II.3, except for a single piece from the surface of ditch 383.

Fabrics B and C; sparse to moderate sand and occasional chalk

Fabric B was defined as fine in texture, with very sparse inclusions of sand and occasional small chalk flecks. Fabric C contained the same types of inclusions as B, but in sparse to moderate quantities. In practice, there appeared to be a range of fabrics intermediate in texture and amounts of inclusions between B and C, and differentiation of the two fabrics was sometimes difficult. Certain features tend to support the idea that B and C are variations on the same fabric, such as the occurrence of distinctive 'squiggle' combing on pieces of box flue in both fabrics, and both fabrics are likely to be local products, possibly even from the same tilery. The perceived variations may simply represent slight differences in the clay used. The evidence from the wasters recovered also suggests that the fabrics are local; there was a much higher proportion of wasters in these two fabrics than in the other fabrics. The wasters were all from contexts associated with the baths, and were probably used as coarse rubble in the fabric of the building.

Tile type	*Fab. A*	*Fab. B*	*Fab. C*	*Fab. D*	*Fab. E*	*Fab. F*	*Fab. G*	*Fab. H*	***Totals***
Imbrex	110	4387	716	2	2	23	1	0	**5241**
Tegula	225	5778	1549	12	1	5	16	0	**7586**
Brick	53	1695	1000	85	14	22	19	2	**2887**
Box flue	6	390	331	0	0	3	21	0	**751**
Total	**394**	**12250**	**3596**	**99**	**17**	**53**	**57**	**2**	**16465**
%	2.4	74.4	21.8	0.6	0.1	0.3	0.3	0.0	

Table 37 Gross numbers of fragments found, by tile type and fabric (excluding spall)

Tile type	*Fab. A*	*Fab. B*	*Fab. C*	*Fab. D*	*Fab. E*	*Fab. F*	*Fab. G*	*Fab. H*
Imbrex	2.1	83.7	13.7	0.0	0.0	0.4	0.0	0.0
Tegula	3.0	76.2	20.4	0.2	0.0	0.1	0.2	0.0
Brick	1.8	58.7	34.6	2.9	0.5	0.8	0.7	0.0
Box flue	0.8	51.9	44.1	0.0	0.0	0.4	2.8	0.0

Table 38 Percentages of each fabric within each tile type, by number of sherds

Together, fabrics B and C accounted for over 95% of the tile from the site, occurring in both early and late Roman phases.

Fabric D; sandy

Fabric D was distinctively sandy. Bricks were the most common tile type in this fabric, and it is likely that the sand was deliberately added in order to temper these thick slabs of clay and improve the firing characteristics, making the bricks less likely to crack during firing.

Fabrics E and F; inclusions of clay and iron-rich flecks

As with fabrics B and C, these two fabrics may be variants of each other, being characterised by inclusions of lighter and redder firing clay, and small iron-rich flecks and nodules. These inclusions were more common in fabric F. There were few tiles in these fabrics, which may not be immediately locally made. All came from late Roman contexts.

Fabric G; Eccles fabric tile

One hundred and thirty-five fragments in fabric G were recovered, weighing 16691g, and comprising *tegulae*, bricks, voussoir and box flue, but no *imbrices*. Both the *tegulae* and the bricks tended to have the underside cut flat, removing most of the sand deposited by the mould.

The fabric was variable in colour, but predominantly light buff or cream, occasionally light brown, and sometimes with pale pink streaking or a pinkish core. The inclusions were sparse sand, sparse iron rich flecks and small nodules, and occasional small blobs of red clay. The fabric contained fairly common small voids.

A sample was examined by I. Betts, who identified it as coming from Eccles, in Kent. Other sites in the area with Eccles tile include Colchester (Betts 1992), where it was noted that there were no box flue tiles in the fabric, and that tile in this fabric was probably not being imported into the area after the 1st century. The Eccles tile from Great Holts is thus unusual for this area on two counts; box flue tiles are present, and the material was used in a 4th-century building. In particular, two half-faces from probable voussoir tiles in this fabric formed part of the furnace wall (6100 and 6418). One had sooting on the inside, indicating that it was re-used. A number of fragments of box flue in this fabric were combed with the same distinctive tile comb; this is discussed below.

Most, but not all, of the tile in fabric G came from contexts directly associated with, or in the vicinity of, the bath-house. The small quantities present at Great Holts suggest that tiles in this fabric were not being deliberately used for decorative effect, as has been suggested elsewhere, but were simply being used or re-used as building rubble. Besides the pieces found *in situ* in the furnace wall, other pieces had mortar on the broken faces, indicating use in the fabric. It is likely that all of the tile in this fabric arrived on the site as building rubble robbed from another site, the location of which is unknown, and thus it is possible that the tiles originally arrived in Essex in the 1st century, as seems to be the case at other sites in Essex with this fabric. At present, it appears unlikely that the Eccles tile derived from the nearest known site, Bulls Lodge, as this produced only two pieces of pale coloured tile, which appear to be in a slightly different fabric.

Fabric H

Fabric H was off-white in colour, with occasional pink streaks, and had a slightly soapy texture. There were few inclusions, comprising occasional sand and occasional red flecks.

There were three pieces of tile in this fabric, two of which were from bricks and the third spall. The tile was examined by Scott Martin, who was of the opinion that the fabric was extremely similar to Colchester white ware pottery, and that a source in the Colchester area was indicated. Colchester white wares were produced mainly in the 1st–2nd century, declining in the early 3rd century; a similar date range for the production of white tile might be postulated. There are possible tile kilns in the Colchester area (McWhirr 1979, 123–35), many associated with pottery kilns, but there seems to be no evidence to date for the type of tile which might have been produced at these kilns, and there are no known tiles from the Colchester area in this fabric (pers. comm. E. Black).

These three fragments are all from late Roman contexts, and, if Colchester products, are likely to be residual. The contexts containing this fabric are all ditch

	Flange type													*Total*
Fabric	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	
A	15	1	47	3	1	1	8	0	6	0	1	0	0	**83**
B	619	31	386	269	10	49	47	1	109	1	1	2	0	**1525**
C	127	12	111	28	1	11	12	0	14	1	3	1	1	**322**
D	2	0	0	0	0	0	0	0	0	0	3	0	0	**5**
G	1	1	1	0	0	0	0	0	0	0	0	0	0	**3**
Totals	**764**	**45**	**545**	**300**	**12**	**61**	**67**	**1**	**129**	**2**	**8**	**3**	**1**	**1938**

Table 39 *Tegula* flange types; gross numbers

	Flange type												
Fabric	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
A	18.1	1.2	56.6	3.6	1.2	1.2	9.6	0	7.2	0	1.2	0	0
B	40.6	2	25.3	17.6	0.7	3.2	3.1	0.1	7.1	0.1	0.1	0.1	0
C	39.4	3.7	34.5	8.7	0.3	3.4	3.7	0	4.3	0.3	0.9	0.3	0.3

Table 40 *Tegula* flange types; percentage within each fabric for fabrics A, B and C

fills of phase II.2 or II.3 (5575, ditch 365; 5437, ditch 243; 5584, 302), none of them primary, and none close to the main buildings. Unlike fabric G, there is no direct connection with the bath-house, and none of the pieces has mortar on, which would indicate use in the fabric of a building. The deposition of the tile in this fabric may therefore not be connected with the construction/ destruction of the bath-house and its associated buildings.

While this fabric probably comes from the Colchester area, it should be noted that there are clays suitable for making pale-coloured tile very close to Great Holts Farm. Bricks similar to 'Suffolk Whites' were produced at Boreham in the 19th century, the brickfields being less than 1.5km from Great Holts (Bristow 1985, 91); they were made from a stratum of brickearth underlying the upper red brickearth used for the production of 'Boreham Reds'. This clay source is now inaccessible, as the old clay pit lies under the A12 dual carriageway, but there are (or were), no doubt, other similar sources in the area.

Tile types

Tegulae

Sixteen tiles were whole, or at least complete enough to give full measurements, ranging from 490×295mm to 350×245mm, measured across the mid point. On six fragments, only the full length survived, ranging from 270mm to 405mm; ten fragments had only the width surviving, with a range of 270mm to 390mm. The width of many of the *tegulae* tapered up to 20mm from top to bottom.

Flange types

Flanges were assigned a type number according to their basic profile compared with an index of idealised flange shapes (Fig. 102). Type 14 was present at Bulls Lodge, but not at Great Holts. The width of the flange was not taken into account, as it normally varies from one end of the tile to the other; the squatness of the flanges may be significant in some cases, but was not generally taken into account. The flange shapes may be divided into two basic groups, rounded flanges (types 1, 2, 5, 7, 8, 10, 11, 12 and 13), and squared flanges (types 3, 4, 6 and 9), often quite sharply cut. It is accepted that flange profiles may vary somewhat on a single tile, but any variations will normally be within the same group. A total of 1938 pieces of *tegula* had flanges present, virtually all in fabrics A, B and C. The gross number per fabric is shown in Table 39, and the proportions within each of these fabrics in Table 40. As may be seen, types 1, 3 and 4 predominate.

Fabric A differs from the other fabrics in that over half of the flanges were type 3 (squared), whereas in fabrics B and C, the predominant form was type 1 (rounded). If we consider the proportions of squared flanges to rounded flanges (Table 41), the difference is less marked, but still significant; fabric A has a higher proportion of squared flanges than B or C.

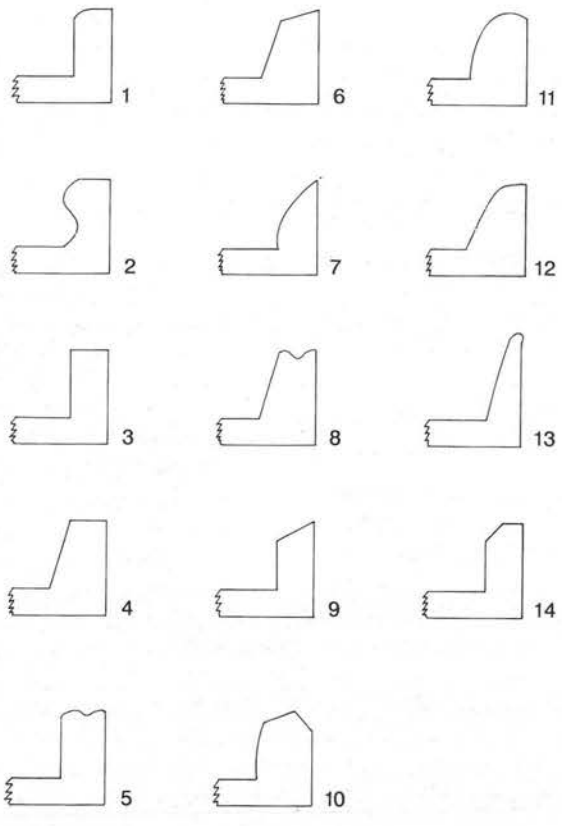


Figure 102 Roman brick and tile: flange types

	Flange group	
Fabric	*Squared*	*Rounded*
A	68.7	31.3
B	53.3	46.7
C	50.9	49.1

Table 41 *Tegula* flange groups; percentage within each fabric for fabrics A, B and C

	Flange								
Cut-away	*1*	*2*	*3*	*4*	*6*	*7*	*9*	*12*	***Total***
A1	34	3	17	16	3	3	4		**80**
A2	1	1	1	2					**5**
A3	1			1					**2**
A7	17		11	13	2		5	1	**49**
A8	6			1					**7**
B1	10		5	4			2		**21**
B5	1								**1**
B6			1						**1**
B7	25	3	5	4	2	3	1		**43**
Total	**95**	**7**	**40**	**41**	**7**	**6**	**12**	**1**	**209**

Table 42 Flanges and cut-aways

Almost all the flanges are from late 3rd/4th-century contexts, and could in theory be contemporary with the buildings, although re-use of older tiles cannot be ruled out. Only seven flanges came from earlier contexts, all in fabric B and comprising three examples of type 1, three of type 3 and one of type 4, the three commonest types on the site overall. There is thus no evidence from this site for variation in flange form over time.

The relationship of flange type to the different cut-away types (see below for the types) was examined. It would have been of interest to see if fabric A had a significantly different distribution to B and C, but there were only seventeen examples from A, and this was too small a sample to reach any conclusions. The sample for fabric B was larger, 209 examples, and it could be seen from simple tabulation that there was unlikely to be any correlation between flange and cut-away types (Table 42). There were only three flange types (1, 3 and 4) with reasonably large numbers of examples, and they were combined with almost the same range of cut-away types. Where they differed, it was usually by virtue of single examples of the rarer cut-away types, *e.g.* A8, of which there were only seven examples from the site.

Comparison of the tegula flange types from Great Holts and Bulls Lodge

The *tegula* flange types from the nearby site at Bulls Lodge, Boreham, were catalogued using the same type series as Great Holts. Comparison of the two assemblages is of some interest, since the sites are close to each other, approximately a kilometre apart. The date of deposition of the tile is somewhat later at Great Holts than Bulls Lodge, but since the material can be assumed to be (in the main) original to the buildings, their date of initial use can be taken as being quite close, a matter of a few decades.

The number of flanges was much smaller at Bulls Lodge than at Great Holts, a total of 482, and the range of *tegula* flange types present was also smaller, seven as opposed to thirteen. Fabric was not taken into account in this study.

It can been seen from Table 44 that the distribution of flange types is quite different at Great Holts and Bulls Lodge, with over half of the flanges from the latter site being of type 3, and nearly 30% of type 4. While type 3 is quite common at Great Holts, type 1 is the most common flange type there. If we then look at the proportions of squared versus rounded flanges (using the criteria noted above) at the two sites, the difference becomes even more apparent. Table 45 shows that there is a far higher proportion of squared flanges at Bulls Lodge than at Great Holts, where (disregarding the different fabrics) the tile is fairly evenly divided between the two basic shapes.

There does seem to be a genuine difference in the distribution of flange types between the two sites, but what does it mean? There are various factors which could be assumed to influence the distribution.

1. Temporal factors: production of different flange types at different periods.
2. Provenance: different tileries may consistently produce different flange shapes.
3. Re-use: re-use of earlier material, perhaps from a number of different sources, *may* produce a more varied range of flange type. This could be particularly relevant to Great Holts, where there is good evidence of the re-use of other types of tile in the fabric of the bath-house, though not necessarily re-use of *tegulae*.

	Flange type													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	***Total***
Gt. Holts	764	45	545	300	12	61	67	1	129	2	8	3	1	**1938**
Bulls Lodge	62	4	251	144	2	10	0	0	10	0	0	0	0	**482**

Table 43 Gross numbers of flange types from Great Holts and Bulls Lodge

	Flange type													
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	***Total***
Gt. Holts	39.4	2.3	28.1	15.5	0.6	3.1	3.5	0.1	6.7	0.1	0.4	0.2	0.1	**1938**
Bulls Lodge	12.8	0.8	52.0	29.8	0.4	2.1	0	0	2.1	0	0	0	0	**482**

Table 44 Percentage of flange types from Great Holts and Bulls Lodge

4. Personal preference of an individual tiler.

It is very difficult to suggest which of these factors is relevant here, and more than one factor may be involved. The extensive re-use of tile at Great Holts makes it difficult to test any hypotheses involving temporal elements. Excavation of a tile kiln in this area of the county would be of great interest in examining this aspect of the *tegulae*, but none have been located to date.

	% *Squared*	*Rounded*
Gt. Holts	53.4	46.6
Bulls Lodge	86.1	13.9

Table 45 Relative proportions of squared and rounded flanges

Cut-aways

The cut-away types were catalogued for all contexts, the lower end cut-aways being designated A and the upper end B. All the classifiable cut-aways except one were from late 3rd-century or later contexts, and, while they could be residual, are likely to have derived from the buildings on the site. The exception, from the surface of ditch 383, was cut-away type A7.

Five lower end cut-away types were present (Fig. 103.A1–8). 248 examples were noted, of which forty-four were too incomplete to assign to a specific type. The distribution of the rest by fabric is shown in Table 46.

Type A1 is the most common cut-away in all fabrics except D (of which the sample is too small to be significant). Brodribb (1987, 17) cites his type 1, equivalent to A2 here, as the most common cut-away type country-wide, occurring on some 75% of all *tegulae*. Even including type A3 as a variation of type A2, the type forms only 5.4% of the cut-aways at this site. Type A1 is also the most common cut-away at some other sites in the area excavated by Essex County Council, namely Chelmsford Bath-house (site CF20, 60% type A1; Major in prep.) and Bulls Lodge (89%; Major 1993). However, the cut-away here designated A8 is by far the most common at Chelmsford sites S and AR (Wickenden and Drury 1988, 80), which suggests the possibility of a different source for the tile from these two sites, as compared to the bath-house at Chelmsford.

At the upper end of the tile, five different cut-away types were noted (Fig. 103.B1–7; B2 occurs at Bulls Lodge but not Great Holts). One hundred and twenty-seven upper cut-aways were present, of which thirty-four were too incomplete to be assigned to a type. The distribution of the remainder is shown in Table 47.

	Cut-away type					
Fabric	*A1*	*A2*	*A3*	*A7*	*A8*	***Total***
A	14	–	–	3	–	**17**
B	86	5	3	54	7	**155**
C	28	2	1	–	–	**31**
D	–	–	–	1	–	**1**
Total	**128**	**7**	**4**	**58**	**7**	**204**
%	62.7	3.4	2.0	28.4	3.4	

Table 46 *Tegula* lower end cut-away types; gross numbers

	Cut-away type					
Fabric	*B1*	*B4*	*B5*	*B6*	*B7*	***Total***
A					4	**4**
B	23	1	1	1	46	**72**
C	3	1			13	**17**
Total	**26**	**2**	**1**	**1**	**63**	**93**
%	28.0	2.2	1.1	1.1	67.7	

Table 47 *Tegula* upper cut-away types; gross numbers by fabric

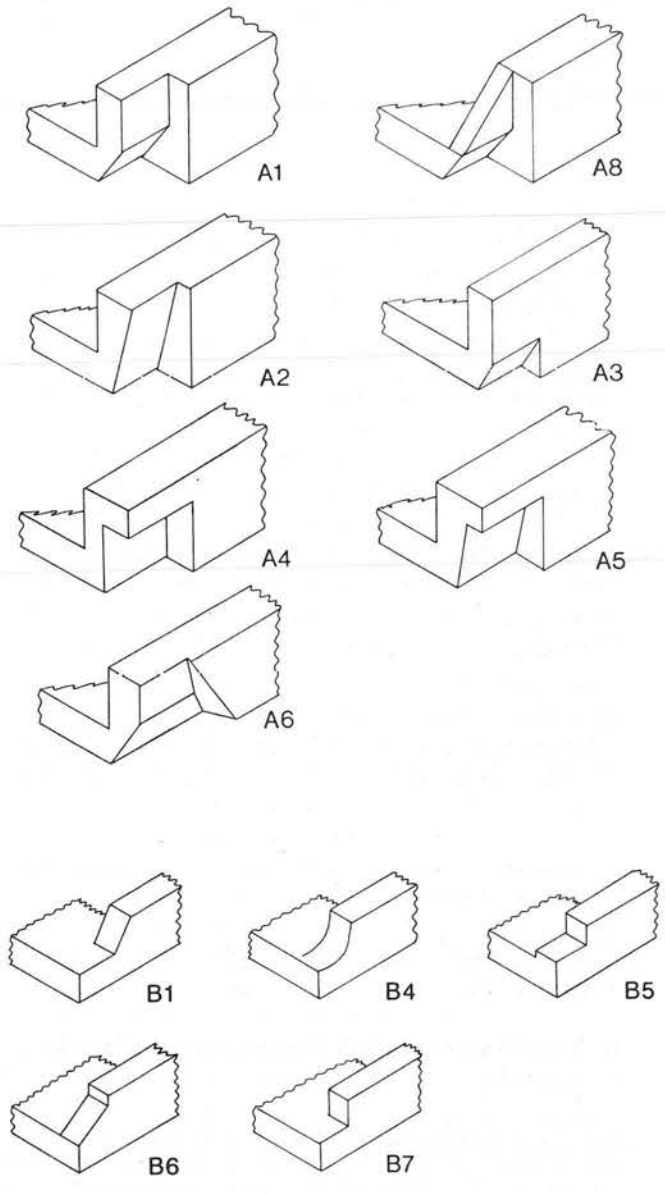


Figure 103 Roman brick and tile: cut-aways

Combination	A1/B1	A1/B4	A1/B7	A7/B1	A8/B7
No. of examples	2	1	7	6	2

Table 48 Combinations of cut-aways on tiles with both ends present

	A1	*A2*	*A3*	*A7*	*A8*	***Total no.***
Gt. Holts	63	3	2	28	3	**204**
Bulls Lodge	89	4	2	5	0	**120**

Table 49 Lower cut-aways; % within each cut-away type for Great Holts and Bulls Lodge

	B1	*B2*	*B4*	*B5*	*B6*	*B7*	***Total no.***
Gt. Holts	28	0	2	1	1	68	**93**
Bulls Lodge	13	2	0	0	0	85	**112**

Table 50 Upper cut-aways; % within each cut-away type for Great Holts and Bulls Lodge

The upper end cut-aways are simpler to make than the lower end, normally involving only two knife cuts, and it is possible that most of the different types could merely be misshapen examples of B1. The exception is B4, with its single, curving cut, of which there are two examples from Great Holts.

Eighteen tiles had both ends present, in a variety of combinations (Table 48). All except two were in fabric B, both exceptions being examples of A1/B7 in fabric C. The largest group of complete *tegulae* came from drain 93, and comprised six examples, of which five were A1/B7 and the sixth A7/B1. Apart from one example from well 567, the remainder were from bath-house contexts, some from the fabric of the walls and furnace.

Comparison of the percentages of each cut-away type (Tables 49 and 50) from Great Holts and Bulls Lodge suggests that, as with the *tegula* flanges, there is less variation of cut-away shape at Bulls Lodge, and the assemblage is more homogeneous.

Nail holes and other features

Fifty-one fragments of *tegulae* were pierced by nail holes, which appear to have been made by pushing an implement through the soft clay of the tile before firing. 0.65% of the *tegula* fragments from the site have holes, which may be compared with only 0.1% of the *tegulae* from Chelmsford bath-house (Major in prep. b). Brodribb's survey of complete tiles (Brodribb 1987, 11) suggested that around 20% of *tegulae* had nail holes, and at Great Holts three out of the sixteen complete *tegulae* had nail holes, that is, 19%.

Where sufficient of the tile survived, the hole was positioned between 24mm and 40mm from the edge, and roughly equidistant between the flanges. One tile however, had a hole through the inner base of the flange, angled down slightly. It is unusual to find such a hole and its purpose remains obscure. In all but three examples, which were slightly irregular, the instrument used seems to have been circular in section. The average diameter of the holes is 8.5mm, slightly larger than the 7mm average diameter that Brodribb gives (Brodribb 1987, 10). One piece of *tegula* from a post-extraction pit in building 294 had a nail still in place in the hole; the nail appeared to have been bent by force, presumably during the deliberate removal of the tile from the roof.

A *tegula* from context 6271 had had a knife stuck vertically into the flat of the tile, completely perforating it, with the impression of the triangular section of the knife clearly visible.

Signature type	*No.*	*%*
'Q'	28	7.9
Single arc	85	24.0
Double arc	153	43.2
Triple arc	42	11.9
Small pointed double arc	14	4.0
Small single arcs crossed through	11	3.1
Double arc crossed through by two lines	14	4.0
Various fragmentary and irregular arcs	6	1.7
Parallel lines off centre	1	0.3
Total	**354**	

Table 51 Signatures on *tegulae*: gross numbers by signature type

Signatures

Three hundred and fifty-four pieces of *tegula* had signatures, 5% of the total. The good state of preservation of the tile from this site has resulted in the identification of at least eight types of signatures on the *tegulae*, summarised in Table 51. The marks described as arcs are drawn centrally, against the lower edge of the tile unless otherwise stated. They are usually assumed to have been drawn by the fingers of the tiler (Brodribb 1987, 99). All the complete *tegulae* from the site had signatures. This appears to be unusual; Brodribb (1987, 101) notes that his survey of complete tiles in Britain gave an overall figure of 60%, although some sites had higher proportions. Thirty-nine of the forty-one complete *tegulae* from Beauport Park, for example, had signatures.

Brodribb (1987, 99) notes that 65% of signatures take the form of semi-circles, but the proportion is somewhat higher here, with 79% of the signatures being single, double or triple arcs (although the true percentage may be lower, as the total includes incomplete arcs, some of which could, for example, be 'Q's). As well as the ubiquitous arcs, there are several signatures found at Great Holts which are less common, in particular the 'Q' signature, drawn away from the edge of the tile, distinctive small pointed double arcs and single or double arcs crossed through with one or more straight lines.

'Q' (Fig.104.1–3)

This mark is a distinctive signature resembling the letter 'Q'. It consists of two concentric circles, drawn right to left, the lines of which overlap at the completion of the circle. They are close to, but not against, the edge of the tile, and equidistant from the flanges. It is clear that both circles were drawn together as they overlap together. Physical experiments show that it is possible, but difficult to draw the circles in a single sweep without leaving marks as the fingers turn. The signature is more easily made with the tile held at an angle, rather than horizontal, so it may have been made after the tile had been removed from the mould. The uniformity of the 'Q' signature suggests that it is the work of a single individual. These signatures are all on fabric B *tegulae*, eleven of which are discoloured or distorted by overfiring. The flange profiles are somewhat irregularly made but are roughly similar, being variations on forms 1 or 3. Most of the *tegulae* with this signature came from contexts

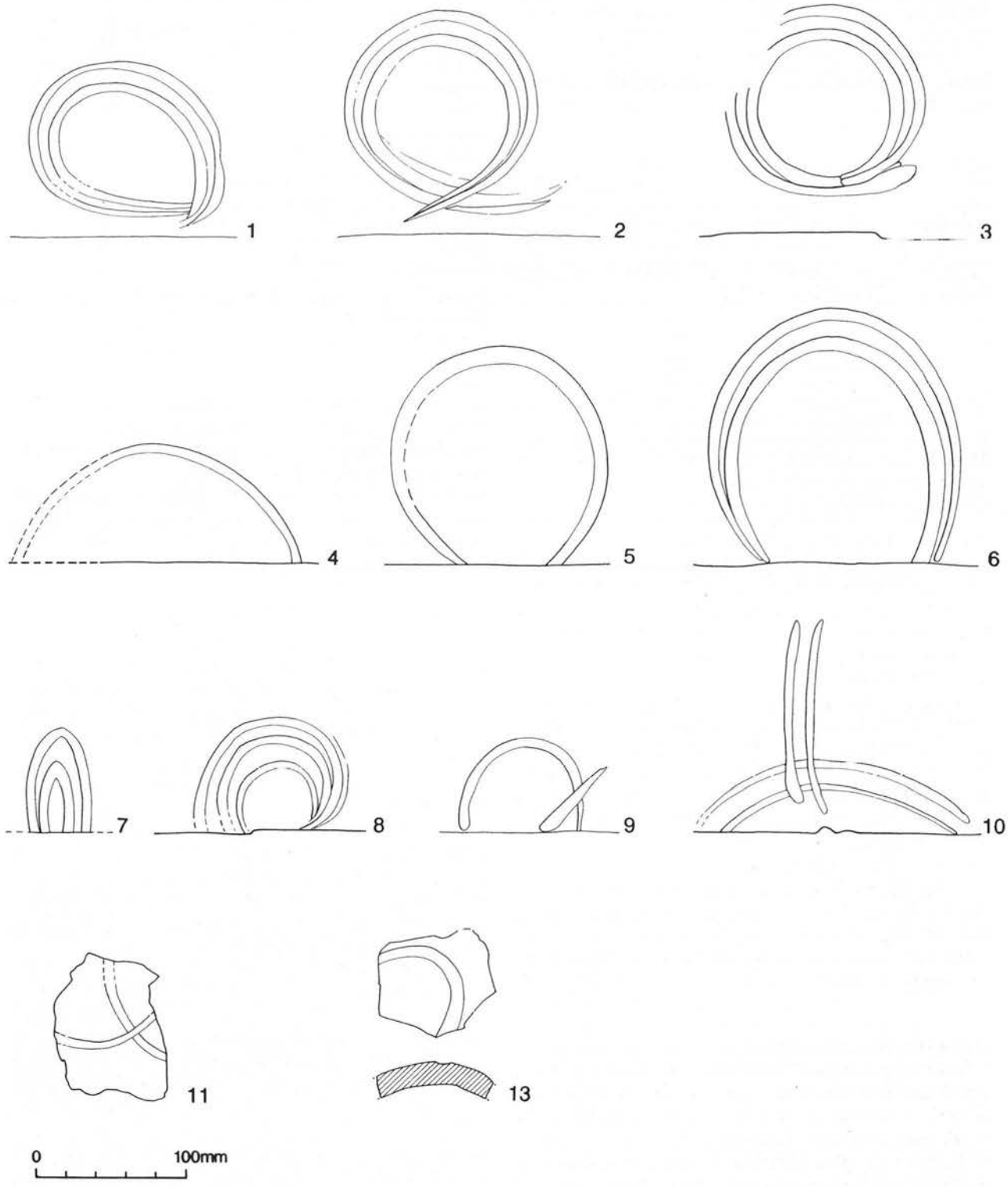


Figure 104 Roman brick and tile: signatures

associated with the baths, some at least having been used in the fabric of the walls rather than being from the roof.

A good parallel for the 'Q' signature comes from Ivy Chimneys, Witham (Turner 1999, signature type B), where there was a single example of a *tegula* with the 'Q' drawn right to left, as with the Great Holts ones.

Single arcs (Fig. 104.4–5)
Eighty-five fragments of tile had single arc signatures, some of which may be damaged double or triple arcs. Few of the fragments were complete enough to provide measurements, but those that could be measured ranged from 80mm high and 210mm wide to 150mm high and 150mm wide. There were at least two different styles of single arc present.

Double arcs (Fig. 104.6)
One hundred and fifty-three fragments of tile had double arc signatures, some possibly incomplete triple arcs, coming principally from the baths and associated features. They were found only on *tegulae* in fabrics B and C. There is little variation in style and size, which ranges from 110×190mm to 170×175mm.

Small pointed double arc (Fig. 104.7)
Fourteen fragments of tile had small pointed double arc signatures, occuring only on *tegulae* in fabric B. These signatures vary little in style and size, and are possibly the work of one tiler. This signature is particularly associated with the granary, which yielded ten fragments, although there were also three from the baths, and one from ditch 303.

Triple arcs (Fig. 104.8)
Forty two fragments of tile had triple arc signatures. There is no evidence for quadruple arcs at Great Holts, and while some of these could be incomplete quadruples, it is unlikely. These marks were used on *tegulae* of fabrics A, B and C, and vary in style and size from 95mm high × 75mm wide to 200mm high × 105mm wide. Twelve of the twenty contexts with triple arcs are from the baths.

Small single arcs crossed through once (Fig. 104.9)
Eleven fragments of *tegula* had small single arcs, cut diagonally by a short line. The average size of the arcs was 60x90mm, with a line 65mm long. All the examples were from the bath suite.

Single arcs crossed through with a line appear to be fairly common; there are examples from a number of sites, including Beauport Park (Brodribb 1979, fig.5.13), Southwark (Cowan 1995, fig. 47.19) and Castleford (Betts 1998, fig. 99.1). Double arcs crossed through twice are rarer; *cf.* an example from Southwark (Cowan 1995, fig. 47.20).

Double arcs crossed through twice (Fig. 104.10)
Fourteen fragments of *tegula* had two flattish arcs, cut vertically by two short lines. The average size of the arcs was 50×195mm, with lines 130mm long. Seven of the fourteen fragments of tiles with this signature were from barn 294, two from ditch 365, close to 294, and the rest from the baths.

Other signatures (Fig. 104.11)
There are six tiles with curvilinear signatures, which do not belong to the above categories, but are too incomplete to be sure of the layout of the signature; one is illustrated. In addition, there is a fragmentary *tegula* with parallel lines just off the centre of the tile, probably diagonal.

Imbrices
The *imbrices* from the site were, as is normally the case, unremarkable, with few notable features. Most were very fragmentary, although there were two almost complete *imbrices* measuring 360×160mm and 370×143mm. Both tiles taper by 20mm down their length, to allow them to fit over one another on the roof. Only one piece of *imbrex* appeared to have been deliberately marked, with a small, deeply impressed, incomplete single arc (Fig. 104.12).

Box flue and voussoir tile

Distribution (Table 52)
There were 751 pieces of box flue tile and voussoir from the site, of which 88.6% came from contexts associated with the bath-house. Within the bath complex, the largest amount of tile came from the bath robbing backfill (798), over half of the total from the site. The other two largest contexts were cistern 415 and drain 93. The *praefurnium* and flue contained relatively minor amounts of box flue; in the case of the flue in particular, this is probably not significant, as the flue represents a much smaller volume of deposit than the main part of the baths. Only six fragments came from the sample taken from the actual structure of the bath-house (mortar and *opus signinum*), and box flue tile seems to have formed only a minor component of the rubble used in its construction. The majority of the box flue may be assumed to have derived from the jacketing of the walls, none of which survived *in situ*.

Of the rest, virtually all came from late Roman, or possibly late Roman contexts.

The largest group came from ditches, with very small amounts coming from the other Roman buildings on the site. Given the evidently sparse amount of earlier box flue found on the site, it is likely that the majority of this material derives either from the building phase or the demolition phase of the bath-house.

Type of context	*No. of pieces*	*%*
Bath robbing	438	58.2
Cistern 415	112	14.9
Drain 93	79	10.5
U/S	27	3.6
Ditches, LR	24	3.2
Praefurnium	12	1.6
Flue backfill	10	1.3
Drain 100	9	1.2
Bath-house structure	6	0.8
Well 567	5	0.7
Misc L C4	4	0.5
Ditches, R	4	0.5
Building 416	4	0.5
Annexe 786	4	0.5
Pond 421	3	0.4
Depression 318	2	0.3
Depression 350	2	0.3
Building 368	2	0.3
Ditch, C2–3	1	0.1
Depression 158	1	0.1
Building 294	1	0.1
Building 417	1	0.1
Post-hole, not dated	1	0.1
Total	**752**	

Table 52 Gross numbers of box flue fragments

Box flue was present in fabrics A, B, C, F and G only, with 96% in fabrics B and C. The proportions in each fabric are shown in Table 37.

Dimensions
Despite the large number of box flue and voussoir tile fragments, there were few measurable dimensions. There were no complete tiles, but in two cases (contexts 5575 and 5400) the size of the combed face could be recorded as 235mm high × 200mm wide, and 270mm high × 220mm wide. There were four other complete widths of 135mm, 144mm, 145mm and 152mm, and a complete depth of 140–145mm from a probable voussoir tile (see below). Two almost identical fragments from the furnace wall had complete heights; both were in fabric G (Eccles tile), and were 300mm high. If symmetrical, the original width would have been *c.* 340mm; these two pieces are likely to be voussoir tiles, although very large for such tiles. The only other complete height was a tile only 162mm tall, from context 6344. This is short for a box flue tile (Brodribb (1987, 74) gives a range of 155–470mm), and this fragment may be a voussoir tile. In addition to the complete measurements taken directly from the tile, some dimensions could be estimated by assuming symmetry of pattern, or a symmetrically placed cut-out, in particular two estimated depths of 180mm and 190mm, and an estimated depth of *c.* 120mm on a tile in fabric G.

Leaving aside the tiles in fabric G, which were not part of the *hypocaust* itself, there appear to be at least three different sizes of flue tile used, all of unknown depth. The first has a width of 135–150mm, and a height over 200mm. The second is represented by the complete faces from 5400 and 5575, with a height of 235–270mm and a width of 200–220mm., and the third is the single example 162mm high. The two latter types may be voussoir tiles. The majority of the tile appears to belong to the first two

sizes, although it is difficult to be certain given the small size of many of the fragments.

Voussoirs

There were a number of probable hollow voussoir (arching tile) fragments present. Most were from the bath-house, although the most definite one was found with 4th-century pottery in the top fill of ditch 365, near the granary (294). This is some distance from the bath-house, and may not have derived from there. In addition, the two half-faces in Eccles fabric used in the furnace wall (6100 and 6418) were probably from voussoirs. This type of tile often has combing on all sides, or combing on the face with the cut-out. A fragment from 6346 (pit 728, within the bath-house) has combing on adjacent sides, and two tiles, from 6227 (bath-house robber cut) and 5104 (surface cleaning near building 416), have cut-outs on the combed side. However, the position of the hole on the latter example suggest an original depth of *c.* 180mm, and a height of perhaps 340mm, and it seems more likely that this is a box flue tile. As noted above, the shorter tiles may be voussoirs, and an example from 6344 (bath-house robber cut) is a strong candidate. The combing on it is a saltire cross or variant; insufficient of the tile survives to see whether there was a cut-out on this face.

The evidence for the use of voussoirs in the bath-house is slight and inconclusive. There are a few possible sherds, but some at least were being re-used as building rubble, and the best candidate is not from the vicinity of the bath-house.

Cut-outs

There were no tiles with complete cut-outs, and few pieces of box flue or voussoir had even incomplete cut-outs, a grand total of only seventy-nine. Except for the voussoir from 5575, which had a rather irregular sub-rectangular cut-out, the cut-outs could only be classified as having a curved edge or a straight edge. Cut-outs with curved edges were far more common than those with straight edges, and comprised 86% of the total.

Surface treatment

Two types of surface treatment were present; combed patterns and knife-cut cross-hatching.

Combing patterns were recorded in detail, using a coded scheme to catalogue individual elements. As the majority of the sherds were small, with few pieces large enough to be certain of the complete combing pattern, this approach was of considerable use in determining which overall patterns *might* be present, even though there were few large fragments, and enabled the smaller fragments of box flue tile to be related to the more complete patterns. The writer has found that at other sites in Essex (*e.g.* Bulls Lodge), classification of only the more complete combing patterns can give an erroneous impression of how common a pattern type is, and use of this method of assessing the commonness of a pattern is particularly useful for a relatively large assemblage such as this one. However, even on a site with few fragments of box flue, this approach can give some idea of the range of pattern types originally present.

Some pattern elements can occur in more than one overall pattern, so while in general, the more possible components present, the more common the pattern type, some figures for possible components may be misleadingly high, and certain common pattern elements (*e.g.* single straight combed lines) were ignored for purposes of analysis. The number of teeth in the combs used was not recorded, and the comments below include the fragments of possible voussoir. The complete list of combing pattern elements present is in the site archive.

Combed tile

Patterns present

Twenty combing patterns were identified as being definitely or probably present in the assemblage; in addition a number of fragments were assigned to the general group of 'squiggle' patterns, which technically belong with one of the other groups, but were characterised by their sharply angled waves, here termed 'squiggles' (pattern 22). The patterns present can be loosely grouped into four categories; patterns with saltire crosses with or without frames; patterns of oblique lines; combinations of lines and waves; and a crossing wave pattern ('caduceus'). The numbers present in each combing pattern are given in Table 53. Identifiable overall patterns were only present in fabrics B, C and G; there were four incomplete pattern elements in fabric A, and one in fabric F.

Breakdowns of the pattern elements present in fabrics B and C can be found in the archive. Only the combing on fabric G (Eccles tile), and the 'squiggle' patterns will be considered here. Twelve fragments of box flue tile in fabric G were combed, 57% of the total of twenty-one pieces. This includes the two half widths of possible voussoir tile from the furnace wall (6100 and 6418), which were neatly broken down the centre, and are possibly the opposite sides of the same tile. Both have a saltire cross, made with the same five-toothed comb, and a roughly circular mark in the centre of the cross where the combing has been squashed immediately after combing (Fig. 105). The other pieces comprised seven which could also be from saltire crosses, two with lines down the edge, and one with two lines at an acute angle, all of which could be from saltire crosses or saltire cross variants.

