THE LATE ROMAN CEMETERY AT LANKHILLS, WINCHESTER

EXCAVATIONS 2000-2005

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Front Cover: Photograph of crossbow brooch from grave 1846

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Summary

Excavations were carried out from 2000-2005 on part of the major late Roman cemetery at Lankhills, Winchester, a site already well-known from excavation carried out in 1967-1972 by Giles Clarke, which had examined a total of 444 inhumation and seven cremation graves. The new excavations, undertaken by Oxford Archaeology (OA) on behalf of Hampshire County Council, revealed a further 307 inhumation graves (plus six more partly-excavated previously) and 25 more cremation burials. The latter included seven burials of *bustum*-type, unusual in a late Roman context. The northern boundary of the cemetery was identified. Most burials were aligned roughly west-east in relation to this boundary or perpendicular to a north-south boundary at the eastern margin of the excavation. Further west an approximate WSW-ENE alignment was more common, relating to the line of the Winchester-Cirencester road lying beyond the western margin of the site. Localised areas of intercutting pits associated with cremation burials formed early 4th-century foci for continued intensive activity within the northern part of the site. Burials, as in the earlier excavation, were mostly in wooden coffins and were much more commonly provided with nailed footwear and other grave goods than is usual in late Romano-British urban cemeteries. Pottery vessels were found in 39 inhumation graves and coins in 28 graves. Other finds included combs, spindle whorls, bracelets, rings, beads, and a pair of shears. A number of age/gender associations were apparent; jewellery was often associated with adolescents and young women and spindle whorls with older women, for example. A further six crossbow brooches, one from a cremation burial, were found, to add to the eight from earlier work. These were almost invariably associated with elements of belt equipment (and the latter often with knives) and indicate an unparalleled official/military element within the cemetery population, particularly from the middle of the 4th century. The most spectacular individual burial contained a gilded and inscribed crossbow brooch, a silver gilt belt fitting and decorated spurs, a unique assemblage for Roman Britain.

The human remains indicate a generally quite healthy population with reasonable life expectancy, a number of individuals being assigned to a '60+ years' age bracket. Neonates and infants were present but, as usual, only in small numbers. Analysis of carbon and nitrogen isotopes suggests that many individuals enjoyed a relatively mixed diet. Strontium and oxygen isotope analysis was carried out on 40 individuals to provide a wide-ranging assessment of geographical origin, particularly important in the light of controversial claims by Clarke to have identified intrusive groups on the basis of aspects of their grave assemblages. The analysis revealed diverse origins for the sampled individuals, with as many as 11 perhaps having been born outside Britain. Only one of these correlated fairly closely with the suggested area of origin of Clarke's principal intrusive group in Pannonia. Most of the 'foreigners' were of unspecific but broadly western European origin, but three may have come from the Mediterranean area, possibly even from North Africa. There was an almost complete lack of correlation between non-British isotopic origin and 'intrusive' suites of grave goods.

Use of the cemetery probably commenced early in the 4th century and continued at least to the end of the century, but an attempt to use radiocarbon to clarify the date of very late burials (including some with associated coins dated after AD 388) produced problematic results and the degree of use of the cemetery after AD 400 remains uncertain. Some chronological trends are apparent, however. Burials of the official/military group were dated after *c* AD 350, and the majority of the incomers identified by isotope analysis (including those identified in an earlier study) were also of this date. While burials with pottery were more common in the first half of the 4th century the range of grave goods deposited seems to have expanded later. Very late 4th-century burials in the north-west corner of the site included a few richly furnished north-south aligned graves. Isotope evidence suggests some spatial separation of two non-local groups (broadly western- and central-European), respectively in the northern and southern parts of the cemetery area, but such hints of differentiation within the burial population are rare and their significance is debatable. The implications for the cemetery population of the possible identification of Winchester as the location of an Imperial weaving shop *(gynaeceum)* are explored. Such a presence might account for the appearance of the official/military community, but this can be no more than a tentative suggestion.

Acknowledgements

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Subsequent stages of the project were managed by Paul Booth. The work of all the site staff and the contributors to this report is gratefully acknowledged. The analysis and reporting programme has benefited from the help of many individuals. Rebecca Gowland and Connie Stuckert kindly made available data from their various osteological researches on the earlier excavation, and Carolyn Chenery, Hella Eckardt and Gundula Müldner, who reported on the Strontium and Oxygen isotopes as part of a two-year project funded by the AHRC 'Diasporas, migration and identities' programme, were also helpful with wider questions. Colleen Cummings is thanked for all her work on the Carbon and Nitrogen isotopes. Helen Rees of Winchester City Council kindly gave access to forthcoming publications on the pottery and the suburbs of Winchester. Edward Biddulph, Steve Teague and Ben Ford provided further information about OA and other excavations in Winchester. Jackie McKinley, Nick Cooke, Paul McCulloch and Jorn Schuster of Wessex Archaeology provided information on various aspects of their work at Lankhills and elsewhere, Laurie Coleman of Cotswold Archaeology provided information on the Lea, Denham, and Jill Greenaway of Reading Museum kindly allowed access to archive material from the Bray excavation.

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Chapter 1: Setting the scene

INTRODUCTION

This report describes and analyses the results of a programme of archaeological excavations and watching briefs carried out by Oxford Archaeology between July 2000 and April 2005 at Lankhills School, Winchester, Hampshire. These investigations were occasioned by the re-organisation of the school facilities and the preparation of part of the grounds for sale for redevelopment. Previous excavations carried out in the southern part of the school grounds between 1967 and 1972 had recorded a total of 451 burials forming part of a major late Roman cemetery (Clarke 1979), and the current investigations were designed to mitigate the impact of development on further areas of the cemetery.

The investigations reported on here were uniquely fortunate in being able to build upon the foundations laid down by the published account of the 1967-72 excavations. Clarke's report represented a landmark in Romano-British cemetery studies and set a standard for analysis of cemetery material that has rarely been equalled since. The Lankhills cemetery stood out for its degree of spatial organisation, the large number of burials accompanied by grave goods, and the identification of two 'intrusive' groups of people, one identified as deriving from the Danube region and the other as Anglo-Saxon. The exhaustive analysis and comparative study of the graves and their artefacts was not matched by analysis of the skeletal material, however, which was classified only in terms of age and sex, and the proportion of the burials that it was claimed could be assigned to sex was unusually high.

In a number of significant respects the position of Lankhills within Romano-British studies has not changed since the publication of Clarke's report. Despite the existence of a much larger body of data on burial, excellently synthesised by Philpott (1991), well-excavated and well-published cemeteries of any great size remain a relative rarity (Pearce 2008). The number of significant publications of continental cemetery excavations has also not been particularly large (Pearce 2002). The current report has, however, benefited from developments in cemetery studies in the time since Clarke's publication. The theoretical aspects of interpreting cemetery assemblages have received much attention (eg Morris 1992; Parker Pearson 1999), as has Roman burial archaeology both at a general level (eg Struck 1993a; Pearce *et al.* 2000; Scheid 2008) and also within a specifically British context, not least Philpott's survey of Romano-British burial practice (1991). In addition the science of archaeological osteology has advanced significantly, enabling a more detailed analysis of the skeletal material to be undertaken than was possible when the report on the 1967-72 excavations was published.

The general approach of the current project has been to integrate the analyses of cemetery morphology, grave types and orientation, grave goods and skeletal remains as far as possible (see further below). The well-known constraints of developer-funded archaeology do not always allow much scope for detailed analysis of excavation results. In the present case, however, while there are several aspects of the study of the cemetery which it would have been desirable to pursue further than has been done here, the established importance of the site meant that fairly detailed analysis of the results of this work, in relation to a defined set of research questions, was anticipated from the inception of the project. It was essential that these analyses made reference, where possible, to the data from the earlier excavation, an exercise that has substantially increased the value of the more recent work and allowed direct comparison of the two areas of the site. In order to facilitate this OA has made use *inter alia* of an osteological dataset for the earlier excavations, kindly made available by Dr Rebecca Gowland, which uses more up-to-date ageing and sexing methodologies than those available at the time of the original publication (see Chapter 5). While post-excavation assessment and subsequent analysis were underway, further work adjacent to the south-east and east margins of Clarke's excavation was undertaken by Wessex Archaeology in 2007-8, revealing a further 56 graves. It has not been possible to take full account of this work here, but summary information has kindly been made available (Wessex Archaeology 2009).

LOCATION AND SITE CHARACTER

Winchester is located at the southern edge of the chalk Downs of Wessex, where the valley of the River Itchen cuts southward through the western end of the South Downs (Fig. 1.1).

Lankhills Special School lies in the northern part of Winchester, in the triangle of modern development between the A272 Andover Road and the A33 Basingstoke Road at NGR SU 479 304. These roads follow the line of the former Roman roads leading