		Fabric		
	Combing pattern	*B*	*C*	*G*
1	Plain saltire	1	3	2
2	Saltire with side lines	x	3	
3	Double height saltire with side lines and horizontal divider		x	
4	Saltire with top (and bottom?) line	1	x	
5	Saltire with full frame		x	
6	Saltire with central vertical line?	2	6	
7	Saltire with central vertical line (double height)	1	x	
8	'Union Jack'?	x	2	
9	Full frame with oblique lines between?	x	x	
10	Side lines with oblique lines between	1		
11	Oblique lines, no frame?	x		
12	Multiple opposed waves in frame	1		
13	Vertical wave/line/wave		1	
14	Vertical wave/line/wave with frame		1	
15	Vertical wave/line/wave with frame and divider		1	
16	Vertical line/wave/line	1	3	
17	Multiple vertical waves	2	1	
18	Vertical line, arcs either side	x		
19	Vertical line, arcs either side, small arcs in centre		1	
20	'Caduceus', no central line		1	
21	'Caduceus' with central line and side frame		1	
22	'Squiggle' patterns	11	6	

An 'x' indicates that the pattern is possibly present.
Selected patterns are illustrated in Figures 105.1–19 and 106.20–22C

Table 53 Definite or probable combing patterns, by fabric; number of occurrences by fabric

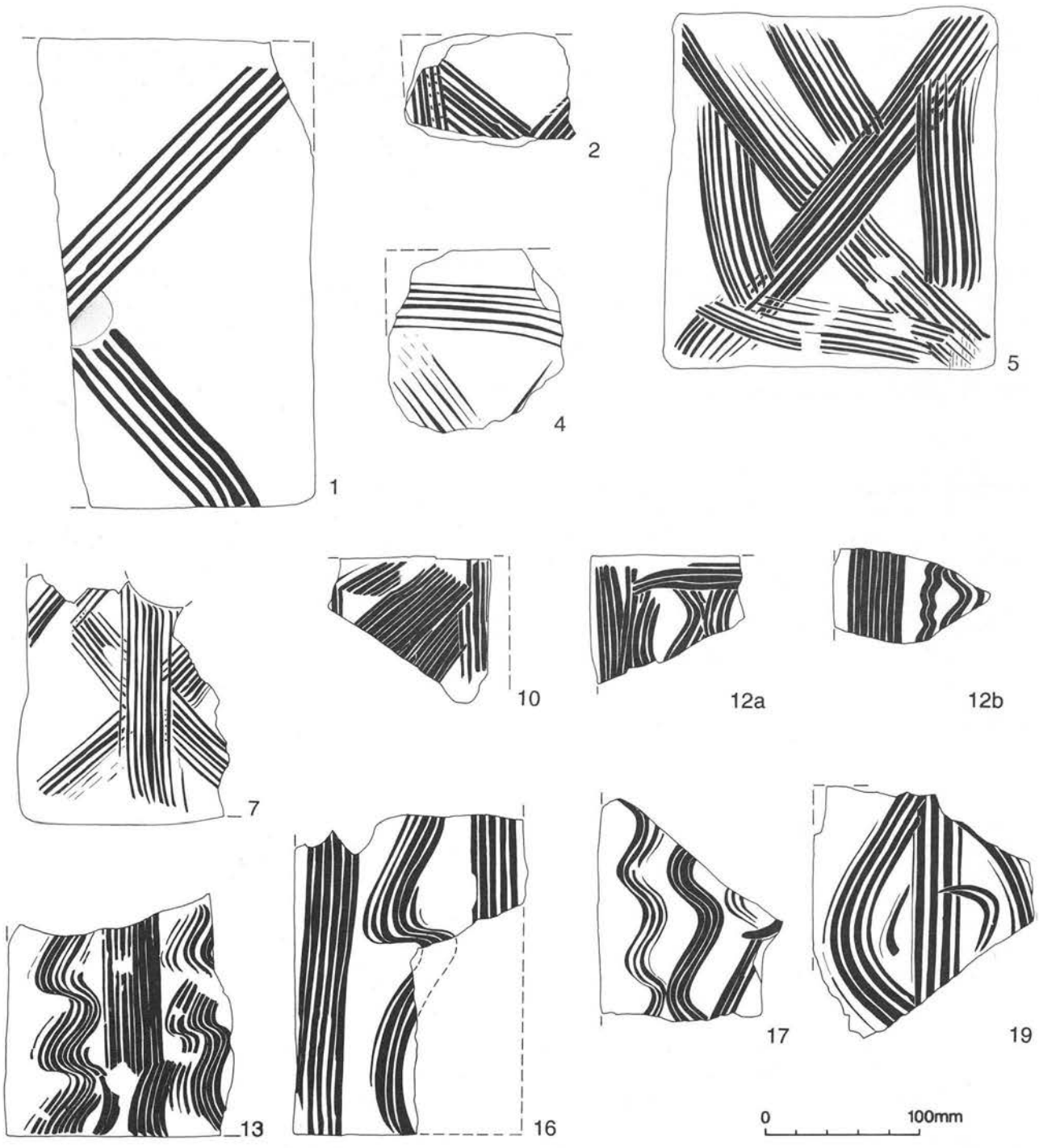


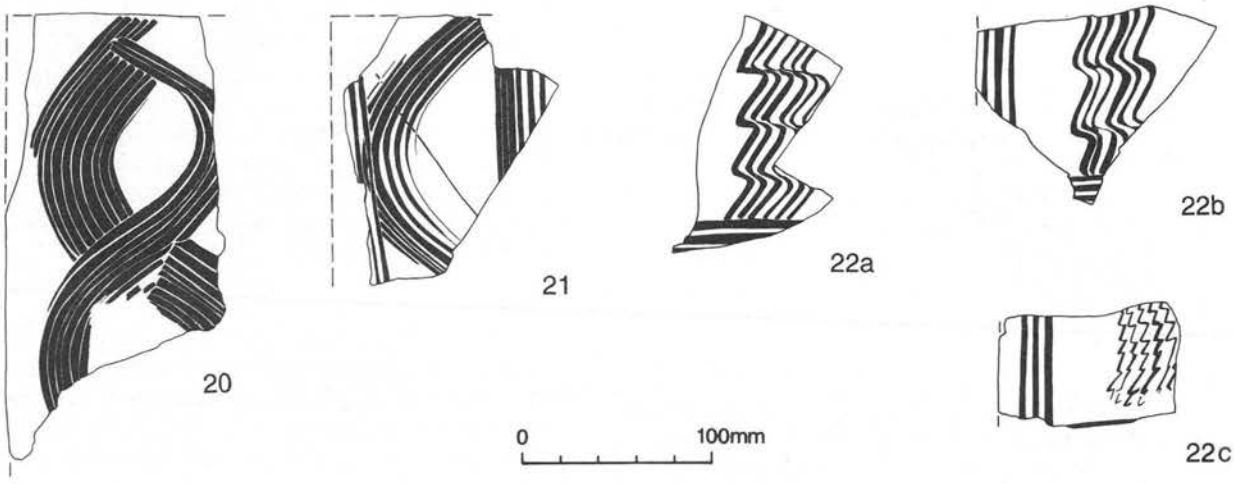
Figure 105 Combed tile

Eight contexts produced fragments in Eccles fabric, which had been combed with the same comb, recognisable from a distinctive pattern of ridges ('comb X'). The comb impression was 38mm wide, and had eight teeth, two of which were set very close together. The depth of the impression varied, and on two fragments the end tooth had not impressed at all, producing the illusion of a seven-toothed comb. There was a total of nine sherds definitely combed with 'comb X', and one possibly using the same comb; the impressions on most of the other pieces were too incomplete to be certain. Neither of the two half-faces from the furnace wall were combed with 'comb X', both having been decorated by a different, five-toothed, comb. Seven of the 'comb X' pieces were from contexts associated with the bath-house, with a possible piece from depression 318, a piece from ditch 312, and a fragment from 6459, the sixth fill of well 567. The presence of the latter sherd suggests that the well was infilled at the time of the construction of the bath-house. The use of the same comb on many of the pieces of box flue tile in this fabric supports the hypothesis that the tile came from a single batch originally used in another building in the area, and subsequently re-used at Great Holts. The possibility exists that in the future this building might be identified through the presence of the same distinctive comb impressions.

'Squiggle' combing

A few tiles in both fabrics B and C exhibited tight waves termed 'squiggles' by the authors, quite distinct from the normal loosely drawn wave motifs. Within this group, four sub-groups could be distinguished. No joins could be found between contexts, but some pieces could have come from the same tiles. Unfortunately, there were no large sherds, and overall patterns could not be determined, and, unlike the flue tile in fabric G, the comb(s) used had no distinctive features.

1. At least four tiles, probably combed by the same person, and all probably the same pattern, consisting of side lines and vertical



Cross hatched tile

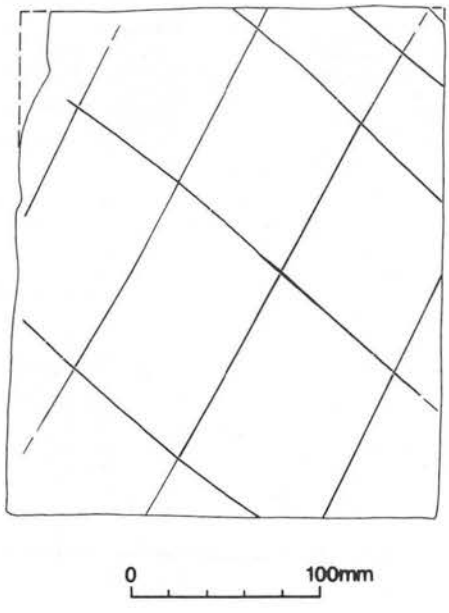


Figure 106 Combed and cross-hatched tile

squiggles against a horizontal line (Fig. 106.22a, 22b). On one piece this is the top frame, but it is uncertain whether this represents a top/bottom frame, or a horizontal divider on the other pieces. The number of vertical squiggles across the tile is unknown. One piece had definitely been used in the fabric of the bath-house, and other fragments came from drain 93, cistern 415, and cut 809, which is within the bath-house. The piece from cistern 415 is almost certainly from the same tile as one of the pieces from drain 93, and another piece from the drain was almost certainly combed by the same person, although in a slightly different fabric. A further fragment from the cistern was also probably combed by the same person, using a very compressed squiggle with a look of some impatience about it (Fig 106.22c).

2. (Not illustrated) Two tiles, one from post-hole 792 in building 416, and one from cistern 415 in slightly different fabrics, with a tight squiggle down the edge, probably combed by the same person. Another fragment, from the backfill of the baths, was possibly combed by the same person.
3. (Not illustrated) Two fragments with a squiggle down the edge, done with a narrower comb, and probably by the same person, from the mortar in wall of the bath and the backfill of the bath.
4. (Not illustrated) Two sherds with possible squiggles, but with the surface flattened subsequent to combing. Both are from the backfill of the baths. One is unusually thick for a box flue tile from this site, and has a small surviving area of combing on the adjacent side, also flattened, apparently an ordinary wave down the edge.

Cross-hatched tile

Twenty-four fragments of flue tile had knife-cut cross-hatching (lattice decoration). The most complete example is illustrated (Fig. 106). All were in fabrics B and C, and all except one came from contexts associated with the bath-house, the exception being a fragment from post-hole 211, which is in the south-west of the site, and just over 200m from the bath-house. Post-hole 211 itself was undated, but was adjacent to a cluster of small pits and post-holes thought to be contemporary with the buildings, and may be similar in date.

One sherd had both knife-cut cross-hatching and combing, with a single combed line at right angles to the top of the tile.

Cut lattices are particularly common on early Roman tile; at the Marlowe Car Park site in Canterbury, for example, all the box flue tile definitely from Period 2 (*c.* AD 70/8–100/110) had cut lattice keying (Black 1995, 1268–9). It is likely that the pieces from Great Holts have been re-used.

Structural brick and floor tiles

Bessales
The assemblage includes two complete *bessales* from the top fill of the *praefurnium*, context 6082. One measures 200×220×35mm, the other 195×185×37mm. There was also a half fragment 210mm across from 6270, the *opus signinum* on the side of the flue. The principal use of *bessales* was usually to form the *pilae* of the *hypocaust*, but here they were being used in the fabric of the building as well.

Pedales
There were no definite fragments of *pedales* found during the excavation, but we have indirect evidence for their presence and dimensions. A small irregular area of the *opus signinum* base of the *hypocaust* of the baths (414) was preserved in the lower levels of the robbing. The impressions left by the presence of fifteen *pila* bases in two sizes were recorded. They measured 240mm square and 340mm square and were laid in a pattern, which has been obscured by damage caused by the robber pits. The bases of pilae were usually formed by *pedales*, and certainly the larger impression must be a *pedalis*, rather larger than the average size of 281mm square (Brodribb 1987, 36). The smaller impression may be a *pedalis*, but could be a large *bessalis*.

Bipedales
There were no definite examples of this type of tile, but twenty-three fragments with thicknesses of between 50mm and 60mm may have come from *bipedales*. It should be noted, however, that *pedales* can be up to 60mm thick (Brodribb 1987, 36). The fragments are in a range of fabrics, most commonly fabrics C (nine pieces) and B (six pieces), with four pieces in fabric E and one each in fabrics A, D, G and H. As noted above, it is unlikely that fabric G was used in the structure other than as building rubble, and the very small amount of fabric H is probably residual, and does not occur in the vicinity of the baths. All but three of the thirteen contexts containing possible *bipedales* fragments were associated with the bath suite. This small number of fragments may, then, represent the remains of the floor; if each different fabric represents a minimum of one tile, and fabrics G and H are discounted, we have a minimum of five tiles.

The possible fragments of *bipedalis* from contexts other than the bath-house came from building 294 (post-extraction pit 828), the top fill of ditch 365, which is to the south-east of the farmhouse, and 5853, surface clearance.

Lydion
The nineteen whole tiles came from three structural contexts; seven came from drain 93, six from the base of the flue, and six from the top of the flue. All are in fabric B, and they range in size from 410×290mm to 375×265mm, and in thickness from 27mm to 37mm. In addition, forty-three halves were broken in such a way that their proportions suggested that they belonged to this category, although in only one of these tiles was there a measurable length, 390mm. The remainder were broken across the width of the tile, the widths being 258–300mm.

Fifteen of the *lydion* broken across the width were from drain 93, where they were used to form the tile lining, with complete *lydion* forming the base, and the remainder were from the structure of the flue and furnace wall. The use of regularly broken bricks as a facing for a structure was common. Often the bricks used would be broken diagonally, as at Chelmsford bath-house (Major in prep.) or as visible in a wall in Ostia (Adam 1984, 160). The *lydion* broken lengthwise was from the backfill of the flue, and the presence of mortar shows that it had also been used in the fabric of the building.

Tessera
The above heading is deliberately in the singular, as there was only a single *tessera* from the site, found during surface cleaning directly above building 416. The *tessera* is made from an orange *tegula*, and is a fairly neat cube, 24×24×23mm. The top surface is not definitely worn, but there are traces of a sandy mortar with crushed tile on the bottom, implying use in a floor. This sole *tessera* cannot be taken as good evidence for a tessellated floor on the site; we know that tile from another building was incorporated in the fabric of the bath-house, and it is possible that the *tessera* came from the same source.

Signatures and graffiti on bricks
Sixty-six brick fragments had signatures on them, 2.3% of the total number of pieces. In most cases, no attempt was made to distinguish the type of brick bearing the signature, as this is generally difficult to do with small fragments. However, it is likely that most of the signatures were on *lydion*. Three of the nineteen complete *lydion* (15.8%) had signatures, all from drain 93. 27% of the *lydion* in Brodribb's survey of complete tile (1987, 102) had signatures, so the proportion represented here is somewhat less than average.

A summary of the signature types present is given in Table 54. As with the *tegulae*, simple arcs are most common, comprising 64% of the total, mostly one or two arcs, with three arcs being rarer. Straight line signatures in various combinations are more common on brick than *tegula*, making up 17% of the total. There is also a significant amount of brick with parallel wavy lines down the centre of the brick.

Signature type	*No.*	*%*
Single arc	26	32.1
Double arcs	22	27.2
Triple arcs	9	11.1
Two parallel lines	4	4.9
Crossed parallel lines	3	3.7
Parallel wavy lines	7	8.6
Single lines diagonally from the corner	3	3.7
Single line across the corner	1	1.2
Multiple circles and lines	3	3.7
Box flue type combing?	3	3.7
Total	**81**	

Table 54 Signatures on bricks: gross numbers by signature type

Single arcs
There were at least two different styles of single arc present. Ten fragments have unusually deeply impressed arcs.

Double arcs (Fig.107.1)
Twenty-two fragments of brick, mostly from the baths, had double arc signatures, varying in size from 55×150mm to 100×190mm.

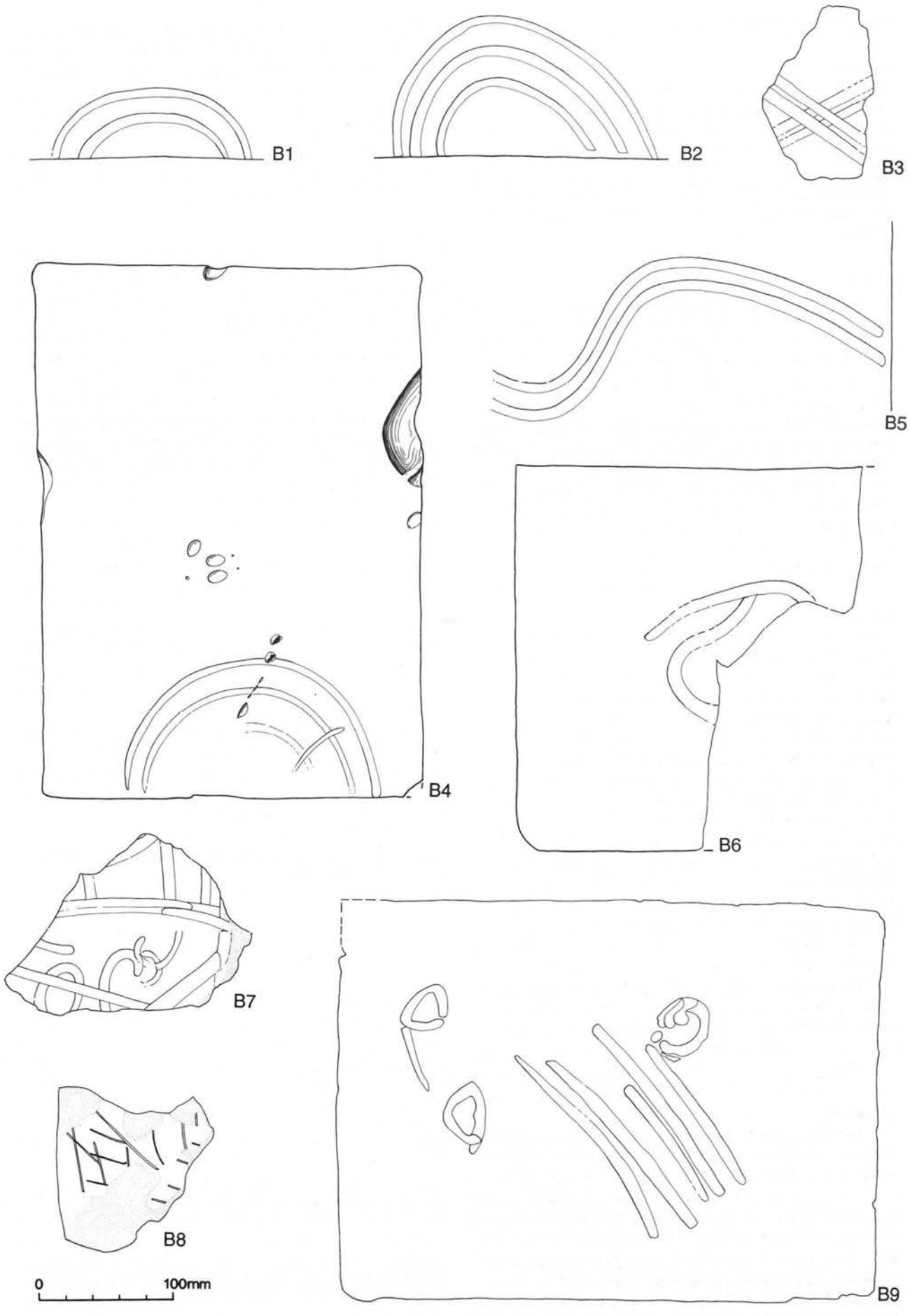


Figure 107 Structural brick and floor tile

Triple arcs (Fig.107.2 and 4)
Nine fragments of tile had triple arc signatures, used equally on bricks of Fabrics A, B and C, and varying in size from 95×75mm to 200×105mm. All were from the baths.

Straight parallel lines (Fig.107.3)
Four brick fragments were signed with simple parallel lines, probably running diagonally across the tile. Three more sherds had crossed pairs of parallel lines, but it is not possible to say where these marks were positioned on the tiles. These signatures came from the baths and drain 100.

Wavy parallel lines (Fig.107.5)
Seven brick fragments had irregularly wavy lines along the long axis of the tile. Five came from the fabric of the furnace, and two from drain 93.

Multiple circles and lines (Fig.107.6–7 and 9)
Three examples were different from the other tiles in the assemblage in that the markings spread all over the surface of the *lydion* instead of being against one edge or springing from a corner. They appeared to be completely abstract combinations of lines and small circles.

Other signatures
There were three bricks with single lines springing diagonally from one corner, and one with a line across the corner. One fragment from a large brick, 50mm thick, had box flue type combing (a single straight combed line). Combed flat tile is known from elsewhere, *e.g.* from two kilns at Colchester (Hull 1963, 155, 168 and pl. XXII), where they were used to line the stoke-holes, although the Colchester tiles were much thinner, *c.* 13mm thick.

Graffiti (Fig. 107.8)
The top fill of ditch 302, south of building 294, produced a fragment of brick with probable cursive writing scratched in the wet clay of the tile. Not enough is present for the inscription to be deciphered.

Animal and human prints

Seventy-five fragments of brick and *tegulae* from the site bore human or animal prints, made as the tiles lay drying, prior to firing. Identifications of the animal prints were made using Bang (1987) and Bouchner (1982), and the results are summarised in Table 55. 48% are dog paw prints of various sizes, 12% are cats and 9% are roe deer, one of which may be a fawn; the tile with this small deer print also had a larger deer print, conceivably the mother. There are also a few more unusual prints, probably made by a badger, a mouse, a vole and two foxes. The clay must have been very soft for animals the size of voles and mice to leave marks. The human presence is represented by a bare heel print, a shoe sole print, groups of hobnails and a textile pushed into the clay by the side of a hand or foot. Unfortunately the cloth has not printed clearly enough to make identification possible. Textile impressions have occasionally been found at other sites, for example, Castleford (Cram 1998), but seem to be comparatively rare.

Apart from the dogs and cats, the other animal prints are all wild animals, suggesting that the tilery (or tileries) producing the tile was not in close proximity to a farmyard or stockyard (or was securely fenced against domestic animals), but could have been close to woodland. The range of prints present may be contrasted with those recorded on tiles from Silchester (Cram and Fulford 1979), which had no wild animal prints except birds, but numerous domestic animal prints, including horse, cattle, sheep and goat, leading to the conclusion that the source of the tile was close to a farm.

The shoe print (on joining fragments of brick from contexts 6269/6417; Fig.108) is of a pointed toe, with some lightly impressed hobnails in an apparently random pattern on the ball of the foot. The print provides us with indirect evidence for the date of manufacture of the tile, as shoes with pointed toes can be dated to around the late 2nd to early 3rd century AD (pers. comm. D.E. Friendship-Taylor). The contexts are both *opus signinum* from the flue, 6269 being the side of the flue and 6417 the top, and it can thus be said with some confidence that this was a re-used tile (unless the Romans of Boreham were wildly unfashionable). In all, 24% of the imprinted fragments bore the marks of hobnails, but none of the other pieces were large enough to identify the nailing patterns.

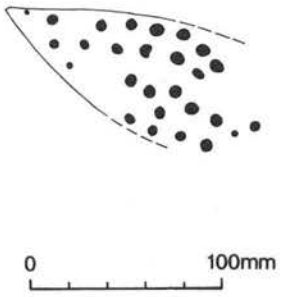


Figure 108 Shoe print

Overall, 0.2% of the tile from Great Holts had animal or boot prints, which may be compared with the site at Bulls Lodge, Boreham, just outside Chelmsford (Major 1993), where 0.4% of the tile had such markings, and Chelmsford bath-house (ECC site CF20, Major in prep. b) with 0.2%. The range of animal prints found at Bulls Lodge was similar to that found at Great Holts, with the exception of the wild animals; at both sites sheep/goat and pig were absent. Bulls Lodge had a single tile with a cattle print.

The total number of impressions is greater than the total number of fragments, as some tiles had more than one species on them. Where there was clearly more than one individual of a species on a single tile, they have been counted separately.

	Tile type		
Print type	*Tegula*	*Brick*	*Total*
Dog/probable dog	24	12	36
Deer	4	5	9
Cat/probable cat	8	2	10
Badger?	1	–	1
Fox?	2	–	2
Vole?	1	–	1
Mouse?	1	–	1
Hobnailed shoe	14	4	18
Bare human heel	1	–	1
Total	**56**	**23**	**79**

Table 55 Animal and human foot impressions on tiles

Temporal and spatial distribution of the tile

Tile was recovered from 521 contexts, with an average of eighty-three pieces per context. The breakdown by feature group is given in Table 56, which gives the percentage of each tile type from the group (it should be noted that this table was prepared before the site phasing was finalised, and the figures for earlier Roman contexts may be slightly inaccurate, but not misleadingly so). Two structures yielded large amounts of tile, namely the bath-house, with

Feature	*Imbrex*	*Tegula*	*Brick*	*Box flue*	*Spall*	*Overall*
Bath-house	23.4	30.9	57.7	61.9	28.9	31.0
Building 294	23.9	20.9	1.5	0.1	33.2	27.3
Drain 93	6.2	9.2	7.6	10.5	7.4	7.7
Later linear contexts	9.4	8.6	7.7	2.7	5.4	6.5
Cistern 415	7.1	7.0	5.8	14.9	1.2	3.4
Well 567	1.8	2.2	4.0	0.7	3.3	3.0
Building 416	3.2	1.4	0.7	0.5	3.6	2.9
Drain 100	3.3	2.3	2.7	1.2	2.6	2.6
Building 368	2.7	1.8	1.0	0.4	2.3	2.1
Earlier Roman contexts	4.9	2.7	1.0	0.7	1.7	2.2
Depression 318	2.3	1.9	2.1	0.3	1.6	1.7
Annexe 786	0.5	0.3	0.8	0.5	0.8	0.7
Pond 422	1.8	0.8	0.5	0.0	0.4	0.6
Building 417	1.1	0.6	0.5	0.0	0.4	0.5
Depression 350	0.3	0.7	0.3	0.3	0.5	0.5
Pond 421	0.7	0.7	0.8	0.4	0.2	0.4
Post-med. features	0.1	0.0	0.0	0.0	0.1	0.1
Building 440	0.0	0.0	0.0	0.0	0.0	0.002
Other contexts	7.2	8.9	5.4	5.1	8.5	8.0

Table 56 Percentages of tile types by feature group

Phase	*Imbrex*	*Tegula*	*Brick*	*Box flue*	*Spall*	*Total*	*% of total*	*No. of contexts*	*Av. no. per context*
Pre-Phase II.2	11	37	15	1	141	205	0.5	30	7
II.2	357	409	229	10	1442	2447	5.7	87	28
II.2–II.3	1658	2110	500	36	12878	17182	40.3	160	107
II.3	1933	2742	908	267	6861	12711	29.8	158	80
III.1?	864	1598	1034	401	5727	9624	22.6	14	687
Post-Roman	71	115	25	8	245	464	1.1	27	17

Table 57 Gross number of pieces of tile by phase (excluding undated contexts)

nearly a third of the total amount of tile from the site, and building 294.

Most of the material from pre-phase II.2 contexts came from earlier Roman contexts (phase II.1), but eight fragments were found in pre-Roman contexts. There were three very small fragments from each of prehistoric post-holes 482 and 139, small enough to be intrusive through the agency of root action.

The earlier Roman contexts produced only a small amount of tile, a total of 197 sherds. The material was principally from ditches, with no more than forty-one sherds from a single context, the average number of sherds being seven. There was a single box flue tile from pond 421, a context not definitely dating to this phase. The distribution was across the whole site, providing no indication of the direction of origin of the material. The amount and quality of tile present is typical of a Roman ditched landscape with no tiled buildings present.

Almost a third of the phase II.2 material came from a single feature, well 567. Another third came from ditch contexts, although not in large quantities from any one ditch (the average number of sherds per ditch was twenty-five). There was still little box flue tile entering the archaeological record, with a total of only ten pieces, forming 0.4% of the assemblage for this phase, a percentage which is slightly lower than that for the previous phase.

The bulk of the tile came from contexts of phase II.3 and ?III.1, and is predominantly associated with the bath-house and building 294. Phase II.3 and ?III.1 produced substantial deposits of box flue tile, the large groups all in contexts associated with the bath-house, or in the immediate vicinity. More than half of the box flue tile from the site came from contexts dated to phase III.1?, consisting solely of contexts associated with the bath-house and drains (see Table 56). There was a scatter of box flue across the rest of the site, but no context away from the main buildings contained more than three sherds of box flue, and most had only one. In addition, there were no brick or *tegula* fragments with mortar on the broken edges (an indicator of use in the fabric of a building) found away from the bath-house. It can therefore be assumed that the debris from the bath-house demolition was not widely scattered — at least the tile from the fabric and *hypocaust* system.

Phase	*Imbrex*	*Tegula*	*Brick*	*Box flue*	*Spall*
Pre-Phase II.2	0.2	0.5	0.6	0.1	0.5
II.2	7.3	5.8	8.4	1.4	5.3
II.2–II.3	33.9	30.1	18.4	5.0	47.2
II.3	39.5	39.1	33.5	36.9	25.1
III.1?	17.7	22.8	38.1	55.5,	21.0
Post-Roman	1.5	1.6	0.9	1.1	0.9

Table 58 Percentage of tile type in each phase

The possibility that tile from the roof was deposited elsewhere on the site is discussed under building 294.

Tile from the later Roman ditches

Most of the ditches on the site contained small amounts of tile, but only ten contained more than 100 sherds. Two of these were from phase II.2 (91 and 377), and the remainder from phase II.3.

Ditch 91 is a short stretch of a shallow gully, cut by post-hole 573 of building 368, and only located in the evaluation trench. It is possibly earlier Roman, and may have been overcut into the post-hole by the excavator, so it is possible that at least some of the 148 pieces of tile from this feature actually came from 573, which yielded only twenty-seven sherds. Ditch 91 produced two pieces of box flue tile, which points more towards it being a later Roman context; the definitely early Roman contexts only produced a single piece of box flue.

The other ditch in this phase to produce a notable amount of tile was 377, to the east of the building complex. There was no box flue tile, and a large proportion of the material was roof tile; this may represent debris associated with the construction of the bath-house.

One of the phase II.3 ditch deposits was close to the main buildings (399), but the remainder were to the south of the buildings. In particular, the three largest groups of tile from ditches were from ditches 302, 365 and 816, close to the large deposit of tile in barn 294, and possibly (at least partly) from the same source. There is, however, a much higher proportion of brick in the assemblages from 302 and 816 than there is in the assemblage from 294 (19% as opposed to under 2%), although 365 has only 2% brick, and all three ditches have a larger average sherd size than 294. Of the three ditch assemblages, that from 365 is most similar to 294, and could easily be predominantly debris from the same source. 302 and 816 may contain material from the same source as 294, but the higher proportion of brick suggests that the tile was either from a different source, or from a variety of sources.

The other three ditches with considerable amounts of tile are 229 (but spread over a number of segments), 359 and 177. The latter ditch is located on the southern edge of the site, and produced 16kg of tile.

The presence of reasonably large deposits of tile in ditches at some distance from the bath-house suggests that there may have been a structure, or structures, utilising tile, fairly close to those ditches, that is to the east of structure 294, and to the south of the site. This could have been a building (possibly another barn), or a lesser structure such as an oven or corn-drier.

The use of tile in the buildings

As noted above, barn 294 and the bath-house produced the bulk of the tile from buildings. The other structures (buildings 368, 416, 417 and 786) produced relatively small amounts, and it is unlikely that they utilised tile in their construction. Some aspects of the tile used in 294 and the bath-house and associated features are dealt with in the structural report, and will not be reiterated here.

Granary 294

The structure was notable for the presence of a substantial spread of tile within the interior of the building, and several of the post-extraction pits also contained large amounts of tile. The assemblage consisted mainly of roof tile, a total of 1203 pieces of *imbrex* and 1532 pieces of *tegula*. In contrast, there were a mere forty-four pieces of 'brick' and a single fragment of box flue tile. There were also 8555 pieces of spall.

The tile spread within the building (293/283) lay on the surface of the clay subsoil, and must have been deposited within a hollow in the centre of the building. In addition, the clay below the tile shows signs of burning, which may have happened if and when the building burnt down. The tile, however, shows no signs of having been in a fire, and must have been deposited after this episode. The hollow within the floor may be associated with some form of crop processing; P. Murphy has tentatively suggested to the author that it may have aided winnowing, for example.

The limited range of fabrics present, and the fact that the material was nearly all roof tile, suggests that the material derived from a single roof, moreover one that may have been dismantled rather than just collapsing. One piece of *tegula* from post-extraction pit 825 (5534) had a nail still in place in the nail hole; the nail appeared to have been bent by force, presumably during the deliberate removal of the tile from the roof. Given that we know from the presence of post-extraction pits that 294 was demolished, it seems likely that this could be the remains of the roof. However, if the building did burn down, one might expect the roof, even if it did not collapse at the time, to display some sign of scorching, which is absent.

It is possible that 294 was roofed in another material, such as thatch, and that the tile might have derived from a different building, being used merely as rubble to level up the ground, and help fill in the post-extraction pits. The bath-house roof is an obvious candidate for this scenario (and the only other tiled roof within the complex that we have good evidence for), having probably been demolished at approximately the same time as 294. The roof tile from 294 was therefore compared with that from the robbing layers of the bath-house (798), and the dump of bath-house material in the cistern (415). The range of fabrics present was considered. The *tegulae* from 294 are almost exclusively in fabric B (91.5%), with fabric A absent, whereas those from 798 and 415 are in a wider range of fabrics; nearly a quarter of the *tegulae* from 415 were in fabric A. The figures for *imbrex* fabrics are very similar. It therefore seems likely that the tile dumped in 294 does not come from the roof of the bath-house.

The hypothesis that building 294 burnt down had stemmed largely from the environmental evidence, charred crop remains consistent with destruction by fire. Discussion with P. Murphy elicited the possibility that the fire which destroyed the stored crops had been locally severe, but might not have caused much damage to the fabric of the building. This interpretation of the evidence is consistent with both the lack of fire damage to the tiles, and the scarcity of baked clay from the building. So the material could be, and probably is, from the roof of barn 294.

The use of brick and tile in the bath-house, and material from associated features

Under this heading will be considered contexts within the bath-suite itself, drains 93 and 100, and cistern 415.

The tile from the bath suite comprised material deposited as infill after robbing, and tile remaining *in situ* in the fabric. Samples of tile were taken from the fabric, in particular from the facing of the furnace, and the flue.

The fabric of the building

The furnace was formed mainly from *lydion* but included large fragments of *tegulae*, one of which was complete, and half a *bessalis*. One piece of *tegula* has a signature of small pointed double arcs, a type which occurs principally in building 294. There was occasional use of other types of tile, with a complete *tegula* forming part of the base of the wall, and two nearly identical half-sides from voussoir tiles in the facing, both in Eccles tile fabric, and with signs of previous use. It is not possible to be certain whether the brick was also re-used, but the presence of the wavy line signature does suggest that at least some were from the same batch.

The base of the flue was formed mainly from *lydion*, of which six complete and five incomplete examples survived, plus a single complete *tegula*, laid flange up. There was a strip with no mortar traces 145–190mm wide down the middle of the tiles, scorched on some (presumably those nearest the fire — the order of the tiles within the flue was not recorded). The roof of the flue was formed in a similar way, although less survived. There were six complete *lydion,* laid at right angles to the flue, with a mortar-free strip *c.* 200mm wide down the middle. Included with this context (6417) were large pieces of *tegula*, mostly with the flanges still on, mortared together. The pieces from the flue sides consisted predominantly of *lydion* brick, broken in half. Five of the bricks had the same signature of wavy lines down the centre; the only other occurrence of this signature was in the backfill of drain 93.

The flue continued across the base of the *hypocaust* as a row of *imbrices* set into the floor (771). Only one of the *imbrices* was kept for examination; it is unremarkable apart from its completeness. The *imbrices* were filled with *opus signinum* during the remodelling of the bath suite.

The tile kept from the surviving fabric of the walls consisted principally of small broken fragments from *opus signinum*. Where identifiable, this was mainly *tegula* and brick, with minor amounts of *imbrex* and box flue. Three *tegulae* were found *in situ* as bases for the sleeper walls (contexts 6139 and 6132). The two from 6139 both had 'Q' signatures (see above for discussion), and another fragment from the same context had a similar signature. Other fragments with the same signature came from the wall footing of cold bath 844 (6411) and ?wall footing 807 (6147).

The only traces of the *hypocaust* that survived were fifteen impressions of *pilae* visible on the base of the *hypocaust*. Two sizes of impression were present, the larger of which were from *pedales,* the type of tile usually used as a *pila* base, and the smaller from either small *pedales* or large *bessales*. The pattern was obscured by damage caused by later robber pits, but enough survived to suggest that the larger impressions belong to the first phase of the bath suite, being laid out slightly irregularly in a six-by-six square within a square room, supplemented by *pilae* with smaller bases following the remodelling of the bath suite and the insertion of the sunken bath, as noted below.

The spacing of the larger *pila* bases suggests that the floor was made from *bipedales* about 600mm square, although these would have been too large to fit along the east and west sides of the *hypocaust*, even allowing for the existence of a ledge in the wall for them to rest on; perhaps *lydion* were used here instead. Some gaps between the visible *pilae* seem too large to be bridged by *bipedales*, and it is possible that there was a further row of *pilae*, of which we now have no trace. There are no definite pieces of floor tile surviving in the assemblage.

The bath suite was extensively remodelled during its lifetime, reflected in the treatment of some of the areas of structural tile. The *hypocaust* floor must have been lifted during the building works, as the *imbrex*-lined flue across the *hypocaust* was filled with *opus signinum,* and the west end of the original flue removed, and the floor possibly extended in this area. At the same time, the insertion of the plunge bath probably necessitated the addition of extra *pilae* to support the changed floor shape.

Drain 93

The drain had been lined with tile, which was found partly *in situ*. The base of the drain was formed in part by a row of *tegulae* placed end to end, with their flanges facing upwards, and in part by *lydion*, laid over a thin layer of *opus signinum.* The sides were lined with mortared brick, now mostly robbed out, except for a small area, apparently all half *lydion*, broken across the width. The fills of the feature contained quantities of tile, some of which represents the remains of the tile lining, but which may also include debris from the bath-house, as there is box flue present. It cannot, however, be ruled out that pieces of box flue were used in the fabric of the drain sides. Only six pieces of brick or tile were recorded as having mortar on them, although the presence of mortar was not rigorously recorded, and this low number may not be significant.

Most of the surviving *tegulae* used for the base of the drain were of similar size, with lengths of 380–395mm and widths of 270–285mm. One *tegula* (context 5173) was longer, 490mm, and was the longest example from the site. However, it came from the backfill of the feature, rather than being *in situ* in the base of the drain, and is therefore not necessarily originally from the drain. One segment (4128, context 6188) had *lydion* along the bottom of the drain. The change in tile type used is probably not significant; the base and roof of the *hypocaust* flue also utilised a mixture of *lydion* and *tegulae*. As with the *tegulae* from the other segments, the *lydion* from 4128 were similar in size to each other, and only slightly larger than the *tegulae*, with lengths of 394–410mm and widths of 285–292mm. One of the *lydion* from this context had an iron nail accidentally incorporated in the clay.

The top fills of all the segments contained large amounts of fragmented brick and tile of all types, including box flue. As noted above, some of this may be material dumped into the feature during the robbing of the bath-house, rather than part of the lining of the drain.

Drain 100

In contrast to drain 93, there was no indication that this feature ever had a tile lining. There was relatively little tile from the feature (less than, for example, from building 417) and little box flue, a total of only nine pieces, eight of them from context 6179 (segment 4133, immediately adjacent to the bath-house). While the average sherd weight was in keeping with the average sherd weight for cistern 415, and there were no particular signs of abrasion, the relatively small amount of tile suggests that its deposition may not be associated with the demolition/robbing of the bath-house.

Cistern 415

Cistern 415 contained a large amount of tile, 1490 pieces, weighing just over 268 kg (and it should be recalled that only half of the feature was excavated). Most of the tile came from the top two layers, 6076 and 6077, the finds from both these layers having been collected under context number 5923. The longitudinal section of the feature suggests that there may have been more tile in 6077 than 6076, and 6077 had slightly more tile from the soil samples. The other contexts from which tile was recovered were 6002/6052, which produced 104 pieces, similar in average size to those from the top two fills, 5968 (11 pieces), and 6003 (one piece of brick, with mortar on the broken edges). In addition, the section drawing shows tile present in 6053. The feature was not bottomed, but layer 6052 is probably close to the bottom.

The cistern contains a relatively high proportion of box flue tile, nearly 15% of the box flue from the whole site (see Table 56), second only to 798. It also contains tile with mortar on the broken edges, the significance of which is discussed below. There is no noticeable difference in preservation or abrasion between the cistern tile and the tile from 798, and it is very probable that they were deposited at the same time.

Demolition and robbing deposits

The presence of mortar on the broken edge of a tile is a good indicator that the tile was used as rubble in the building fabric, and where present, this was recorded. All pieces of tile with mortar on the broken edge came from either the bath-house itself, the drains or the cistern, which supports the hypothesis that most, if not all, of the waste tile from the bath-house robbing was redeposited in the immediate area. The material with mortar on the broken edges was principally brick and *tegula*, with lesser amounts of *imbrex* and, occasionally, box flue tile. Only 304 fragments with mortar on the broken edge were recorded, but it should be borne in mind that this does not represent all the tile present which derived from the fabric, as there will be pieces where the mortar has left no trace on the broken edge, and the spall was not included in this exercise. It is suggested above, for example, that all tile in fabric G is likely to have been used as rubble in the fabric, yet relatively little has mortar on the broken edges.

Two of the contexts containing tile with mortar on the broken edges (in this case *tegulae*) were structural (6147, ?wall footing 807, and 6417, *opus signinum* in flue top), with one fragment from each; the remainder were all contexts within the backfill of the baths, flue and *praefurnium*, apart from two pieces from drain 100 (6179), one from drain 93 and thirty-two from cistern 415.

It is noticeable that the largest amount came from the backfill of robber pit 798, suggesting that the bulk of this type of tile, if not all, derived from the debris created at the time of the robbing. The presence of the next largest amount in the upper fills of cistern 415 supports the theory that 798 and at least the top of 415 were backfilled at the same time, a supposition which is also supported by the evidence of the box flue tile (below).

The amount of *tegula* with mortar on the broken edge from within each of these contexts is in most cases relatively small, not over 5% of the total *tegula* from the feature. The exception is the infill of flue 672, which has over 50%, in a total of only 29 fragments. This may have derived from the demolition of the flue top and immediately adjacent wall; however, the fill of the context also contains box flue tile, which suggests that the flue was backfilled during or soon after the main episode of robbing represented by 798, so it could be from elsewhere in the building.

As noted above, it is likely that the backfilling of the *hypocaust* and the top fill of the cistern took place at the same time. The contexts comprising 798 have been dated to III.1?, that is, possibly Saxon, whereas there is nothing to suggest that the upper fills of the cistern are other than latest Roman. If the top of the cistern was not backfilled until some time in the Saxon period, it implies that it was open for some decades at least after the abandonment of the Roman site. In this case, there should be a considerable amount of (probably sterile) silting between the latest Roman deposits and the final backfilling, which is not the case. Therefore it seems more likely that the robbing episode, and the backfilling of the *hypocaust* and cistern both took place during the latest Roman phase. The presence of Saxon pottery, and the bone pottery stamp (which is dated 450–600) certainly indicate that there was early Saxon activity of some sort on the site, but it seems unlikely that this activity included the robbing out of the bath-house. The small size of the Saxon sherds and the pottery stamp makes it entirely feasible that they are intrusive.

Perhaps the most striking aspect of the tile assemblage from the bath-house and associated features was the thoroughness with which the demolition and robbing had been carried out. Virtually all the complete or nearly complete tiles which were recovered had survived in the fabric; the material dumped back into the building was very fragmented. This suggests that the purpose of the demolition was not simply to raze the building, but to recover as much usable large tile as possible. It is unlikely that the Saxons would have been interested in re-using tile before about the 7th century, as they had no history of building masonry structures. We are therefore left with the implication that there is a *very* late Roman masonry building somewhere near Great Holts, which used the bath-house tile as building rubble.

Conclusions

The large tile assemblage from Great Holts is of particular value as the bulk of it can be related to two discrete buildings, bath-house 414 and barn 294. The earlier Roman features produced very little tile, and we can therefore be fairly confident that there is a low residuality factor in the later contexts. However, re-used tile is clearly present in the fabric of the bath-house, and some of this is likely to be quite old; in particular, the Eccles tile is likely to have arrived in this area in the 1st or 2nd century. It was presumably robbed out from an earlier building, as some of the voussoir tile show traces of sooting, indicating previous use. A number of pieces of the Eccles tile have distinctive combing, which creates the possibility that the building from which it originally derived could be identified in the future, through comparison of the comb profiles.

The distribution across the site of the box flue tile, and the tile with mortar on the broken edges, demonstrates that the material derived from the demolition and robbing of the bath-house is strongly concentrated in the immediate area of the bath-house. It is therefore unlikely that any significant proportion of the tile from other parts of the

site derived from the bath-house. In particular, the tile from barn 294 is unlikely to have come from the bath-house, which suggests that this timber-framed building had a tiled roof. A few ditches in the vicinity of barn 294 produced relatively large groups of tile, and while some of this material may have derived from barn 294, the larger proportion of non-roof tile present suggests that it may have derived from a structure located outside the excavated area.

The similarity of the tile assemblages from cistern 415 and the bath-house suggests that the backfilling of both the bath-house and the cistern occurred immediately after robbing, and that it took place in the very late Roman period. Further, the size and condition of the tile fragments from these features suggest that the tile was being deliberately robbed out for re-use in another structure. The distinctive combing on the Eccles tile could in the future help to identify this building, as could the distinctive signatures present on some of the *tegulae*.

Mortar and *opus signinum*

by R. Tyrrell

The material was all found in and around the bath-house (414) and was sorted into the following four fabrics:

1. The matrix is pinkish in colour and has much angular (4–7mm) crushed brick/tile and occasional chalk flecks. 7383g were noted.
2. As fabric 1, but less frequent brick/tile fragments. 19327g were noted.
3. An evenly sorted buff, sandy mortar with no crushed brick/tile but some flint. 30461g were noted.
4. As fabric 3, but with the addition of a small quantity of largish (10–15mm) brick/tile fragments. 21479g were noted.