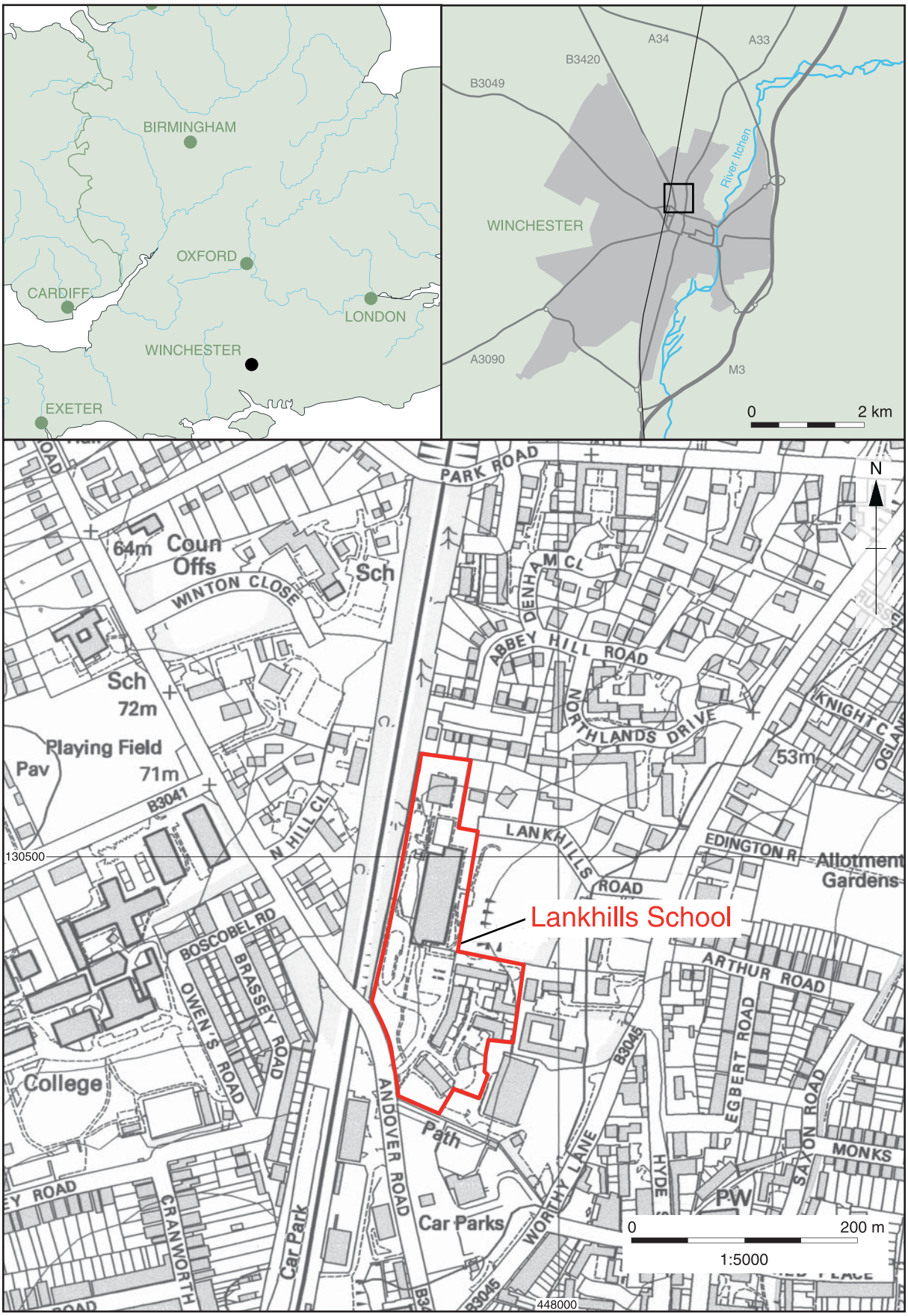


Fig. 1.1 Location of Lankhills School

toward Cirencester and Silchester respectively, running from the north gate of the Roman city of Winchester, *c* 450 m to the south of the site. The site of the school is on the western side of the Itchen Valley, on one of a series of undulating ridges into which the former downland of the valley side is dissected by the shallow valleys of winterbournes and tributary streams. The grounds fall from west to east from 62 m OD to 56 m OD with the slope of the Itchen Valley, and from 61 m OD at the north end of the school to 58 m OD at the south end as it slopes into the valley of one of these tributary streams, the