Clearly the presence of over 48kg of *opus signinum* (there are 30kg of mortar) suggests that the builders were aware of the increased hydraulicity gained by the addition of crushed brick or tile to the mix (Williams and Zeepvat 1994, 252). It is possible that the plain mortar was used higher up for the upper walls and ceilings.

The robbing of the site has made it very difficult to associate the different fabrics to periods or parts of the building. Fabric 1 does not appear to have been used in the foundations of the walls. There does not appear to be any pattern in the use of a particular fabric at any one phase.

The floor of the *hypocaust* was made of fabric 4, so the floors (there were no *tesserae*) and the sink-baths may have been lined with fabrics 1 and/or 2. None of the finished flat surfaces were painted red or black, as at Bancroft, Bucks (Williams and Zeepvat 1994, 140, 165, and 181).

Wall plaster

by R. Tyrrell

Most of the painted wall plaster came from twenty contexts associated with the bath-house (414). The extent of the post-Roman robbing has disturbed any plaster which may have remained *in situ* after the demise of the baths. This has resulted in the general size of the fragments being small. The largest of the 194 fragments is 100mm by 100mm. Most of the fragments have only one coat of mortar beneath the final skim of the paint. The plaster is generally in good condition, although in a few cases the backing is rather crumbly.

All the plaster has been examined macroscopically and there appear to be two types of backing present, both use a pinkish mortar, but fabric 1 has a considerably greater quantity of crushed brick added than fabric 2. Fabric 2 mortar was present in nine of the contexts whereas fabric 1 mortar was present in seven; four contexts had both types of mortar present. Due to the disturbed nature of this part of the site it is not possible to relate the difference in mortars to different rooms or dates. Scientific testing on the *opus signinum* from Bancroft villa, Bucks (Williams and Zeepvat 1994, 252) suggested that quantities of crushed brick added to the lime past improved hydraulicity. There is the possibility that fabric 1 mortar was used in parts of the baths particularly prone to problems with dampness.

The surface treatment varies from roughly wiped to smooth, but there is no evidence for polishing. The plaster has no signs of repainting or plastering, so it is assumed to be all of one period, and implies that the baths may not have had a long life. Ten of the contexts producing plaster have pottery, which may be used to date them. The earliest are late 1st to early 2nd-century and mid 3rd-century, but the three small pieces may be intrusive, as they are painted on fabric 1 mortar. Also the contexts have been disturbed by robbing. The other eight contexts, making up the bulk of the material, date from the mid to late 4th century.

The colours present are predominantly red and white, with a small amount of pale green, grey, purple, pink, maroon and yellow. The only combinations of colours are red and white and a maroon, 8mm wide, right-angled stripe on a white ground (6141). There are no signs of figurative schemes and one stripe is barely enough to suggest a panel border. It is possible that a maroon stripe delineated a window or door. There is one fragment of moulding painted grey, which may have come from a window, or a door, though it it is rather small. A largish white fragment (6101) has the suggestion of an internally painted corner. Eleven red fragments have right-angles edges one side of which is roughly unfinished and unpainted. These look as if they may have come from the junction between the wall and the floor, certainly they are very casually painted, perhaps meant to be covered by an *opus signinum* quarter-moulding. This leads on to the possibility that the lower half of the walls were red and the upper part above the dado was white. These suggestions are tentative because of the limited assemblages.

XIV. Early Saxon bone artefact

by S. Tyler

(Fig. 109)

Bone potter's stamp

Rosette stamp of Briscoe's Type A 5a, carved from the tibia of a small animal. The rosette has five segments, uneven in both cutting and arrangement. Length: 25mm. Max. diam. at head: 12mm. SF445, context 6087.

Discussion

Because the stamp depicts a simple rosette motif, it is not closely datable and could belong anywhere within the period AD 450–600.

Potters' stamps or dies as they are sometimes called are rare finds; easily made, they must have been frequently

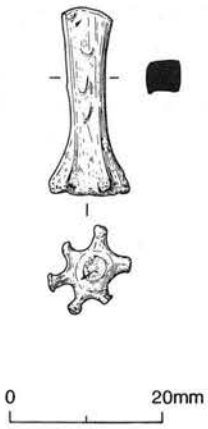


Figure 109 Bone potter's stamp

dropped, lost or discarded (Stokes 1984). Usually made of antler or bone, most have perished: Briscoe lists only twelve in her corpus (Briscoe 1983), nearly all from East Anglia.

The bone examples usually have simple designs: often the bone hollow used, with or without inserted pieces, to form dot-and-circle impressions; a more unusual example from a 6th- century grave at Lackford, Suffolk, gives a rectangular impression (Lethbridge 1951, fig. 17). The Great Holts potter has not however utilised the hollow of the bone, but has chosen to carve the top of the tibia into a rosette; this is an unparalleled form among surviving examples, although one can speculate that given the immense popularity of the rosette motif on stamped vessels, such bone stamps were commonplace, but have not survived (or perhaps have not been recognised) in the archaeological record.

XV. Wood

by R. Darrah
(Figs 110–116)

Introduction

The wood consists of a timber well lining and a group of objects from the well pit. The structure was excavated by machine unseen, as the pit was unsafe. No stratigraphic relationship was recorded between the jointed boards or between the other pieces of wood.

The form, joints and braces of the boards are similar to those found in excavated wells from Queen Street, London (Wilmott 1982) and Elms Farm, Essex (Darrah forthcoming). This suggests that the boards formed a well lining. In addition to the well boards, a group of wooden small finds were preserved within the silts extracted from the well pit.

The well lining

The surviving well lining consisted of parts of at least fourteen sawn oak well boards of between 1m and 1.12m long, between 0.25m and 0.48m wide and up to 0.06m thick. These parts are detailed in Table 59. The boards had joints at each end, and diagonal laps for braces. Figure 110 shows two of the best preserved boards. 6466 is a board 1.2m × 0.25m × 0.035m with face dovetails at each end and diagonal laps on upper edge. 6468 is a wider heavier board 1.0m × 0.45m × 0.055m with dovetail housing at each end and diagonal laps on upper edge.

The source of the oak timber

The oak timber from which the boards were made had average ring widths of 2mm to 3mm although one plank had average ring widths of 4mm. The timber is from trunks of trees and not from branches. Size of knots and growth pattern suggest a woodland origin.

Function	*Number*	*Species*	*Condition*	*Length*	*Width*	*Thickness*	*Joint code*
Well plank	6466	oak	abraded	1.12	0.25	0.035	md/l
Well plank	6467	oak	abraded	1.12	0.25	0.04	md/l
Well plank	6468	oak	abraded	1	0.45	0.05	fd/l
Well plank	6471	oak	incomplete	0.84	0.23+	0.03	m?
Well plank	6472	oak	incomplete	0.93	0.42(48)	0.06	md/l
Well plank	6473	oak	incomplete	1.01	0.13	0.055	fd/l
Well plank	6474	oak	incomplete	1.08+	0.28	0.04	m
Well plank	6475	oak	incomplete	0.54+	0.25+	0.055	ed/l
Well plank	6477	oak	incomplete	0.8+	0.12+	0.035	mf
Well plank	6478	oak	incomplete	0.84+	0.18+	0.055	md/l
Well plank	6489	oak	abraded	0.8+	0.19+	0.025	mf
Well plank	6490	oak	abraded	1.11+	0.28	0.04	fd/l
Well plank	6491	oak	abraded	0.55+	0.25	0.03	md/l
Well plank	6492	oak	abraded				mf
Well brace	6470	oak	distorted	0.45	0.03	0.03	br
Well brace	6476	oak	abraded	0.5+	0.06	0.06	br
Well stake?	6469	oak	poor	0.87	0.1		st
Well stake?	6479	oak	decayed	0.52+	0.1		st

m = face dovetail, d/l =diagonal lap, f =dovetail housing, mf =either joint type, e = end dovetail

Table 59 The function, condition, dimensions, and joints of the well timbers

The conversion of the timber

The timber is all oak; only the heartwood has survived. On many of the boards at least part of the surface has decayed away. The surfaces which have survived are those internal to the well. All the other surfaces have lost several millimetres through decay so that no tool marks survive.

Where surfaces survive, saw marks indicate conversion by sawing. Where the surfaces are damaged, the unevenness of the grain and the presence of knots suggests that these boards had been sawn rather than split. The flatness of the surfaces also suggests sawing. The sawn planks up to 0.28m wide varied in thickness by less than 5mm over the lengths of up to 1.1m indicating competent sawing.

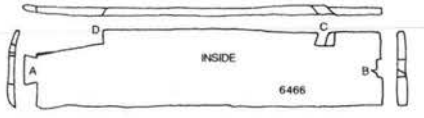
The best evidence for sawing survived on a broken board (6471) originally more than 0.23m wide and 0.03m thick. The saw marks on its internal face run parallel down its length at eighty degrees to the side (Fig. 110). It had been sawn from both ends consecutively and the middle 0.03m had split. The steep sawing angle suggests that the board was sawn using two trestles rather than seesawing. This technique is recorded in London (Goodburn 1991) and Scole (Darrah forthcoming). These authors also note that the timbers were squared into balks before sawing.

The presence of heartwood at the edge of the planks suggests that these planks were sawn from balks. This method of conversion would result in most of the planks having two sawn faces, but in each balk two planks would each show one hewn surface and one sawn. The edges of each plank would also be hewn. The absence of evidence for hewn surfaces may simply be due to decay in the majority of the surfaces.

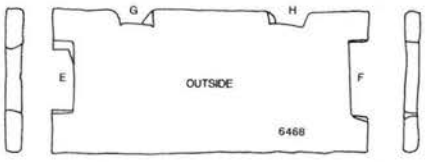
Number	*Function*	*Width*	*Diameter of tree*	*Growth rate (mm)*
6472	Well plank	0.48	*0.68*	2.4
6468	Well plank	0.45	*0.64*	
6474	Well plank	0.28	*0.40*	4
6490	Well plank	0.28	*0.40*	
6466	Well plank	0.25	*0.35*	
6467	Well plank	0.25	*0.35*	
6491	Well plank	0.25	*0.35*	3
6481	Offcut	0.23	*0.33*	2
6473	Well plank	0.13	*0.18*	2.1
6480	Offcut	0.09	0.2	2
6486	Offcut	0.06	0.12	
6469	Stake	0.1	0.1	2
6479	Stake	0.1	0.1	2–4

Diameters in italics were calculated from the formula, others were measured trunk widths.

Table 60 Diameters of trees used to make planks

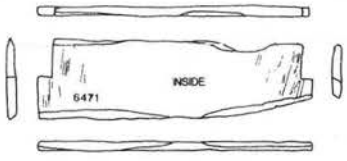


6466 is a board 1.2 × 0.25 × 0.035m with face dovetails at each end and diagonal laps on upper edge

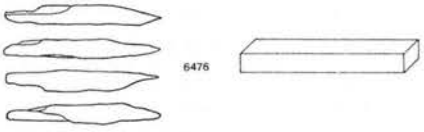


6468 is a wider heavier board 1.0 × 0.45 × 0.0455m with dovetail housing at each end and diagonal laps on upper edge.

A. Face dovetail
B. Broken neck of dovetail
C. Diagonal lap
D. Sawn side of broken diagonal lap
Eand F. Dovetail housings with sawn sides
Gand H. Diagonal laps. Note deep saw cuts on G.



6471 well board with conversion saw marks as faint lines running across the faces. These marks are almost at right-angles to the side of the board. The angle of one side of the end dovetail can be seen in the right-hand end cross section.



6476 and 6470. The corner braces which fitted into diagonal laps on the well boards (Fig. 114). These were both decayed and bent. They have been redrawn straight in the reconstruction drawing. 6476 was over 0.5m long and square sectioned (0.06 × 0.06m) over its whole length; 6470 was 0.45m long, rectangular in section, 0.06 × 0.03m with lap joints

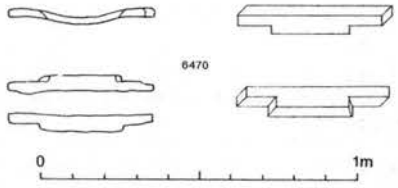
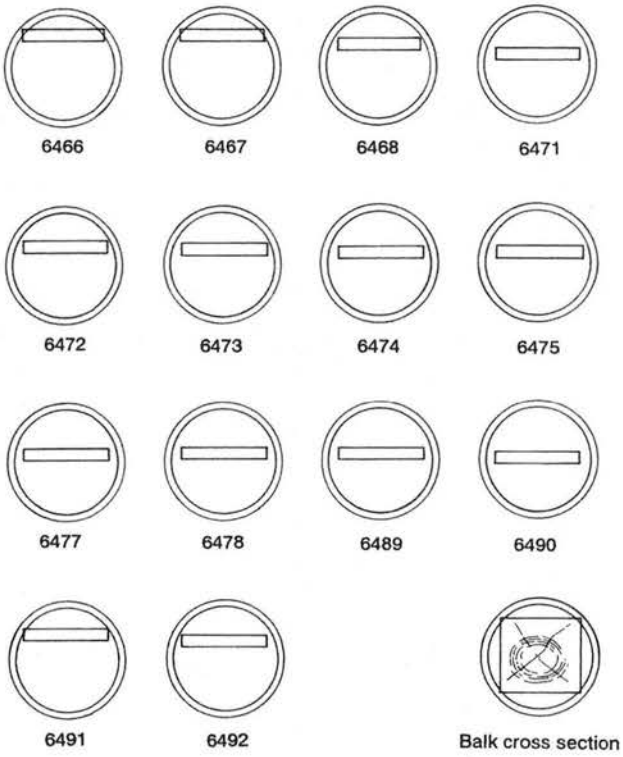


Figure 110 Well boards and corner braces



The boards have been placed in their correct position in a cross section showing the presence or absence of sapwood. The majority of the planks have no sapwood (as they are within the inner circle). Each of these planks would be sawn from a squared balk such as that outlined in the last cross section

Figure 111 Position of the well boards in the trunk cross section

On this site the only direct evidence for hewn edges to planks is from an offcut (6481) which is a plank 0.25m wide with hewn edges. The other evidence for hewing into balks is the absence of sapwood on the cross sections of the well planks. Figure 111 shows the position of the planks in the tree cross section, suggesting the trees were squared up before sawing.

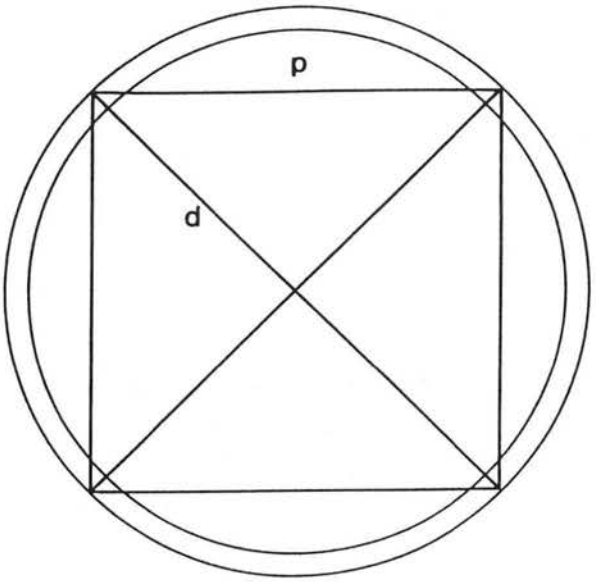
The size of the trees

If the planks were sawn from squared balks then we can estimate the diameter of the tree trunks used in the wells from the width of the planks. Figure 112 shows how this is achieved. The formula $d = \sqrt{(p^2 \times 2)}$ where d is the diameter of the tree and p is the plank width gives us estimates of the tree sizes (Table 60).

The dimensions of the planks

Four distinct plank widths were recorded; 0.25m, 0.28m, 0.45m and 0.48m. Two distinct thicknesses were used in the well planks. These were thin planks between 30mm and 40mm, and thicker planks between 50mm and 60mm. The wider planks are thicker and shorter.

A jumble of plank widths were recorded, most of which are from incomplete planks. It is clear from the drawings of 6466 and 6468 (Fig. 110) that two distinct plank lengths can be seen, of 1.0m and 1.12m. The other lengths are probably due to damage to the planks on extraction.



The trunk diameter equals the plank width times the square root of two (1.41). Trunk diameter = $d = p \times \sqrt{2} = p \times 1.41$ where p = plank width

Figure 112 Estimating the trunk diameter from the plank width where planks have been sawn from a balk

The joints in the well timbers

None of the well timbers have any joints or nail holes to suggest that the timbers were re-used. All the joints found are consistent with use of the timbers as well planks in one or more wells (except the small find boards). Most planks are broken and missing one end, but where both ends are present the joints are symmetrical.

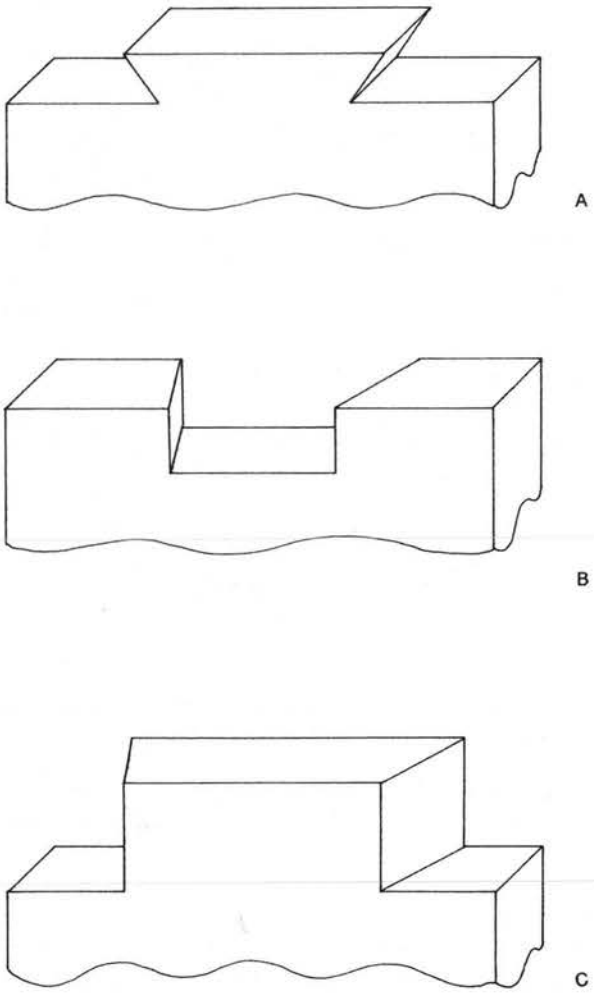
The joints consist of two similar types of dovetails (Fig. 113). Each is a single dovetail; most have the fan cut into the face of the board. A single example exists with the fan cut into the end of the board.

The dovetails have been cut out with a saw or saws which left a 2mm to 2.5mm kerf in the planks. These dovetails were housed in a through dovetail housing. Where evidence survives, the neck of the dovetail was the same length as the board above and below it. The sides of the dovetail housing were sawn and the wood was cut out with chisels.

The dovetail joints enabled the planks to be joined together at right angles. Four planks joined on edge in this way would have formed a bottomless box (Fig. 114).

Another feature of the boards is that they each have two diagonal laps cut into one edge close to the ends (Fig. 114). Battens 6470 and 6476 (Fig. 110) appear to have fitted into these laps and would have acted as braces to the bottomless box structure. These are the only two braces surviving and are of distinct form. Brace 6470 is a 0.06m square sawn section 0.5m long, and 6476 is a deeper brace with 0.06m square sawn laps at each end. Each of the bottomless boxes or frames would have had braces across the corners, lapped into the top edge of the boards so that their upper surface was flush (Fig. 114).

No evidence for nails was seen either in the corners of the box frames or holding the braces in place.



A. Face dovetail sawn out of the end of the board with the dovetail shape in the face of the board
B. The through dovetail housing for type A.
C. The end dovetail sawn out of the end of the board, with with the dovetail shape marked out at the end of the board. This form only survives on board 6471 (see Fig. 110)

Figure 113 The two forms of dovetail used to join the well boards together at right angles

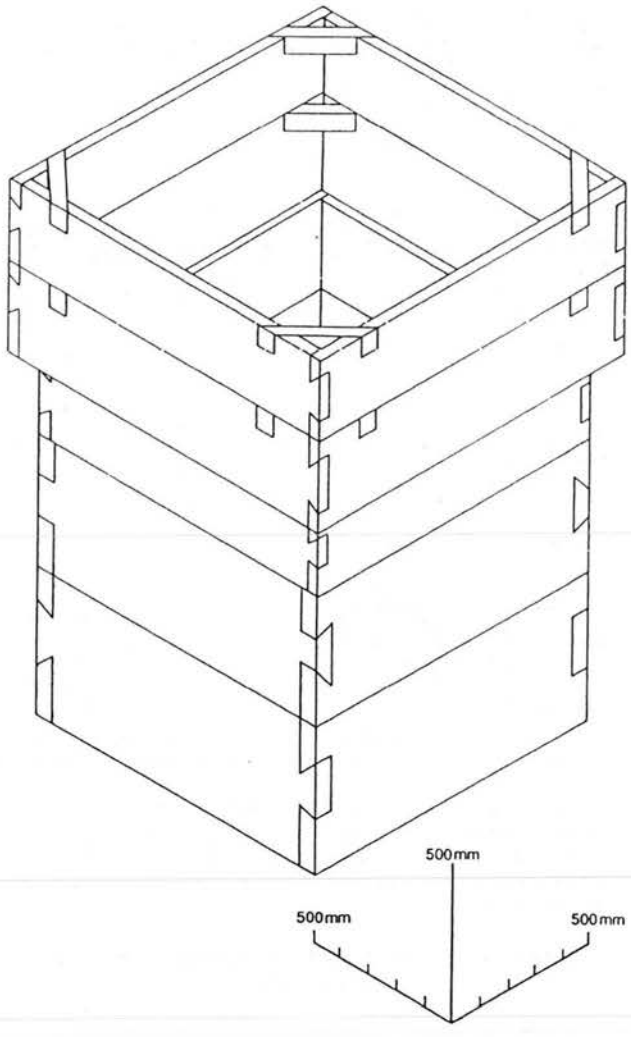


Figure 114 A reconstruction of the well made by stacking up the five well frames

Well structure

In well structures from London similar boards had been set on edge and joined at the corners to form a square well lining (Wilmott 1982). As each box is generally built of the same width of board, this excavation contains parts of several frames from the well lining. Table 61 sorts the boards into a minimum of five frames.

The broken and unstratified nature of the find means that we can estimate the minimum height of lining which could be reconstructed from the well boards. There may have been more than five frames. Addition of the board widths from Table 61 gives a minimum well height of 1.66m. It is not possible to say which order the frames were assembled in, but it is clear that two distinct board lengths (and so two distinct frame sizes) were used.

The worked wood within the well

The worked wood associated with the well boards is of several types. There are three pieces of round wood, five sawn offcuts, one tool and a packing wedge.

As the well boards have dovetailed joints at their ends, we know which face of the boards was inside the well. These inner faces are much better preserved than the outer faces of the well boards. This suggests that the silts inside the well provide better conditions for the conservation of wood than the well pit outside the well lining. It is reasonable to assume that the pieces of wood which were not part of the well lining and are in good condition were preserved in the silts within the well. These associated finds are in better condition than any faces of the well boards.

As these finds were unstratified we do not know their position in the well pit.

Small find 601

601 is a short length (0.3m) of tangentially sawn oak plank, this is an offcut which has been sawn off the end of a longer plank. It is now 0.155m wide by 0.02m thick. Part of the board had broken away before it was deposited in the well, its original width would have been approximately 0.25m (Fig. 115).

The faces are accurately sawn; the saw moved forward at 4mm per stroke and at an angle of eighty degrees to the long edge of the original plank. One face was thinned towards one side with an adze. The thinning took place after the plank had been sawn and the adze marks run almost along the length of the plank. The angle of the adze blade stop marks is at seventy degrees to the long edge of the original plank.

Two blind auger holes of 10mm diameter and 20mm diameter had been cut into the thinned face. The 10mm auger hole was broken into by a similar hole cut from the opposite face.

Frame	*Number*	*Joint*	*Surviving dimensions of board*			*Original dimensions of boards*		
			length (m)	*width (m)*	*thickness*	*length (m)*	*width (m)*	*thickness*
1	6466	md/l	1.12	0.25	0.035	1.12	0.25	0.04
	6467	md/l	1.12	0.15	0.04			
2	6474	m	1.08+	0.28	0.04	1.12	0.28	0.04
	6490	fd/l	1.11+	0.28	0.04			
3	6472	md/l	0.93	0.42(48)	0.06	1.01	0.48	0.06
	6478	md/l	0.84+	0.18+	0.055			
	6468	fd/l	1	0.45	0.05			
	6473	fd/l	1.01	0.13	0.055			
4	6471	m	0.84	0.23+	0.03	1	0.25	0.035
	6477	mf	0.8+	0.12+	0.035			
	6489	mf	0.8+	0.19+	0.025			
	6491	md/l	0.55+	0.25	0.03			
5	6475	ed/l	0.54+	0.25+	0.055	1	0.4	0.055
	6492	mf						
				Surviving height of well in metres			**1.66**	

m = face dovetail, d/l = diagonal lap, f = dovetail housing, mf = either joint type, e = end dovetail

Table 61 The well frames produced by combining planks with similar dimensions and joints

Small find 602
602 is the curved end of a flat hollowed oak tool, looking like a large hollowed spatula, which had been burnt before being deposited. The remaining piece is roughly 0.165m by 0.075m by 0.02m (Fig. 115). Approximately one third of the bowl of the tool and most of the handle had been broken away in antiquity.

It is difficult to identify objects which have been partly burnt, as burnt areas often take on the regular curves of worked wood. Four distinct areas could be seen, both the back and the edge were burnt, the hollowed area remained unburnt, but no clear toolmarks survived to indicate how it was hollowed.

Small find 603
This piece of wood does not warrant the small find number; it is a large splinter from a sawn oak board 15mm thick. Two parallel sides are sawn, two are split, one end is broken and the other possibly sawn.

Details of some other pieces of wood from the well fill which were of note follow below.

Context number 6481
6481 is a tangentially sawn plank 0.31m × 0.23m × 0.06m which is excellently preserved. Both the faces were sawn with a saw blade at an angle of eighty degrees moving forward at 2.5mm per stroke, both the ends were sawn and both edges hewn. This suggests that it was an offcut from a board sawn from a rectangular balk. One face had been used as a chopping board for rounding off a cylindrical object approximately 0.1m round with an axe (Fig. 115).

Context number 6480
6480 is an oak timber 0.25m × 0.09m × 0.08m, it is a quartered length of trunk with both ends sawn. It has one radius hewn and the other split. The sapwood is partly hewn away at right angles to the hewn face. This suggests that the timber was originally part of a trunk which had been split into halves or quarters and was then hewn square. The piece would have been an offcut from the end of a post or beam made from a 0.2m diameter tree.

The average annual ring width of the tree from which this post was made was about 2.2mm, a slow growth rate for young trees. This tree was approximately forty years old at felling.

Context number 6485
6485 is an oak wedge. It has been axe hewn, the wedge is blunt and very roughly shaped. This piece is a packing wedge, definitely not a splitting wedge as the taper is too blunt. It may have been used for levelling up a well frame (Fig. 115).

Context numbers 6479 and 6469
6479 and 6469 are each half round oak timbers with points shaped into one end. Surviving lengths are 0.52m and 0.84m respectively and the diameter is 0.1m in each case. The points are chisel points and 6479 shows tool marks from either an axe or an adze.

Discussion

Woodland resource
Annual ring widths in the oak timber forming the well boards and offcuts are generally between 2mm and 3mm per annum, although one plank had average ring widths of 4mm.

This is a small sample of timber to use for making generalisations about woodland management. However, from this sample it is clear that the growth rate is faster than would be expected from trees growing in high forest, but not as fast as standards growing in modern coppiced woodland. Most of the wood shows a significant decrease in growth rate before felling. This, together with the lack of large knots, suggests that these are woodland trees. They were growing close enough together to cause a marked decrease in growth rate (6492 decreases from a healthy 4mm to 1.5mm before felling).

Offcuts 6480 and 6486 are from either squared or halved oak building timbers of less than 0.2m diameter. Their growth rates are 2.2mm or less per annum. In later periods there is planned production of small fast-grown trees for posts and beams in managed woodland. The use of slow-grown small trees for posts in this context hints at the lack of a managed resource. The indications are that this timber came from woodland with little management.

Conversion of timber
There are several methods for conversion of trees into usable timber. These include hewing the trunk to shape

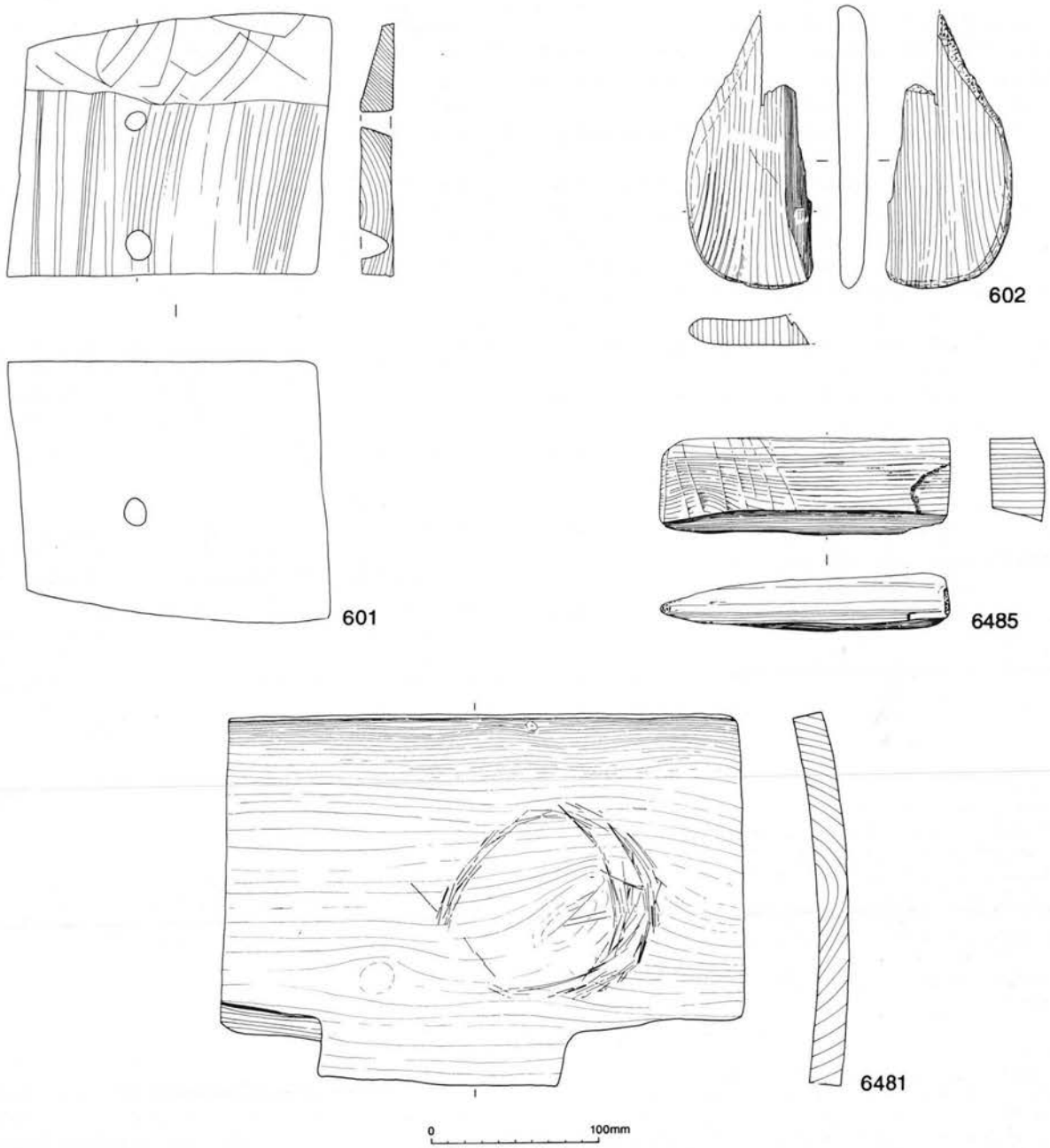


Figure 115 Wood

with an axe or adze; splitting the trunk down its length into halves, quarters, eighths *etc.*; sawing the trunk down its length, or a combination of the above techniques.

The sample from this well pit is biased by the survival of tool marks on the inner faces of the well timbers only. These are all saw marks. On the other finds better preservation shows that sawn timbers had some split and some hewn surfaces. Evidence exists on these timbers of use of saws and adzes. There is no clear evidence for use of axes, although these may have been used to point the half round stakes and to chop into 6480.

The use of hewn balks is neither confirmed nor refuted by the evidence of this site due to substantial decay of the timbers. The absence of sapwood on the outer edges of the central tangential planks and the position of sapwood on the outer planks suggests that the timbers may have been hewn square. This idea is encouraged by the presence of the offcut which had been sawn down both its faces, but had hewn edges.

On this site sawing has been used for at least three purposes:

1. sawing a trunk along the grain into planks
2. sawing across the grain to cut planks or timbers to length
3 sawing at an angle to the grain to create dovetail joints (see under 'joints').

1. Sawing a trunk along the grain into planks: when sawing along the grain the sawyers on this site were confident at producing planks of up to 0.48m wide. The saw was used at an angle of eighty degrees to the plank edge, and moved by 2.5mm per stroke.

The angle of sawing suggests that the technique was to saw on two trestles. This is confirmed by 6471, which shows that the face was sawn from both ends and the last 30mm in the centre was split.

The straight saw marks running across the face of the boards each represent one stroke of the saw. The rate of sawing will vary with the width of the board being sawn. In this well the plank 6471 was sawn at a rate of 3mm per stroke on a board over 0.23m wide. If the saw rate was thirty strokes per minute this would suggest a sawing rate of 1m in twelve minutes, excluding the time for moving the trestle, sharpening saws, removing saws from cuts and the normal rests required to saw over an extended period. It is likely that each sawn well plank would take roughly one hour to saw off the balk, mark out, saw to length and saw the joints.

The offcut 6481 has been sawn at a slower rate of 2.5mm per stroke, it is possible that rate of sawing might also vary with the fineness of the finished plank.

2. Sawing across the grain to cut planks or timbers to length: all the evidence suggests that cross cutting was always done with a saw. This is also the case with the partly burnt pieces of wood. These pieces were probably produced as offcuts from building work before they became firewood. Sawing is associated with building, but is not necessarily always associated with firewood.

Joints

3. Sawing at an angle to the grain to create dovetail joints: the dovetail joints, the sides of their housings and the sides of the diagonal laps show evidence of being sawn. The saws used had a 2.5mm thick blade. Use of a saw for the cutting of these joints suggests that the planks were rested upon either trestles or a bench.

Auger holes exist in only one offcut from the well pit. The two 10mm auger holes meet accurately from opposite faces. These may have been drilled deliberately this way, or mistakenly drilled from the wrong side first using an awl as a guide (no evidence of the awl hole survives).

The third (20mm) auger hole only proceeds part of the way through the wood. Similar blind auger holes were used as countersinks for nails at Scole (Darrah forthcoming), enabling structures to be fixed together using shorter nails.

The tools used are the same as those used in 19th-century estate carpentry; it is the dovetail joints, and auger drilled countersinks plus economical use of nails which distinguishes this structure from a Victorian wood structure. Care must be taken to ensure that we do not miss competent or complex Roman wooden structures by assuming they are post-medieval.

Well structure

There are several distinct styles of wooden well from the Roman period. The three main types are those that are:

A. built from the bottom of the pit upwards
B. built at the surface and dug or lowered into the well pit
C. of stacking frames which may be built within the well pit from the top downwards or from the bottom upwards depending on local conditions.

An example of type A is found at Scole (Rogerson 1977) where corner posts are positioned at the pit bottom then planks and braces are nailed behind the posts. Other wells built *in situ* include wicker lined wells.

Type B includes those with a free-standing frame with pegged mortice and tenon joints to which planks are attached, for example Wild Goose Cottage, Nottinghamshire (Garton and Salisbury 1995). This group also includes barrel wells, such as those found in London (Wilmott 1982), and basket wells like those at Scole (Darrah forthcoming).

Type C wells are formed by frames stacked upon each other. These frames can be assembled at the bottom of the well pit and built up towards the surface. Alternatively in soft ground the top frames may be placed in a shallow pit. The ground below this frame is then dug out, the next frame is dismantled and reassembled below the existing frame. This method has the advantage of using the top frames to support the pit sides while digging proceeds.

Great Holts Farm well is an example of type C. The only way to determine whether it was built from the bottom up or top down would be to study the soil stratigraphy in the immediate area of the well. This was not possible at this site but may be possible in future well excavations.

The presence of two distinct frame sizes suggests either a step in the well lining (as at Chigwell (F.R. Clark pers. comm.) and Skeldergate (Carver *et al.* 1978)) or a rebuilding of the well. At both Chigwell and Skeldergate the smaller frames are at the bottom of the well. It is not clear whether the larger frames are at the top in this well, but in suggesting a well structure I have assumed this to be the case following the known pattern (Fig. 114).

Dating

Objects may be deposited within a well at various times in its life:
during construction
while silts form during its working life
during cleaning
as it is backfilled at the end of its active life
after it is abandoned.

The best preserved objects are usually surrounded by silt deposits near the base of the well. Wooden objects deposited in a well may sink or float, depending on their own characteristics and the manner in which they are introduced. For instance freshly felled oak will sink, while seasoned timber and other species may float. But if seasoned oak is trampled into the silt at the well bottom it may stay buried in those silts. Small pieces of floating wood will tend to be removed in buckets of water drawn from the well.

The wooden objects from within the well fill at Great Holts could have been deposited at any stage of its history. They may or may not be contemporary with the well building and/or repairing phase.

Although a number of these objects are offcuts, they do not represent offcuts from the well timbers. They are almost certainly offcuts from a different type of structure near to the well site. This could be a structure associated with the well (a shed to cover it) or a distinct structure such as a house or barn.

Four of the thickest well planks were dated by dendrochronology; and this suggests that two trees were sawn up to create these four planks.

Dendrochronologists correctly give the date that the measured timbers were growing, with the allowance for

sapwood. As Baillie (1995) points out, any additions to this exact information would be speculative, and thus devalue their exact dating method. In the case of the Roman well planks from Great Holts Farm, I would like, as a wood technologist, to suggest a probable date for the felling of the trees. My suggested date relates entirely to this set of data and should not be extrapolated to other groups of timbers. It is not intended to imply that dendrochronologists should provide more information.

Trees over 0.5m diameter lose an appreciable amount of outer heartwood in the process of squaring up. Most heartwood annual rings are lost on the sawn boards which lie nearest to the diameter of the tree (Fig. 116). However, as these are the planks with most annual rings it is precisely these planks which are most likely to be dated by dendrochronology. This loss of heartwood does not effect the dendrochronological date, but it does effect the estimate for the felling date of the tree.

This probable felling date is estimated by adding a series of estimates to the precise date provided by dendrochronology. My suggested felling date rests on the following assumptions;

that on these oak timbers there is no heartwood/sapwood boundary, so that some of the heartwood is missing,

that as the well timbers are tangentially sawn from a squared balk of oak, there may be a substantial number of annual rings in the heartwood of the tree which have been lost,

that the number of sapwood rings on a tree with this growth pattern is twenty-five, and that the average width of sapwood is 30mm.

The process of estimating the losses of timber from the outside of an inner plank sawn from a squared balk is shown in Figure 116. The actual measurements used come from plank 6472 which was originally 0.48m wide, had average annual ring widths of 2.4mm and a dendrochronological heartwood ring date of 178.

Plank 6472 was taken from position A in the balk. Geometrically we are estimating length zw, as this is the width of the wood lost from a trunk to form a plank in the formation of the balk. We use the information that for plank 6472 the thickness is one eighth of the width of the plank, the assumption is that there are eight planks made from the balk.

For 6472
Plank width = p = 4 wx = 0.48m
Diameter of the tree = d = 2 yz = p2 = 0.68m

The length zw = zy – wy = the width of wood lost from the trunk.

$wy = \sqrt{[(wx)^2 + (xy)^2]} = \sqrt{[(p/4)^2 + (p/2)^2]} = \sqrt{[0.48/4)^2 + (0.48/2)^2]} = 0.27m$
$yz = d/2 = 0.68/2 = 0.34$
$zw = zy - wy = 0.34 - 0.27 = 0.07m$

Sapwood accounts for 30mm with twenty-five rings (as a rule trees of this diameter are slowing down in growth rate, this decrease in growth rate is seen from other trees from this site so the width of the sapwood rings and outer heart wood rings will be lower than the average).

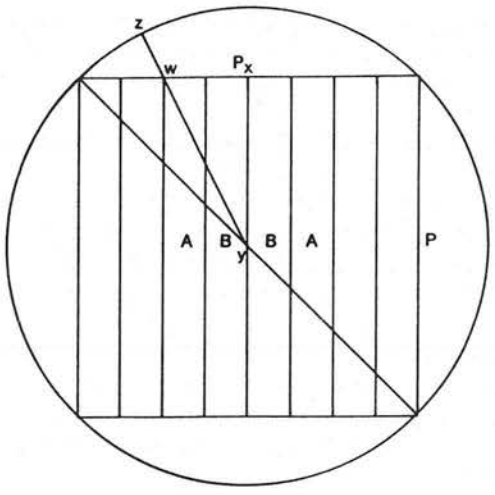


Figure 116 The process of estimating the losses of timber from the outside of an inner plank sawn from a squared balk

Loss of heartwood is 40mm, the number of heartwood rings lost is 40/2.4 = 17. (2.4mm is the average ring width for this tree, but again in these outer rings the width may well be less than 2.4mm).

The total number of rings lost is about 25 + 17 = 42.
My estimate of the felling date is 178 + 42 = 220 AD.

The dating of this well is slightly later than Wilmott's dating of the London wells with dovetail joints (1982), which are included in his 1st and 2nd-century group.

Conclusions

We are still at a stage where excellently preserved wood gives us new information about Roman woodworking techniques. So although the excavation techniques were not ideal the wooden objects retrieved were worth having.

The woodland resource for this period appears neither to be carefully managed nor old growth trees from high forest.

Conversion of oak trees into wide planks (up to 0.48m) was by sawing, this may have been preceded by hewing the trunks into squared balks. The sawing angle suggests two trestles rather than see-sawing. Sawing was also used for cross cutting planks to length and for cutting joints.

The well planks were joined to form square bottomless boxes with sawn through dovetail joints and diagonal braces across all four corners. No nails were used. A minimum of five box frames were stacked to form the well of at least 1.66m depth. The well box frames with dovetail corners are a common form of well lining in Essex; they are also found in London and York.

Evidence of other techniques were found on offcuts within the well, these include auger holes, thinning along the edge of one plank with an adze and possibly pointing of a post with an axe.

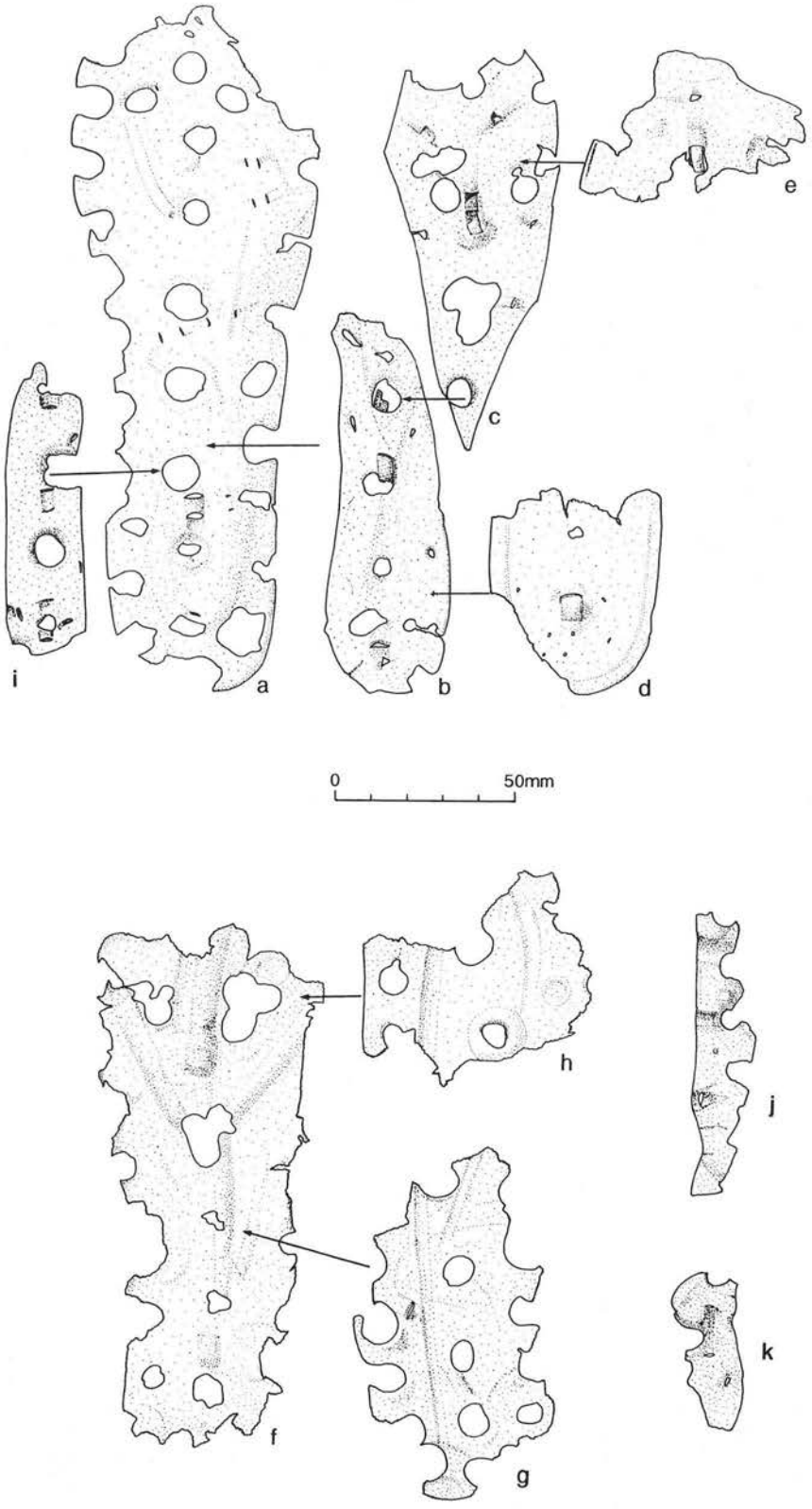


Figure 117 Leather: shoe 1

XVI. Leather

by D. Friendship-Taylor
(Figs 117 and 118)

The leather assemblage, all from the same context, (well 567, context 6463, within building 416), comprises parts of at least two Roman shoes and a piece of leather which bears evidence of leatherworking.

Some components had become displaced from their original relative positions in the burial environment and on excavation. Some small fragments, although identifiable as shoe parts, cannot necessarily be assigned to either of the two shoes identified. Delamination of some pieces has weakened the leather and most parts are in a fragile and fragmentary state.

The shoe bottom parts, being more substantial, have survived much better than the upper, as is usual, the latter having survived only as fragments.

Where possible, the leather has been identified, but the surfaces have become soft or disrupted, which has made identification difficult in all but a small number of pieces.

Shoe 1

Bottom parts of a multi-layered thonged and nailed shoe, presumably a *calceus*, all of calf or cattle leather, were identifiable.

Parts of the insole, grain side uppermost, survive at the toe (e) and heel seat (d). The middle sole components (a, b, c) comprise a number of overlapping partial and complete layers, the equivalent of three layers, beneath which is a lozenge-shaped shank (i) running along the longitudinal axis from near the rear of the heel seat to the waist. Below this is the delaminated outer sole (f, g, h), which bears impressions of the upper lasting margin, approximately 21mm wide. Some fragments remain of presumed packing around the sections of middle components (j), acting rather like a rand. Even allowing for some possible missing parts, the effect of the arrangement of the layers would most likely have made the heel higher than the forepart.

All the layers were joined together with a row of thonging (f) along the longitudinal axis of the shoe (average width of thonging: 4mm), with two 'branches'

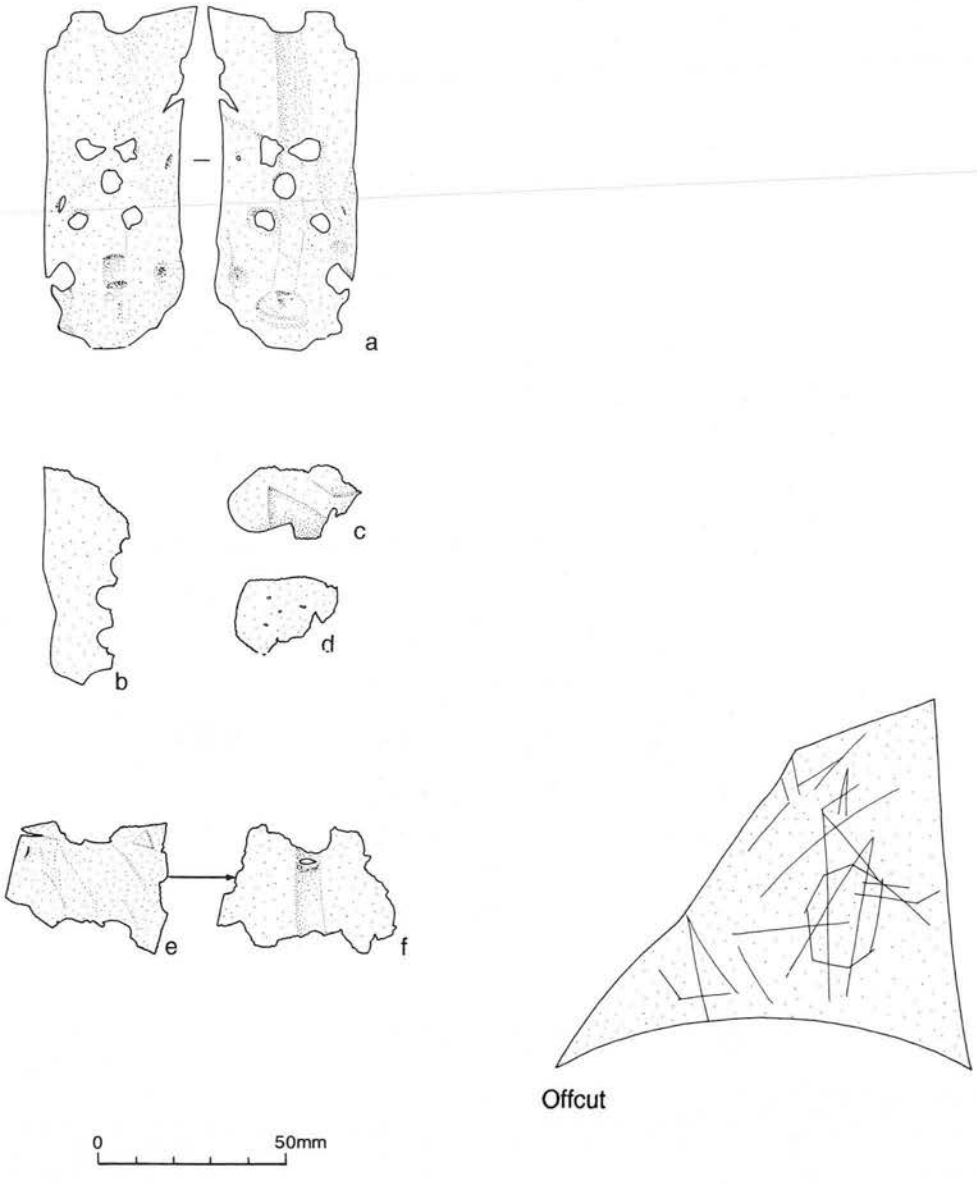


Figure 118 Leather: shoe 2 and offcut

angled towards the approximate line of the tread. Some of the thonging survives.

The sole is approximately 210mm in length, only slightly 'waisted' and 70mm at the broadest point across the tread, modern size two approximately (allowing for a presumed 10% shrinkage in burial), suggesting that it was worn by a youth or a woman.

There is a single row of hobnails around the margin, approximately 20mm from centre to centre. There is a further, medial, row, from seat to tread, with a diamond arrangement of four near the toe (a). The hobnails are domed, with square shanks, fifteen of which survive, of an estimated thirty-six, but none now firmly *in situ*. The pattern conforms broadly to Rhodes Type 'B' (Rhodes 1980), which were identified at that site mainly with women's and children's shoes of streamlined type (as in this example) and dated between AD 70 and 160 in that context.

Some small stitch holes in the insole seat and apparently relocated hobnails presumably represent repairs on several different occasions.

Marked wear on one side of the rear of the heel seat suggests that the shoe was worn on the left foot (the outside edge of the heel normally sustains more wear in use).

Shoe 2

Fragmentary bottom parts of a multi-layered thonged and nailed shoe, also of a *calceus*, of cattle leather where identification was possible.

Parts of the middle sole survive (a, e, f) of a slender shoe (approximately 38mm at the waist), of indeterminate length, but probably from a child's shoe. The remains of a broad medial thong, 9mm wide, run from the back of the heel seat to at least the ball of the foot, leaving a marked impression on the flesh side.

Six hobnails survive, five forming a dice five at the waist/heel seat (a). There is insufficient evidence to assign the fragments to a definable category of nailing pattern.

One fragment, with cut edges, suggests that components may have been re-used (b).

In association were possible undecorated upper fragments, but with no untorn edges or features surviving. There were also three small fragments of openwork, with triangular cut-outs, but there is no positive evidence that these belong to either of the two shoes. They could belong to a *calceus* or to a one-piece shoe (*carbatina*), not otherwise represented.

From the same context, but not necessarily in close association, is a fragment of probable upper, with circular punched holes. Though delaminated, the leather does not appear to belong to a nailed shoe. It is possible that it belongs to either of the two shoes and that it could be associated with the openwork fragments aand/or the plain vamp fragments. These three elements could occur together on a *calceus* upper, as on an example from Köln (Schleiermacher 1982). Elaborate openwork uppers occur in both military and civilian settlements, from the last quarter of the 1st century to about the 130s AD. Though fragmentary, there are indications here of some high quality footwear.

An offcut, probably of goat leather, had been used as a base for cutting out, including a small seven-sided shape. This constitutes the only positive evidence of leatherworking.

Part 4. Zoological Evidence

I. Human bone

by S. Mays

Fourteen cremations were discovered but only the bone from three of them, 43, 122 and 185, was analysed; the bone from the remaining eleven was either undatable or too sparse and fragmentary for study. All three cremations had been heavily truncated by ploughing and this limited the amount of data which could be obtained from them. Nevertheless, there were some points of interest worth recording.

An adult corpse yields about 2kg of bone (Trotter and Hixon 1974). The Great Holts Farm burials are all very incomplete, probably in the main reflecting plough damage.

In each burial the bone was white in colour. According to Shipman *et al.* (1984) this suggests a firing temperature of above *c.* 940°C. A few additional fragments of unburnt bone were found in context 5060.

Mean fragment size was about 7–10 mm in each burial. The small size of the fragments meant that few could be identified to skeletal element.

Contexts 5332 and 5211 contained some animal bone. In 5332 there were only a few fragments of animal bone, none of which were identifiable to species. In 5211 most of the bone fragments which were identifiable were animal bone rather than human, only a few identifiably human fragments were present. The animal bone from this context which could be identified to species and skeletal element all came from the forelimb of a cow (carpals and metacarpal).

Animal bone fragments are quite frequent findings from cremation burials during Romano-British and other periods when cremation was practised. In such instances the question arises as to whether the animal fragments represent deliberate burning of animal remains with the corpse or whether they are pieces of bone lying around in the pyre area which were inadvertently burnt and collected with the human remains. The few fragments in context 5332 may well represent inadvertent inclusions, but the bones from 5211 must surely represent deliberate offering(s). The animal remains from 5211 to some extent recall those found in a Romano-British cremation from Brougham, Cumbria, where some bone fragments from the rear leg of a horse were found with an adult male (Mays nd).

Context	*Cremation*	*Phase*	*Age*	*Sex*	*Weight of bone (grams)*
5332	185	II.3	Adult	Unknown	204*
5211	122	II.3	Adult	Unknown	137
5060	43	II.3	Adult	Unknown	50

* the bone from this burial was poorly sorted, so the weight includes significant extraneous material (soil and stones)

Table 62 Cremated bone

II. Animal bone

by U. Albarella

Summary

A small assemblage of animal bones was recovered mainly from late 3rd/4th-century AD contexts. The majority of the bones are in excellent condition and derive from the waterlogged conditions of phase II.2 well 567. Beef was the most commonly eaten meat, but a variety of other resources including some wild animals, were also exploited. The size of cattle was very large and might indicate that these animals were recent imports from the continent. The simultaneous presence of sparrowhawk and thrush bones may represent early evidence of hawking, although the use of the raptor as a decoy is perhaps more likely. The evidence from the mammal and bird bones appears to corroborate the interpretation, derived from the study of the plant remains and fish bones, of a relatively affluent life-style and overseas contacts for the Great Holts Farm inhabitants.

Methods

Animal bones from most contexts were hand-collected. Small samples were taken and wet-sieved (mesh size 0.5mm) from a number of 'dry' contexts. These samples were mainly aimed at the recovery of plant remains, and produced no animal bones. This is probably due to the acidic conditions of the soil.

Due to the instability of the surrounding soil, the waterlogged fills from the bottom of the well had to be removed mechanically in blocks. Samples from these blocks were taken and water-sieved through a 0.5mm mesh. These produced quite a few bones, mainly of birds and fishes (Table 64).

The mammal bones were recorded following a modified version of the method described in Davis (1992) and Albarella and Davis (1994). In brief, all teeth (lower and upper) and a restricted suite of parts of the postcranial skeleton were recorded and used in counts. These are: skull (zygomaticus), scapula (glenoid articulation), distal humerous, distal radius, proximal ulna, carpal 2–3, distal metacarpal, pelvis (ischial part of acetabulum), distal femur, distal tibia, calcaneum (sustentaculum), lateral part of the astragalus, naviculo-cuboid, distal metatarsal and proximal phalanges (1, 2 and 3). At least 50% of a given part had to be present for it to be counted.

For birds the following were always recorded: scapula (articular end), proximal coracoid, distal humerous, proximal ulna, proximal carpometacarpus, distal femur, distal tibiotarsus, distal tarsometatarsus.

Horncores with a complete transverse section and 'non-countable' elements of particular interest were recorded, but not included in the counts.

Wear stages were recorded for all P_4s and dP_4s as well as for the lower molars of cattle, caprines and pig, both isolated and in mandibles. Tooth wear stages follow Grant (1982) for cattle and pig and Payne (1973, 1987) for caprines.

Measurements are listed in the archive. These in general follow von den Driesch (1976). All pig measurements follow Payne and Bull (1988). Humerus HTC and BT and tibia Bd measurements were taken for all species as suggested by Payne and Bull (1988) for pigs.

Provenance and preservation

All animal bones derive either from fills of pits and ditches or from well 567 (Table 63). The bones from pits and ditches were moderately well preserved, whereas the bones from the well were generally in excellent condition, due to the waterlogged environment. However, a few cattle metapodials from the well (context 6459) had very eroded surfaces, which suggest that they had been subject to aerobic conditions for some time, and therefore the backfilling of the well does not represent a single event. Context 6459 is at the top of the sequence of waterlogged levels located at the bottom of the well (Fig. 33) and may thus represent the top level of the initial backfilling. Unfortunately, we do not know the condition of the bones above, because part of the well contents was removed by machine.

A few bones had been gnawed by carnivores, although this condition was not particularly common. No gnawing marks were recognised on the bones from the well.

The bones from the well were probably in a primary deposit, as were those from context 6082 in bath-house 414, as suggested by the presence of a pig astragalus and calcaneum in articulation.

The bone condition, the context, and the small quantity of material from other phases suggest that there is no significant residual or intrusive material in the late Roman assemblage.

Overview of the bone assemblage

Cattle is by far the most common species (Table 63), as is typical of sites of full Roman tradition (see King 1984, but also table 6 in Robinson and Wilson 1987). Due to the lack of 'whole earth' samples, we cannot establish to what extent this is due to a recovery bias, but it seems improbable that better recovery could have significantly altered the frequencies of the main species.

The assemblage from the late Roman well seems to be related to some special activities and can hardly be used for establishing the relative economic importance of the different animals. The hand-collected assemblage from the well is mainly represented by elements of cattle skull and feet (Table 65). Most metapodials were complete. Cut marks, almost certainly due to skinning, were found on carpals, metapodials and phalanges (Plates VI and VII).

Plate VI Cattle metatarsal with cut mark, probably due to skinning

Plate VII Cattle 1st phalanx with cut marks, probably due to skinning

	Early Roman	*Late Roman (3rd/4th cent. AD)*			*Medieval*	*Total*
	(1st/2nd cent.)	*Well 567*	*Other contexts*	*total*		
Cattle (*Bos taurus*)	6	64	28	92	3	101
Caprine (*Ovis/Capra*)	–	2	6	8	1	9
(sheep (*Ovis aries*))		(1)	(–)	(1)	(1)	(2)
(goat (*Capra hircus*))		(–)	(–)	(–)	(–)	(–)
Pig (*Sus scrofa*)	1	1	5	6	–	7
Equid (*Equus* sp.)	–	–	5	5	1	6
Dog (*Canis familiaris*)	–	–	–	–	2	2
Cat (*Felis catus*)	–	–	1	1	–	1
Red deer (*Cervus elaphus*)	–	+	1	1	–	1
Hare (*Lepus* sp.)	–	1	1	2	–	2
Chicken/pheasant/guinea fowl (*Gallus/Phasianus/Numida*)	–	1	2	3	–	3
Goose (Anserinae)	–	2	–	2	–	2
Bird (Aves)	–	–	–	–	2	2
Total	**7**	**71**	**49**	**120**	**9**	**136**

Table 63 Number of identified specimens (NISP) by taxon, at Great Holts Farm (hand-collected assemblage). + = present, but not 'countable' (Davis 1992). Figures in brackets for sheep and goat are included in the total for caprine

Plate VIII Sawn antler tine

Plate IX Arthropathic cattle metatarsal

Plate X Woodcock humerus with cut marks (mm scale)

This sort of deposit can be associated with primary butchery wastes or tanning wastes (see Schmid 1972 and Serjeantson 1989). The lack of horncores, generally associated with these sort of deposits, may be due to the fact that they were used elsewhere for making tools. Evidence of horn and antler working has indeed been found in other parts of the site. Five cattle horncores, three chopped from the skull, and two antler fragments, one sawn at the base (Plate VIII), were recovered from the late Roman period. The sawn antler is the only one to have been found in the well. The tip of this antler is worn, probably due to some kind of use.

The cattle bones from the well derive from mature animals, some of them with severe arthropathies (Plate IX), a condition generally associated with working stress generated by ploughing or by pulling carts (Jewell 1963, Bartosiewicz *et al.* 1993). However, the absence of similar conditions in cattle — probably also used for traction — from other sites suggests that the nature of the terrain may also have been a factor.

The metric data are listed in the archive. These can be useful as part of a more general database of metric data from Roman sites. The eleven complete cattle metapodials are particularly valuable in this respect and are discussed in the next section.

Several species of bird were found, mainly in the sieved samples from the well (Tables 63 and 64). Most of the duck and goose bones are relatively small and may derive from wild animals. Woodcock and plover provide tasty meat, and, when found in sites of later periods, tend to be associated with people of high status (*e.g.* Maltby 1982; Albarella and Davis 1996). The fact that they were eaten by the inhabitants of Great Holts Farm is demonstrated by the presence of cut marks on one of the woodcock bones (Plate X). Woodcock remains have been found in several other Roman sites and are particularly common at Exeter (Maltby 1979). The intriguing presence of both sparrowhawk and thrushes is discussed below. This variety of birds, together with the presence of wild

	6459 (V= c. 60l)	6461 (V= c. 30l)	6462 (V= c. 60l)	6463 (V= c. 105l)	6465 (V= c. 15l)	Total
Cattle (*Bos taurus*)	–	–	–	1	–	**1**
Hare (*Lepus* sp.)	1	–	–	–	–	**1**
Chicken/Pheasant/guinea fowl (*Gallus/Phasianus/Numida*)	16	–	1	–	–	**17**
Goose (Anserinae)	4	–	–	2	–	**6**
Duck (Anatinae)	3	2	2	–	–	**7**
Sparrowhawk (Accipter nisus)	–	–	–	1	–	**1**
Woodcock (*Scolopax rusticola*)	11	1	9	1	–	**22**
Golden/Grey Plover (*Pluvialis* sp.)	1	–	–	–	–	**1**
Thrush (*Turdus* cf. *merula*)	33	4	33	56	5	**131**
Total	69	7	45	61	5	**187**
Fish	5	3	34	62	–	**104**
Grand total	**74**	**10**	**79**	**123**	**5**	**291**

Table 64 Number of identified specimens (NISP) by taxon from phase II.2 well 567 (sieved collection). 6459–6465 are the different contexts at the bottom of the well. 'V' is the volume of the sample sieved from that context

mammals such as red deer and hare (Table 63) appears to corroborate the interpretation derived from the plant remains of a relatively affluent life-style at Great Holts Farm.

The cattle metapodials

The size and shape of the eleven cattle metapodials found in the fills at the bottom of phase II.2 well 567 are compared to those from other Roman sites in eastern England (Figs 119–120).

It is clear that both the metacarpals and metatarsals at Great Holts Farm are from very large animals. The metatarsals are particularly massive (Fig. 119), and this can only be marginally due to their abnormally splayed out distal ends.

The difference in size between the Great Holts Farm animals and those from other sites is very marked (for both lengths and distal widths of metacarpals and metatarsals $p<0.01$ according to a two-tailed Student's t-test).

Though larger, these specimens are not much more robust than those from other sites (Fig. 120). The metacarpals from three Roman sites considered here (Great Holts Farm, Colchester, and Lincoln), seem to cluster in two groups (Fig. 120 top). It is tempting to suggest that the specimens in the 'more gracile' group, which are more numerous, belong to cows and the more robust ones to oxen (it is unlikely that such a high number of bulls could be kept on site). However, a clear shape difference between females and castrates only occurs in some cattle breeds (see Fock 1966; Albarella 1997). Ox metapodials can appear more female-like or male-like according to their breeds and, presumably, to the age of castration. Furthermore, difference in shape between different breeds or populations can be even larger than between different sexes. However, when this is the case, the difference is generally more pronounced in metatarsals than in metacarpals (Albarella 1997), the former being less sexually dimorphic (Grigson 1982; Higham 1969; Howard 1963). In the case of the Roman sites considered here the clustering can be detected in the distribution of the metacarpals (Fig. 120 top), but not of the metatarsals (Fig. 120 bottom) and it is therefore more probably due to a sex difference than to the contemporary presence of two different breeds.

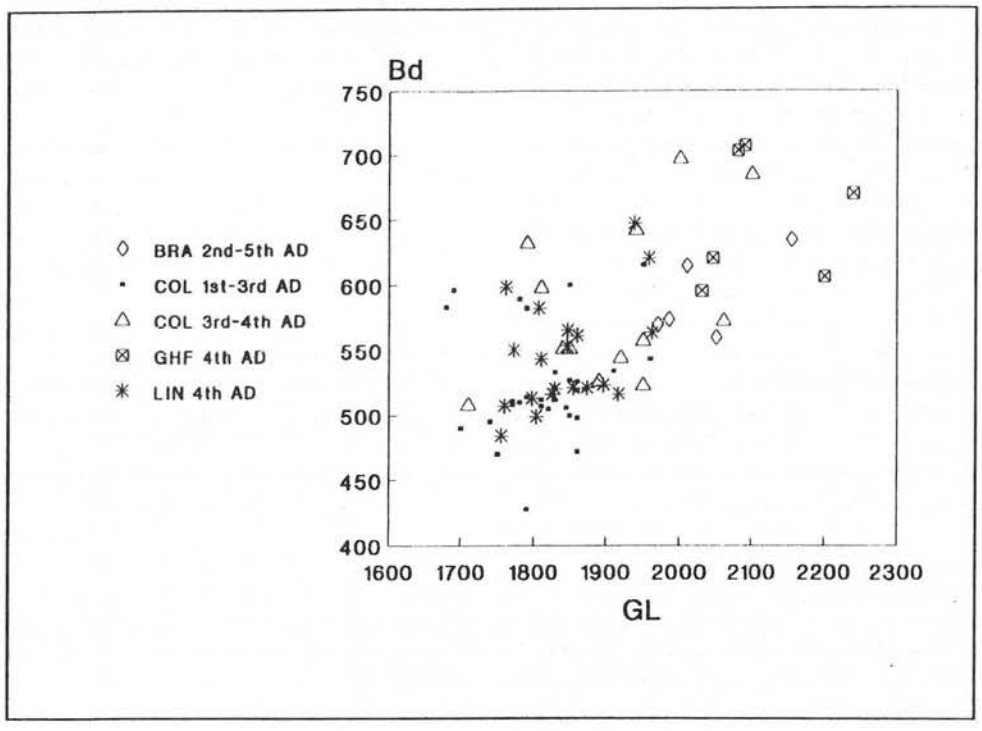
	6459	6460	6462	6463	Total
Cranium	2	–	–	1	**3**
Teeth (max. & mand.)	8	1	6	1	**16**
Radius	–	–	1	–	**1**
Tibia	–	1	–	–	**1**
Carpal	–	–	2	–	**2**
Calcaneus	1	–	–	–	**1**
Metacarpal	6	–	1	–	**7**
Metatarsal	9	–	1	–	**10**
Phalanges (1, 2 & 3)	14	–	9	–	**23**
Total	**40**	**2**	**20**	**2**	**64**

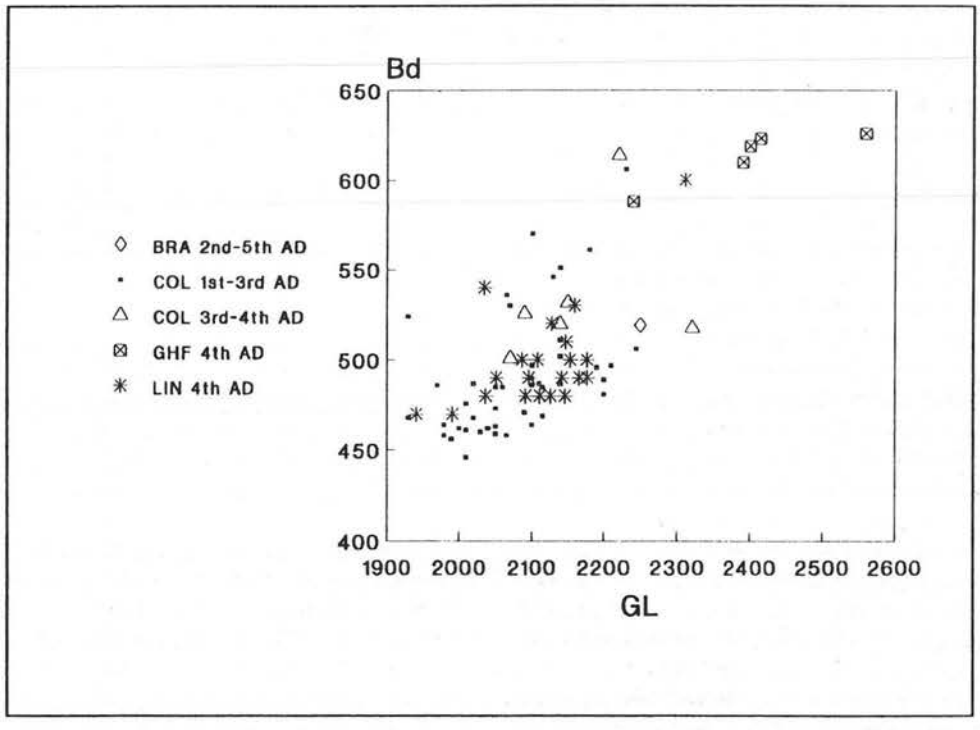
Table 65 Representation of cattle body parts by number of identified specimens (NISP) from phase II.2 well 567 (hand collected assemblage). 6459–6463 are the different contexts at the bottom of the well

The assumption that the metapodials from Great Holts Farm derive from both females and castrates is important for our interpretation of their large size. Indeed this hypothesis rules out the possibility that the large size of the Great Holts Farm animals is due to the fact that they were all oxen, whereas most of the bones from the other sites are from females. My suggestion is that the Great Holts Farm animals rather belong to a genuinely larger and perhaps different type of cattle.

In his study of the Dutch Eastern River area Lauwerier (1988) has argued that the cattle found in Romanised sites reflect the import and subsequent improvement of the stock through interbreeding. In one site, Druten (3rd century AD), there is contemporary presence of two size groups, which Lauwerier interprets as being derived from two different populations: a larger, imported type and a smaller, native one. The 4th-century cattle from another site, Nijmegen, are intermediate in size between the two Druten Groups and might be the consequence of subsequent interbreeding. No large animals were found in Dutch regions outside the Roman empire.

A remarkable difference in the size of cattle from *Germania Romana* and *Germania Libera* was noted by Teichert (1984). The cattle from the Roman provinces were definitely larger, although a few large cattle were also





Size of cattle metacarpals (top) and metatarsals (bottom) at Great Holts Farm and other Roman sites. BRA = Braintree (Smoothy 1993), COL = Colchester (Luff 1993), GHF = Great Holts Farm, LIN = Lincoln (Dobney *et al.* 1996). GL = greatest length, Bd = distal breadth, SD = smallest breadth of diaphysis. Measurements in tenths of mm.

Figure 119 Size of cattle metacarpals (top) and metatarsals (bottom)

found in the area occupied by the Germans. This suggests the existence of some trade between the Germans and the Romans. With the retreat of the Romans, large cattle were no longer to be found north of the Alps (Teichert 1984).

Dobney *et al.* (1996) have noticed an increase in size of the Lincoln cattle from the 1st/2nd century to the 3rd. In the 4th century there is greater variation, but the very large animals found in the 3rd century are no longer present. Although caution is necessary, due to the very small number of measurements from the 3rd century, Dobney *et al.* (1996) also raise the possibility that the largest specimens may be recent Roman imports, and that later animals may represent the product of interbreeding between local and imported stock.

Reviewing cattle size from European archaeological sites, Audoin-Rouzeau (1991) also suggests that the large Roman cattle found in northern Europe were the product of importation rather than local improvement.

Using the average multiplying factor for males and females recommended by von den Driesch and Boessneck (1974), the height of cattle from Great Holts Farm has been calculated as being *c.* 130cm. This makes them similar in size to the larger group from 3rd-century Druten and in the upper range of the large cattle from *Germania Romana*. They are also larger than the largest 3rd-century cattle from Lincoln. Few Roman sites have similarly large cattle (see Audoin-Rouzeau 1991) and, interestingly, some of them are from Italy (see also King 1994).

On the basis of the evidence discussed above my suggestion is that the cattle from Great Holts may represent imported rather than native stock and, due to their very large size, recent imports, which have not interbred with local populations.

Sparrowhawk and thrushes

The distal part of a sparrowhawk tarsometatarsus (context 6463) and many thrush post-cranial bones were collected from the waterlogged samples from the bottom of the well (Table 64; Fig. 33).

Thrush bones have been identified as such (*Turdus* sp.), rather than starling (*Sturnus vulgaris*) on the basis of the morphological criteria suggested by Stewart (1992), in particular those which apply to the proximal carpometacarpus. The size of the bones is also more compatible with *Turdus* rather than *Sturnus*. Large size overlap occurs between the different *Turdus* species (Stewart 1992) and therefore specific identification of these bones has not been possible. However, the bones are of a medium-large size and they certainly do not belong to the rather small redwing (*Turdus iliacus*). When compared with the metric data presented in Stewart (1992), they seem to fit particularly well with the distribution of the blackbird (*Turdus merula*), and are quite consistently larger than any of the song thrush (*Turdus philomelus*) bones, but partly overlap with the larger fieldfare (*Turdus pilaris*) and mistle thrush (*Turdus viscivorus*).

The thrush bones are derived from various parts of the body, but no skulls were found. This might be due to the fragmentation of these fragile elements, although a genuine lack of heads, probably connected to their early separation and discard, cannot be excluded.

Sparrowhawk bones have only occasionally been found on Roman sites in Britain (Parker 1988), but they are much more common in later periods. In a number of medieval sites they are found as complete skeletons, and they are generally interpreted as tame birds used for hawking (Mulkeen and O'Connor 1997). Sparrowhawks are unlikely birds to be found in archaeological sites for any other reasons, as they do not scavenge, and are too small and tough to make valuable meat or feathers. At Great Holts Farm there is only one bone rather than the whole skeleton, though it is possible that the rest of the body was in fact in the well but was not collected.

Thrushes occur much more commonly in Roman sites (Parker 1988), and they are generally interpreted as eaten birds (Coy 1987).

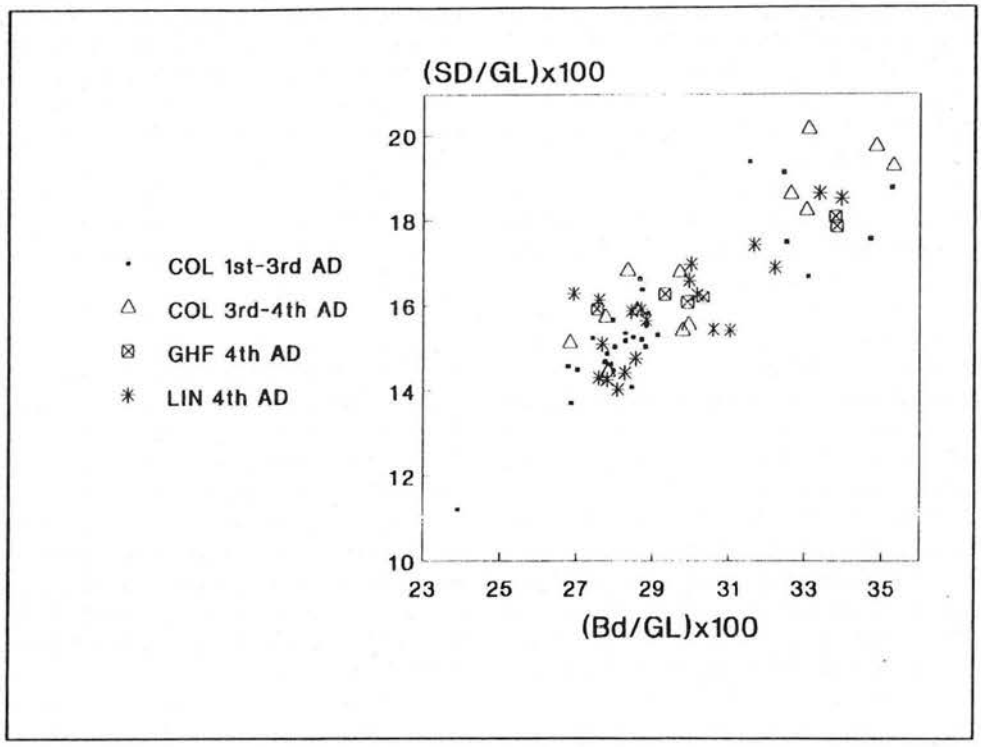
Turdids are among the birds most commonly caught by the wild sparrowhawk, and much more so by the trained bird, for which they can represent as many as 90% of the prey (Prummel 1997). It is therefore tempting to correlate the presence of sparrowhawks and thrushes and to suggest that the raptor was a tamed bird kept to catch passerines and possibly other birds, such as woodcocks. However, we do not have evidence that hawking was practised in Europe before the 4th–5th century (Prummel 1997) and in Britain until mid Saxon times (Parker 1988). Due to the almost total absence of any pictorial or literary evidence, it is obvious that the Romans were not commonly engaged in hawking.

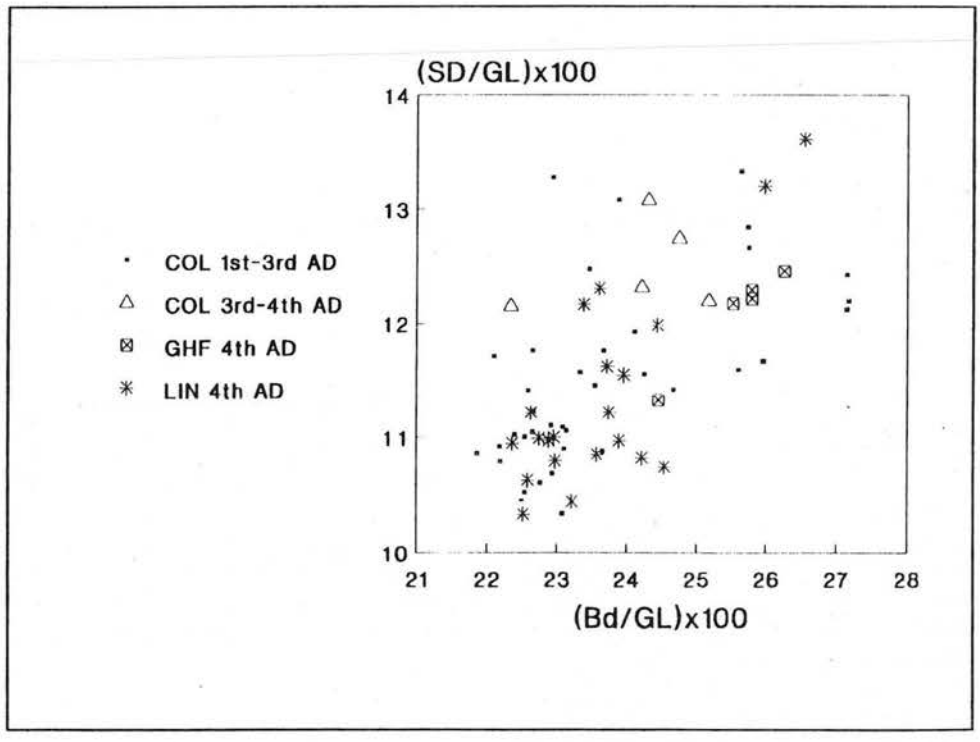
Nevertheless, falconry is very ancient; it was practised as early as the 8th century BC by the Assyrians (Epstein 1943). Although Romans were obviously not keen falconers, it is unlikely they were totally unaware of this practice. There is a passage in an epigram of Martial (40–102 AD), in which there is quite definite reference to hawking. Epstein (1943) suggests that 'it is just possible that (...) a few Roman gentlemen, who had learned it in one of Rome's Asiatic or African provinces, practised this sport'.

The well 567 at Great Holts Farm was an integral part of building 416 and was probably covered by a portico. Its indoor location is also confirmed by the absence of weed seeds deriving from the local vegetation and by the presence of insects of indoor habitats. It is assumed that the well deposit is represented by material intentionally dumped in the well, derived from human activities.

We can therefore rule out the possibility that the bird bones do not have an anthropogenic origin, a hypothesis which had to be taken into account in view of the absence of cut marks on the thrush bones. Since both the sparrowhawk and the thrushes are the product of human activities, the possibility that they represent an early case of hawking must be raised. As discussed above there are hardly any other reasons why a sparrowhawk should be kept or killed and its association with such a high number of thrush bones could be significant. Another possibility is that the sparrowhawk was used as a decoy to attract and catch small birds, as suggested by Reilly (1985) for his remains of hobby (*Falco subbuteo*) bones from the site of Settefinestre in Italy and as depicted in the 'Small Hunt' mosaic at Piazza Armerina in Sicily (4th century AD) (Parker 1988, Reilly 1985).

Whatever the explanation, it is not here suggested that the date of the introduction of hawking in Europe should be moved back by one or two centuries. The occasional case of falconry may have occurred anywhere in the Roman Empire and, since it was not part of a widespread phenomenon, may have escaped the attention of the pictorial and literary sources of the time. Whether interpreted as an early case of hawking or as the use of





Shape of cattle metacarpals (top) and metatarsals (bottom). COL = Colchester (Luff 1993), GHF = Great Holts Farm, LIN = Lincoln (Dobney *et al.* 1996). GL = greatest length, Bd = distal breadth, SD = smallest breadth of diaphysis.
These diagrams are size independent: the higher the value the more robust is the specimen.

Figure 120 Shape of cattle metacarpals (top) and metatarsals (bottom)

raptors as decoys, the presence of the sparrowhawk possibly reinforces the overseas connections and the upper class life-style of the inhabitants at Great Holts Farm.

Conclusions

The small assemblage of mammal and bird bones from Great Holts Farm provides an interesting insight into the life and economy of a Roman farmstead in Essex. As is common for Roman sites in the north-western Provinces of Europe, beef was the most commonly eaten meat. A variety of other resources, including wild mammals, birds and fishes attest to the prosperous life-style of the Great Holts Farm inhabitants. This is somewhat surprising, due to the rather unpretentious flooring of the building which initially indicated that we were dealing with a low status site.

The assumed wealth of the site is confirmed by the presence of a number of 'exotic' plants, such as Mediterranean stone-pine (*Pinus pinea*), sweet chestnut (*Castanea sativa*), walnut (*Junglans regia*), grape (*Vitis vinifera*) and olive (*Olea europaea*). Of these species only the olive was definitely imported, but all others, although they can grow in Britain, are typical Mediterranean plants. The presence of the Spanish mackerel (*Scomber scombrus*), and possibly of the scad (*Trachurus trachurus*) among the fish remains also suggests imported goods, perhaps in the form of stored fish.

The evidence from the mammal and bird bones also points to overseas contacts, although no exotic species were found. The first piece of evidence is represented by the size of the cattle remains. This is very large and suggests the presence of non-native, recently imported livestock. The second piece of evidence is the simultaneous presence of a sparrowhawk tarsometatarsus and a large number of thrush bones. This is tentatively interpreted as an early indication of hawking or, alternatively, of the use of the raptor as a decoy. Both these would suggest a connection between the Great Holts Farm inhabitants and the southern Provinces or Rome itself.

III. Fish bone

by A. Locker

A small assemblage of fish bones was recovered from four contexts within late 3rd/early 4th-century well 567. Samples from the contexts were sieved through a 0.5mm mesh and the following species were identified: Eel (*Anguilla anguilla*), Herring (*Clupea harengus*), Pike (*Esox lucius*), Scad (*Trachurus trachurus*), Scombridae and plaice/flounder (*Pleuronectes platessa/Platichthys flesus*). These are tabulated in Table 66, unidentified vertebrae have been included, but not indeterminate fragments.