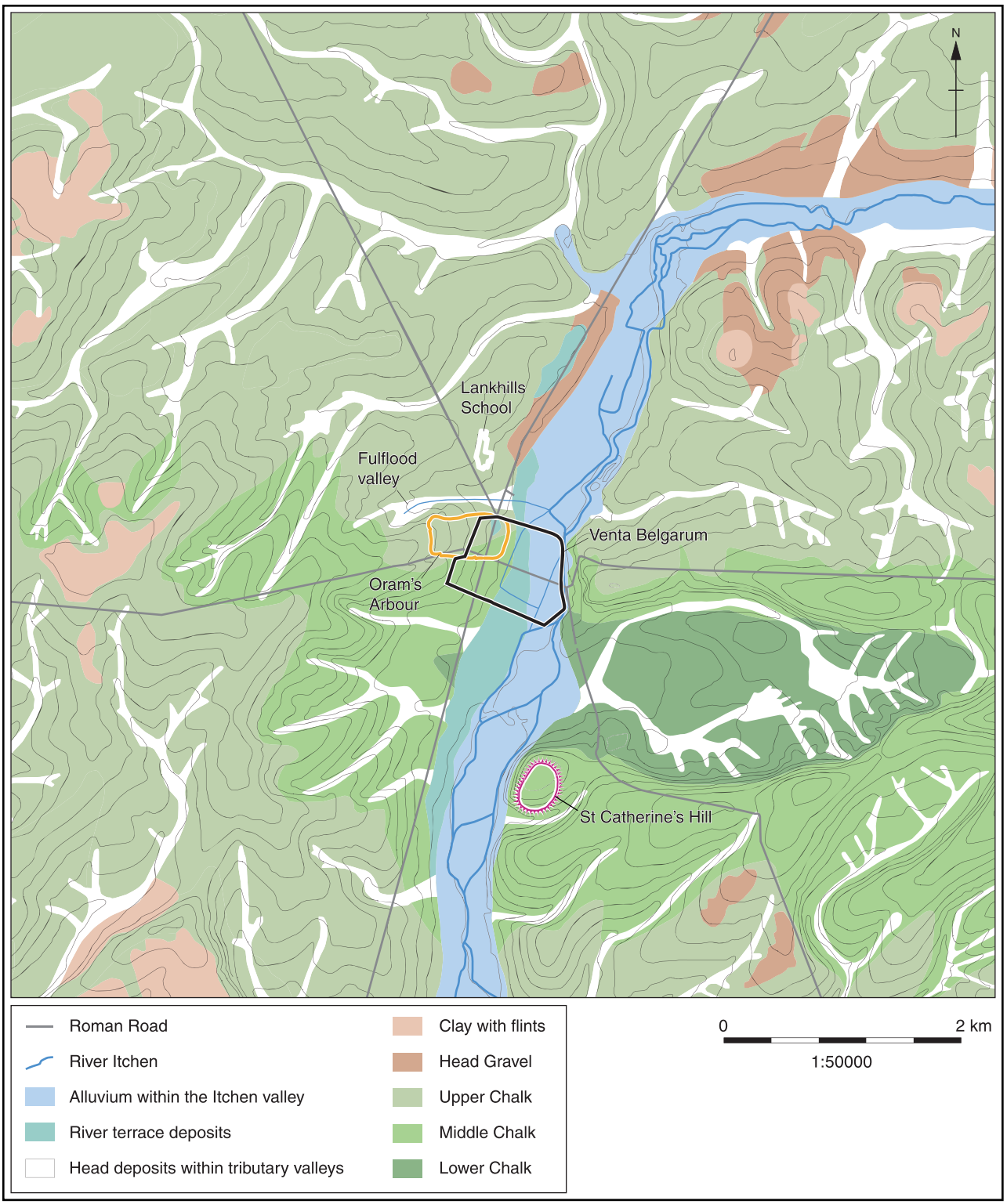


Fig. 1.2 The geology and topography of the Winchester area

Fulflood, now carried in a culvert. Beyond the Fulflood the ground rises again to the site of the Roman city, where the modern city centre now stands. The site is on the Upper Chalk that underlies most of the surrounding area (Fig. 1.2). Over most of the site area the chalk lay directly beneath topsoil and other modern deposits.

The school grounds encompassed an area of some 3.6 hectares and comprised a series of level terraces corresponding with existing and past buildings and the sports field. Some of these terraces were occupied by a mixture of modern and late 19th-century buildings. Contours recorded on the 1869 and 1898 Ordnance Survey maps indicate that the terrace in the north-east corner of the grounds had, in part, exploited a natural combe. Geotechnical investigations showed that the terraces in the north-western part of the site were the result of cut and fill landscaping, with made ground up to 1.5 m thick contributing to the steep terrace edges around the buildings and sports ground (SAS 1999).

The main area of excavation took place at the south-eastern end of the school grounds, around and beneath the site of a former dormitory building known as the School House (Fig. 1.3), the construction of which in 1961 had resulted in the initial discovery of burials on the site (Clarke 1979, 7-9).

The building consisted of four wings arranged around a small open courtyard, within which a pond had been excavated. The School House stood on a flat terrace at 58.3 m OD, surrounded by small areas of lawns and pathways. The western end of the 1967-72 excavation had encompassed most of the lawn immediately south of the building. Some indication of the amount of landscaping involved in its construction is provided by the level of the terrace immediately to the north-west, which is some 1.5 m higher. From the terrace bearing the School House the ground slopes away gradually to the south and east toward stands of mature trees that defined the boundaries of the school grounds.

ARCHAEOLOGICAL BACKGROUND

Winchester is one of the principal historic towns of southern England. Despite this, and a number of antiquarian observations, its Roman archaeology was not well known before the 1920s and systematic excavation did not begin until the late 1940s (Qualmann 1993, 67), undertaken by staff of the Winchester Museum and developing into the Winchester Excavations Committee programme initiated in 1961. This and subsequent work by the Archaeological Section of Winchester Museum Service has created an extensive and detailed archaeological database from which the origins and development of the town can be studied, although much work is still unpublished. Between the walled city and the site of Lankhills, observations made by

Fig. 1.3 The south side of School House looking east and showing the excavation of Area 2 in 2000

antiquarians during the suburban expansions of the 19th and 20th centuries and subsequent excavations have produced information on the cemeteries in this area which provides important background for the understanding of Lankhills. Again, however, this work, including relatively recent excavations (eg Teague 1999), has not yet been published in detail (Browne *et al*. forthcoming).

The Roman city of Winchester, Venta Belgarum, was established on a site that had been occupied from at least the middle Iron Age. Evidence has been found for settlement dating from the 3rd century BC onward extending over a large area of the western side of the Itchen Valley, as well as at the hillfort at St Catharine's Hill on the eastern side (Hawkes *et al*. 1930; Hawkes 1936; 1976; Biddle 1983, 108). The latter site was abandoned *c* 100 BC, but occupation continued on the western side of the valley, with the construction during the 1st century BC of Oram's Arbour, a ditched enclosure encompassing an area of some 20 hectares. Although the density of occupation appears to have diminished following construction of the enclosure, the discovery of imported amphorae and many native and imported coins has led to the suggestion that it functioned as some form of central place or *oppidum*, perhaps with a key role in the communications network and functions associated with trade and religion (Biddle 1983, 108-9; Qualmann 1993, 74; Qualmann *et al*. 2004). Occupation of Oram's Arbour declined in the decades preceding the Roman conquest and it is currently unclear whether it was completely abandoned before the establishment of the Roman town.

Venta Belgarum appears to have begun around AD 50 as an unenclosed settlement on the west bank of the River Itchen and on one of a series of several tufa islands in mid-stream (James 1997, 30). This early phase of occupation is poorly understood, and although evidence has been claimed for a street layout in and outside the north-western corner of the later walled city on a different alignment to the rest of the street grid (Biddle 1983, 111) this has not been substantiated by more recent work. The town must have owed its origins to the presence of pre-existing routeways converging on a crossing point of the river, and to the significance the area had gained from the proximity of Oram's Arbour, regardless of whether the latter enclosure was occupied down to this time. The question of whether or not the town saw a phase of early military activity has been widely debated. The recent consensus seems to be against this (eg Wacher 1995, 291). The character of early timber structures at the George Hotel in the western part of the town (Cunliffe 1964, 22, 32) and of the early ditch at Lower Brook Street (Biddle 1975b, 296-7) is uncertain, but the incidence of early Roman fine wares at the former location (Cunliffe 1964, 58-60), and of coins of Gaius and Claudius to the north at Victoria Road (Kenyon 2008), suggest that the question should remain open. Consideration of comparable developments at Chichester and Silchester is also relevant, however, and in both instances the evidence for significant early military establishments is considered to be limited (eg Magilton 2003, 161-2; Fulford 2003, 101). The settlement was transformed by a major programme of public works started in the Flavian period, including the construction of earth and timber defences enclosing the north, south and west sides, and a large public building believed to be the forum, which has been investigated in excavations at the Wessex Hotel and Cathedral Green (Wacher 1995, 293-5). Property boundaries and timber strip buildings dating from the same period have also been excavated at the Brooks (Zant 1993, 29-31). This sudden burst of development has been attributed variously to investment given as a reward to Cogidubnus, within whose kingdom Venta is likely to have lain, for his loyalty to the emperor, or to the settlement being awarded the status of *civitas* capital following the division of his kingdom on his death (Wacher 1995, 293). The latter view has been developed by Wilson (2006, 22-3, 30, 39-40) in the context of a recent discussion of early Romano-British urban defences although, as Esmonde Cleary (2003, 80) points out, in the absence of good evidence for post-conquest earthwork defences at Chichester and Silchester, the real significance of the Winchester earthworks is unclear. Winchester grew to be one of the principal cities in the province of Britannia, with the fifth largest walled area (Biddle 1983, 110), a population of perhaps 3-4000 (James 1997, 32; but see also below Chapter 8) and considerable suburbs (Wacher 1995, 301; Browne *et al*. forthcoming). The continued prosperity of the population is demonstrated by the construction of town houses with mosaic floors and hypocausts, the augmentation of the earthwork defences towards the end of the 2nd century, and the addition of a stone wall during the early 3rd (Wacher 1995, 296).