Discussion

The site is 13km from the Blackwater Estuary, and of the species identified only pike and eel are representative of local river fishing. Flatfishes could have been caught on lines or in shoreline traps along the local coastline. Herring would have been seasonally available; the annual migration of separate populations could have given rise to a winter fishery in November and December off the Essex coastline, if current migrations have any relevance to the Roman period (Cushing 1982, 61).

	6450	*6461*	*6462*	*6463*	*Total*
Eel	1sk	0	0	0	**1**
Herring	0	0	0	1sk	
	2v	0	17v	19v	**39**
Pike	3v	0	0	3v	**6**
Scad	0	0	6v	0	**6**
Scombridae	0	0	0	3v	**3**
Plaice/flounder	1sk	0	0	4sk	
	9v	0	3v	14v	**31**
Unidentified	0	3v	6v	0	**9**
Total	**16**	**3**	**32**	**44**	**95**

Table 66 Fish bones from phase II.2 well 567

The scad vertebrae are from a mature fish, this pelagic species would have been caught offshore, although found in the North Sea it has not been regarded as a prime food fish in Britain, but it is valued in the Mediterranean (Wheeler 1978, 246). Together with the scombrid precaudal vertebrae, which are closer to the Spanish mackerel (*Scomber japonicus*) than the more northerly distributed mackerel (*Scomber scombrus*), it is feasible that the scad and ?Spanish mackerel remains may represent stored fish imported from the Mediterranean, possibly in amphorae. The well also contained some seeds of imported species such as the olive and Mediterranean stone pine and it appears that a variety of imported foods were brought to the site.

Spanish mackerel vertebrae were also identified from 1st/2nd-century deposits at Gorhambury villa, Herts (Locker 1990, 212) and also from six heads in a 1st-century amphorae from Winchester Palace, London, on which the inscription described the contents as *liquamen* and the property of Lucius Tettius Africanus from Antipolis, modern Antibes (Yule 1989).

A larger assemblage of Roman fish bones combined from a number of sites in Colchester contained a high proportion of indeterminate material and many more species, often represented by a single bone. In contrast to the Great Holts Farm assemblage the species all represented local exploitation of rivers and the North Sea (Locker 1992, 278 and Locker 1987) and there was no evidence of wealth through imports of luxury items.

Despite the small size of the fish assemblage from the well, Great Holts Farm has provided more valuable data regarding the range of possible imports from the Mediterranean during the Roman period.

IV. Marine mollusca

by K. Reidy

The shells were washed and counted, the left and right valves of the oyster shell were separated and then divided into those which could be measured (whole valves) and those which could not be measured (fragmented valves). A minimum number of individuals (MNI) was calculated by adding together the totals of measurable and unmeasurable valves for both left and right valves. The highest of the two was taken to be the MNI. There were few other species present and their presence was merely noted.

Context	*Fill of*	*LVUM*	*RVUM*	*LV*	*RV*	*MNI*	*%*	*Phase*
6075	93	0	0	1	1	1	0.18	II.3
6179	100	7	4	3	17	20	3.51	II.3
6355	100	5	0	5	9	10	1.75	II.3
6384	100	2	1	1	7	8	1.41	II.3
6181	414	0	0	0	0	1	0.18	II.2
5923	415	14	17	35	37	54	9.49	II.3
6002	415	2	0	5	10	10	1.76	II.3
6003	415	7	6	24	27	33	5.80	II.3
6052	415	1	2	7	8	10	1.76	II.3
5902	456	0	0	0	1	1	0.18	II.3
5904	456	0	0	2	0	2	0.35	II.3
6010	525	2	1	0	0	2	0.35	II.2
6084	567	52	37	61	94	131	23.02	II.2
6459	567	19	26	44	45	71	12.48	II.2
6462	567	3	3	9	11	14	2.46	II.2
6463	567	8	3	8	10	16	2.81	II.2
6465	567	0	0	1	0	1	0.18	II.2
6082	575	10	13	24	22	35	6.15	II.3
6143	575	1	1	0	0	1	0.18	II.2
6222	575	1	1	6	3	7	1.23	II.3
6365	575	0	0	0	0	1	0.18	II.2
6102	605	1	1	1	1	2	0.35	II.3
6141	606	0	2	0	2	4	0.70	II.3
6345	623	1	0	0	2	2	0.35	II.2
6241	672	0	1	0	0	1	0.18	II.2
6267	680	0	0	11	10	11	1.93	II.2
6346	728	3	4	3	1	6	1.05	II.3
6404	748	0	0	0	1	1	0.18	II.2
6390	751	0	0	0	1	1	0.18	II.3
6071	798	0	0	1	0	1	0.18	III.1+
6072	798	1	2	2	2	4	0.70	III.1+
6073	798	0	2	2	4	6	1.05	III.1+
6074	798	8	7	8	8	16	2.8	III.1+
6087	798	3	10	4	5	15	2.64	III.1+
6142	798	5	10	9	10	20	3.51	III.1+
6252	798	8	6	6	11	17	2.99	III.1+
6344	798	0	2	0	0	2	0.35	III.1+
6363	798	0	0	0	4	2	0.35	III.1+
6253	809	1	3	13	10	14	2.46	II.3
6227	unstrat	3	2	12	9	15	2.64	–
Total		**168**	**167**	**308**	**383**	**569**	**100**	

Table 67 Quantification of marine mollusca

The vast majority of shells recovered were oyster (*Ostrea edulis*), 1026 valves from forty-two contexts which were part of eighteen features (Table 67). The minimum number of individuals present was 569. Of the 1026 oyster valves a third were too damaged to undergo further analysis but overall the condition of the shells was good with a few contexts noted as having very worn shells. The only other species present were a few fragments of mussel (*Mytilus edulis*) and a single whelk (*Buccinum undatum*).

Large deposits of oyster were retrieved from late Roman well 567 and post-Roman robbing 798. Smaller amounts of oyster shell were found in cistern 415 and drain 100. Apart from pit 456, no oyster shell was discovered outside the area of the main building complex (368, 414 and 416).

V. Insects

by M. Robinson

As part of the investigation of the biota preserved in the waterlogged sediments of well 567, a sequence of three samples was analysed for insects. High concentrations of insect remains were recovered from all the samples. All the insect assemblages were of similar character, with a high proportion of them being from a distinctive indoor community.

Methods and results

A sub-sample of between 0.75 and 1kg of each sample was washed over onto a 0.212mm sieve and subjected to paraffin flotation to recover insect remains. The flots were washed and sorted in water at ×10 magnification. Insect

	minimum no. of individuals		
Context	*6465*	*6463*	*6462*
Sample	*973*	*972*	*971*
Preservation	*good*	*good*	*mediocre*
Sample weight (kg)	*0.75*	*0.75*	*1.00*
Carabus sp.	–	1	–
Amara sp.	–	–	1
Harpalus affinus (Schr.)	–	1	1
Hydroporus sp.	1	–	–
Helophorus sp. (*brevipalpis* size)	1	1	–
Cercyon cf. *analis* (Pk.)	–	2	–
C. haemorrhoidalis (F.)	1	–	–
Phyllodrepa floralis (Pk.)	1	1	–
Xylodromus concinnus (Marsh.)	1	2	–
Platystethus cornutus gp.	1	–	–
P. nitens (Sahl.)	1	–	–
Anotylus nitidulus (Grav.)	1	–	–
A. rugosus (F.)	–	1	–
Philonthus marginatus (F.)	–	1	–
Philonthus sp.	–	–	1
Tachyporus sp.	–	1	–
Aleocharinae indet.	1	1	1
Geotrupes sp.	1	–	–
Aphodius foetens (F.)	1	–	–
A. luridus (F.)	–	1	–
A. cf. *sphacelatus* (Pz.)	–	1	–
Aphodius sp.	1	–	2
Onthophagus sp.	1	1	–
Phyllopertha horticola (L.)	1	–	–
Anobium punctatum (Deg.)	2	2	4
Tipnus unicolor (P. & M.)	–	1	–
Ptinus fur (L.)	1	2	1
Lyctus linearis (Gz.)	1	–	–
Cryptophagidae indet. (not Atomaria)	1	1	1
Atomaria sp.	1	–	–
Lathridius minutus gp.	4	1	–
Enicmus transversus (Ol.)	1	1	–
Corticariinae indet.	2	2	–
Cis sp.	1	–	–
Typhaea stercorea (L.)	3	1	2
Aglenus brunneus (Gyl.)	8	5	5
Anthicus antherinus (L.)	–	–	1
A. formicarius (Gz.)	2	1	2
Longitarsus sp.	–	1	1
Chaetocnema concinna (Marsh.)	1	1	–
Chaetocnema sp. (not *concinna*)	–	1	–
Apion sp.	1	–	–
Sitona sp.	–	–	1
Ceutorhynchus erysimi (F.)	–	1	–
Gymnetron pascuorum (Gyl.)	1	1	–
Tychiinae indet. (dwarf)	–	2	–
Total	**44**	**39**	**24**

Table 68 Coleoptera

fragments were picked out and sorted in ethanol. Following the assessment of these remains, it was decided that these sub-samples were adequate for palaeoecological interpretation and it was unnecessary to process more material.

The insect remains were identified by comparison with specimens from the Hope Entomological Collections, Oxford, at magnifications of up to ×50. The minimum number of individuals of each species represented by the fragments in each sample was calculated and the results are given in Tables 68 and 69. The nomenclature used for the Coleoptera in Table 68 follows Kloet and Hincks (1977).

Interpretation

The deposits analysed accumulated under water in the well but few if any of the remains were from species which lived there. The majority appeared to have been

	minimum no. of individuals		
Context	6465	6463	6462
Sample	973	972	971
Aphrodes sp.	1	–	–
Hymenoptera — adult head	1	4	1
Diptera — puparium	4	–	5

Table 69 Other insects

incorporated amongst organic refuse that was dumped into the well. The similarity of the insect assemblages from the three samples would be consistent with the material representing one event of dumping from a single source.

The most numerous species in all three samples was the beetle *Aglenus brunneus*. It is now a rare species which is perhaps best known from mouldy organic material in dark damp places such as cellars, stable refuse and mill refuse (Hinton 1945, 179). Archaeologically it is best known as a major component of insect assemblages from somewhat compacted deep organic debris on earth floors of medieval buildings in towns (Kenward 1975) although it has also been recorded from Roman contexts (Kenward 1976).

Another beetle that was well represented was *Typhaea stercorea*. Although it sometimes occurs in granaries, it is a fungal feeder rather than attacking the grain itself (Green 1952). It is also familiar from haystack bottoms, where it has been recorded along with *Aglenus brunneus* (Walker 1910). Other beetles from the well which are characteristic of old damp hay or straw, often with white moulds, included *Phyllodrepa floralis*, *Xylodromus concinnus*, *Atomaria* sp., other Cryptophagidae, *Lathridius minutus* gp., *Enicmus transversus*, Corticariinae, *Anthicus antherinus* and *A. formicarius* (Buck 1954, 24; Tottenham 1954, 21, 27; Kenward 1982, 76). Two additional beetles, *Ptinus fur* and *Tipnus unicolor* usually occur inside buildings where they feed on a wide range of partly dried plant or animal matter including starchy food waste, stable debris, old hay and animal skins although they do also occur away from buildings in birds' nests (Fowler 1890, 181–3; Hinton 1940–41, 340, 368; Koch 1989, 281–2).

This fauna suggests that material such as old hay, straw, threshing waste or perhaps other plant debris that had been accumulating on the damp floor of a building had been dumped into the well. This would be entirely consistent with the macrobotanical evidence from the deposit (p.204). The fauna as a whole was not characteristic of stored grain other than in its final stages of decay, despite the association of some of these beetles with granaries, and did not contain any true grain beetles. A somewhat similar fauna, including *Xylodromus concinnus*, *Aglenus brunneus*, *Ptinus fur*, *Tipnus unicolor*, *Atomaria* sp. and other Cryptophagidae was recorded from debris which had accumulated in the corners of an old water mill at Cothill, Oxon. (Walker 1916).

Two other insects likely to have been derived from the building were the second most abundant beetle from the well, *Anobium punctatum* (woodworm beetle) and *Lyctus linearis* (powder post beetle). Both readily infest structural timbers and items of furniture, the latter only attacking hardwoods (Hickin 1963, 23–35, 40–41). They are much less often found in naturally occurring dead wood.

The remaining Coleoptera were mostly species of weedy disturbed ground and grassland. *Ceutorhynchus erysimi*, for example, feeds on cruciferous weeds while *Harpalus affinis* is a ground beetle that frequently occurs on weedy or bare ground. The larvae of *Phyllopertha horticola* feed on the roots of grassland and scarabaeoid dung beetles which feed on the droppings of domestic animals on pastureland, such as *Geotrupes* sp., were also present. Although some of the beetles can occur in foul decaying organic material, a full midden fauna was absent.

A couple of normal–sized adults of *Gymnetron pascuorum*, a grassland weevil that develops in the fruits of *plantago lanceolata* (ribwort plantain) were present. Curiously there were also the elytra of two very dwarf Tychiinae which were probably *G. pascuorum*. They were much smaller than any of the specimens of *G. pascuorum* in the Hope Entomological Collections. It is possible that they had been derived from larvae in plantain heads cut with hay. The drying out of the host plant would encourage early pupation in some weevils.

Part 5. Botanical Evidence

I. Plant macrofossils

by P. Murphy

Methods

213 bulk samples (usually 1–2 buckets, *c.* 15–30 litres of soil) were collected from the dry gravel-based features of all periods. Contexts bulk sampled included ditches, pits, the upper fills of a well, a pond, cremations, post-holes and structural trenches. The samples were processed by C. Forrest, using a bulk sieving/flotation tank with 0.5mm meshes throughout. During assessment, the dried flots were scanned under a binocular microscope at low power, noting the range of taxa represented by charred plant macrofossils and their abundance (report in archive). It was apparent that the majority of samples included exceedingly low densities of charred material. Charred cereal grains (mainly *Triticum* (wheat) with some *Hordeum* (barley)), occasional glume bases of *Triticum spelta* and *Bromus* caryopses occurred quite consistently, but some samples also produced pulse seeds, *Rosa* (rose) and *Crataegus* (hawthorn) fruitstones and/or small weed seeds. However, most assemblages were too poorly preserved, or contained too few items (less than fifty, usually far less), to allow interpretation.

However, some contexts included much higher densities of well-preserved material, and samples from these were selected for analysis: they comprised post-holes and other deposits from the late Roman building 294, a few other late Roman features, and post-holes of the medieval building 440. Identifications were made by comparison with modern reference material, and are listed in Tables 70–72.

Crop plants

The samples from Roman building 294 were composed largely of prime grain and/or pulse seeds, with little or no cereal chaff. Identification of cereals has to be based primarily on grain morphology. The wheat grains were elongate to drop-shaped forms, with more-or-less parallel sides, maximum widths well above the embryo, usually with abruptly truncated apices, and commonly with longitudinal ridges and grooves on their dorsal surfaces where they had been adpressed to inflorescence bracts. These are of emmer or spelt-type (*Triticum dicoccum* or *T. spelta*), probably mainly the latter. The few identifiable glume bases and spikelet forks were all of *T. spelta*: broad, keeled and strongly veined glumes, with an angle of more than 90 degrees between the glume faces on either side of the keel, and a rounded curve around the poorly defined secondary keel. Rachis internodes, where well preserved, showed prominent venation.

Spelt chaff vastly predominated in late Roman features elsewhere on the site (Table 71), though traces of possible emmer chaff with much narrower glumes showing less prominent keels, a more angular cross-section and no veins were noted in one sample. The available evidence suggests that spelt was the main wheat crop at the site.

Wheat grains from post-holes of the medieval building 440 were, by contrast, all very short rounded forms, characteristically free-threshing hexaploid wheat (*Triticum aestivum* s.l.). No rachis fragments were present.

Barley was represented only by grains, with no rachis fragments. The grains were all hulled and some samples (marked with an asterisk in Table 70) included asymmetrical grains from lateral spikelets, establishing the presence of *Hordeum vulgare*. Similarly, there were no floret bases of oats, and a weed or cultivated species of *Avena* might be represented. Rye (*Secale cereale*) occurred only in post-holes of the medieval building 440: the grains showed their typical variability, from very elongate to shorter, sometimes asymmetrical, but always with a more or less triangular cross-section and abruptly truncated apex.

Some post-holes of building 294 contained seeds and cotyledons of pulses (Fabaceae), notably 5512. The seeds were sub-spherical to sub-angular in overall form, with cotyledon lengths of 3.3–5.1mm. Most showed little sign of the testa, and there were no well-preserved hila. However, many seeds showed a small oval depression (frequently silt filled) below the radicle, marking the former position of the hilum, and one seed showed traces of a similar small oval hilum. From these features the presence of field pea (*Pisum sativum* var *arvense*) may be inferred. However, most specimens could equally be of cultivated vetch (*Vicia sativa*): they are too poorly preserved to tell. All are listed as Fabaceae indet. in Table 70.

Post-hole 6256 from building 440 produced a single battered seed of field bean (*Vicia faba* var *minor*) with a cotyledon length of 9.1mm.

Discussion

The Roman period

Building 294 was marked by nine large post-pits, reconstructed as the remains of an aisled timber building (see Table 70). Their fills were of dark yellowish brown sandy clay and gravel (sampled contexts: 5493, 5501, 5513, 5542, 5544, and 5546). These fills were thought to represent soil backfilled around the standing posts, relating to the construction phase of the building. In the centre of each post-pit was a pit infilled with dark greyish brown sandy clay loam including abundant tile and charred plant material (sampled contexts: 5492, 5494, 5512, 5530–2, 5534, 5539, 5541). These pits are thought to have been dug after the building was destroyed by fire to remove or salvage the charred remains of the posts ('post-extraction pits'): their fills would have been derived from charred debris in the immediate vicinity. Also relating to the destruction of the building were spreads of tile and charred material near the centre of the building (sampled contexts: 5540, 5552).

It is obvious from Table 70 that most samples of construction phase deposits included very much lower densities of charred cereals and pulses than those relating to destruction. There are some exceptions to this. 5546, for example, included a relatively high density of barley

Context type	*Construction phase – post-pits*						*Tile spreads*			*Demolition – post-extraction cuts*								*Other*
Context no.	*5493*	*5501*	*5513*	*5542*	*5544*	*5546*	*5552*	*5540*	*5492*	*5494*	*5512*	*5530*	*5531*	*5532*	*5534*	*5539*	*5541*	*5533*
Bulk sample no.	*185*	*173*	*183*	*180*	*171*	*188*	*168*	*167*	*184*	*172*	*181*	*170*	*178*	*176*	*187*	*186*	*177*	*179*
Cereal grains																		
Cereal indet	1	2			6	4	68	54	4	26	14	44	3	17	112	3	10	1
Triticum sp(p)	1	2	1	2	54		104	48	35	69	8	274	38	8	19	236	5	1
Hordeum sp(p)				1		42*	11*	19	2	3	7*			12	573*		11	
Avena sp(p)		1			1				3		6	7			4	4		
Cereal chaff																		
Triticum spelta L (gb)		1										11				7		
Triticum spelta L (spf)															1			
Triticum sp (gb)												6						
Triticum sp (spb)							1					3						
Triticum sp (spf)							1											
Pulses																		
Fabaceae indet (co)			2		5					1	223	20			4			
Fabaceae indet (s)			1							1	57	3						
Herbs (weeds/grassland)																		
Anthemis cotula L			2 cf									2 cf				4		
Asteraceae indet																1		
Atriples patula/hastata											1							
Bromus mollis/secalinus	1				1		3		3		5	1	2		7	20		
Bromus/Avena			1														1	
Carex sp											1							
Danthonia decumbens											1					4		
Galium sp																1		
Indeterminate seeds *etc*											1					3		
Medicago/Lotus/Trifolium sp											3							
Plantago lanceolata L															1			
Poaceae indet (medium)										1		5				2		
Poaceae indet (small)									1		2	29				12		
Polygonaceae indet																1		
Polygonum aviculare agg																1		
Rumex sp																2		
Other																		
Poaceae indet (cn)											2							
Quercus sp (ch)													xxx					
Sample volume (l)	15	15	n.r	15	30	15	30	15	15	15	15	15	15	30	7.5	15	15	30
Flot volume (ml)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	100	200	1200	<100	<100	<100	<100	<100
% flot sorted	100	100	100	100	100	100	100	100	100	100	100	25	12.5	100	100	100	100	100

Table 70 Charred plant macrofossils from Roman building 294 (see p.211 for notes)

Context type	*Ditch*	*Ditch*	*Feature*	*Pond*
Context No.	*5390*	*5416*	*5904*	*5919*
Bulk Sample No.	*38*	*35*	*872*	*879*
Cereal grains				
Cereal indet	14	9	5	1
Cereal indet (spr)	3		1	1
Triticum sp(p)	48	22	11	21
Hordeum sp(p)			2	
Avena sp(p)		4	3	
Cereal chaff				
Avena sp (afr)	×	×		
Triticum spelta L (gb)	11	51	100	10
Triticum spelta L (ri)	4	12	3	5
Triticum cf *dicoccum* Schubl. (gb)		1		
Triticum cf *dicoccum* Schbl. (spf)		1		
Triticum sp (gb)	8	8	68	4
Triticum sp (spb)	2	4	5	1
Triticum (ri)		1	5	2
Triticum sp (bri)		3		
Herbs (weeds/grassland)				
Anthemis cotula L	13	9		6
Bromus mollis/secalinus	59	54	2	3
Bromus/Avena	8	3	2	
Chenopodiaceae indet			1	
Danthonia decumbens			1	
Galium aparine L			1	
Lamiaceae indet			1	
Medicago/Lotus/Trifolium sp	1			
Poaceae indet (medium)	1	3	7	6
Poaceae indet (small)	2	21	1	1
Polygonaceae indet			4	
Prunella vulgaris L				1
Rumex sp	2	4	13	2
Trifolium type				1
Indeterminate seeds *etc.*	3		2	1
Sample volume (l)	15	15	15	15
Flot volume (ml)	<100	<100	<100	<100
% flot sorted	25	50	25	100

Table 71 Charred plant macrofossils from other late Roman contexts (see p.211 for notes)

grains, which may have been intrusive from the fill of post-extraction pit 5534, cut into it, which also contained abundant barley. Overall, the destruction phase deposits are thought to include remains of crops which had been stored within the building and were charred when it burnt down; whilst those from the post-hole fills are of less certain origin, probably partly material already present in the soil when 294 was built, but also incorporating material introduced via root channels and by the activities of burrowing animals from overlying deposits.

Roman period charred granary deposits in Britain are uncommon, and this material from Great Holts Farm would appear to represent the only known granary deposit from a Roman farm, as opposed to a town or a military site. The vast majority of charred cereal remains from Roman rural sites comprise processing waste (commonly abundant spelt chaff, as in other contexts at Great Holts Farm: Table 71), spoilt grain and, occasionally, charred grain and malt from so-called 'corn-driers' (Van der Veen 1989). Granary deposits have the potential to yield information on sowing techniques ('monocultures' or maslins), the form of storage (as grain or spikelets), the efficiency of crop cleaning methods, the degree of pest attack and, potentially, the structure and use, in spatial terms, of the storage facilities available. Some indication of the relative importance of crops may also be obtained.

The composition of samples from the post-extraction pits and the central tile spread are summarised in Figure 121, in which only crop seeds and grains are considered. Obviously some degree of mixing is likely to have occurred when the building burnt down and collapsed. Nevertheless, there is a clear spatial patterning to the relative abundance of crop seeds and grains. Samples from the southern part of the building, from contexts 5492, 5530, 5531 and 5539 consisted largely of wheat grains. Samples from the central tile spread (5540, 5552) included many indeterminate grains, but were largely of wheat, with some barley. In contexts 5532 and 5534 (the former a small sample), in the north-western part of the building, barley predominated. Pulse seeds, probably largely peas, predominated only in 5512, the northernmost post-hole. From this, it would appear that wheat (thought to have been largely spelt), six-row barley and pulses were grown and stored as separate crops rather than mixed crops

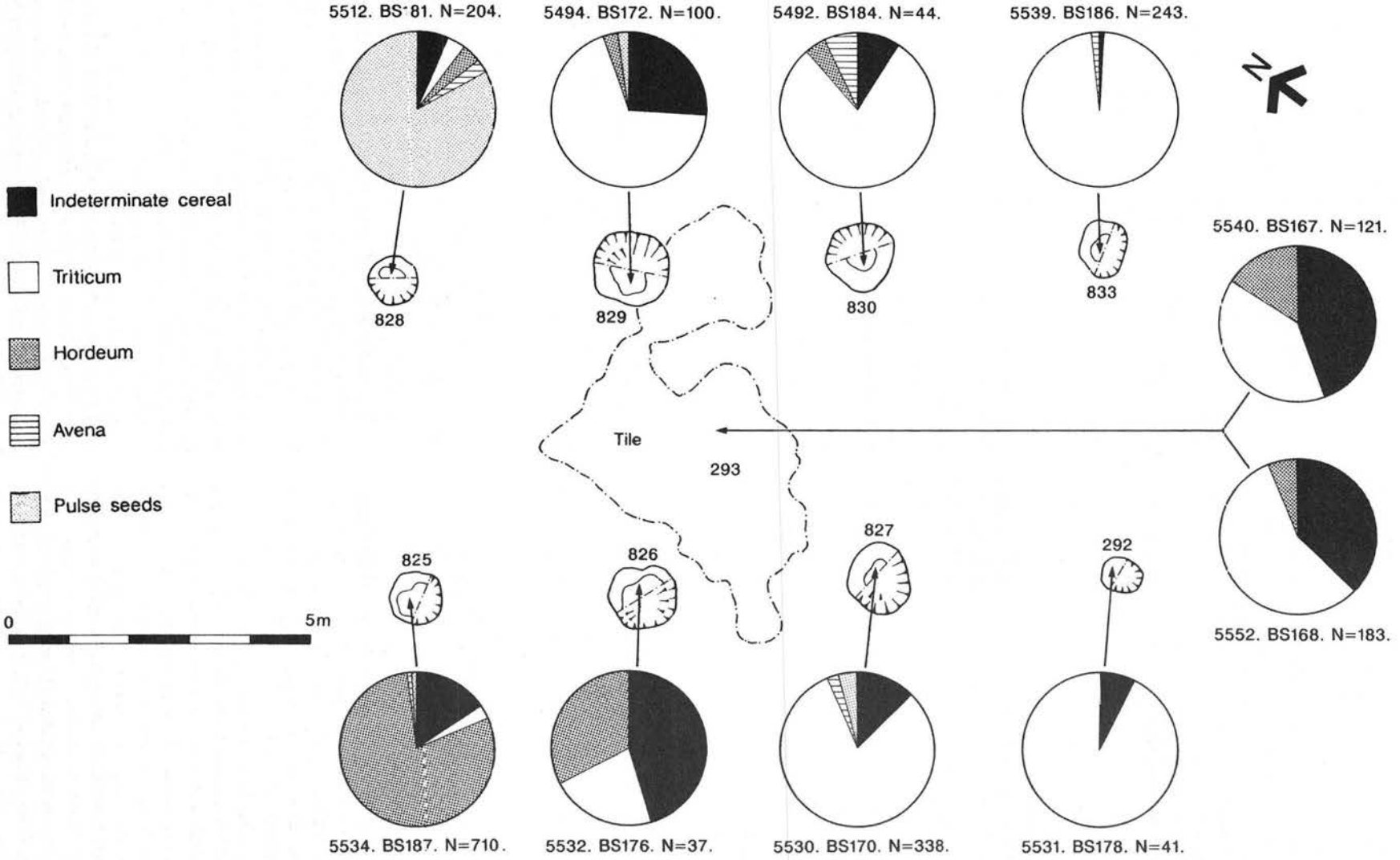


Figure 121 Charred cereals and pulses from building 294: summary of sample composition

('maslins') though inevitably, given the limitations of grain-processing technology at this time, there would have been some admixture of other crops.

The spatial distribution of crop remains in the Great Holts granary suggests a zoning of storage within the building. Wheats predominated at least in the southern half of the building, and perhaps in the central and north-eastern areas. Barley was largely confined to the extreme north-west and pulses to the northern corner. This could reflect a distinction between the storage of human food and animal fodder. Roman agricultural writers record that six-row barley was grown mainly as fodder, and was rarely used as human food (White 1970, 214–15), whilst pulses have been widely used as fodder.

The preservation state of charred grains from the samples also showed some spatial variation. There are few experimental data relating the state of charred grains to conditions of charring (Boardman and Jones 1990), but in general terms it appears that high temperatures and relatively good oxygenation result in gross deformation, 'puffing' and loss of surface detail, whereas slow charring in very oxygen-deficient conditions produces charred grains preserving overall shape and surface detail well. The proportion of grains sufficiently well-preserved to be identifiable therefore could provide a measure of conditions whilst they became charred.

In building 294, it is notable that poorly preserved, unidentifiable grains were more common in the central tile spread and adjacent post-extraction pits to the north. Well-preserved grains predominated in post-extraction pits at the southern and northern ends of the building. From this, it would appear that there was a better air-flow in the middle of the building. Clearly, this could relate to the position of doors which, as in medieval barns, may have been centrally situated.

The extreme rarity of cereal chaff in these samples shows that cereals had been threshed and winnowed before being stored as grain rather than spikelets. This departure from the Iron Age practice of spikelet storage no doubt reflected the need to reduce bulk for large-scale storage and transportation and, of course, the shift from pit storage to above-ground granary storage. Most weed seeds had also been largely removed during crop cleaning. There was no visible evidence for insect attack or fungal spoilage.

Regrettably, there is no way of telling to what extent the charred crop grains and seeds from this building were representative of production on the farm. The material surviving represents only a small charred residue from a year's harvest, and it is perfectly possible that some of the harvest had already been sent to market and was not stored at the site.

Roman granary deposits from urban and military sites at Caerleon (Helbaek 1964), Colchester (Murphy 1984, 1992), London (Straker 1984), York (Williams, D. 1979), Rocester (Moffet 1989) and South Shields (Van der Veen 1994) were predominantly of wheat grain, often including a mixture of wheat species, sometimes with barley and/or rye. Urban and military sites would presumably have been receiving grain from a large number of farms, the produce of which may have been amalgamated for storage, thus explaining the more mixed wheat species composition of granary deposits than at Great Holts. A common feature of urban granary deposits is that wheat grain in particular shows signs of sprouting before charring; at Culver Street, Colchester, for example, a pile of sprouted wheat grains (associated with charred coarse textile, probably the remnants of a sack) was found in the corner of a room. It is probable that these sprouted grains were malt (Murphy 1992, 282). At Great Holts, no sprouted grains were noted.

The cleaned grain samples from building 294 included few weed seeds, but by combining the list of taxa with those identified in other Roman contexts (Table 71) some limited information on soil conditions in arable fields may be obtained. These latter samples are more typical of Roman rural sites, consisting largely of crop processing waste: cereal chaff and weed seeds. The predominance of large fruited grasses (notably *Bromus mollis/secalinus*) is probably partly an artefact of crop processing methods. *Anthemis cotula*, a weed characteristic of clay soils (Kay 1971) is relatively abundant, implying some cultivation of heavy soils. Macrofossils of grassland taxa in general are not uncommon: they include small grass caryopses, *Medicago/Lotus/Trifolium* sp (medicks/clovers), *Plantago lanceolata* (ribwort plantain), *Prunella vulgaris* (self-heal) and *Danthonia decumbens* (heath grass). These could relate either to a hay crop or to grassland taxa growing in incompletely tilled arable fields as weeds. *D. decumbens* is nowadays a rare plant in Essex: Jermyn (1974) gives a scatter of records from 'dry heathy and sandy places'. Charred caryopses of this species were, however, very common in some Roman deposits at Culver Street, Colchester where it was associated with a range of grassland taxa confidently interpretable as charred residues from hay (Murphy 1992).

The medieval period

Unfortunately, only two post-holes of the medieval building 440 were sampled (Table 72). Crops represented include bread-type wheat, indeterminate barley, rye, oats, field bean and pea/vetch. There were no cereal rachis or floret fragments and weed 'seeds', apart from *Bromus*, were rare. Interpretation of these two isolated assemblages is necessarily tentative, though it is possible that the charred material from these post-holes represents debris from yet another granary fire.

Plant macrofossils from phase II.2 well 567

Methods

This well cut through the foundation trench for the south-eastern wall of building 416, thought to be the main domestic residence in the late 3rd to late 4th century, and appears to have been an integral part of the building in its earliest stages, probably covered by a portico (Fig. 47). The upper aerobic fills were initially removed and bulk-sampled for the retrieval of charred plant material (report in archive). Subsequently, the entire surface of the site was lowered by the gravel extractors, potentially permitting excavation of the lower waterlogged fills without resorting to shoring. However, at this lower level, the surrounding gravel and well fills were found to be highly unstable, making conventional excavation hazardous. The fills were therefore removed in spits using a JCB, and samples were removed from these spits for macrofossil analyses. Two sample series were taken: a series for general biological analyses, which were processed using the methods of Kenward *et al.* (1980) and bulk samples for machine flotation/bulk sieving, with 0.5mm collecting meshes. Flots and residues from the latter were air-dried, and their coarse fractions (>5mm)

	Context type	*Post-hole*	*Post-hole*
	Context no.	*6256*	*6265*
	Bulk sample no.	*952*	*955*
Cereal grains			
Cereal indet		37	6
Triticum sp(p)		37	1
Hordeum sp(p)		54	1
Secale cereale L		12	14
Avena sp(p)		19	7
Pulses			
Vicia faba var minor		1	
Fabaceae indet (co)		1	
Herbs (weeds/grassland)			
Anthemis cotula L		2	
Asteraceae cf Centaurea		2	
Bromus mollis/secalinus		16	2
Bromus/Avena		20	3
Centaurea cyanus L		1	
Poaceae indet (m)		1	
Vicia/Lathyrus sp (co)		2	
Indeterminate seeds *etc.*		1	1
Sample volume (l)		15	15
Flot volume (ml)		<100	<100
% flot sorted		100	100

Table 72 Charred plant macrofossils from medieval contexts (see p.211 for notes)

were sorted in order to extract additional remains of fruitstones, seeds and nutshells. Assessment of these samples indicated that contexts 6462, 6463 and 6465 included abundant well-preserved macrofossils.

Macrofossils extracted in the laboratory from samples of these contexts are listed in Table 73, and large macrofossils from the bulk samples in Table 74. Identifications were, in most cases, made by comparison with modern reference specimens, though grass and cereal caryopses from the samples were characterised mainly using criteria defined in the key of Korber-Grohne (1964). This key unfortunately does not include all species which might be present in these samples, and full identification of Poaceae has thus not been attempted. Caryopses of *Danthonia decumbens* are readily identifiable from their very distinctive short hilum, which was often white in colour.

Crops and other edible plants

Pinus pinea (Mediterranean stone-pine)
The highly distinctive woody cone bracts of this pine were present in all samples (Plate XI), and 6463 produced a cone apex with under-developed bracts attached to axillary tissue. The pine-nuts were mainly fragmentary, indicating that they had been broken for consumption, though an intact nut, 19 × 10mm came from 6463.

Castanea sativa (sweet chestnut)
Fragments of pericarp, fibrous on their interior surfaces and glossy externally, some showing basal attachment scars and stylar projections at the apex, came from 6463. Nut lengths are estimated at *c.* 21mm (Plate XII).

Juglans regia (walnut)
Nutshell fragments, showing distinctively furrowed and reticulate external surfaces, were present in all samples. Most were very fragmentary, though 6463 produced a half nut 37 × 27mm (Plate XIII).

Corylus avellana (hazelnut)
Again, hazelnuts were represented by fragments. A few small intact nuts (no doubt considered too small to be worth cracking) came from 6463: 13–16mm long × 11–12mm broad.

Plate XI *Pinus pinea* (stone pine) nut and bract

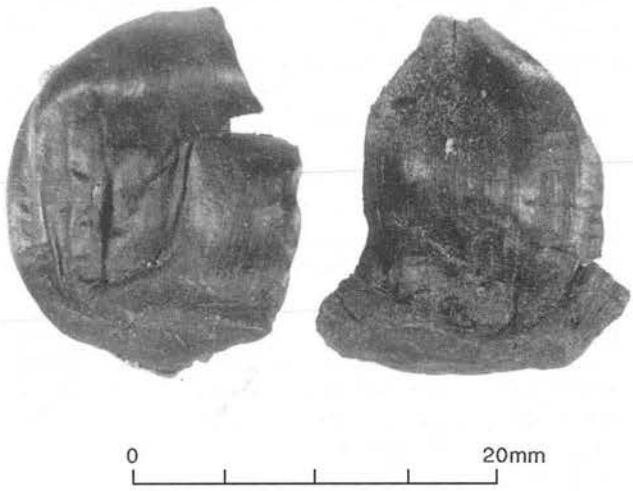


Plate XII *Castanea sativa* (chestnut) nuts

Olea europaea (olive)
Stones of olive, with their characteristic incised venation, were retrieved only from 6463 (Plate XIV). There was considerable variability in length (14.9–7.0mm), and it appeared that two size groups were represented (14.9–10.5mm and 8.6–7.0mm), though sample size (seventeen measurable specimens) was small.

Vitis vinifera (grape)
6463 produced a single seed, 4.5 × 3.3mm.

Prunus spp (sloe, bullace, cherry)
Some of the small, rounded, rough-surfaced fruitstones of *Prunus spinosa* (sloe) were obscured by mineral-replaced mesocarp tissue, and a few had preserved epicarp. This may imply that they had been used for flavouring foods or drinks, rather than being consumed entire.

Larger, more elongate fruitstones of *Prunus domestica* subsp *insititia* were present in smaller numbers in 6363. Dimensions of six specimens were as follows: length 10.0–15.0mm (mean 13.0mm); width 7.0–13.0mm (mean 9.0mm); thickness 5.0–8.0mm (mean 6.2mm). No notable large, flattened forms characteristic of cultivated plums were noted.

Five smooth-surfaced, generally elongate fruitstones of cherries were also present in 6463: length 7.1–9.5mm (mean 8.3mm); breadth 5.5–6.5mm (mean 6.0mm). Problems in identifying cherry fruitsones specifically are discussed by Willcox (1977, 287). Due to hybridisation and intra-specific variation, identification is problematic, though the native wild cherry, *Prunus avium*, is probably the most likely species.

Plate XIII *Juglans regia* (walnut) nut

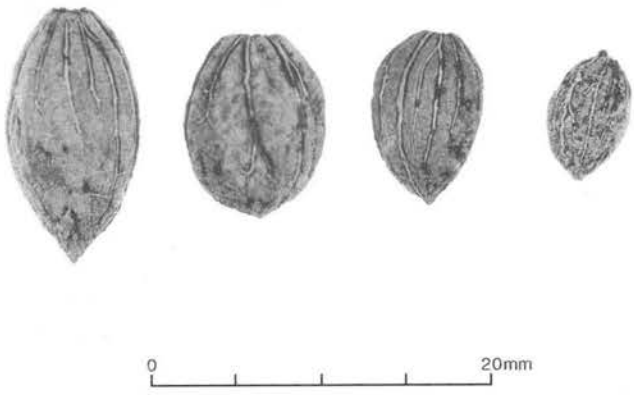


Plate XIV *Olea europaea* (olive) fruitstones

Malus sp (apple)
No seeds were noted, but 6463 produced fragments of fibrous endocarp.

Cereals
Non-charred cereal chaff was common in 6463 and 6465, consisting of wheat glume bases and spikelet forks. Many specimens were crushed and deformed, and some were fragmentary, but the robustness and width of the glume bases (up to 1.9mm) and the persistence of ascending broad internodes on the forks indicated that spelt, *Triticum spelta*, was the predominant species. Several forks still including remnants of caryopses were noted.

The large size of some caryopses (up to approximately 7.6 × 4.0mm) left no doubt that they were of cereals, but identification was problematic. In view of the predominance of wheat chaff, wheat grains were expected to occur, but no specimens showing well-preserved pericarps with rows of transverse cells were noted. Degradation had resulted in exposure of the more irregular testa cells in some cases.

Charred cereal remains, mainly wheat grains, but including a spelt (*T. spelta*) spikelet fork, were present in 6465.

Wild flora
Herbaceous taxa present are listed in Table 73. Taxa represented by fruits or seeds are divided into two broad ecological groups: dryland herbs and wetland/damp grassland herbs. Additionally, a few taxa (*e.g.* bracken, *Pteridium aquilinum*) were represented only by vegetative remains.

The first group, of dryland herbs, includes both weeds and grassland species. Some of these (*e.g. Agrostemma githago* (corncockle), *Anthemis cotula* (stinking mayweed)) are characteristic weeds of autumn sown cereal crops and others are characteristic grassland plants (*e.g. Linum catharticum* (purging flax), *Trifolium* sp. (clovers)). However, Roman tillage may have not been so efficient as that in arable fields today, so that some grassland taxa could then have persisted as weeds of cultivation (Hillman 1981, 145–6). In particular, *Danthonia decumbens* (heath grass), which occurs consistently here, is noted by Hillman as an important arable weed in the Iron Age/Romano-British phases of Cefn Graeanog. Indeed, charred caryopses of *D. decumbens* and other grassland species were associated with charred cereal remains in other contexts at Great Holts (Table 71). In Essex today, it is a rare plant found only in 'dry heathy and sandy places' (Jermyn 1974, 206). Complete separation of dryland herbs into 'weed' and 'grassland' is not clear-cut.

Having said this, there is no doubt that the Great Holts weed flora is not typical of Roman wells. In general, assemblages from Roman wells are dominated by species in the Chenopodietea (*e.g. Stellaria media* (chickweed), *Arenaria* spp. (sandwort), *Chenopodium album* (fat hen), *Atriplex* sp. (orache), *Urtica urens* (annual nettle) and *Solanum nigrum* (black nightshade)), with biennial and perennial weeds of the orders Onopordietalia and Artemisitalia, such as *Conium maculatum* (hemlock), *Malva sylvestris* (mallow), *Hyoscyamus niger* (henbane) and *Urtica dioica* (stinging nettle) (*e.g.* Greig 1988, Murphy 1996b). This is thought to indicate abandonment and disuse of areas around wells, and development of weedy overgrown conditions.

At Great Holts these species are rare or absent: there is no evidence for a significant input from local weed vegetation by natural dispersal. Most of the weed 'seeds' present, mainly of cornfield weeds, are thought to have been dumped into the feature together with cereal processing waste. As in the charred samples from the site (see above), the most abundant species is *Anthemis cotula* (stinking mayweed), pointing to cultivation of heavy clay soils.

Herb species found today predominantly in grasslands were common in the Great Holts samples, together with grass caryopses and grass/cereal culm fragments. In sample 972, calyces of *Trifolium* sp. (Clover) predominated. Many of the taxa present are widely distributed but the samples include species indicative of several distinct grassland types. Calcicoles, characteristic of dry calcareous soils include *Daucus carota* (wild carrot) and *Linum catharticum*. However, species of dry, sandy and acidic conditions are also represented: *Danthonia decumbens*, *Rumex acetosella* (sheep's sorrel) and *Pteridium aquilinum*. In addition, the group of wetland/damp grassland species includes plants such as *Caltha palustris* (marsh marigold), *Filipendula ulmaria* (meadowsweet), *Lychnis flos-cuculi* (ragged robin) and *Rhinanthus minor* (yellow rattle), common in river valley

meadows and drainage ditches. A similar ecologically mixed assemblage of grassland taxa came from Roman deposits at Culver Street, Colchester (Murphy 1992, 282–3). Residues from hay are thought to be represented, and at both sites hay cut in several types of grassland appears to have been amalgamated.

Mosses

by R. Stevenson

Mosses from 6463 (sample 972) were identified. There were only seven stems, comprising six species. Nomenclature follows Smith (1978), except where modified by Corley *et al.* (1981).

Plagiomnium affine (Funck) Kop.
Well-preserved fragment. This is a plant of dampish habitats, including grasslands and woodlands. It is probably somewhat shade-demanding.

Brachythecium rutabulum (Hedw.) Br. Eur.
Two well-preserved fragments. A common species, growing in a wide variety of habitats, including grasslands and woods. It prefers relatively eutrophic habitats.

Scleropodium (Pseudoscleropodium) purum (Hedw.) Limpr.
A fairly well-preserved fragment. Like the previous species this plant is tolerant of a wide range of habitats, ranging from strongly calcareous to mildly acidic. It prefers well lit and fairly dry conditions, and is common in grasslands.

Rhytidiadelphus squarrosus (Hedw.)
Large, branching but poorly preserved fragment. This is another species enjoying a very wide range of ecological tolerance. Again, it is very common in grassland.

Calliergonella (Calliergon) cuspidata (Hedw.) Loeske
Yet another species of wide tolerance, common in grasslands. It is particularly common in dampish conditions.

Cratoneuron filicinum (Hedw.) Spruce
Small, poorly preserved fragment. This plant grows best in damp calcareous conditions; however, it can also be found in rather drier places. This specimen is fairly well-developed, so probably came from a dampish calcareous place. Open, often grassy habitats are fairly typical.

This assemblage could occur virtually anywhere in the UK. All the species are common and widely distributed.

Conclusions

As can be seen from Figs 28 and 47, well 567 almost certainly was located within the portico of the farmhouse. The unusual features of the macrofossil assemblages from it (particularly the lack of evidence for a significant input from the local weed vegetation by natural dispersal) are explicable in terms of the atypical taphonomy of the deposits. They are thought to be composed almost entirely of material intentionally dumped into the well: human food refuse, crop processing waste and hay. Assessment of insects from the deposits indicated the presence of assemblages formed in indoor habitats, the most numerous species being *Aglenus brunneus*, formerly common in compacted organic debris on earth floors of buildings. The origin of the material in the well is quite clear. It seems that when the well went out of use, flooring materials from within the farmhouse were dumped straight into it, along with other domestic debris. In short, these samples provide an unusually direct picture of living conditions *within* a late Roman farmhouse.

Despite the presence of hay, there is no reason to suppose that animals were housed in the building. Most of the plant macrofossils present were intact, and the samples did not include finely comminuted (masticated) plant material, such as occurs in animal dung. Moreover, although non-pollen palynomorphs, including microscopic charcoal, iron pyrite framboids, urediniospores of fungal rusts and fungal hyphae, were noted during assessment, ova of parasitic intestinal nematodes (*e.g. Trichuris*) were not. The small proportion of dung beetles (*e.g. Geotropes* sp.) in the insect assemblages could have been introduced to the site, incorporated in hay or straw. It therefore appears that hay, crop processing waste, including straw, and some bracken were used as flooring materials in human living spaces.

Although flooring was apparently unpretentious, the occupants were clearly affluent enough to consume a varied diet of plant foods, including 'exotic' species. Fruits and nuts identified comprised pine-nut, chestnut, walnut, hazelnut, olive, grape, sloe, bullace, cherry and apple, whilst charred macrofossils from other contexts show that the arable produce of the farm included spelt, barley and peas.

Whether fruit and nut crops were locally grown cannot be established. The olives, on climatic grounds, must represent imports, but all other species could have been local products; even the stone-pine, which produces cones with fully developed nuts in the present British climate. The potential presence of pollen of fruit and nut crops in the well fills was not thought necessarily to be a reliable indicator that these crops were grown in the vicinity, for pollen could have been trapped in bracts and on surfaces of nuts *etc.* deposited in the feature: hence detailed analysis was not undertaken. Preservation in other potentially polleniferous sediments at the site, where there was no evidence for the dumping of food wastes, (notably pond 776), was poor and probably differential. *Pinus* (pine) pollen was noted, but specific identification is not possible. However, it seems unlikely that a well-established farm of this type would not have had orchards.

Notes to Tables 70 to 74

Taxa are represented by fruits or seeds (all charred in Tables 70 to 72) except where indicated.

Abbreviations

brn basal rachis node; ca – caryopses; ca seg – capsule segments; ch – charcoal; cn – culm nodes; co – cotyledon; co br – cone bracts; flo – floret; fr – fragments; gb – glume bases; lf ra – leaf 'rachis'; ns – nutshell; pi – pinnules; s – seeds; spb – spikelet base; spf – spikelet forks; tspf – terminal spikelet forks; * – asymmetrical lateral grains of barley present.

Notes to Tables 70 to 72

Poaceae (small) refers to Poa-sized caryopses, 1.0–1.3mm in length and rounded in form; Poaceae (medium) refers to grass caryopses intermediate in size between these and *Bromus*.

Charcoal was present in all samples, but was abundant only in BS178 (5531). All fragments identified in this sample were of mature oak (*Quercus* sp). The fragments appeared to include pieces of radial boards, up to about 12mm thick. However, natural splitting along the rays after charring cannot be excluded.

BS 872 (5904) included some aggregates of siliceous material, including 'silica skeletons' of indeterminate awns.

Uncharred plant macrofossils from these samples included recent intrusive weed seeds, notably *Chenopodium album* and *Stellaria media*, but also some more unusual wild taxa (*e.g. Ranunculus sceleratus*) and food plants (*Ficus carica*, *Rubus fruticosus*, *R. idaeus*, *Sambucus nigra*). These must be relatively recent (at the very least post-Roman) and intrusive: they would not be expected to survive for long periods in the well-aerated gravel soils of this site. Their provenance is uncertain, though they could perhaps have derived from sewage spread on the fields as manure.

Notes to Tables 73 to 74

(a) Includes *P. erecta*; (b) Small caryopses (under 2.5mm long), hilum obscured; (c) Small caryopses (<2.5mm), with small round-oval hilums; (c) Elongate caryopses (2.6–3.0mm) with elongate hilums.

Context number	*6462*	*6463*	*6463*	*6465*	*6465*
Sample number	*971*	*972*	*972*	*973*	*973*
Size fraction	*All*	*>2mm*	*<2mm*	*>2mm*	*<2mm*
Cereals (uncharred)					
Cereal indet. ca		13		fr.	
Triticum sp. gb	8	5	11	10	62
Triticum sp. spf	1	2	5	4	
Triticum sp. tspf		1			
Triticum spelta L. gb		4	8	94	35
Triticum spelta L. spf		23	5	8	
Cereals (charred)					
Cereal indet (ca)					2
Triticum sp. (ca)					16
Triticum sp. (brn)					3
Triticum sp. (gb)					2
Triticum spelta L. (spf)					1
Fruits, nuts *etc.*					
Corylus avellana L. ns. fr.		x			
Juglans regia L. ns. fr.		x		x	
Malus sp. end. fr.		x			
Pinus pinea L. co. br.			1		
Pinus pinea L. nu			1		
Dryland herbs (weeds/grassland)					
Agrimonia eupatoria L.		8			
Agrostemma githago L.		2			
Anthemis cotula L.	37		19		6
Apiaceae indet			2		
Asteraceae indet			1		
Brassicaeae indet			7		
Brassica sp.	1				
Bromus sp.		3	1		
Capsella-type			1		
Carex cf *caryophyllea* Latourr			2		
Centaurea sp.		1	1		
Cerastium arvense L.			27		1
Cirsium/Carduus sp.			1		
Crepis cf. *vesicaria/foetida*			1		
Crepis sp.		1	4	1	1
Danthonia decumbens (L.) DC.	1		4/4cf.	1	1 cf.
Daucus carota L.	2		1		
Linum catharticum L. ca seg.			12		
Linum catharticum L. s.			19		
Papaver argemone L.			1		
Plantago major L.			1		
Poaceae indet. (b)	10		24		2
Poaceae indet. (c)	14		38		3
Poaceae indet. (d)	1		2		
Poaceae indet. (flo)	3				
Polygonaceae indet.			1		
Polygonum aviculare L.	4		5		1
Potentilla sp. (a)	12		27		1
Primula sp.			1		
Primulaceae indet.			1		
Prunella vulgaris L.	4	1	5		
Ranunculus acris/repens/bulbosus	2	1	7	1	
Reseda luteola L.	3				
Rumex acetosella L.			1		
Rumex sp.	5	1	11		2
Stachys sp.			1		
Stellaria graminea/palustris	1		6		1
Stellaria media-type					1
Trifolium spp. cal.	3	4	40	1	
Urtica dioica L.	3	6			

Context number	*6462*	*6463*	*6463*	*6465*	*6465*
Sample number	*971*	*972*	*972*	*973*	*973*
Size fraction	*All*	*>2mm*	*<2mm*	*>2mm*	*<2mm*
Wetland/damp grassland herbs					
Caltha palustris L.			1		
Carex cf *vesicaria* L.			1		
Carex sp. (bicarpellate)	2	1	8		1
Carex sp. (tricarpellate)	6				
Filipendula ulmaria (L.) Maxim.			1		
Juncus articulatus group					x
Juncus sp(p)			x		x
Lychnis flos-cuculi L.			1		
Ranunculus flammula L.	2		10		1
Rhinanthus minor L.		10	1/2 cf.	2	
Typha sp			1		
Vegetative plant material					
Bud				1	
Charcoal	x	x	x	x	x
Epidermal frags. (indet)	x	x	x	x	x
Mosses		x	x	x	
Poaceae indet. cn + fr.		xxx	xx	xx	
Pteridium aquilinum (L.) Kuhn lf. ra.		x			
Pteridium aquilinum (L.) Kuhn pi.		2		1	
Quercus sp. lf. fr.		x			
Twigs/wood fragments	xx	x	x	x	x
Indeterminate					
Seeds/fruits *etc.*		3	17		
Seed capsule/calyx (?Caryophyllaceae)		2			
Inflorescence (degraded, ?Centaurea)		1			
Sample weight (kg)	0.5	0.5	0.5	0.5	0.5
% sorted	100	25	12.5	50	12.5

Taxa are represented by fruits or seeds except where indicated (see notes)

Table 73 Macrofossils, well 567

Context number	*6461*	*6462*	*6463*	*6465*
Sample number	*966*	*967*	*968*	*969*
Nuts				
Castanea sativa L.			*c.* 5	
Corylus avellana L. nu. fr. (grams)	0.5	1.9	32.8	1.7
Corylus avellana L. nu.			2	
Juglans regia L. nu. fr. (grams)		0.5	46.5	1.5
Juglans regia L. nu/2			2	
Pinus pinea L. co. br.	1		62	1
Pinus pinea L. co. ap.			1	
Pinus pinea L. nu. fr. (grams)		2.8	13.5	0.1
Fruits				
Crataegus monogyna L.			6	
Crataegus sp.			1	
Olea europaea L.			21	
Prunus cf *avium* (L.) L.			5	
Prunus domestica L. spp. *inistitia* (L.) Bonnier & Layens		3	7	
Prunus spinosa L.	1	30	112	4
Vitis vinifera L.			1	
Indeterminate (?Pinus shoot-deformed)			1	
Indeterminate fruitstones (deformed)		2	7	

Table 74 Large macrofossils from 15 litre bulk samples, well 567

II. Palynological assessment of waterlogged sediments

by Patricia Wiltshire

Methods

A monolith of Roman pond (776) sediments, and fills from a well (567) located within Roman building (416), were assessed for palynological potential. Only the upper and lower sediments of the pond were assessed and, as it proved impossible to obtain a sequence of monoliths from the well, palynological assessment was carried out on aliquots of macrofossil bulk samples from fills 6462, 6463, and 6465. Fill 6465 was an intercalated layer within 6463.

Each sample was subjected to standard concentration techniques (Dimbleby 1985). Slide preparations were examined with phase contrast microscopy at ×400 and ×1000 magnification. All palynomorphs encountered in ten standard traverses of each slide were identified and recorded, although no detailed counting was carried out. Presence of a taxon was represented by + while a relatively abundant taxon was recorded as ++ or +++ depending on frequency. Microscopic charcoal was noted but absolute counting was not carried out. Identification and nomenclature followed standard texts and keys (Bennett *et al.* 1994; Moore *et al.* 1991; Stace 1991), and modern reference material wherever necessary. Cereal-type pollen refers to all Poaceae grains >40 μm with annulus diameters >8 μm (Anderson 1979; Edwards, K.J. 1989).

Depth (cm)	*1*	*6*	*8*	*20*	*30*	*40*
Trees and shrubs						
Betula	–	–	–	–	+	–
Corylus-type	–	–	–	–	+	+
Pinus	+	–	+	–	–	–
Quercus	–	+	–	–	–	–
Spore Formers						
Pteridium	–	+	+	+	–	+
Sphagnum	–	–	–	+	–	–
Crops						
Cereal-type	–	+	–	+	+	+
Herbs						
Poaceae indet	+	+	+	+	+	+
Lactuceae	+	+	+	+	+	–
Ranunculus-type	+	–	–	+	–	–
Aster-type	–	–	–	–	–	+
Filipendula	–	–	–	–	–	+
Polygonum aviculare	–	–	–	–	–	+
Chenopodiaceae indet	–	–	–	–	+	+
Fabaceae indet	–	–	–	–	+	+
Plantago lanceolata	–	–	–	–	+	–
Brassicaceae indet	–	–	–	+	–	–
Cirsium	–	–	+	–	–	–
Caryophyllaceae indet	–	+	–	–	–	–
Cyperaceae indet	–	+	–	–	–	–
Plantago major	–	+	–	–	–	–
Sinapsis-type	–	+	–	–	–	–
cf. *Onobrychis*	+	–	–	–	–	–
Other Palynomorphs						
Microscopic charcoal	+	+	+	+	+	+
Glomus type	–	–	–	–	+	–

Table 75 Palynomorphs from pond 776, phase II.2

Results and discussion

Pond 776

The results are shown in Table 75. Sparse microscopic charcoal was found in every sample and, throughout, palynomorphs were exceedingly sparse and in a rather poor state of preservation. A rather impoverished pollen assemblage was recorded but this may be a function of differential preservation rather than a lack of species richness in local vegetation.

In the absence of detailed counting, any variation in vegetation pattern throughout the sequence must be noted with caution. However, it is interesting that *Betula* (birch) and *Corylus*-type (probably hazel) were found only in the lower fills while *Pinus* (pine) and *Quercus* (oak) were present only in the upper sediments. Poaceae (grasses) and Lactuceae (dandelion-like plants) were present throughout, but some herbs were found only in the lower fills while some appeared confined to the upper ones. The significance of this is enigmatic but it is possible that the vegetation in the environs of the pond changed over time. Cereal-type pollen was certainly more frequent in the lower fills and some inwash of bioactive soil into the pond occurred early on, as evidenced by *Glomus*-type (arbuscular mycorrhizal fungi). Whether the cereal pollen were derived from arable fields and/or crop processing in the environs of the pond, or whether it was simply adhering to dumped organic waste, is difficult to ascertain.

Today, members of most of the herbaceous taxa are common in grassland, pasture, and broken, open soils. Some of them such as *Filipendula* (meadowsweet) and Cyperaceae (sedges), which favour high water table, could have been growing around the pond edges, while others might have been growing as grassland, 'backyard', or even crop weeds. The presence of *Pteridium* (bracken) and *Sphagnum* moss is interesting. Bracken often infests dry, acid grassland, while species of *Sphagnum* might have been growing on the soggy soils, or even been growing in water amongst emergent sedges at the pond margins (Daniels and Eddy 1985). However, both these acidophilous plants may have been collected from areas of heathland and eventually dumped into the feature. Bracken has many uses *e.g.* for bedding, thatching, and even as a source of potash (Callaghan and Sheffield 1985). *Sphagnum* moss also has a long history of domestic use, including that of wound dressing and for sanitary purposes (Grieve 1931).

Pollen and spore taphonomy is complex and it is difficult to separate taxa which may have been intentionally or accidentally dumped in the pond from those of the local flora. Nevertheless, in spite of the meagre nature of these data, they suggest that the environs of the feature was dominated by weedy grassland for most of its history. Birch, hazel, pine, and oak were growing in the catchment and cereals may have been grown and/or processed in the vicinity of the pond. There is tentative evidence that the surrounding vegetation had become somewhat changed during the later period of sedimentation in the feature.

Well 567

The results are shown in Table 76. Palynomorphs were moderately abundant and in a reasonable state of preservation in every sample. Microscopic charcoal was more frequent than in the pond sediments but it was not very abundant. As evidenced by the presence of iron pyrite framboids in all three fills (and particularly the basal one), the feature appears to have contained stagnant water contaminated with fermenting organic matter (Wiltshire *et al.* 1994). This is not surprising considering that it

	Fill	6462	6465	6463
Trees and Shrubs				
Betula		+	–	+
Corylus-type		+	–	+
Fagus		–	–	+
Crataegus-type		+	–	–
Quercus		+	–	–
Sambucus nigra		+	–	–
Spore Formers				
Ophioglossum		–	+	+
Pteropsida monolete indet		–	–	+
Pteridium		+	–	–
Crops				
Cereal type		+	+++	+
Herbs				
Centaurea nigra-type		+	+	+
Lactuceae		+	+	+
Plantago lanceolata		+	+	+
Potentilla-type		+	+	+
Ranunculus-type		+	+	+
Cyperaceae		+	–	+
Fabaceae indet		–	–	+
Filipendula		–	–	+
Geum		–	–	+
Aster-type		+	–	+
Poaceae		++	–	+
Trifolium–type		+	–	+
Alchemilla-type		+	–	–
Anthemis-type		+	–	–
Caryophyllaceae		+	–	–
Cirsium		+	–	–
Hypericum perforatum-type		+	–	–
Lotus type		+	–	–
Plants of wet soil				
Other Palynomorphs				
Microscopic charcoal		+	+	+
Iron pyrite framboids		+	+	++
Fungal spores indet		+	++	+
Fungla rust (Urediniospores)		–	++	–
Fungal hyphae		+	–	–

Table 76 Palynomorphs from well 567, phase II.2

functioned as a well, but the upper fill contained an abundance of fungal hyphal fragments. If the hyphae had been derived from dumped plant material, they might also be expected to be present in the basal fill. It is likely, therefore, that the upper fill was aerated, at least periodically, and that this allowed active mycelial growth which is more prolific in aerobic conditions.

Since the well was situated within a building, it is surprising that so many palynomorphs found their way into the sediment. It is, of course, possible that the pollen and spores were adhering to dumped plant debris rather than were airborne. A number of tree/shrub taxa were recorded: birch, hazel, oak, *Crataegus*-type (*e.g.* hawthorn), *Fagus* (beech), and *Sambucus nigra* (elder). If the pollen were, indeed, from an airborne source, hawthorn, elder, and beech might have been growing fairly nearby since all are relatively poor pollen producers and the two shrubs are insect-pollinated.

Cereal-type pollen was fairly frequent in both fills, and the abundance of Poaceae (grasses) suggests that the terrain was open. The assemblage of other taxa is very mixed and was probably derived from a wide variety of habitats. Plants characteristic of wet soils, such as meadowsweet and sedges, were present. Taxa characteristic of acid, mesic, and calcareous soils were also found. Many taxa could have been growing in weedy pasture or meadow, or as ruderals on open ground. It is difficult to interpret this assemblage in terms of local habitats, but it is possible that they represent a mixture of plant waste such as would be derived from hay or sweepings.

The intercalated layer (6465) is of particular interest because it was so different from the other fills. Herbaceous taxa characteristic of weedy grassland or pasture were present but no tree pollen was found. Cereal-type pollen was exceedingly abundant as were the urediniospores of fungal rusts and other unidentified fungal spores. Rusts are obligate pathogens of a wide range of plants including grasses and cereals, and they are only present if the living host is available. At least two distinct types of urediniospores were present, and this might indicate either a multiple infection of one plant host, or that more than one infected species was present. It is tempting (and reasonable in this instance) to suggest that the rust spores were derived from fungal pathogens of the cereals within the layer. The large numbers and range of other fungal spores might also suggest infected crops.

Conclusion

There seems to have been a variety of habitats in the environs of the site. Acid, mesotrophic and more base-rich soils seem to have been available, and this is reflected in the range of habitats suggested by the plant taxa found. Trees and shrubs were present in the catchment but the pond seems to have been set in an open area surrounded by open, disturbed/trampled soil and weedy grassland or pasture, with sedges and meadowsweet growing at its edge. The well seems to have received pollen from a range of sources and, in layer 6465, there was evidence for the dumping of infected cereal waste.

Detailed analysis of these sediments might have thrown light on the more exotic elements found in the macrofossil assemblage. However, this relatively cursory examination has suggested a picture of open landscape dominated by herb-rich grassland and arable fields, with few trees and shrubs.

Part 6. Discussion

I. Introduction

One of the main objectives of the Great Holts Farm project was to carry out a rescue excavation on a low status Romano-British farmstead, to offset a legacy of past excavations on the *foci* of high status villas. The investigation of the Romano-British rural economy was to be assisted by a large-scale open area excavation in which a low status farmstead was examined in association with its main means of production, its surrounding enclosures. As the status of the site was slightly higher than expected, this objective was only partly achieved, although a Romano-British rural settlement in its immediate setting was uncovered. The investigation of large-scale aspects, such as Romano-British farm/villa morphology and planning, was facilitated by the near complete plan; other aspects, such as the production of crops and the undertaking of subsidiary tasks, by the environmental evidence and the wide range of buildings. One welcome discovery was the granary, with its well-preserved assemblage of carbonised macrofossils. Another welcome discovery was the well, with its significant range of ecofactual material.

II. Prehistoric

A large body of prehistoric evidence from the Chelmer Valley/Blackwater Estuary is supplemented by the prehistoric features and finds, which are probably related to four separate episodes of ritual activity and/or settlement. Ritual activity is represented by the Neolithic finds, the Late Neolithic/Early to Middle Bronze Age ring-ditches, and the Late Bronze Age placed deposits. Two episodes of on-site settlement are indicated by the Late Bronze Age miscellaneous features and the Early Iron Age structure.

Phase I.1 (Neolithic)
The ritual deposition of finds in the Neolithic in the Chelmer Valley/Blackwater Estuary is indicated by the Peterborough Ware and the flint axe head. The pottery, in particular, bridges a gap in the ware's distribution, between Elms Farm, Heybridge and the north Essex coast, and the cursus at Springfield (Atkinson and Preston 2001; Cleal 1982; Hedges and Buckley 1981).

Phase I.2 (Late Neolithic/Early to Middle Bronze Age)
Ploughed-out barrows are probably represented by the two ring-ditches from the second phase of ritual activity (Figs 7 and 9), as ring-ditches/barrows of Neolithic and Early/Middle Bronze Age date are well-represented in the Chelmer Valley and the Blackwater Estuary: *e.g.* Springfield, Slough House Farm, and Langford (Buckley and Hedges in prep; Wallis and Waughman 1998; Cooper-Reade, pers comm). It is assumed that the circular cropmark to the north-west (Fig. 4) is a ploughed-out barrow from the same period, although a word of caution is presented by Boreham Airfield, where a similar example is now known to be the site of a medieval windmill (Clarke, R. forthcoming). The traversing of this feature by two field ditches (Fig. 4) may indicate that it was re-used as a boundary marker in the Roman or post-Roman period. In this case, it is assumed that the two excavated and one unexcavated ring-ditches are part of an inter-related group; it is also assumed that all three features are related to nearby, unlocated settlements. The embellishment of ring-ditch 452 with an external ring of posts is not unusual. Similar examples have been found at Braziers Farm, Great Tey; Elms Farm, Heybridge, and possibly Langford, near Maldon (Gibson in prep; Atkinson and Preston 2001; Cooper-Reade pers. comm.).

Phase I.3 (Late Bronze Age)
The undertaking of ritual activity in a domestic context in the Late Bronze Age is evidenced by the Late Bronze Age placed deposits (Fig. 10). The ritual deposition of pottery and other finds in a domestic context at that time, in general, is demonstrated by the deposition of pottery at Lofts Farm, Maldon, and pottery and bronze-working moulds at Springfield Lyons, Springfield (Brown 1988a; Buckley and Hedges 1987).

A small, unenclosed farmstead, in possible deference to the high status settlement at Springfield Lyons (Buckley and Hedges 1987), is suggested by the miscellaneous pits, the fire-pit, and the assorted finds. A wider context of an intensively settled and heavily exploited landscape, is indicated by numerous finds-spots, the possible temple at Broads Green, the farmstead at Broomfield, and the Springfield-type enclosures at Springfield and Great Baddow (Brown 1988b; Atkinson 1995; Brown and Lavender 1994).

Phase I.4 (Early Iron Age)
Structure 146 is thought to be the remains of a small farmstead (Fig. 11). Small, post-built structures in apparent isolation, similar to 146, have been found at Linford, Rawreth and — possibly — North Shoebury (Barton 1962; Drury 1979; Wymer and Brown 1995). Analogy with all three examples may indicate that 146 was round or sub-round, with a diameter of *c.* 5 to 6m.

Phase I.5 (Middle Iron Age to Early Roman)
The Middle to Late Iron Age at Great Holts Farm is notable for a dearth of features and finds, although the general exploitation of the site and its immediate area is suggested by the residual pottery. The exploitation of the wider area in general is indicated by the Late Iron Age features and/or finds from Bulls Lodge Dairy and Boreham Airfield (Lavender 1993; Clarke, R. forthcoming). Settlements and field systems of Middle to Late Iron Age date have also been found at Little Waltham, 4.5km to the west (Drury 1978).

III. Roman

The Roman evidence begins in the early 2nd century with the foundation of a Roman farm or the expansion and or shifting of a pre-existing, but undetected off-site settlement. Two parallel fields (E1 and E2) and a central,

possibly square sub-divided enclosure (E5 to E7) with two squat 'wings' (E8 and E9) are defined by nineteen ditches on a north-east south-west alignment (Fig. 12). A high degree of regularity in the layout is thought to be related to a regimented approach and a 'business-like enterprise' (Fig. 16). An associated settlement, if not on site, is implied by a large assemblage of mid Roman pottery and other finds such as iron smithing debris. Further evidence for on-site activity at that time is comprised of fifteen ovens, four ancillary enclosures (E3 and E11 to E13) and one well (567) (Fig. 13).

The infilling of the E1 to E3 enclosure ditches in the early 3rd century is followed by the laying out of four attendant areas (E15 to E18) to either side of the central enclosure (E10) (Fig. 17). This development, which may have been undertaken as late as the late 3rd/early 4th century, after a long hiatus, is accompanied by the remodelling of the E11 enclosure in the south-east corner, and the setting out of a ditched droveway and a square holding pen (E19). A further, possibly contemporary development is the laying out of five enclosures (E21 to E25) across a previously unenclosed area to the south-east.

The construction of an aisled villa and house (416 and 368) is probably carried out at the same time as these alterations (Figs 17, 18 and 47). Both buildings are linked by a small bath-house (414) in the late 3rd/early 4th century, if not before (Fig. 37).

Three more buildings that are present during that and/or the following phase are granary 294, workshop and/or storehouse 417, and annex 786 (Figs 41, 42 and 44). The production and processing of cereal crops for external demand is demonstrated by the granary, which is accompanied by a large assemblage of carbonised macrofossils (Fig. 121).The emulation of a 'Romanised lifestyle', which is apparent in the outward design of the aisled villa, is repeated in imported or recently introduced high-status foodstuffs, in pieces of amphora from Campania, and in possible evidence for hawking. The importation of large cattle to plough the heavy clay soils of the surrounding fields is demonstrated by a small assemblage of extra large cattle metapodials.

The second half of the 4th century is characterised by an increasing air of dereliction. The first steps in the slow demise of the Roman estate are the ending of workshop/storehouse 417, and the going out of service of bath-house 414. These are followed by the accumulation of silt in the ponds, the dumping of rubbish in some of the ditches, and finally, in the late 4th/5th century, the demolition or robbing of the bath-house, aisled villa and house. The few exceptions are the re-cutting of selected ditches, and the re-modelling of the pre-existing droveway and holding pen (Fig. 49).

Settlement form and zoning

Planning

The measurements and modules in the phase II.1a layout possibly indicate that the associated fields and enclosures were part of a planned landscape. The sub-division of a centuriated grid of 2400pM by 2400pM *limites*, for example, is suggested by the modular forms and the multiples of twelve (Fig. 16). If this is correct, then it is probable that the associated, unlocated, II.1a settlement, was part of an imperial estate, or the tenanted property of a substantial landlord. This idea is given further weight by the interpretation of the apsed building at Bulls Lodge Dairy as a *principia* (*i.e.* the administrative centre of an imperial estate), which, although in use in the mid 3rd to mid 4th century, was possibly preceded by a so far undetected predecessor. Another explanation for the planned, and therefore possibly regulated layout, is that it was connected to the production of food for the *civitas* or military.

The use of set dimensions in a rural context is not unique to Boreham, although few examples are as consistent or as extensive as at Great Holts Farm. Units and multiples of 17m and 27m have been identified in a villa context at Roughground Farm, Glous., and a sub-divided, rectangular block, one *iugerum* in area, *c.* 120pM by 240pM, at Brockworth, Glous. (Allen *et al.* 1993; Rawes 1981). A range of market gardens, *c.* 60pM by 120pM, is possibly present in the north part of Wroxeter, and a basic module of *c.* 20m square at Duncote Farm in its surrounding hinterland (Ellis *et al.* 1994). A cohesive field system, over 85ha in extent, has been discovered by aerial photography at Upwell in Cambridgeshire; its Roman origins are suggested by regular dimensions of *c.* 1200m by 700m, or *c.* 34ac by 24ac (Hall 1996). The regular layouts at Wroxeter and Duncote Farm are believed to be connected to the production of specialist supplies for the *civitas* or military. The cohesive field system at Upwell is possibly part of a regular, but less rigid, form of land division called *limitatio*, as sometimes used by imperial estates.

Mucking, Essex

The closest known parallel to the II.1a layout is the 2nd-century double-ditched enclosure at Mucking, which was once thought to be the outfield of an off-site villa, but is now regarded as a ditched enclosed farmstead, complete with timber farmhouse and granary (Going 1993a, 1996). In their basic morphology, both sites are characterised by ninety-degree angles, straight ditch lines, modular forms, and north-west/south-east north-east/south-west alignments (Fig. 122). The combined E5 to E7 area at Great Holts (if initially square, as is believed) is also similar in size (*i.e.* *c.* 11236m^2) to its Mucking double-ditched counterpart (*i.e.* *c.* 11700m^2). Unlike Mucking, however, it is not known if the II.1a layout was occupied. If a simple farmhouse, like the one at Mucking, was present then it either remains undetected or has been destroyed by post-Roman ploughing.

A possible explanation for both sets of similarities, above and beyond coincidence, and the prevailing ethos of regimentation and order, is that both sites are the Romano-British equivalent of 'model farms'; that in order to maximise production and to facilitate control both sites have been carefully organised according to the same set of precepts.

Continuity

The absence of a Late Iron Age/early Roman predecessor is slightly unusual, as it is often assumed that the Late Iron Age/early Roman transition was characterised by a high degree of continuity. In this case, it is possible that the II.1a layout was imposed upon an existing set up, as it is highly likely that the surrounding area was settled and exploited in the preceding period. Another explanation for the apparent lack of continuity is that the II.1a layout was related to the expansion and/or shifting of a so far

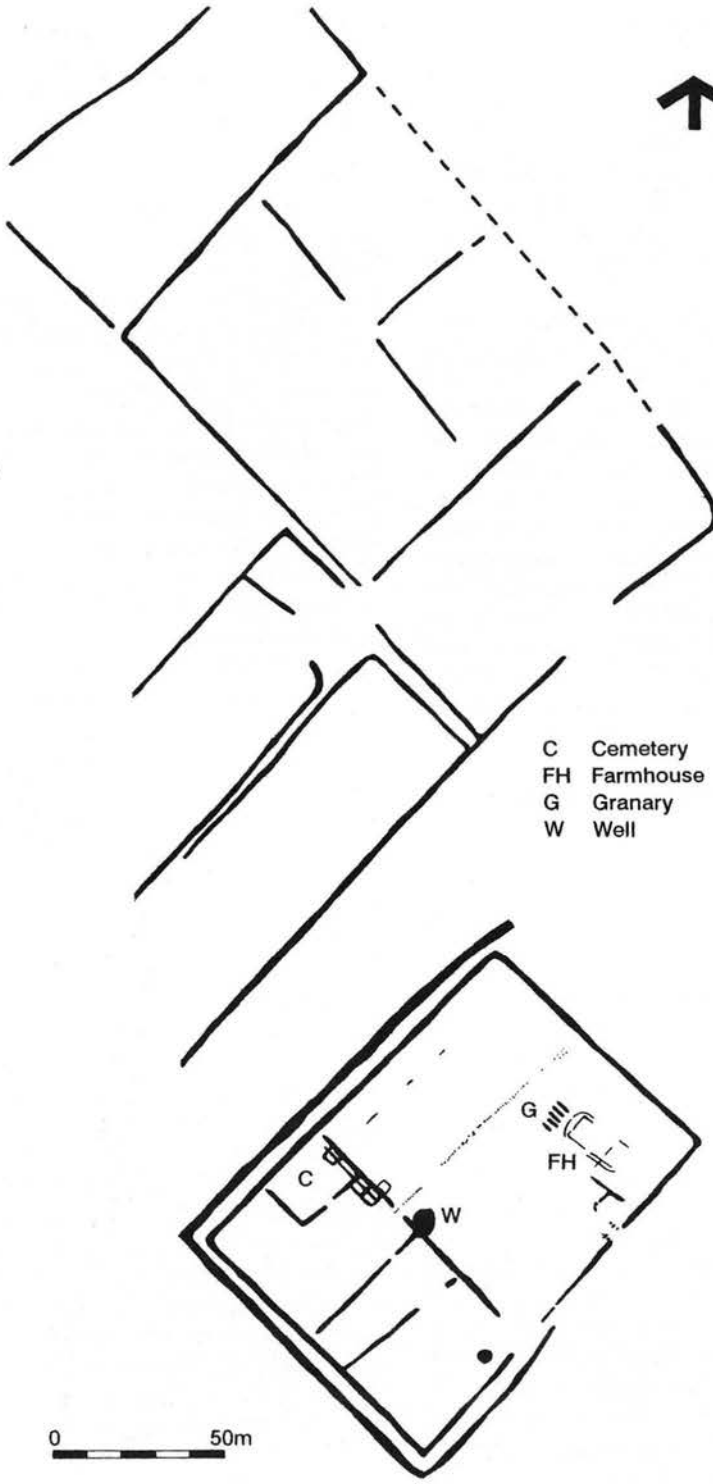


Figure 122 Phase II.1a and Mucking

undetected, off-site settlement, although no direct evidence for this has so far been discovered.

Zoning

The arrangement of the phase II.2 inner and outer compounds E10 and E14 (Fig. 17) is similar to the inner and outer courtyards of winged corridor and courtyard villas, such as Gorhambury, Herts. (Fig. 124) and Chignall St James, Essex (Neal *et al.* 1990; Clarke, C.P. 1998). It is considered unlikely in this case that the E10 enclosure was largely domestic due to the attendant areas E15 to E18, and the utility buildings 294, 417 and 786. This is supported by pond 776, which was probably used as a watering hole for livestock.

A need to control the movement of livestock, probably cattle, on a regular basis into and out of the phase II.2 to II.3 compounds is suggested by the droveway and the E19 and E29 to E30 holding pens (Figs 17, 48 and 49). It is

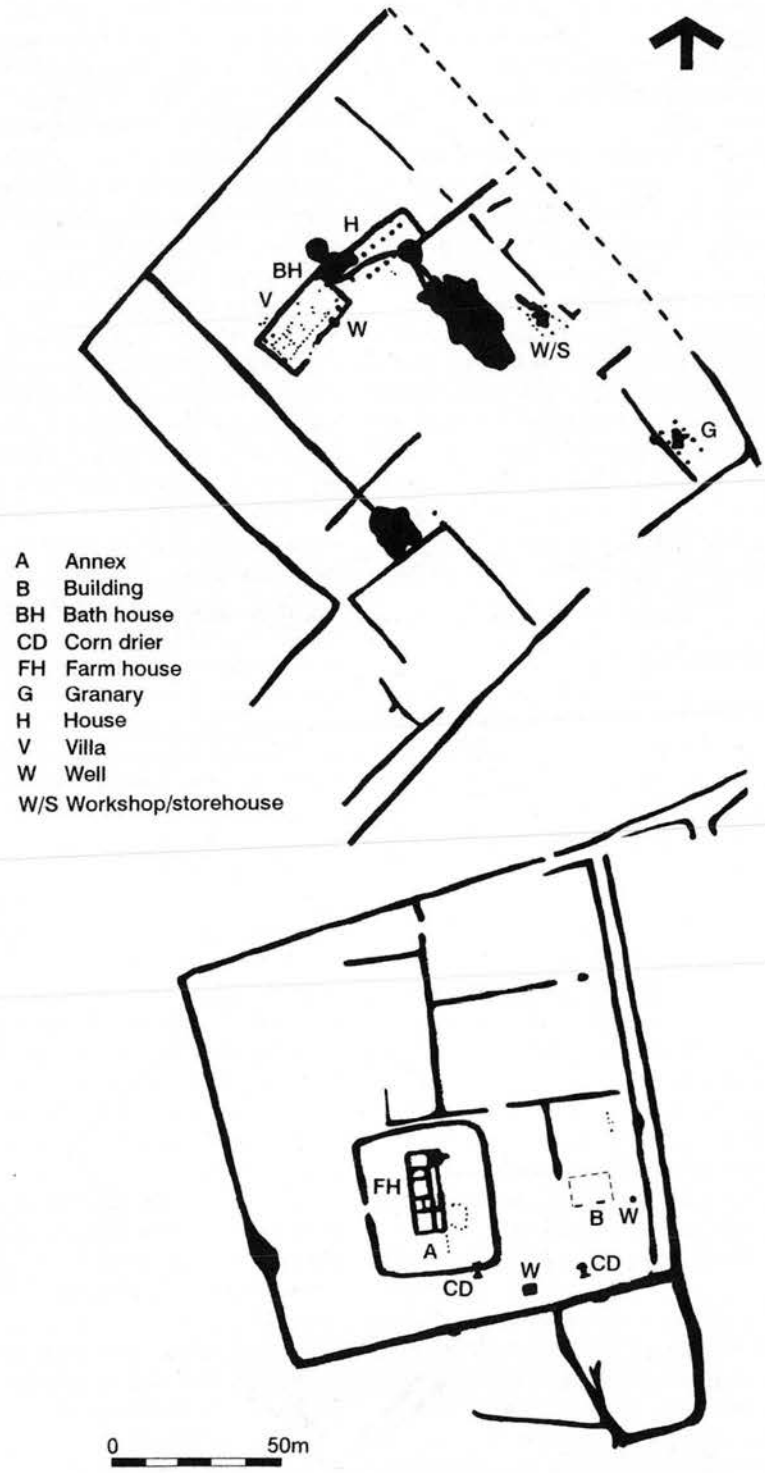


Figure 123 Phase II.2 and Barton Court Farm, Oxon

considered likely that this type of arrangement was an important component of agriculture in Roman Britain because similar layouts have been found at Barton Court Farm, Oxon. and Roughground Farm, Glous, (Miles 1984; Allen *et al.* 1993). The site at Barton Court Farm, in particular, is a close match for the one at Great Holts Farm. It comprised an occupied square compound, and a ditched droveway leading to a small group of pens in its north-east corner (Fig. 123). Droveways and stock-management areas were also present at Roughground Farm, where a late Roman villa was fronted by a large corral and two droveways. One possible reason for this arrangement, at Great Holts Farm at least, is that it was related to general management and/or safekeeping. Another possible reason is that it was related to milking.

Work areas or areas for stock keeping or horticulture are probably represented by the E11 and E15 to E22 and E24 to E25 enclosures. Further afield, the wetter ground

along the nearby brook and river was probably largely reserved for the grazing of livestock, and the boulder clay to the north and west for the growing of crops.

Enclosure E23 is thought to have been used for something other than farm work, because of its unusually large ditch, its position directly opposite the front face of the main building complex, and its nearby inhumation, which was discovered by St Albans Sand and Gravel in the late 1980s. A possible explanation for these unique features is that it was used as an estate related cemetery. Likewise, an estate related cemetery from the previous phase is suggested by the well-to-do cremations from the fore-yard of the present day farm (Richmond 1963) (Fig. 4).

A close association between villas and villa related cemeteries is not unknown. This includes Chignall St James, where a small group of Roman inhumations was present on the outskirts of the late Roman villa (Clarke, C.P. 1998). It also includes the double ditched enclosure at Mucking, which was distinguished by a small cremation cemetery in its north-west corner (Fig. 122) (Going 1993a).

Form and function of buildings

A range of activity is represented by the six Roman buildings: villa 416, house 368, bath-house 414, granary 294, workshop and/or storehouse 417, and workshop, stable or byre 786. All six buildings were possibly present as a group in the late 3rd to mid 4th century, although granary 294 and ancillary building 786 may not have been present until phase II.3.

Aisled villa 416 and house 368

Buildings 416 and 368 are two different examples of the Romano-British aisled building form, the main characteristics of which have been discussed and identified by J.T. Smith (1963) and Morris (1979). For Romano-British aisled buildings in general the two main defining characteristics are twin rows of parallel roof supports and a large open nave. Other features can include a small suite of private rooms, luxury fittings such as hypocausts, mosaics and bath-houses, and a partial or total sub-division of one or both aisles. The private rooms and bath-houses are often situated at opposite ends, commonly the west and east respectively. Other features can include porticos and wing rooms, as at Stroud and North Warnborough (Moray-Williams 1909; Liddell 1931). The main pattern in terms of development is the enhancement of a simple barn-like structure; rooms and luxury fittings are added as the wealth and aspirations of the owner increase. The reservation of the private rooms for the head of the household, and the sub-divided aisles and the open part of the nave for livestock, industry, farm-work and farmhands, is suggested by spatial and archaeological analysis and anthropological parallels.

Some of these characteristics are present in building 416. Private rooms are thought to be represented by rooms A and D, and a portico and two wing rooms by rooms J, K and L (Fig. 28). The bath-house and private rooms are at opposite ends and further rooms are present in the north-west aisle. The use of rooms A and D as private rooms is suggested by the box-like storage pits, which were probably used for the storing and hiding of personal possessions and valuables. This is suggested in turn by the two large lead water pipes, which must have been of some value, in pit 394.

Building 416 is exceptional in one respect because of the absence of a large open nave; the whole of the interior appears to have been sub-divided into twelve or more rooms (Fig. 28). The hypothesis that it was fully sub-divided from the beginning is supported by the coherent building plan, which is uncharacteristic of a piecemeal development. Further evidence to this effect comes from the aisle post-holes, which are inordinately small and frequent (*c.* fifteen pairs) for an otherwise open-plan building. This point is exemplified by comparing the structure with larger, and more typical aisled buildings, such as Stroud (eleven pairs, *c.* 43.6m by 15.2m) and Rivenhall (seven pairs, *c.* 17.5m by 55.5m) (Moray-Williams 1909; Rodwell and Rodwell 1985). A fully sub-divided building from the outset is a significant factor because it may imply that the more utilitarian aspects, of which an open nave is an important part, were always excluded; that building 416 is a purpose-built residence for an estate owner or bailiff. Building 368, on the other hand, was possibly built for the excluded functions, *i.e.* the farmhands and livestock.