The character of the city changed significantly shortly after AD 350: the town houses went out of use and deposits of 'dark earth' developed across parts of the occupied area. However, these changes do not appear to represent abandonment as much as a change in the nature of occupation. The area of occupation, as reflected in the distribution of pottery and coins, actually seems to have increased at this time to incorporate the previously little-used western part of the city. Evidence for metalworking increased, as did the size of the city's cemeteries, and at some point during the second half of the 4th century bastions were added to the city wall (Biddle 1983, 112-3). These changes are difficult to interpret, but perhaps the role of the city changed from being principally an administrative centre to a densely occupied industrial centre, or a defended centre for the collection and storage of taxation in kind. The demise of the city may have occurred quite swiftly at the end of the 4th century or shortly after, when all evidence for occupation is thought to have

ceased, reflected most notably in the apparently abrupt cessation of burial in the city's cemeteries (Biddle 1983, 115).

The cemeteries of Venta Belgarum

Roman law forbade burial within urban areas, for reasons of hygiene and religion, and consequently cities were typically surrounded by a ring of cemeteries. The cemeteries of Venta Belgarum are not particularly well understood, but areas of burial have been identified to the north, west, south-west and east of the city, broadly alongside the main roads leading into it (Fig. 1.4; Browne *et al*. forthcoming). The location of the Roman cemeteries outside the town has meant that they remained beyond the limits of Winchester throughout most of the historic period, and it is only with the development of the city's

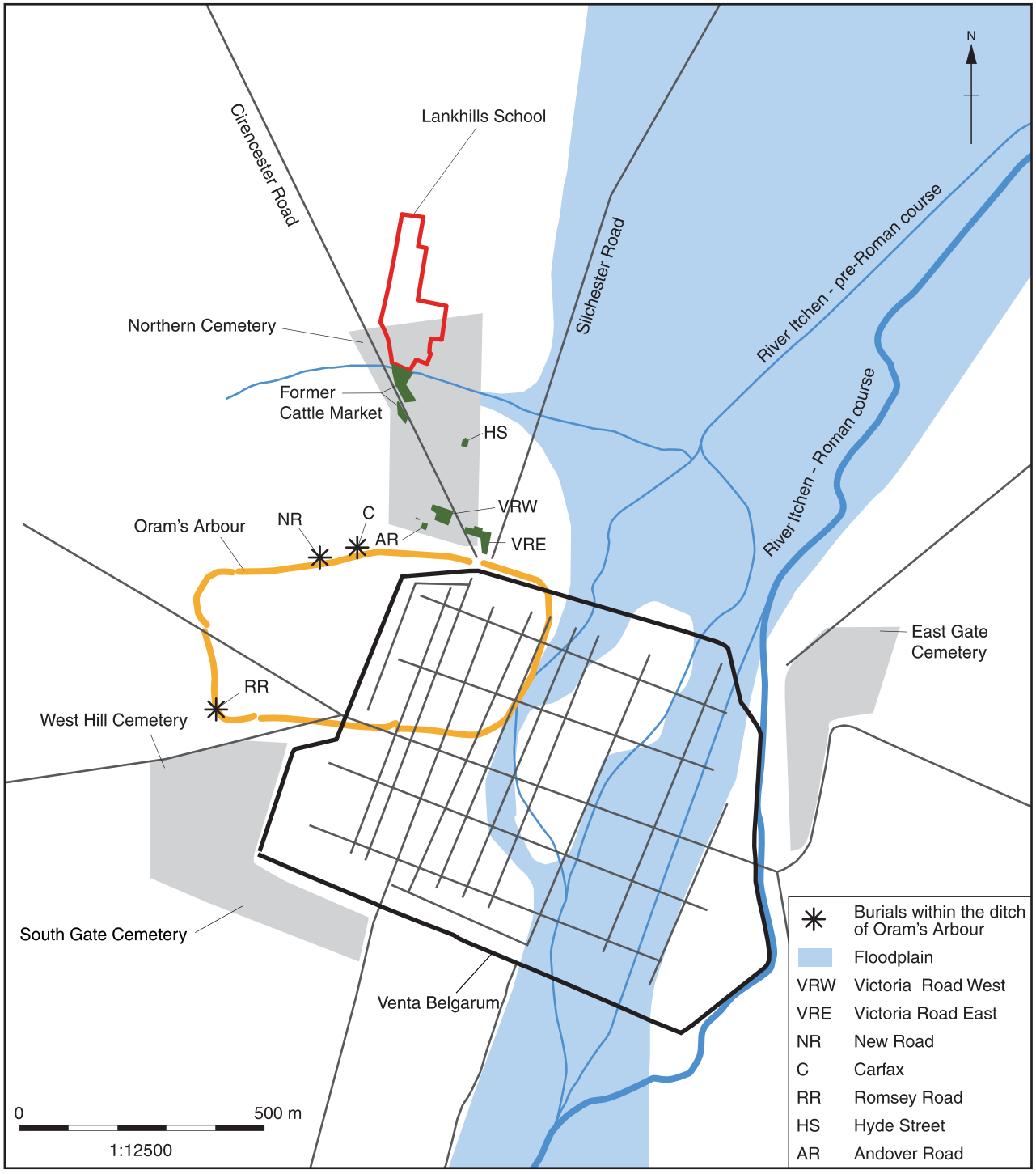


Fig. 1.4 The setting of the Roman town and its cemeteries (after Browne et al. forthcoming, 6)