The hypothesis that the whole of 416 was sub-divided, and therefore largely reserved for a domestic function and a single group, is supported by the position and contents of well 567, the unusual location of the bath-house *praefurnium*, and the difference in status between the two aisled buildings. Of these, the difference in status is demonstrated by the bigger size of 416, its sub-division into rooms, its 'Roman' frontage, and its exclusive use of the intervening bath-house. The status of building 368, in contrast, is diminished by the *praefurnium* in the north-west corner, and the unusual course of the tile-lined drain. The restriction of the bath-house to 416 is indicated by the location of the doorway in the north-east wall. An association between 368 and manual labour, in contrast, is implied by the *praefurnium* in the north-west corner. Further evidence for a social distinction between the occupants of the two buildings is evident in the position of well 567, which is situated on the face of the portico (Fig. 47). The well is in a position where it is accessible to all, but still under the roof, and the control therefore, of the people in 416. The exclusion of livestock, and the presence of a relatively well-to-do group in 416 is further suggested by the environmental evidence from well 567. This includes the imported and introduced food items, the possible evidence for a high status activity like hunting, the low number of dung beetles, and the flooring material for humans but not animals.

The dual function of building 368 makes it likely that it was divided into other rooms along with the *praefurnium*. If the interpretation of the building's function as part agricultural and part residential is correct then rooms and other features, such as stalling for animals, were probably present. A possible candidate for a second room division is slot 108, which is situated in the north-west aisle, halfway between the north-east side of the *praefurnium*, and the north-east end of the building. The reservation of this side for farmhands is suggested by the slot and the small doorway/footbridge in the north-west side. The south-east aisle, in contrast, was possibly used for stalling of cattle because of the unusual course of the tile-lined drain, which was possibly related to a dual function such as a channel for slurry. At some point prior to the mid 4th century the internal space must have been reorganised as the structure was reduced in

length, from 24m to *c.* 15m. One possible side-effect of this is that annex 786 was added to the south-west end of 416 to compensate for the loss of space.

The status of building 416 is not reduced by its timber construction, which is more likely to be due to the dearth of good quality building stone in the region, than to standing and wealth. The many fine and attractive timber buildings from the late medieval and post-medieval periods that still distinguish the county to this day refute the assumption that high quality buildings can only be constructed from stone or brick. A more modest example of this is the present day farmhouse at Great Holts Farm, which was constructed from timber and daub in the 15th century. A connection between Romano-British aisled buildings and an availability of timber in general is possibly indicated by their distribution pattern, as the majority are situated in what were probably once well-wooded areas (Hadman 1978).

It is likely that the earth-fast posts in the outside walls of building 416 were prone to damp and infestation, although it is possible that this was reduced by broad eaves and heavy rendering. A susceptibility to damp and infestation is possibly demonstrated by the two species of beetle from well 567 that infest structural timbers, and the otherwise difficult to explain replacement of the south-west and south-east walls. In terms of construction, the decision to use earth-fast posts for the outside walls is unusual, as a box-frame structure on sleeper walls of flint or rubble would have been less vulnerable to damp. Regardless of reason, the building is not alone in this respect, as large Roman timber structures with outside walls of earth-fast sleeper-beams, posts or planks are common in the surrounding area. This includes the early 2nd-century farmhouse at Mucking (Fig. 122), and a late 2nd to 4th-century building of unknown function at nearby Hatfield Peverel (Ecclestone and Havis 1996). Further changes to building 416 include the replacement of internal partition 529, and the possible reorganisation of the inside rooms. Changes to building 368 comprise a reduction in length, and a replacement of two or more aisle posts. The versatility of the Romano-British aisled building form in general and the relative ease with which they could be maintained and altered is demonstrated by both sets of changes.

The use of an aisled building (416) as the central point of a Roman rural estate is a rare situation, as Romano-British aisled buildings in general are more commonly found in an ancillary or subsidiary context. In this case, it is considered that the classification of the building as a villa, the main focal point of the estate, is justified by the exclusion of the more workaday aspects, the restriction to one social group, and the relationship with aisled house 368.

The pairing of 368 and 416 is not uncommon, as many Roman rural sites are characterised by a focal point of two main structures, often of slightly different status. Examples of this include Norton Disney, Lincs., where a simple residence was accompanied by a large aisled house, and Gayton Thorpe, Norfolk, where two winged-corridor houses were linked by a single room (Oswald and Buxton 1937; Edwards, D. 1977). In this case, the conclusion of J.T. Smith (1978) that pairing could be connected to dual proprietorship, possibly between extended families, is considered unlikely due to the different roles and status of the occupants in the two separate households.

Another aspect of pairing is its possible association with water; two residential units of roughly equal status are located to either side of a shrine in the form of a well, water tank or pond (Smith, J.T. 1978). A possible candidate for this, well 567, is considered to be inappropriate, partly due to its unequal placing and partly due to the different status and role of the two buildings. The same conclusion is applicable for building 416 alone, as the well is unevenly placed, and the internal layout of the building is not indicative of two equal households. A second candidate for both buildings is cistern 415, which in contrast to well 576 is more centrally placed, albeit to the rear. The use of this feature as a shrine, however, seems unlikely, because of the unequal standing and role of the buildings.

Bath-house 414

The interpretation of bath-house 414 is compromised by the demolition and robbing which took place from the late 4th century onwards. In consequence, it is difficult to be certain if the surviving components in those two to three rooms are related to a single phase, or to two or more phases of construction, remodelling and/or repair.

For the *praefurnium*, the one room that was less extensively robbed, the most interesting feature by far is the flue, which ran from the pit in the north-east corner, to the north-east side of the *hypocaust* base. The presence of this feature is slightly unusual, as most Roman bath-houses in general were provided with a simple fire pit or furnace up against an opening in the *caldarium* wall. A possible explanation for this feature is that it was related to the process of convection, to the fact that the bath-house fire and up-draught were competing for a restricted air supply with other fires in the surrounding building 368. Unfortunately, it is not known if the fire, which would have been on top of the flue, was positioned on top of a grill, as in a modern coal/wood heated fireplace. If it was, then some way of controlling the amount of air which was going into the furnace, such as blocking off the mouth of the flue, must have been necessary, to prevent the fire from sometimes burning too fiercely and the bath house from over-heating.

The fact that the flue was blocked off with rubble and *opus signinum* at some point during the lifetime of the bath-house is significant, because it either questions the worth of the flue in the first place, or it possibly indicates that some form of change had taken place around it. If the flue was designed to maximise the up-draught of air from a confined space, then its blocking off may indicate an improvement to the surrounding air supply, either through internal changes to bath-house 414, or through alteration and/or the opening up of building 368. If this last point is true, then it is possible in turn that the flue and the bath-house were altered when building 368 was reduced in length. Either the building (368) was opened up, or the number of internal fires and obstacles reduced.

Two other features which are worthy of mention are the cistern (415) and the tile-lined drain (93). A parallel for the first of these is the 'sump' at Piddington, Northants. which was associated with a villa related bath-house, and fed by a timber pipeline (Selkirk and Selkirk 1996). In this case, it is possible that the cistern at Great Holts Farm was supplied with rainwater from the surrounding roofs, as the

feature would have been insufficiently deep for the natural water table. To prevent slumping, some form of internal support, such as timber or hurdles, would have been required, although little direct evidence was found to support this. A dual function, such as a channel for slurry, is possibly indicated by the unusual course of the second feature, the tile-lined drain, which ran through the middle of building 368. Regardless of function, some form of cover must have been required, as the feature at *c.* 0.8m deep and 1m wide, was a considerable obstacle.

Buildings 294, 417 and 786

The interpretation of building 294 as a granary, and 417 as a cruck building with scarfed crucks, seems secure, although the interpretation of their remaining aspects, be it form or function, is open to doubt. An interpretation of the other building, 786, is bound to be doubtful, because of the poor preservation; it is impossible to determine, for example, if its two main elements — the slots and the post-hole line — are related to one structure or to two or more structures from one or more phases. If the latter is true, then it can be conjectured that the two slots are part of a semi-open-sided workshop, stable or byre, *c.* 8m by 13m; the post-hole line, if contemporary, is possibly a fence line for an adjacent yard. The closest parallel for the post-hole line is a row of four post-holes on the south end of the late Roman farmhouse at Barton Court Farm, which is thought to be an annex, possibly a workhouse or storehouse (Fig. 123) (Miles 1984). Two short walls, possibly part of a yard in front of a large entranceway, are also present on the east end of the aisled villa at Norton Disney, Lincs. (Oswald and Buxton 1937).

The poor preservation of building 294 is particularly unfortunate, as the building is a rare instance in which a granary has been found in association with part of its contents in a non-military or non-urban context. Various types of granary are outlined by Morris in her monograph on Roman agricultural buildings (Morris 1979, 29–39). Of these, of the two types most applicable, one — a 'military style' granary raised on sleeper beams or pillars — can be excluded as a parallel for the one at Great Holts Farm because of the central hollow, which was probably in use when the building was standing. A second, and, in this case, somewhat more appropriate type of parallel, is a room with a raised floor on internal offsets. Such rooms, which were often detached, were characterised by an air gap beneath a raised floor, which was either supported by small inner walls, or by offsets in the surrounding walls. Either way, the provision of a raised floor, either by lifting up the whole building, or through the construction of an elevated floor on inside offsets, would have been a necessity; good dry conditions and a regular temperature were necessary to deter insect infestation and to minimise germination or mould. With Great Holts Farm, it is possible that the central hollow was designed to increase the size of the sub-floor air gap. A raised wooden floor, just above ground level, was probably supported by supports in the walls, which in turn, were either held up by posts in the eight main post-holes, or by sleeper beams and a box frame construction.

The interpretation of building 417 as a cruck building seems fairly secure, due to the two large end post-holes, which are thought to be for the ridge-posts, and the irregular spacing of the side post-holes, which are thought to be for the vertical posts with scarfed crucks. Both elements are among the defining characteristics outlined by Green in his article on the origins and development of cruck construction in eastern England (Green, H.J.M. 1982). The interpretation of the building as a workshop and/or storehouse is less secure as it is based on a small assemblage of metalwork. A different interpretation of the building's function is that it was used as a small byre. This is supported by the central hollow, which may be a worn floor area, and the cut feature to the north, which may have been used as a sump.

Economy

Production

Relatively little is known about the economy of the II.1 phase of the Roman settlement, although it seems likely from the organised layout that the associated farm was mainly directed towards the intensive production of crops and/or animals from the outset. The ovens and the iron smithing debris are either connected to commercial sidelines or to the day to day needs of the farm and its inhabitants. The ovens, which are not uncommon, can be matched at nearby Castle Hedingham (types A, B and D), Orsett (type D), Gorhambury (types A, B and C), and Baldock (types C and D) (Lavender 1996; Carter 1998; Stead and Rigby 1986; Neal *et al.* 1990).

The villa estate must have been at a peak in the late 3rd to mid 4th century, due to the pottery evidence, the ancillary buildings and the increase in enclosures, although this is cautioned by a dearth of II.1 evidence for a direct comparison. The intensive production of wheat, barley and pulses for a specific client and/or the general market is indicated by the granary, which was in use in II.2 and/or II.3, and the distribution pattern of the carbonised macrofossils (Fig. 121). The production and storage of crops as monocultures rather than maslins is evident in the distribution pattern, whilst the processing of crops away from the building is apparent in the absence of chaff. The exploitation of the surrounding Boulder Clay is further suggested by the common occurrence of stinking mayweed, a weed of heavy clay soils and arable fields, in the environmental soil samples.

An emphasis on arable production is probably related to a dearth of summer rainfall, by the fact that the production of grass, and hence livestock, is sometimes restricted by drought-like conditions. This is analogous to the present day landscape, which, apart from the nearby flood plains, is mainly comprised of arable fields. Even though the precise nature of the climate in late Roman Britain is not known, it seems likely that it was at least as favourable as it is today (Greene, K. 1986, 81–6; Dark and Dark 1997, 18–21).

The heavy clay soils of north-west and mid Essex are very fertile, but difficult to plough, especially in winter when they are often waterlogged (Allen and Sturdy 1980). At Great Holts Farm, the need for extra traction is reflected in the introduction of the large cattle, which, due to their large size and their severe arthropathies, are thought to have been used for the pulling of carts and ploughs, rather than for increased beef production.

A further possible reason for the introduction of the large cattle is that it was related to the starting of a new herd or to the improvement of an existing herd. The keeping of cattle as a significant sideline, for milk, beef and leather, is supported by the droveway, which suggests that the need to control the movement of livestock was of

some importance. Further evidence to this effect comes from the making of tools from horn cores, the skinning and leatherworking, the iron ox goad, and the possible cattle bell.

It is likely that the growing of crops and the keeping of cattle were reciprocal in other ways. This includes the production of manure, which would have been needed in some quantity to maintain the fertility of the surrounding fields. A possible reflection of this is the dearth of rubbish pits, as it likely that most of the material was collected in farmyard middens, before being spread across the fields during manuring.

On a wider basis, it is assumed that the cultivation of the surrounding heavy clay soil was further facilitated by the development of the heavy plough in the late 3rd/4th century (Rees 1979). A need for increasing yields is possibly related to rising population levels or to high rents and/or taxes, such as the *annona*. On a local level, the disposal and sale of the produce was probably assisted by the nearby small towns, and the thoroughfare from London to Colchester. The import and export of products and produce, such as the introduced cattle, to and from the near Continent was probably assisted by the Thames and Blackwater Estuaries. It is possible that the River Chelmer was navigable as far as Chelmsford, although no evidence for a wharf has so far been discovered inside the town. Some of the cattle at least must have been sold on as prepared goods, *i.e.* leather, meat *etc.* due to the evidence for skinning, and leather and horn core working. The exploitation of the heavy clay soils of north-west Essex for cattle and crops in the late Roman period is also evidenced at Chignall St James and Stansted, although the primary factor at Chignall was probably pastoral rather than arable (Clarke, C.P. 1998; Havis and Brooks forthcoming). Further evidence for the use of cattle for traction can been seen at Stansted.

The reinvestment of the surplus wealth in the villa estate and its infrastructure is demonstrated by the remodelling and/or repairing of the aisled house and villa, and the extension and upkeep of the ditches and fields. Further expenditure on the villa estate is indicated by the surviving tools and equipment, *e.g.* the axe, wedge, chisels, and knives *etc.*, and the introduction of the large cattle. A large amount of initial investment in the early 2nd century is suggested by the setting out of the II.1a fields and enclosures, whose full extent was not determined. Smaller improvements, during that phase, can be seen in the introduction of the south-east enclosure E11 and the north-west E12 and E13 pens or paddocks. A further episode of large-scale investment, in the following phase, is suggested by the enhancement of the central area, the construction of five or more buildings, and the introduction of the droveway and south-east fields E21 to E25. A fall-off in investment, from the mid 4th century onwards, is indicated by the possible non-replacement of the bath-house and workshop and/or storehouse (417), the dearth of new features, and the drop-off in ditch and pond maintenance. The emphasis in the pottery record towards the late 3rd/4th century is probably due to the greater level of prosperity and on site activity at that time, and the increasing infilling of ditches, from which most of the material was recovered, from that point onwards.

Consumption

The surplus wealth from the villa estate was also spent on a wide variety of consumer items. The most notable example of this is the bath-house, which was clearly in use in the late 3rd/early 4th to mid 4th century, if not before. Some of the consumer items were probably derived from the surrounding environment, either directly through hunting and fishing *etc.*, or indirectly, through purchase at local markets. The red deer, hare, duck, goose, woodcock, thrush and plover are probably derived from the surrounding countryside, and the oysters, pike, eel, plaice and flounder from nearby ponds, rivers and estuaries. Some of the plant remains, such as the hazelnuts, are probably derived from nearby natural resources. The purchase of imported foodstuffs, via local markets, is possibly indicated by the Mediterranean pine cones, the olives, the grapes, the scad and ?Spanish mackerel, the walnuts and sweet chestnuts, and the amphorae. This includes the almond-rimmed wine amphora from Campania (central Italy), the Dressel 20 olive oil amphorae from Baetica (southern Spain), and the Gauloise 4 wine amphora from France. Some of the food items, such as the sweet chestnut, stone pine and walnuts, are possibly derived from new introductions. Most of the above items, including the thrushes and pine nuts, appear in the Roman cookery books of Apicius (Edwards, J. 1984), and it is not impossible that the bulk of the material from the lower part of the well was connected to the deposition of waste from a nearby kitchen, although a ritual connotation is suggested by some of the pottery. The exploitation of the surrounding area is further demonstrated by the well timbers, most of which are probably derived from an unmanaged woodland resource. The use of *Sphagnum* moss for wound dressings and sanitary purposes might be implied by the palynological evidence from pond 776.

Further utensils and consumer items are represented by the large assemblage of pottery, most of which is either locally or regionally derived; the small assemblage of glass, including window glass; the two leather shoes, and the small quantity of trinkets and jewellery, such as rings and bracelets. Leisure time is represented by the possible evidence for hunting, and the evidence for wining and dining. The keeping of working pets, *i.e.* cats and dogs, and the riding of horses is suggested by some of the animal bones, although no horse fittings were found to confirm this. The sparrowhawk bone is important, as it may demonstrate that the main inhabitants of the villa estate were engaged in hunting, which, in the case of hawking, was a high status activity. Some of the foodstuffs are also suggestive of a high status lifestyle, and it is not impossible that the occupants of the aisled villa, from which the material in the well is probably derived, were keen to emulate or maintain a 'Romanised lifestyle'. This is supported by the ornate frontage on the aisled villa — the outward aggrandisement of an otherwise relatively simple building. An air of pretence, however, must have been present due to the absence of high status fittings such as plastered walls, hypocausts and mosaics. The status of the site as a whole is also tempered to a small extent by the dearth of good quality small finds such as brooches and rings and other forms of jewellery. No palynological evidence for gardens or gardening was found from the well, or the pond (776), which must have been functional rather than ornamental because it appears to have been surrounded by disturbed ground. The provision of orchards, however, may be indicated by the environmental evidence for apples, cherries, walnuts and hazelnuts.

The large assemblage of pottery is in most respects typical for a Roman rural site in Essex. Jars and dishes are common, amphorae and mortaria rare. Fine wares are uncommon, and traded wares are infrequent for all periods.

Regional and national context

Regional

The prosperity of the villa estate at Great Holts Farm is likely to have resulted from an interdependent relationship with a well-developed landscape of enclosures and fields and a wide variety of settlement types. Further evidence of the prosperity of the general area can be seen in the high status villas at Rivenhall and Chignall St James, and the large number of small towns, twelve of which were situated within a 30km radius of Great Holts Farm (Clarke, C.P. 1998; Rodwell and Rodwell 1985). Settlements from the lower end of the settlement hierarchy are also thought to have been present in some number. Few examples of these have so far been uncovered, although several farms and a possible roadside settlement may be present at Little Waltham, on the road junction from Chelmsford to Dunmow and Chelmsford to Braintree (Drury 1978). It is considered likely that roadside settlements were also present on the main thoroughfare from London to Colchester, which must have been used by people on official business because of the *mansio* at Chelmsford (Drury 1988). This includes the temple complex at Ivy Chimneys, which was possibly used as a site of pilgrimage because of its near roadside location (Turner 1999).

The economic decline of the villa estate at Great Holts Farm from the mid 4th century onwards is paralleled at most of the above mentioned sites. This includes Colchester, where few private houses were still occupied by *c.* 300 and even fewer by *c.* 350 (Faulkner 1994). It also includes Chelmsford, where domestic life was probably starting to break down in the second half of the 4th century, and Braintree, which shows signs of decline and contraction from *c.* 350 onwards (Havis 1993; Wickenden 1996). This pattern is matched at Chignall St James, which by *c.* 370, is thought to have been operating in a diminished capacity, and Bulls Lodge Dairy, where it seems likely that the possible *principia* was no longer standing by the mid 4th century (Clarke, C.P. 1998; Lavender 1993). The eventual collapse of the Great Holts Farm estate in the very late 4th/early 5th century is probably due to the final loss of the Romanised institutions and markets on which it depended. With the possible exception of Rivenhall (Rodwell and Rodwell 1985) few, if any, Roman settlements in Essex can be convincingly demonstrated to have continued in an unbroken line into the post-Roman period.

Bulls Lodge Dairy

In terms of near neighbours, the most significant site to date is the possible late 3rd to mid 4th-century *principia* at Bulls Lodge Dairy, 1.25km to the south-west, which (on the assumption that the interpretation of the structure is correct — see Wallace 1995) possibly implies that the late Roman villa at Great Holts Farm was either under or near to a site of government control (Lavender 1993). An official connection for the mid Roman phase of the site at Great Holts Farm is at least supported by the set dimensions and the modular forms in the II.1 layout, which, as already mentioned, are ideally suited to the sometimes regulated land-division of an imperial estate, or to the sub-division of a centuriated grid of 2400pM by 2400pM *limites*.

This association between the two sites is questioned by comparison of the Roman tile and pottery, which appears to suggest that the sites, for the most part, developed along separate lines. Whereas, in pottery terms at least, the main phases of activity at Bulls Lodge Dairy appear to have taken place in the late Iron Age to pre-Flavian, the 3rd century, and the late 3rd to mid 4th century; at Great Holts Farm they appear to have occurred in the early 2nd to early 3rd, and the late 3rd to late 4th. It is also evident from comparison of the distribution of *tegulae* flange types, that the two sites were obtaining their roofing tile, be it re-used or otherwise, at different times and/or from different sources.

National

In terms of size and status, the villa estate at Great Holts Farm is out-classed by high status villas at Rivenhall, Chignall St James and Wendons Ambo and, further afield, courtyard villas at places like Chedworth, Woodchester, and Bignor (Rodwell and Rodwell 1985; Clarke, C.P. 1998; Hodder 1982; Goodburn, R. 1981; Clarke, G. 1982; Aldsworth and Rudling 1996). Similarly, the villa estate at Great Holts Farm is slightly higher in status than rural sites such as Barton Court Farm, Oxon., which comprised a farmhouse and a small ancillary residence, and Bradley Hill, Somerset, which comprised a barn and two houses (Miles 1984; Leech 1981). The classification of the settlement at Great Holts Farm as a middle status villa puts it on a level with the aforementioned sites at Stroud and North Warnborough, Hants, and, more specifically, in the case of the pairing of the two main buildings, Gayton Thorpe, Norfolk and Norton Disney, Lincs (Moray-Williams 1909; Liddell 1931; Edwards 1977; Oswald and Buxton 1937). In terms of status, the site is also akin, but slightly less so, to the villa estates at Bancroft, Bucks, and Gorhambury, Herts. (Fig. 124) (Williams and Zeepvat 1994; Neal *et al.* 1990).

The situation at Great Holts Farm, in which a villa of middle status is accompanied by ancillary structures of varied form and function in one or more 'farmyards', can be paralleled at various sites in south-east Britain. A notable example of this is the villa at Gorhambury, Herts., which was fronted at different times by a wide variety of utility buildings, including workshops and/or storehouses, plus granaries, barns, and circular huts for farm-workers and/or stalling (Fig. 124) (Neal *et al.* 1990). A second example is Roughground Farm, Glous., in which the late Roman villa was accompanied — in association with two droveways and a possible green — by aisled buildings and a timber barn/cow shed (Allen *et al.* 1993). Another example, this time from a slightly earlier period, is Bancroft, Bucks., in which a late 3rd to early/mid 4th-century villa was preceded by a late 1st to late 2nd-century aisled house and a number of ancillary buildings, of varied type and function (Williams and Zeepvat 1994). The intensive agricultural production, both arable and pastoral, for a wider market or a specific client is clearly demonstrated at such sites by the provision of the ancillary structures. A close relationship between managers and farm-workers is suggested by the on-site or near site accommodation, and the maintenance or

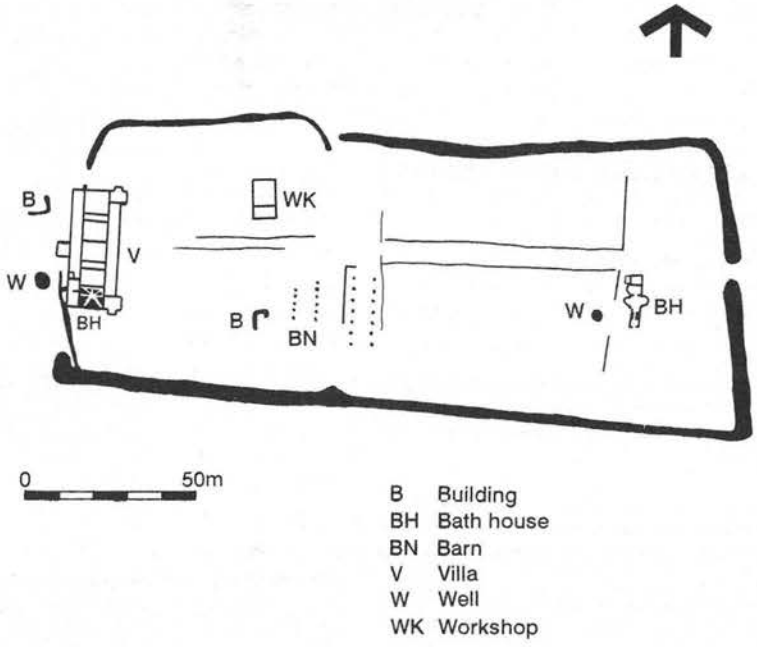


Figure 124 Gorhambury

manufacture of equipment or secondary products by the provision of workshops.

IV. Post-Roman

The post-Roman evidence is notable for a high degree of continuity. This is demonstrated by the retention of the two north-west Roman fields (E9/E32 and E26/E31) and the conjectured north-east side of the II.1 to II.3 layouts. It is also demonstrated by the Early Saxon finds and the medieval building. An earlier farm beneath the present day settlement is suggested by a late 13th-century reference to the Great Holts name, a 15th-century construction date for the present day farmhouse, and the medieval finds from the surrounding farmyard (Reaney 1935; Essex Heritage Conservation Record; T. Fewel, pers. comm.).

The high degree of continuity in the Great Holts area possibly implies that the Roman villa was followed by a continuous or near continuous succession of on-site or near site settlements. The north-west part of the site, in particular, must have been constantly or fairly constantly farmed by a succession of local inhabitants, due to the retention of the two north-west fields. One possible explanation for the retention of the E26 enclosure is that it was redefined as a medieval croft (E31), due to the location of building 440. A succession of settlements is supported by the Early Saxon finds, which are probably derived from a nearby, unlocated off-site source, and the probable medieval forerunner of the present day farm.

The interpretation of the Essex landscape in general as a palimpsest of different dates and forms is supported by the long-term survival of the two Roman fields. The assertions of Williamson, Rodwell, Drury and Bassett, that elements of fields and field systems of Roman and pre-Roman origin have and can survive into the post-medieval and modern day periods are supported by these two fields, as well as the possible retention of the north-east side (Williamson 1987; Drury and Rodwell 1980; Bassett 1982). Further weight to this effect comes from the aforementioned rectilinear field system of possible Middle to Late Iron Age origin at nearby Little Waltham, which is 'cut', so to speak, by the Roman road (the present day A131) from Braintree to Little Waltham (Drury 1978). The contrasting break in continuity in the south half of the site, and in the north-west part of the parish in general, is probably due to more recent disemparkment, to the piecemeal re-enclosure of the New Hall deer park.

The medieval long-house is difficult to put in to context due to the poor survival of the archaeology in the north-west area. The possible implication of the long-house form, that it was occupied by a bonded tenant, would appear to imply that it was tied to one of the nearby manors, most notably Walkfares, which was a possible forerunner of New Hall and Boreham House respectively (Stephen 1988). Further evidence to this effect comes from a 1632 rental and an 1841 tithe award document, from which it is clear that the present day farm, on whose former tenancy the building is situated, was once tied to the New Hall manor, and subsequent Boreham House estates (Essex Record Office: D/DBd M26; D/CT 40).

The timber building tradition of the Early Saxon period makes it unlikely that the main episode of robbing (798) for brick and tile in the bath-house was carried out in the Early Saxon period, in spite of the finds. On balance, it is more likely that the robbing was carried out in the Late Saxon or medieval periods, as a large number of Essex churches, including the Boreham parish church of St Andrew, 2.2km to the south, are distinguished by re-used Roman brick and tile in their fabrics (Fitch 1996; Taylor and Taylor 1965).

Bibliography

Adam, J-P. 1984 *La Construction Romaine* (Paris)

Adkins, L. and Needham, S. 1985 'New research on a Late Bronze Age enclosure at Queen Mary's Hospital, Carshalton', *Surrey Archaeol. Collect.* **76**, 11–50

Albarella, U. 1997 'Shape variation of cattle metapodials: age, sex or breed? Some examples from medieval and post-medieval sites', *Proc. 7th ICAZ Conference Konstanz*

Albarella, U. and Davis, S. 1994 *The Saxon and medieval animal bones excavated 1985–1989 from West Cotton, Northamptonshire*, Ancient Monuments Laboratory Report 17/92 (London)

Albarella, U. and Davis, S. 1996 'Mammals and birds from Launceston Castle, Cornwall: decline in status and the rise of agriculture', *Circaea* 12(1), 1996 for 1994, 1–156

Aldsworth, F. and Rudling, D. 1996 'Excavations at Bignor Roman villa, West Sussex 1985–90', *Sussex Archaeol. Collect.* **133**, 103–88

Allason-Jones, L. 1993 'Small finds' in Casey, P.J. and Davies, J.L. *Excavations at Segontium (Caernarfon) Roman Fort 1975–1979,* Counc. Brit. Archaeol. Res. Rep. **90**, 165–210

Allen, R.H. and Sturdy, R.G. 1980 'The environmental background', in Buckley, D.G. (ed.) *Archaeology in Essex to AD1500*, Counc. Brit. Archaeol. Rep. **34**, 1–7

Allen, T., Darvill, T., Green, S. and Jones, M. 1993 *Excavations at Roughground Farm, Lechlade, Gloucestershire: a prehistoric and Roman landscape*, Thames Valley Landscapes: the Cotswold Water Park, Vol. 1 (Oxford Archaeological Unit)

Anderson S. Th. 1979 *Identification of wild grasses and cereal pollen,* Danmarks Geologiske Undersogelse Årborg 1978, 69–92

Andrews, G. 1985 'The coarse wares', in Hinchliffe, J. and Sparey-Green, C., *Excavations at Brancaster, 1974 and 1977,* E. Anglian Archaeol. **23,** 82–116

Arthur, P. and Williams, D.F. 1992 'Campanian wine, Roman Britain and the third century AD', *J. Roman Archaeol.* **5**, 250–60

Atkinson, M. 1995 'A Late Bronze Age enclosure at Broomfield, Chelmsford', *Essex Archaeol. Hist.* **26**, 1–23

Atkinson, M. and Preston, S.J. 1998 'The Late Iron Age and Roman settlement at Elms Farm, Heybridge, Essex, excavations 1993–5: an interim report'. *Britannia* **XXIX**, 85–110

Atkinson, M. and Preston, S. 2001 'Prehistoric settlement and burials at Elms Farm, Heybridge', *Essex Archaeol. Hist.* **32**, 42–74

Audoin-Rouzeau, F. 1991 *La taille du buf domestique en Europe de l'antiquité aux temps modernes* (Valbonne, CNRS)

Baillie, M.G.L. 1995 *A slice through time* (Batsford, London)

Bang, P. 1987 *Collins Guide to Animal Tracks and Signs* (London)

Barford, P. and Major, H. 1992 'Later Bronze Age loomweights from Essex', *Essex Archaeol. Hist.* **23**, 117–120

Barrett, J. 1989 'Food, gender and metal: questions of social reproduction', in Sorensen, M. and Thomas, R. (eds.), *The Bronze Age Transition in Europe*, Brit. Archaeol. Rep. Int. Series **59**, 304–320

Barton, K.J. 1962 'Settlements of the Iron Age and pagan Saxon periods at Linford, Essex', *Trans. Essex Archaeol. Soc.* **3** series 1, 57–104

Bartosiewicz, L., van Neer, W. and Lentacker, A. 1993 'Metapodial asymmetry in draft cattle', *International J. Osteoarchaeol.* **3**, 69–75

Bassett, S.R. 1982 *Saffron Walden: excavations and research 1972–80,* Chelmsford Archaeol. Trust. Rep. 2, Counc. Brit. Archaeol. Rep. **45**, 5–9

Bedwin, O. 1992 'Early Iron Age settlement at Maldon and the Maldon *burh*: excavations at Beacon Green 1987', *Essex Archaeol. Hist.* **23**, 10–24

Bennett, K.D., Whittingdon G., and Edwards, K.J. 1994 'Recent plant nomenclatural changes and pollen morphology in the British Isles', *Quaternary Newsletter* **73**, 1–6 (Quaternary Research Association)

Betts, I.M. 1992 'Roman tile from Eccles, Kent, found at Colchester', in Crummy, P. *Excavations at Culver Street, the Gilberd School, and other sites in Colchester 1971–1985*, Colchester Archaeol. Rep. **6**, 259–260

Betts, I.M. 1998 'The Roman Tile', in Cool, H.E.M. and Philo, C. (eds.), *Roman Castleford, Excavations 1974–85 Vol 1: The small finds*, Yorkshire Archaeol. **4**, 225–232

Black, E.W. 1995 'Voussoirs and wall-tiles', in Blockley, K., Blockley, M., Blockley, P., Frere, S.S. and Stow, S., *Excavations in Marlowe Car Park and surrounding areas,* Archaeol. Canterbury **V**, 1267–93

Boardman, S. and Jones, G. 1990 'Experiments on the effects of charring cereal plant components', *J. Archaeol. Sci.* **17**, 1–11

Boon, G.C. 1972–73 'Roman glassware from Caerwent 1855–1925', *Monmouthshire Antiq.* **3**, 111–23

Bouchner, M. 1982 *A Field Guide in Colour to Animal Tracks and Traces,* (London)

Bradley, R., Lobb, S., Richards, J. and Robinson, M. 1980 'Two Late Bronze Age settlements on the Kennet gravels: excavation at Aldermaston Wharf and Knight's Farm, Burghfield, Berkshire' *Proc. Prehist. Soc.* **46**, 217–96

Briscoe, T. 1983 'Anglo-Saxon pot stamps' in Brown, D., Campbell, J. and Hawkes, S.C. (eds.), *Anglo-Saxon Stud. Archaeol. Hist.* **2**, 1–36

Bristow, C.R. 1985 *Geology of the Country Around Chelmsford,* (HMSO)

Brodribb, G. 1979 'A survey of tile from the Roman bath house at Beauport Park, Battle, E. Sussex', *Britannia* **X**, 139–56

Brodribb, G. 1987 *Roman Brick and Tile* (Gloucester)

Brown, N. 1988a 'A Late Bronze Age enclosure at Lofts Farm, Essex', *Proc. Prehist. Soc.* **54**, 249–302

Brown, N. 1988b 'A Late Bronze Age settlement on the Boulder Clay plateau: excavations at Broads Green 1986', *Essex Archaeol. Hist.* **19**, 1–14

Brown, N. 1992 'Prehistoric pottery', in Bedwin, O. 'Early Iron Age settlement at Maldon and the Maldon *burh*: excavations at Beacon Green 1987', *Essex Archaeol. Hist.* **23**, 10–24

Brown, N. 1995a 'Prehistoric pottery', in Atkinson, M., 'A Late Bronze Age enclosure at Broomfield, Chelmsford' *Essex Archaeol. Hist.* **26**, 1–23

Brown, N. 1995b 'Later Bronze Age and Early to Middle Iron Age pottery', in Wymer, J., and Brown, N., *North Shoebury: Settlement and Economy in South-East Essex 1500 BC–AD 1500*, E. Anglian Archaeol. **75**, 77–87

Brown, N. 2001 'Prehistoric pottery', in Buckley, D.G., Hedges, J.D. and Brown, N., 'Excavations at Springfield Cursus, Essex', *Proc. Prehist. Soc.* **67**, 101–62

Brown, N. forthcoming a '1979–85 Prehistoric pottery', in Buckley, D.G., and Hedges, J.D., *Excavations at Springfield Lyons, Essex: I. Prehistoric*, E. Anglian Archaeol.

Brown, N. forthcoming b 'Prehistoric pottery', in Havis, R. and Brooks, H., *Excavations at Stansted Airport, 1986–91* (2 vols), E. Anglian Archaeol.

Brown, N. and Lavender, N. 1994 'Late Bronze Age sites at Gt. Baddow, and settlement in the Chelmer Valley, Essex, 1500BC–500BC', *Essex Archaeol. Hist.* **25**, 115–6

Buck, F.D. 1954 *Coleoptera (Lagriidae to Meloidae)*, Royal Entomological Society Handbook for the Identification of British Insects 5, pt. 9 (London)

Buckley, D.G. and Hedges, J.D. 1987 *The Bronze Age and Saxon Settlements at Springfield Lyons, Essex: An Interim Report*, Essex County Council Occas. Pap. **5**

Buckley, D.G. and Hedges, J.D. in prep. *Excavations at Springfield Lyons, Essex: I. Prehistoric*, E. Anglian Archaeol.

Buckley, D.G., Major, H. and Milton, B. 1988 'Excavation of a possible Neolithic long barrow or mortuary enclosure at Rivenhall, Essex, 1986', *Proc. Prehist. Soc.* **54**, 77–91

Buckley, D.G. and Major, H. 1995 'Quernstones', in Wymer, J.J. and Brown, N.R., *Excavations at North Shoebury: Settlement and Economy in South-East Essex 1500BC – AD1500*, E. Anglian Archaeol. **75**, 72–73

Buckley, D.G. and Major, H. 1998a 'The quernstones', in Cool, H.E.M. and Philo, C. (eds.), *Roman Castleford, Excavations 1974–85 Vol 1: The Small Finds*, Yorkshire Archaeol. **4**, 240–47

Buckley, D.G. and Major, H. 1998b 'The quernstones', in Clarke, C.P. *Excavations South of Chignall Roman Villa, Essex, 1977–81*, E. Anglian Archaeol. **83**, 91–93

Callaghan, T.V. and Sheffield, E. 1985 *'Pteridium aquilinum*: weed or resource?', *Proc. Royal Soc. Edinburgh* **86B**, 461

Carter, G.A. 1998 *Excavations at the Orsett 'Cock' Enclosure, Essex, 1976*, E. Anglian Archaeol. **86**, 44

Carver, M.O.H., Donaghey, S. and Sumpter, A.B. 1978 'Riverside structures and a well in Skeldergate and buildings in Bishophill', *The Archaeology of York: The Colonia 4/1*

Clark, J.G.D. and Fell, C.I. 1953 'The Early Iron Age site at Micklemoor Hill, West Harling, Norfolk, and its pottery', *Proc. Prehist. Soc.* **19**, 1–40

Clarke, C.P. 1998 *Excavations South of Chignall Roman villa, Essex, 1977–81*, E. Anglian Archaeol. **83**

Clarke, G. 1979 *Pre-Roman and Roman Winchester Part II: The Roman Cemetery at Lankhills*, (Oxford)

Clarke, G. 1982 'The Roman villa at Woodchester', *Britannia* **13**, 197–228

Clarke, R. forthcoming *A medieval moated settlement and windmill: excavation at Boreham Airfield, Essex 1996*, E. Anglian Archaeol. Occas. Pap.

Cleal, R. 1982 'The Late Neolithic in Eastern England', in Bradley. R. and Gardiner, J. (eds), *Neolithic Studies: a Review of Some Current Research*, Brit. Archaeol. Rep. **133**

Cool, H. and Price, J. 1987 'The glass', in Meates, G.W., *The Roman villa at Lullingstone, Kent: 2. the wall-paintings and finds*, Kent Archaeol. Soc. Monograph, **3**

Cool, H. and Price, J. 1995 *Roman vessel glass from excavations in Colchester, 1971–85*, Colchester Archaeol. Rep. **8** (Colchester)

Corley, M.F.V., Crundwell, A.C., Dull, R., Hill, M.O. and Smith, A.J.E. 1981 'Mosses of Europe and the Azores: an annotated list of species, with synonyms from the recent literature', *J. Bryol.* **11 (4)**, 609–690

Couchman, C. 1976 'Work undertaken by Essex County Council Archaeology Section, 1974–76', *Essex Archaeol. Hist.* **8**, 160–61

Cowan, C. 1995 'A possible mansio in Roman Southwark: excavations at 15–23 Southwark Street, 1980–1986', *Trans. London Middlesex Archaeol. Soc.* **43**, 3–192

Coy, J. 1987 'Non-domestic faunal resources in South-West England', in Balaam, N.D., Levitan, B. and Straker, V. (eds.), *Studies in palaeoeconomy and environment in South-West England.* Brit. Archaeol. Rep. Brit. Ser. **181,** 9–29 (Oxford)

Cram, L. 1998 'Human and animal foot impressed tiles', in Cool, H.E.M. and Philo, C. (eds.), *Roman Castleford, Excavations 1974–85 Vol 1: The Small Finds*, Yorkshire Archaeol. **4**, 232–8

Cram, L. and Fulford, M. 1979 'Silchester tile making – the faunal environment', in McWhirr (ed.), *Roman Brick and Tile*, Brit. Archaeol. Rep. Int. Ser. **68**, 201–9

Crummy, N. 1983 *The Roman small finds from excavations in Colchester 1971–9*, Colchester Archaeol. Rep. **3**

Cunningham, C.M. 1985 'A typology for post-Roman pottery in Essex', in Cunningham, C.M. and Drury, P.J., *Post-medieval sites and their pottery: Moulsham Street, Chelmsford*, Chelmsford Archaeol. Trust Rep. **5**, Counc. Brit. Archaeol. Res. Rep. **54**, 1–16

Cushing, D.H. 1982 *Climate and Fisheries* (Academic Press)

Daniels, R.E. and Eddy, A. 1985 *Handbook of European Sphagna* (Natural Environment Research Council, Institute of Terrestrial Ecology, Huntingdon)

Dark, K. and Dark, P. 1997 *The Landscape of Roman Britain* (Sutton Publishing)

Darling, M.J. 1993 *Caister-on-Sea: Excavations by Charles Green 1951–1955*, E. Anglian Archaeol. **60**

Darrah, R. forthcoming 'Metalwork and wood technology', in Ashwin, T., Gill, D. and Tester, A. (eds.), *Excavations at Scole 1993–1994*, E. Anglian Archaeol.

Davis, S. 1992 *A rapid method for recording information about mammal bones from archaeological sites*, Ancient Monuments Laboratory Report **71/92** (London)

Déchelette, J. 1904 — *Les Vases céramiques ornés de la Gaule romaine* (Paris)

Dickinson, B. 1986 — 'Potters' stamps and signatures on the samian', in Miller, L., Schofield, J. and Rhodes, M. *The Roman Quay at St Magnus House, London*, London Middlesex Archaeol. Soc. Spec. Pap. **8**, 186–98

Dimbleby, G.W. 1985 — *The palynology of archaeological sites* (Academic Press, London)

Dobney, K., Jaques, D. and Irving, B. 1996 — *Of butchers and breeds. Report on vertebrate remains from various sites in the City of Lincoln*, Lincoln Archaeol. Stud. **5**

Drury, P.J. 1976 — 'Braintree: Excavations and Research 1971–76', *Essex Archaeol. Hist.* **8**, 1–143

Drury, P.J. 1978 — *Excavations at Little Waltham 1970–71*, Chelmsford Excavation Committee Report **1**, Counc. Brit. Archaeol. Res. Rep. **26**

Drury, P.J. 1979 — 'Excavations at Rawreth, 1968', *Essex Archaeol. Hist.* **9**, 20–47

Drury, P.J. 1988 — *The Mansio and other sites in the south-eastern sector of Caesaromagus*, Chelmsford Archaeol. Trust Rep. 31, Counc. Brit. Arch. Res. Rep. 66

Drury, P.J. and Rodwell, W.J. 1980 — 'Settlement in the Later Iron Age and Roman periods', in Buckley, D.G. (ed.), *Archaeology in Essex to AD 1500*, Counc. Brit. Archaeol. Res. Rep. **34**, 59–75

Drury, P.J., Rodwell, W.J. Wickenden, N.P. 1982 — 'Finds from the probable site of a Roman villa at Dawes and Heath, Thundersley, Essex', *Essex Archaeol. Hist.* **13** , 66–8

Drury, P.J. and Wickenden, N.P. 1982 — 'An Early Anglo-Saxon settlement within the Romano-British *Small Town* at Heybridge, Essex', *Medieval Archaeol.* **26** 1–40

Duncan-Jones, R.P. 1982 — *The Roman Economy* (Cambridge University Press, 2nd edition)

ECC 1991a — *Great Holts Farm, Boreham, Essex: Archaeological Fieldwalking Report* (Essex County Council internal publication)

ECC 1991b — *Site Manual* (Essex County Council internal publication)

ECC 1992 — *Great Holts Farm, Boreham, Essex: Research Design 1992–93*, (Essex County Council internal publication)

ECC 1994 — *Great Holts Farm, Boreham, Essex: Revised Project Design (Phase II)*, (Essex County Council internal publication)

ECC 1996a — *A130 Improvements, Downhouse Farm, West Hanningfield, Essex: Assesment of Phase I excavation* (Essex County Council internal publication)

ECC 1996b — *Great Holts Farm, Boreham, Essex: Assessment Report (Phase II)*, (Essex County Council internal publication)

Ecclestone, J. and Havis, R. 1996 — 'Late Iron Age and Roman occupation at Hatfield Peverel: excavations at Sandford Quarry 1994', *Essex Archaeol. Hist.* **27**, 13–21

Edwards, D. 1977 — 'The air photographs collection of the Norfolk Archaeological Unit: second report', in Wade-Martins, P. (ed.), E. Anglian Archaeol. **5**, 236

Edwards, J. 1984 — *The Roman Cookery of Apicius* (Hutchinson, London)

Edwards, K.J. 1989 — 'The cereal pollen record and early agriculture', in Milles, A., Williams, D. and Gardner, N. (eds.), *The Beginnings of Agriculture*, Symposia of the Association for Environmental Archaeology 8, Brit. Archaeol. Rep. Int. Ser. **496**, 113–35

Ellis, P., Evans, J., Hannaford, H., Hughes, G. and Jones, A. 1994 — 'Excavations in the Wroxeter hinterland 1988–1990: the archaeology of the Shrewsbury bypass', *Shropshire Hist. Archaeol.* **69**, 1 –119

Epstein, H.J. 1943 — 'The origin and earliest history of falconry', *Isis* XXXIV(98), 497–509

Farrar, R.A.H 1973 — 'The techniques and sources of Romano-British Black-Burnished Ware', in Detsicas, A. (ed.), *Current Research in Romano-British Coarse Pottery*, Counc. Brit. Archaeol. Res. Rep. **10**, 67–103

Faulkner, N. 1994 — 'Later Roman Colchester', *Oxford J. Archaeol.* **13(1)**, 93–120

Finney, T. 1996 — *The examination of industrial debris from Great Holts Farm, Boreham, Essex*, Ancient Monuments Laboratory Rep. **33/96**

Fitch, J. (ed.) 1996 — *A select guide to Essex churches and chapels*, (Paul Watkins, Stamford)

Fock, J. 1966 — *Metrische Untersuchungen an Metapodien einiger Europaischer Rinderrassen*, (Dissertation, University of Munich)

Fowler, W.W. 1890 — *The Coleoptera of the British Islands 4* (London, L. Reeve)

Fulford, M. 1975 — 'The pottery', in Cunliffe, B., *Excavations at Portchester Castle, Vol. 1: Roman*, Rep. Res. Comm. Soc. Antiq. London **32**, 271–367

Fulford, M.G. and Bird, J. 1975 — 'Imported pottery from Germany in Late Roman Britain', *Britannia* **6**, 171–81

Garton, D., and Salisbury, C.R. 1995 — 'A Romano-British wood-lined well at Wild Goose Cottage, Lound, Nottinghamshire', *Trans. Thoroton Soc. Nottinghamshire* **XCIX**, 15–43

Gibson, S. in prep. — 'The archaeology of the Anglian Water Cressing to Great Horkesley fresh water trunk main', *Essex Archaeol. Hist.*

Gillam, J. 1976 — 'Coarse fumed ware in north Britain and beyond', *Glasgow Archaeol. J.* **4** 57–80

Gillam, J. 1979 — 'Romano-Saxon pottery: an alternative interpretation', in Casey, P.J. (ed.), *The end of Roman Britain*, Brit. Archaeol. Rep. Brit. Ser. **71**, 103–18

Gilman, P.J. 1991 — 'Excavations in Essex 1990', *Essex Archaeol. Hist.* **22**, 157

Gilman, P.J. and Bennett, A. 1991 — 'Work of the Essex County Council Archaeology Section, 1990', *Essex Archaeol. Hist.* **22**, 139

Going, C.J. 1987 — *The Mansio and other sites in the south-eastern sector of Caesaromagus: the Roman pottery*, Counc. Brit. Archaeol. Res. Rep. **62**

Going, C.J. 1992a — 'The other pottery', in Wickenden, N.P., *The Temple and other sites in the north-eastern sector of Caesaromagus*, Counc. Brit. Archaeol. Res. Rep. **75**, 93–115

Going, C.J. 1992b 'Economic *long waves* in the Roman period? A reconnaissance of the Romano-British ceramic evidence', *Oxford J. Archaeol.* **11(1)**, 93–117

Going, C.J. 1993a 'The Roman period', in Clark, A. (ed.), *Excavations at Mucking Volume 1: the site atlas,* English Heritage Archaeol. Rep. 20, 20–1

Going, C.J. 1993b 'The Roman pottery', in Rodwell, W.J., and Rodwell, K.A., *Rivenhall: Investigations of a Villa, Church and Village, 1950–1977,* Counc. Brit. Archaeol. Res. Rep. **80**, 64–70

Going, C.J. 1996 'The Roman countryside', in Bedwin, O. (ed.), *The Archaeology of Essex: Proceedings of the Writtle Conference,* 95–107 (Essex County Council, Chelmsford)

Going, C.J. and Ford, B. 1988 'Romano-British pottery', in Wickenden, N.P., *Excavations at Great Dunmow, Essex; a Romano-British Small Town in the Trinovantian Civitas,* Chelmsford Archaeol. Trust Rep. **7**, E. Anglian Archaeol. **41**, 60–76

Goodburn, D. 1991 'A Roman timber framed building tradition', *Archaeol. J.* **148**, 190–19

Goodburn, R. 1981 *Chedworth Roman Villa* (National Trust)

Grant, A. 1982 'The use of tooth wear as a guide to the age of domestic ungulates', in Wilson, B., Grigson, C. and Payne, S. (eds.), *Ageing and sexing animal bones from bones from archaeological sites,* Brit. Archaeol. Rep. Brit. Ser. **109**, 91–108

Green, H.J.M. 1982 'The origins and development of cruck construction in Eastern England', in Drury, P.J. (ed.), *Structural reconstruction: approaches to the interpretation of the excavated remains of buildings,* Brit. Archaeol. Rep. Brit. Ser. **110**, 87–99

Green, J. 1952 'The food of *Typhaea stercorea* (L.) (Col. Mycetophagidae)', *Entomologist's Monthly Magazine* **88**, 62

Greene, K. 1986 *The Archaeology of the Roman Economy* (Batsford, London)

Gregory, T. 1991 *Excavations in Thetford, 1980–1982, Fison Way,* E. Anglian Archaeol. **53**

Gregory, T. 1996 *A Romano-British Farmyard at Weeting, Norfolk,* E. Anglian Archaeol. Occ. Pap. **1**

Greig, J.R.A. 1988 'The interpretation of some Roman well fills from the midlands of England', in Kuester, H. (ed.) *Der praehistorische Mensche und seine Umwelt,* 367–377 (Konrad Theiss, Stuttgart)

Grieve, M. 1931 *A Modern Herbal* (Jonathan Cape)

Grigson, C. 1982 'Sex and age determination of some bones and teeth of domestic cattle: a review of the literature', in Wilson, B., Grigson, C. and Payne, S. (eds.), *Ageing and sexing animal bones from archaeological sites,* Brit.Archaeol. Rep. Brit. Ser. **109**, 7–24 (Oxford)

Grose, D.F. 1991 'Early Imperial Roman cast glass: the translucent coloured and colourless fine wares', in Newby, M. and Painter, K., *Roman glass: two centuries of art and invention,* Soc. Antiq. London Occas. Pap. **XIII**, 1–18

Guido, M. 1978 *The glass beads of the prehistoric and Roman periods in Britain and Ireland,* Rep. Res. Comm. Soc. Antiq. London **35**

Gurney, D. 1985 'The Roman pottery' in Pryor, F., *et al. The Fenland Project, Number 1: Archaeology and Environment in the Lower Welland Valley, Volume 1,* E. Anglian Archaeol. **27**, 121–151

Gurney, D. 1986 *Settlement, Religion and Industry on the Roman Fen-Edge, Norfolk,* E. Anglian Archaeol. **31**

Gurney, D. 1995 'The Roman pottery', in Rickett, R., *The Anglo-Saxon Cemetery at Spong Hill, North Elmham, Part VII: the Iron Age, Roman and Early Saxon Settlement,* E. Anglian Archaeol. **73**, 94–126

Hadman, J. 1978 'Aisled buildings in Roman Britain' in Todd, M. (ed.), *Studies in the Romano-British Villa,* 187–95

Hall, D. 1996 *The Fenland Project, Number 10: Cambridgeshire Survey, the Isle of Ely and Wisbech,* E. Anglian Archaeol. **79**, 176–77

Harden, D.B. 1979 'Glass vessels', in Clarke, G. *The Roman cemetery at Lankhills,* Winchester Stud. **3**, pre-Roman and Roman Winchester **2**, 209–20 (Oxford)

Harden, D.B. and Price, J. 1971 'The glass', in Cunliffe, B., *Excavations at Fishbourne, 1961–1969: Vol. 2 The Finds,* Rep. Res. Comm. Soc. Antiq. London **27** (Leeds)

Hartley, B.R. 1989 'Samian potters' stamps and decorated ware', in Frere, S.S. and Wilkes, J.J., *Strageath: Excavations within the Roman fort 1973–1986,* Britannia Monogr. Ser. **9**, 212–18

Hartley, B.R., Pengelly, H. and Dickinson, B. 1994 'Samian ware', in Mahaney, C. (ed.), *Roman Alcester: southern extramural area, 1964–1966, Excavations Vol. 1,* Counc. Brit. Archaeol. Res. Rep. **96**, 93–119

Hartley, K.F. 1995 'The mortaria', in Gurney, D., *The Anglo-Saxon Cemetery at Spong Hill, North Elmham, Part VII: the Iron Age, Roman and Early Saxon Settlement,* E. Anglian Archaeol. **73**, 97–98

Hartley, K.F 1998 'The fabrics', in Clarke, C.P., *Excavations South of Chignall Roman Villa, Essex, 1977–81,* E. Anglian Archaeol. **83**, 108–9

Hattatt, R. 1987 *Brooches of Antiquity* (Oxford)

Havis, R. 1993 'Roman Braintree: excavations 1984–90', *Essex Archaeol. Hist.* **24**, 22–68

Havis, R. and Brooks, H. forthcoming *Excavations at Stansted Airport, 1986–91* (2 vols), E. Anglian Archaeol.

Hawkes, C.F.C and Hull, M.R. 1947 *Camulodunum. First Report on the Excavations at Colchester 1930–1939,* Rep. Res. Comm. Soc. Antiq. London **14**

Hedges, J.D. and Buckley, D.G. 1981 *Springfield cursus and the cursus problem,* Essex County Council Occas. Pap. **1**

Helbaek, H. 1964 'The Isca grain, a Roman plant introduction in Britain', *New Phytol.* **3**, 158–164

Hermet, F. 1934 *La Graufesenque (Condatomago),* (Paris)

Hickin, N.E. 1963 *The Woodworm Problem* (London, Hutchinson)

Higham, C. 1969 'The metrical attributes of two samples of bovine limb bones', *J. Zoology* **157**, 63–74 (London)

Hillman, G.C. 1981 'Reconstructing crop husbandry practices from charred remains of crops', in Mercer, R. (ed.), *Farming Practice in British Prehistory,* 123–62 (Edinburgh University Press)

Hinton, H.E. 1940–41 'The Ptinidae of economic importance', *Bull. Entomological Research* **31**, 331–81

Hinton, H.E. 1945 *A monograph of the beetles associated with stored products* **1** (London, British Museum: Natural History)

Hodder, I. 1982 *Excavations at Wendons Ambo*, The Archaeology of the M11, vol. **2**

Horsley, K. and Wallace, C.R. 1998 'The Late Iron Age and Roman pottery', in Wallis, S. and Waughman, M., *Archaeology and Landscape in the Lower Blackwater Valley*, E. Anglian Archaeol. 82, 142–57

Horsley, K. 1993 'The Roman pottery' in Havis, R., 'Roman Braintree: excavations 1984–90', *Essex Archaeol. Hist.* **24**, 31–44

Howard, M. 1963 'The metrical determination of the metapodials and skulls of cattle', in Mourant, A.E. and Zeuner, F.E. (eds.), *Man and Cattle*, 91–100 (London, Royal Anthropological Institute of Great Britain and Ireland)

Howe, M.D., Perrin, J.R. and Mackreth, D.F. 1980 *Roman Pottery from the Nene Valley: A Guide*, Peterborough City Museum Occ. Pap. **2**

Huggins, R.M. 1979 'Excavation of a late Roman site at Sewardstone Hamlet, Waltham Holy Cross, Essex, 1968–75', *Essex Archaeol. Hist.* **10** (3rd ser.), 174–188

Hull, M.R. 1958 *Roman Colchester*, Rep. Res. Comm. Soc. Antiq. London **20**

Hull, M.R. 1963 *The Roman Potter's Kilns of Colchester*, Rep. Res. Comm. Soc. Antiq. London **21**

Hylton, T. and Zeepvat, R.J. 1994 'Objects of copper alloy, silver and gold', in Williams, R.J. and Zeepvat, R.J., *Bancroft: a Late Bronze Age/Iron Age settlement, Roman villa and temple-mausoleum*, Bucks. Archaeol. Soc. Monograph Ser. 7, Volumes I and II

Isings, C. 1957 *Roman Glass From Dated Finds*, (Groningen)

Jackson, R. 1985 'The objects of iron', in Bidwell, P.T. *The Roman Fort of Vindolanda*, English Heritage Archaeol. Rep. 1, 131–51

Jermyn, S.T. 1974 *Flora of Essex* (Fingringhoe)

Jewell, P. 1963 'Cattle from British archaeological sites', in Mourant A.E. and Zeuner F.E. (eds.), *Man and Cattle*, 80–91 (London, Royal Anthropological Institute of Great Britain and Ireland)

Johnson, S. 1983 *Burgh Castle, Excavations by Charles Green 1958–61*, E. Anglian Archaeol. **20**

Jones, M.U. and Rodwell, W.J. 1973 'The Romano-British pottery kilns at Mucking', *Essex Archaeol. Hist.* **5** (3rd Ser.), 13–47

Kay, Q.O.N. 1971 '*Anthemis cotula*', *J. Ecol.* **59**, 623–36

Kenward, H.K. 1975 'The biological and archaeological implications of the beetle *Aglenus brunneus* (Gyllenhall) in ancient faunas', *J. Archaeol. Sci.* **2**, 63–9

Kenward, H.K. 1976 'Further archaeological records of *Aglenus brunneus* (Gyllenhall) in Britain and Ireland, including confirmation of its presence in the Roman period', *J. Archaeol. Sci.* **3**, 275–7

Kenward, H.K. 1982 'Insect communities and death assemblages, past and present', in Hall, A.R. and Kenward, H.K. (eds.), *Environmental Archaeology in the Urban Context*, Counc. Brit. Archaeol. Res. Rep. **43**, 71–8

Kenward, H.K., Hall, A.R. and Jones, A.K.G. 1980 'A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits', *Sci. Archaeol.* **22**, 3–15

King, A. 1984 'Animal bones and the dietary identity of military and civilian groups in Roman Britain, Germany and Gaul', in Blagg, T. and King, A., *Military and Civilian in Roman Britain*, Brit. Archaeol. Rep. Brit. Ser. **136**, 187–217 (Oxford)

King, A. 1994 'Mammiferi', in Arthur P. (a cura di). *Il complesso archeologico di Carminiello ai Mannesi, Napoli (scavi 1983–84)*, 367–406 (Galatina, Congedo)

Kloet, G.S. and Hincks, W.D. 1977 *A check list of British insects, 2nd edition (revised) part 3: Coleoptera and Strepsiptera*, Royal Entomological Society Handbook for the Identification of British Insects **11**, pt. 3 (London)

Koch, K. 1989 *Die Käfer Mitteleuropas Ökologie 2* (Krefeld, Goecke and Evers)

Korber-Grohne, U. 1964 *Bestimmungsschlussel fur subfossile Juncus-Samen und Gramineen-Fruchte* (August Lax, Hildeheim)

Lauwerier, R. 1988 *Animals in Roman Times in the Dutch Eastern River Area* (Amersfoort, ROB)

Lavender, N.J. 1993 'A '*principia*' at Boreham, near Chelmsford, Essex: excavations 1990', *Essex Archaeol. Hist.* **24**, 1–21

Lavender, N.J. 1996 'A Roman site at the New Source Works, Castle Hedingham: excavations 1992', *Essex Archaeol. Hist.* **27**, 22–34

Lavender, N.J. 1997 'Middle Iron Age and Romano-British settlement at Great Dunmow: excavations at Buildings Farm 1993', *Essex Archaeol. Hist.* **28**, 47–92

Lavender, N.J. 1999 'Bronze Age and medieval sites at the A12 Boreham interchange, Chelmsford: excavations 1993', *Essex Archaeol. Hist.* **30**, 1–43

Leary, R.S. 1995 'Roman pottery', in Wymer, J.J. and Brown, N.R., *Excavations at North Shoebury; Settlement and Economy in South-East Essex 1500BC–AD1500*, E. Anglian Archaeol. **75**, 92–100

Leech, R. 1981 'The excavation of a Romano-British farmstead and cemetery on Bradley Hill, Somerton, Somerset', *Britannia* **XII**, 177–252

Lethbridge, T.C. 1951 *A Cemetery at Lackford, Suffolk: Report on the Excavation of a Cemetery of the Pagan Anglo-Saxon Period in 1947*, Cambridge Antiq. Soc. Quarto Publications New Ser. **VI**

Liddell, M.D. 1931 'A Roman house at Lodge Farm', *Proc. Hants. Field Club Archaeol. Soc.* **10**, 225–36

Locker, A. 1987 *The Fish Bones from Culver Street, Colchester*, Ancient Monuments Laboratory Rep. **166/87**

Locker, A. 1990 'The fish bones', in Neal, D.S., Wardle, A. and Hunn, J., *Excavation of the Iron Age, Roman and Medieval Settlement at Gorhambury, St Albans*, English Heritage Archaeol. Rep. **2**, 212

Locker, A. 1992 'The fish bones' in Crummy, P., *Excavations at Culver Street, the Gilberd School, and other sites in Colchester 1971–1985*, Colchester Archaeol. Rep. **6**, 278–280

Longworth, I.H. 1971 'The Prehistoric pottery', in Wainwright, G.J., and Longworth, I.H., *Durrington Walls: Excavations*

1966–68, Res. Rep. Comm. Soc. Antiq. London **29**

Luff, R. 1993 — *Animal Bones from Excavations in Colchester, 1971–85* (Colchester Archaeological Trust)

Lyne, M.A.B. and Jefferies, R.S. 1979 — *The Alice Holt/Farnham Roman Pottery Industry*, Counc. Brit. Archaeol. Res. Rep. **30**

Major, H. 1987 — 'Fired-clay objects', in Buckley, D.G. and Hedges, J.D., *The Bronze Age and Saxon Settlements at Springfield Lyons, Essex,* Essex County Council Occas. Pap. **5**, 11

Major, H. 1993 — 'The Roman brick and tile', in Lavender, N.J., 'A '*principia*' at Boreham: excavations 1990', *Essex Archaeol. Hist.* **24**, 9–13

Major, H. 1997 — 'Miscellaneous finds', in Lavender, N.J., 'Middle Iron Age and Romano-British settlement at Great Dunmow: excavations at Buildings Farm 1993', *Essex Archaeol. Hist.* **28**, 47–92

Major, H. 1999a — 'Querns and millstones', in Bedwin, O. and Bedwin, M., *A Roman malthouse: excavations at Stebbing Green, Essex, 1998*, E. Anglian Archaeol. Occas. Pap. **6**, 17–19

Major, H. 1999b — 'The metalwork', in Brown, N., *The Archaeology of Ardleigh, Essex: Excavations 1955–80*, E. Anglian Archacol. **90**

Major, J. in prep. a — 'The querns', in Allen, P.T., *Caesaromagus: excavation of Roman Chelmsford 1980–93*, E. Anglian Archaeol.

Major, J. in prep. b — 'Roman brick and tile', in Allen, P.T., *Caesaromagus: excavation of Roman Chelmsford 1980–93*, E. Anglian Archaeol.

Major, J. in prep. c — 'The querns', in Atkinson, M. and Preston, S.J., *Elms Farm: excavations at the Late Iron Age and Roman settlement at Heybridge, Essex, 1993–5*, E. Anglian Archaeol.

Major, H. and Turrell, R. in prep. — 'Roman brick and tile', in Atkinson, M. and Preston, S.J., *Elms Farm: excavations at the Late Iron Age and Roman settlement at Heybridge, Essex, 1993–5*, E. Anglian Archaeol.

Maltby, M. 1979 — *The Animal Bones from Exeter 1971–1975,* Exeter Archaeol. Rep. **2**

Maltby, M. 1982 — 'Animal and bird bones', in Higham, R., 'Excavations at Okehampton Castle, Devon. Part 2: the Bailey', *Devon Archaeol. Soc.* **40**, 114–135

Manning, W.H. 1985 — *Catalogue of the Romano-British Iron Tools, Fittings and Weapons in the British Museum* (London)

Marsh, G. 1978 — 'Early second century fine wares in the London area', in Arthur, P. and Marsh, G. (eds.), *Early Fine Wares in Roman Britain,* Brit. Archaeol. Rep. Brit. Ser. **57**, 119–223

Martin, T.S. 1996 — 'A group of finds from the vicinity of the Noah's Ark Roman villa at Brightlingsea, Essex', *Essex Archaeol. Hist.* **27**, 311–319

Martin, T.S. 1998 — 'The Roman pottery' in Garwood, A., 'A Late Iron Age and Roman site at Shillingstone Field, Great Sampford', *Essex Archaeol. Hist.* **29**, 33–48

Martin, T.S. 2000 — 'The Roman pottery', in Medlycott, M., 'Prehistoric, Roman and post-medieval material from Harlow: investigations at Church Langley 1989–94', *Essex Archaeol. Hist.* **31**, 33–94

Martin-Kilcher, S. 1987 — *Die Romischen Amphoren aus Augst und Kaiseraugst* (Bern)

Mattingly, H. 1923–93 — *The Roman Imperial Coinage Vols I–X*

Mays, S.A. (nd) — *A cremation from Brougham,* (Manuscript on file, Ancient Monuments Laboratory, English Heritage)

McWhirr, A. (ed.) 1979 — *Roman Brick and Tile,* Brit. Archaeol. Rep. Int. Ser. **68**, 97–189

Medlycott, M. 1996 — 'A medieval farm and its landscape: excavations at Stebbingford, Felsted 1993', *Essex Archaeol. Hist.* **27**, 102–181

Mees, A.W. 1995 — *Modelsignierte Dekorationen auf südgallischer Terra Sigillata* (Stuttgart)

Miles, D. 1984 — *Archaeology at Barton Court Farm, Abingdon, Oxon*, Counc. Brit. Archacol. Res. Rep. **50**

Moffet, L. 1989 — *Economic activities at Rocester, Staffordshire in the Roman, Saxon and medieval periods: the evidence from charred plant remains*, Ancient Monuments Laboratory Report **15/89** (English Heritage, London)

Monaghan, J. 1987 — *Upchurch and Thameside Roman Pottery: a ceramic typology for northern Kent, first to third centuries AD,* Brit. Archaeol. Rep. Brit. Ser. **173**

Moore, P.D., Webb, J.A. and Collinson, M.E. 1991 — *Pollen Analysis* (2nd edition, Blackwell Scientific Publications, Oxford)

Moray-Williams, A. 1909 — 'The Romano-British establishment at Stroud, near Petersfield, Hants', *Archaeol. J.* **66**, 33

Morris, P. 1979 — *Agricultural Buildings in Roman Britain,* Brit. Archaeol. Rep. Brit. Ser. **70**, 55–65

Mulkeen, S. and O'Connor, T. 1997 — 'Raptors in towns: first faltering steps towards an ecological model', *International J. Osteoarchaeology* (special edition)

Murphy, P. 1984 — 'Carbonised cereals and crop weeds from buildings 38, 41 and 45', in Crummy, P. *Excavations at Lion Walk, Balkerne Lane and Middleborough,* Colchester Archaeol. Rep. **3**, 105, 108, 110 and microfiche

Murphy, P. 1992 — 'Environmental studies: Culver Street', in Crummy, P., *Excavations at Culver Street, the Gilberd School, and other sites in Colchester 1971–85*, Colchester Archaeol. Rep. **6**, 273–289 and microfiche

Murphy, P. 1996a — 'Environmental archaeology', in Bedwin, O. (ed.), *The Archaeology of Essex: Proceedings of the Writtle Conference*, 168–180 (Essex County Council: Chelmsford)

Murphy, P. 1996b — 'Plant remains', in Gregory, T. and Gurney, D., *A Romano-British farmyard at Weeting, Norfolk*, E. Anglian Archaeol. Occas. Pap. **1**, 35–6

Myres, J.N.L. 1986 — *The English Settlements*, Oxford History of England

Neal, D.S., Wardle, A. and Hunn, J. 1990 — *Excavations of the Iron Age, Roman, and Medieval Settlement at Gorhambury, St Albans*, English Heritage Archaeol. Rep. **14**

Neal, D.S. 1987 — 'Excavations at Magiovinium, Buckinghamshire, 1978–80', *Rec. Buckinghamshire* **29**, 1–124

Needham, S., 1991 — *Excavation and Salvage at Runnymede Bridge, 1978: the Late Bronze Age Waterfront Site* (London)

Needham, S., 1993 'The structure of settlement and ritual in the Late Bronze Age of south-east Britain', in Mordant, C. and Richard, A. (eds), *L'habitat at l'occupation du sol à l'Age du Bronze en europe, Actes du Colloque International de Lons-le-Sauvier, 16–19 Mai 1990*, Editions du Comité des Travaux historique et scientifique: Documents Prehistorique **4**, 49–69

Oswald, A. and Buxton, L.H.D. 1937 'A Roman fortified villa at Norton Disney, Lincs.', *Antiq. J.* **17**, 138–78

Oswald, F. 1936–7 *Index of Figure-Types on Terra Sigillata ('Samian Ware')*, (Liverpool)

Oxford Archaeotechnics 1992 *Holts Farm, Boreham, Essex: Magnetic Survey*

Parker, A.J. 1988 'The birds of Roman Britain', *Oxford J. Archaeol.* **7(2)**, 197–226

Parminter, Y. 1990 'The pottery', in Neal, D.S, Wardle, A. and Hunn, J., *Excavation of the Iron Age, Roman and Medieval Settlement at Gorhambury, St Albans*, English Heritage Archaeol. Rep. **14**

Payne, S. 1973 'Kill-off patterns in sheep and goats: the mandibles from Asvan Kale', *Anatolian Studies* **23**, 281–303

Payne, S. 1987 'Reference codes for wear states in the mandibular cheek teeth of sheep and goats', *J. Archaeol. Sci.* **14**, 609–614

Payne, S. and Bull, G. 1988 'Components variation in measurements of pig bones and teeth, and the use of measurements to distinguish wild from domestic pig remains', *Archaeozoologia* **2**, 27–65

Peacock, D.P.S. 1977 'Roman amphorae: typology, fabric and origins', *Colln. De L'Ecole Francaise de Rome* **32**, 261–78

Peacock, D.P.S. 1987 'Iron Age and Roman quern production at Lodsworth, West Sussex', *Antiq. J.* 67, 61–85

Peacock, D.P.S. and Williams, D.F. 1986 *Amphorae and the Roman Economy* (London)

Perrin, R. 1996 'Roman pottery', in Mackreth, D.F., *Orton Hall Farm: a Roman and Early Anglo-Saxon Farmstead*, E. Anglian Archaeol. **76**

Price, J. 1978 'Trade in glass', in du Plat Taylor, J. and Cleere, H. (eds.), *Roman Shipping and Trade: Britain and the Rhine Provinces*, Counc. Brit. Archaeol. Res. Rep. **24** (London)

Prummel, W. 1997 'Evidence of hawking (falconry) from bird and mammal bones', *International J. Osteoarchaeol.*, (special edition)

Rawes, B. 1981 'The Romano-British site at Brockworth, Glos.', *Britannia* **XII**, 45–78

Reaney, P.H. 1935 *The Place Names of Essex* (Cambridge University Press)

Reece, R. 1991 *Roman Coins from 140 Sites in Britain*

Rees, S.E. 1979 *Agricultural Implements in Prehistoric and Roman Britain*, Brit. Archaeol. Rep. Brit. Ser. **69**, 59–61

Reilly, K. 1985 'Gli uccelli' in Ricci A. (a cura di), *Settefinestre. Una villa schiavistica nell'Etruria Romana*, Vol. **III**, 299–302 (Modena, Panini)

Rhodes, M. 1980 'Leather footwear' in Jones, D.M. *Excavations at Billingsgate Buildings, Lower Thames Street, London, 1974*, London Middlesex Archaeol. Soc. Spec. Pap. **4**, 99–128

Richmond, I. 1963 'Roman Essex', in Powell, W.R. (ed.), 'A History of the County of Essex', *Victoria County History* **3**, 1–24

Ricken, H. 1948 *Die Bilderschüsseln der römischen Töpfer von Rheinzabern* (Tafelband, Speyer)

Ricken, H. and Fischer, C. 1963 *Die Bilderschüsseln der römischen Töpfer von Rheinzabern*, (Textband, Bonn)

Rickett, R. 1995 *The Anglo-Saxon Cemetery at Spong Hill, North Elmham, Part VII: the Iron Age, Roman and Early Saxon Settlement*, E. Anglian Archaeol. **73**

Roberts, W.I. 1982 *Romano-Saxon Pottery*, Brit. Archaeol. Rep. Brit. Ser. **106**

Robinson, M. and Wilson, B. 1987 'A survey of environmental archaeology in the South Midlands', in Keeley, H. (ed.), *Environmental Archaeology: a Regional Review*, Vol. **II**, 16–100 Historic Buildings Monuments Comm. England, Occas. Pap. **1**

Rodwell, K.A. 1988 *The Prehistoric and Roman Settlement at Kelvedon, Essex*, Counc. Brit. Archaeol. Res. Rep. **63**

Rodwell, W. 1978 'Rivenhall and the emergence of first century villas in Northern Essex', in Todd, M. (ed.), *Studies in the Romano-British Villa*, 11–32

Rodwell, W.J. and Rodwell, K.A. 1985 *Rivenhall: investigations of a villa, church, and village, 1950–1977*, Chelmsford Archaeol. Trust Rep. **4**, Counc. Brit. Archaeol. Res. Rep. **55**

Rogers, G.B. 1974 *Poteries sigellées de la Gaule centrale*, Gallia Supplément **XXVIII** (Paris)

Rogerson, A. 1977 'Roman wells at Scole', in Wade-Martins, P. (ed.) E. Anglian Archaeol. **5**, 111–17

Rook, T. 1987 'The Roman villa site at Dicket Mead', *Hertfordshire Archaeol.* **9**, 79–175

Russell, M. 1990 '*Strange symbols of some kind*: the problems surrounding stamped Roman clay walls', *Bull. Inst. Archaeol.* **27**, 87–117

Salaman, R.A. 1986 *Dictionary of leather-working tools c.1700–1950: and the tools of allied trades*, (London)

Schleiermacher, M. 1982 'Romische leder und textilfunde aus Köln', *Archäologisches Korrespondenzblatt* **12**, 205–16

Schmid, E. 1972 *Atlas of Animal Bones* (Amsterdam-London-New York, Elsevier)

Selkirk, A. and Selkirk, W. (eds.) 1996 'Piddington', *Curr. Archaeol.* **146**, 57–64

Serjeantson, D. 1989 'Animal remains and the tanning trade', in Serjeantson, D. and Waldron, T. (eds.), *Diet and Craft in Towns*, Brit. Archaeol. Rep. Brit. Ser. **199**, 129–146 (Oxford)

Shepherd, J.D. 1986 'The glass', in McWhirr, A., *Houses in Roman Cirencester*, 117–21 (Cirencester)

Shipman, P., Forster, G. and Schoeninger, M. 1984 'Burnt bones and teeth: an experimental study of colour, morphology, crystal structure and shrinkage', *J. Archaeol. Sci.* **11**, 307–25

Smith, A.J.E. 1978 — *The Moss Flora of Britain and Ireland*, (Cambridge University Press)

Smith, J.T. 1963 — 'Romano-British aisled houses', *Archaeol. J.* **120**, 1–27

Smith, J.T. 1978 — 'Villas as a key to social structure', in Todd, M. (ed.), *Studies in the Romano-British Villa*, 149–73 (Leicester University Press)

Smoothy, M.D. 1993 — 'The animal bone', in Havis, R., 'Roman Braintree: excavations 1984–90', *Essex Archaeol. Hist.* **24**, 52–61

Stace, C. 1991 — *New Flora of the British Isles* (Cambridge University Press)

Stead, I.M. 1976 — *Excavations at Winterton Roman Villa*, Dept. Envir. Archaeol. Rep. **9**

Stead, I.M. and Rigby, V. 1986 — *Baldock: the Excavation of a Roman and Pre-Roman Settlement, 1968–72*, Britannia Monogr. Ser. **7**, 42–43

Stephen, M. 1988 — 'The mystery of Walkfares', in Burgess, E. and Rance, M. (eds.), *Boreham, History, Tales and Memories of an Essex Village*, 85–7 (Boreham Histories Project Group)

Stewart, J.R. 1992 — *The Turdidae of Pin Hole Cave, Derbyshire*, (unpublished MSc dissertation)

Straker, V. 1984 — 'First and second century carbonised grain from Roman London', in Van Zeist, W. and Casparie, W.A., *Plants and Ancient Man, Studies in Palaeoethnobotany*, 323–9 (Rotterdam)

Stokes, M. 1984 — 'Anglo-Saxon pottery and die-stamps', *Medieval Ceramics* **7**

Taylor, H.M. and Taylor, J. 1965 — *Anglo-Saxon Architecture* (Cambridge University Press)

Teichert, M. 1984 — 'Size variation in cattle from Germania Romana and Germania Libera', in Grigson, C. and Clutton-Brock, J. (eds.), *Animals and Archaeology: 4. Husbandry in Europe*, Brit. Archaeol. Rep. Int. Ser. **227**, 93–103

Thompson, I. 1982 — *Grog-tempered 'Belgic' Pottery of South-eastern England*, Brit. Archaeol. Rep. Brit. Ser. **106**

Tottenham, C.E. 1954 — *Coleoptera Staphylinidae section (a) Piestinae to Euaesthetinae*, Royal Entomological Society Handbook for the Identification of British Insects **4**, pt. 8a (London)

Townend, P. and Hinton, P. 1978 — 'Glass', in Bird, J., Graham, A.H., Sheldon, H. and Townend, P. (eds.), *Southwark Excavations, 1972–1974*, Surrey Archaeol. Soc./London Middlesex Archaeol. Soc. Joint Pub. **1**

Trotter, M. and Hixon, B.B. 1974 — 'Sequential changes in weight, density and percentage ash weight human skeletons from an early foetal period through old age', *Anatomical Record* **179**, 1–18

Turner, R. 1999 — *Excavations of an Iron Age Settlement and Roman Religious Complex at Ivy Chimneys, Witham, Essex 1978–83*, E. Anglian Archaeol. **88**

Turner-Walker, C. and Wallace, C. 1999 — 'The Iron Age and Roman pottery' in Turner, R., *Excavations of an Iron Age Settlement and Roman Religious Complex at Ivy Chimneys, Witham, Essex 1978–83*, E. Anglian Archaeol. **88**, 123–79

Van der Veen, M. 1989 — 'Charred grain assemblages from Roman-period corn driers in Britain', *Archaeol. J.* **146**, 302–319

Van der Veen, M. 1994 — 'Grain from the forecourt granary', in Bidwell, P. and Speak, S., *Excavations at South Shields Roman Fort, Volume 1*, Soc. Antiq. Newcastle upon Tyne Monogr. Ser. **4**, 243–258

von den Driesch, A. 1976 — *A guide to the measurement of animal bones from archaeological sites*, Peabody Museum Bulletin **1** (Cambridge Mass., Harvard University)

von den Driesch, A. and Boessneck, J. 1974 — 'Kritische Ammerkungen zur iderristhöhen-berechnung aus Längenmassen vor- und früh-geschichterlicher Tierknochen', *Säugetierkundliche Mitteilungen* 22, 325–348

Walker, J.J. 1910 — '*Holoparamecus caularum* Aubé, and *Aglenus brunneaus*, Gyllenhall, near Oxford', *Entomologist's Monthly Magazine* **46**, 91–2

Walker, J.J. 1916 — 'Granary beetles at Cothill, Berks', *Entomologist's Monthly Magazine* **52**, 16–17

Wallace, C. 1993a — 'The pottery', in Lavender, N.J., 'A principia at Boreham, near Chelmsford, Essex: excavations 1990', *Essex Archaeol. Hist.* **24**, 1–21

Wallace, C. 1993b — 'Notes on the dating of Late Shell-tempered Ware in Essex', *J. Roman Pottery Stud.* **6**, 123–26

Wallace, C. 1995 — 'A Roman rural shrine at Boreham ? The Bulls Lodge excavation of 1990 reinterpreted', *Essex Archaeol. Hist.* **26**, 264–69

Wallace, C. 1997 — 'The Late Iron Age and Roman pottery', in Lavender, N.J., 'Middle Iron Age and Romano-British settlement at Great Dunmow: excavations at Buildings Farm 1993', *Essex Archaeol. Hist.* **28**, 66–81

Wallace, C. and Turner-Walker, C. 1998 — 'The Roman pottery', in Clarke, C.P., *Excavations South of Chignall Roman Villa, Essex, 1977–81*, E. Anglian Archaeol. **83**, 98–112

Wallis, S. and Waughman, M. 1998 — *Archaeology and the Landscape in the Lower Blackwater Valley*, E. Anglian Archaeol. **82**

Webster, G. 1999 — 'Bronze (copper alloy), silver and gold', in Turner, R. *Excavations of an Iron Age Settlement and Roman Religious Complex at Ivy Chimneys, Witham, Essex 1978–83*, E. Anglian Archaeol. **88**

Weller, S.G.P. 1974 — 'A late fourth-century cremation from Billericay, Essex', *Antiq J.* **54**, 282–285

Wheeler, A. 1978 — *Key to the Fishes of Northern Europe* (Warne)

Wheeler, R.E.M. 1943 — *Maiden Castle, Dorset*, Rep. Res. Comm. Soc. Antiq. London **XII**

White, K.D. 1970 — *Roman Farming*

Wickenden, N.P. 1987 — 'Prehistoric settlement and the Romano-British Small Town at Heybridge, Essex', *Essex Archaeol. Hist.* **17**, 7–68

Wickenden, N. 1992 — *The temple and other sites in the north-eastern sector of Caesaromagus*, Counc. Brit. Archaeol. Res. Rep. **75**

Wickenden, N.P. 1996 — 'The Roman towns of Essex', in Bedwin, O. (ed.), *The archaeology of Essex: proceedings of the Writtle Conference*, 76–94 (Essex County Council: Chelmsford)

Wickenden, N. and Drury, P.J. 1988 — 'The building material', in Drury, P.J., *The Mansio and other sites in the south-eastern sector of Caesaromagus*, Chelmsford Archaeol. Trust Rep. **31**, Counc. Brit. Arch. Res. Rep. **66**, 77–90

Willcox, G.H. 1977 'Exotic plants from Roman waterlogged sites in London', *J. Archaeol. Sci.* **4**, 269–282

Williams, D. 1979 'The plant remains', in Kenward, H.K. and Williams, D. *Biological evidence from the Roman warehouses in Coney Street*, The Past Environment of York **14/2**, 52–6

Williams, D.F. 1994 'Campanian amphorae', in Bidwell, P. and Speak, S., *Excavations at South Shields Roman Fort*, London, 217–19

Williams, D.F. 1997 'Amphorae', in Monaghan, J., *Roman Pottery from York* (York Arch. Trust)

Williams, R.J. and Zeepvat, R.J. 1994 *Bancroft: a Late Bronze Age/Iron Age Settlement, Roman Villa and Temple-mausoleum*, Bucks. Archaeol. Soc. Monograph Ser. **7**, volumes I and II

Williamson, T. 1987 'Early co-axial field systems on the East Anglian Boulder Clays', *Proc. Prehist. Soc.* **53**, 419–32

Willis, S. 1996 'The Romanization of pottery assemblages in the east and north-east of England during the first century AD: a comparative analysis', *Britannia* **XXVII**, 179–221

Wilmot, T. 1982 'Excavations at Queen Street, City of London, 1953 and 1960, and Roman timber-lined wells in London', *Trans. London Middlesex Archaeol. Soc.* **33**, 1–78

Wilson, M. 1984 'The other pottery', in Frere, S.S., *Verulamium Excavations, Vol. III*, Oxford Univ. Comm. Archaeol. Monogr. **1**, 200–263

Wiltshire, P.E.J., Edwards K.J., and Bond, S. 1994 Microbially-derived metallic sulphide spherules, pollen and the waterlogging of archaeological sites, in Davis, O.K. (ed.), *Aspects of Archaeological Palynology: Methodology and Applications*, American Assoc. Stratigraphic Playnologists Contributions Series **29**, 207–21

Wright, M.E. 1996 'Querns', in May, J., *Dragonby: report on excavations at an Iron Age and Romano-British settlement in North Lincolnshire*, Oxbow Monograph 61, 365–76

Wymer, J.J. and Brown, N. 1995 *Excavations at North Shoebury: Settlement and Economy in South-East Essex 1500 BC–AD 1500*, E. Anglian Archaeol. **75**

Young, C.J 1977 *Oxfordshire Roman Pottery*, Brit. Archaeol. Rep. **43**

Yule, B. 1989 'Excavations at Winchester Palace, Southwark', *The London Archaeol.* **6**(2) 31–39

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