suburbs during the 19th and 20th centuries that they have been built on. Sadly, although some observations were recorded, most notably through the work of Ward-Evans during the 1920s and 1930s (Qualmann 1993, 66), much evidence for the cemeteries was destroyed without recording. More recently the redevelopment of sites within areas occupied by the Roman cemeteries has provided an opportunity for formal excavations where burials survive (see Browne *et al*. forthcoming).

The northern cemetery, within which Lankhills is situated, is the only one of Venta's cemeteries that is reasonably well known. To the west, burials were inserted into the silted-up ditch of Oram's Arbour, and an area of burial has been discovered at West Hill on the road to Old Sarum. A small cemetery is known to the west of the south gate, along St James Lane, and a larger cemetery was sited outside the east gate. All the burials known in these cemeteries date from the later part of the Roman period, the majority assigned to the 4th century.

Clarke (1979, 5-11) has recorded in detail the discoveries of burials within the northern cemetery (an amended and expanded gazetteer will appear in Browne *et al*. forthcoming) and these will not be repeated here except to provide an outline of the development of the cemetery. The cemetery extended for *c* 450 m along the road to Cirencester, from the fork at which it separated from the Silchester road just outside the city's north gate as far as the site of Lankhills School. The burials lay mostly to the east of the road, with graves only recorded on the western side possibly at the site of the former Winchester Cattle Market, now a municipal car park immediately south of Lankhills School (Clarke 1979, 6), and more recently at Victoria Road and Andover Road (the Eagle Hotel). A small number of isolated graves have also been discovered further east, in the vicinity of the Silchester road, but these do not appear to form part of the cemetery and may be the burials of rural settlements or of wealthy individuals who chose to be buried separately. The cemetery appears to have originated as a much smaller area, located in the triangle formed by the junction of the Cirencester and Silchester roads, and to have been extended to the north over time as a larger area became necessary, particularly after the adoption of inhumation as the dominant burial rite during the latter part of the Roman period. This is demonstrated by the concentration of cremation burials, which are generally characteristic of the 1st and 2nd centuries (Jones 1987, 815-7), at the southern end of the distribution of burials. A group of early burials was uncovered at Hyde Street, where a total of 118 cremation burials and 99 inhumation graves dating from the mid 1st and 2nd centuries were excavated (Kjølbye-Biddle 1992, 215; these figures probably include a group of 9 or 10 cremations and three inhumation burials assigned to a 3rd-century phase, for revised figures see Browne *et al*. forthcoming). Several of the cremation burials along the street frontage were set within four-post structures, and a masonry mausoleum with a vaulted roof was also excavated. During the late 2nd century this area was covered by extramural occupation, and the area used for burial moved further north. The rate of expansion of the cemetery is difficult to gauge as the conditions under which many of the observations were made did not allow sufficient detail to be recorded to provide an accurate date, but by the 4th century, when burial started at Lankhills School, the cemetery may have been continuous along the length of the road. It was also at this time that a secondary area of burial seems to have been opened to the west of the southern end of the Cirencester road, parts of which have been uncovered at Victoria Road and the Eagle Hotel site (Teague 1999; Browne *et al*. forthcoming).

The post-Roman history of the site

During most of the historic period the site of Lankhills lay in open downland, and was still shown as such on the Ordnance Survey First Edition 1" map published in 1811, although plough scars were recorded during the 1967-72 excavations, indicating that the site had at some time been cultivated. The name Lankhills may derive from the former presence of lime kilns in the vicinity, probably of post-medieval date (Clarke 1979, 5), although no evidence for these structures survives. The London to Southampton railway, built in 1840, cut through this landscape, but passed to the west of the area of the cemetery and is not known to have disturbed any burials. During the Victorian period large detached villas were built on the valley slopes, including two on the later site of the school: Lankhills House in the northern part and Osbourne Lodge, later re-named The Beeches, to the south. The railway line defined the western boundaries of these properties, and subsequently that of Lankhills School, which was founded on the site in 1907. Lankhills House and The Beeches were retained for use as school buildings but have both been demolished since the 1967-72 excavations.

The 1967-72 Excavation

Burials at Lankhills School first came to light during 1961 when human remains were discovered during the construction of a dormitory building known as the School House. Although the foundations were not generally deep enough to disturb the burials below, rescue observations were made during deeper excavations for a boiler room under the building and for service trenches extending to the north and west, which recorded both inhumation graves and cremation burials. With the presence of burials thus established, a programme of formal excavation was undertaken between 1967-72 in an area of lawn immediately to the south of the School House ahead of proposed extensions to the school buildings. Ironically, much of the proposed area of

building work was not eventually instigated and consequently the 1967-72 excavations disinterred the only non-threatened inhumations within the site.

In total some 451 graves and seven cremation burials were excavated, dated from AD 310 onward. The graves were carefully laid out with later graves rarely being dug through their predecessors, and with very few exceptions a fairly consistent west-east orientation was maintained. Burial appears to have progressed from west to east, eventually extending beyond a ditch and hedgeline that had defined the original eastern limit of the cemetery. The majority of burials were provided with coffins, and the cemetery was unusual in having a high proportion of graves containing grave goods. The excavations were particularly notable for the identification of two groups of burials interpreted as being intrusive among the native population on the basis of the provision and placing of grave goods buried with them. The first of these 'foreign' elements comprised 16 burials dating from AD 350-410 whose funerary rites were interpreted as originating from the Danube region, probably Hungary, and which Clarke interpreted as the graves of military or government officials (and their relations) sent to Britain in the aftermath of the unsuccessful rebellion of Magnentius (AD 350-3). The second group arrived later (AD 390-410) and were interpreted as representing the first arrival of Anglo-Saxons in the Winchester area. The identification of these intrusive groups has not been universally accepted (Baldwin 1985) and although recent isotope analysis of a sample of the skeletons has provided some support for the hypothesis, it has also suggested that the intrusive 'groups' may have been more diverse in terms of origin (Evans *et al.* 2006). The latest burials in the cemetery were characterised by shallower graves and a general sloppiness of excavation and positioning, interpreted as reflecting a breakdown in standards within the cemetery, before burial ceased abruptly at the start of the 5th century.

PROJECT BACKGROUND

The present project was occasioned by the decision by Hampshire County Council, the owners of the site, to rationalise the school facilities. This re-organisation was to comprise relocation of the school buildings to the north-western part of the site as a single large block with a separate dormitory block, while the south-east quarter of the site was to be sold for residential development. Prior to application for planning permission, Archaeological Site Investigations (ASI) was commissioned to carry out an archaeological impact assessment (ASI 1999), which identified the potential for archaeological remains associated with the northern cemetery of Venta Belgarum to extend into the southern part of the site. Oxford Archaeology was commissioned to carry out archaeological mitigation of this area in the form of two phases of excavation and associated watching briefs, starting in 2000. This main phase of the investigation was commissioned by ASI on behalf of Hampshire County Council and conducted according to a Project Design agreed with Hampshire County Council and based on a Design Brief prepared by ASI in conjunction with Hampshire County Council, English Heritage, Winchester City Council and Giles Clarke (OA 2000). In 2005, Laing Homes, who had by this time bought the south-eastern part of the site and begun redevelopment, commissioned a further small-scale watching brief during drainage works, including the excavation of a large soakaway.

Phases of investigation

The excavation was carried out in a series of discrete stages (Fig. 1.5). The initial phase of work took place during July and August 2000, prior to the demolition of the School House, and comprised the excavation of six areas around and to the north of the building, and a narrow area located between the southern edge of the 1967-1972 excavation and the southern boundary of the school grounds, on the Andover Road frontage. This investigation was partly evaluative in nature, intended to establish the extent of the cemetery and thus of the area requiring further detailed investigation. The absence of burials in Areas 4 and 5, to the north of the School House, and the distribution of graves in the areas to the south, demonstrated that the northern limit of the cemetery lay within the northern part of the footprint of the building, and consequently a second, main phase of excavation was undertaken in 2003-4 following its demolition. In the period between the initial investigation and the main phase of excavation, a watching brief was conducted on groundwork carried out during the redevelopment of the central part of the school grounds during 2002 and 2003, but no archaeological remains were identified in this area.

A further watching brief was maintained during the demolition of the School House during September and October 2003 and the removal of its footings, prior to the main phase of excavation, which was carried out between November 2003 and March 2004. This main excavation also incorporated Areas 2, 3, 6 and 7 of the 2000 excavation into a single large area measuring *c* 50 m east-west by 40 m north-south and encompassing a total area of 1513 sq m, and was contiguous on its southern side with the area of the 1967-72 excavations. Area 1, which was excavated during the first phase of excavation in 2000, bordered the southern side of the 1967-72 excavations and extended for 36 m along the site's Andover Road frontage (Fig. 1.6).

This trench had an area of 135 sq m. Subsequent to this, drainage works carried out in April 2005 resulted in a further small-scale watching brief being commissioned by Laing Homes (who had by this time purchased the site), during the excavation

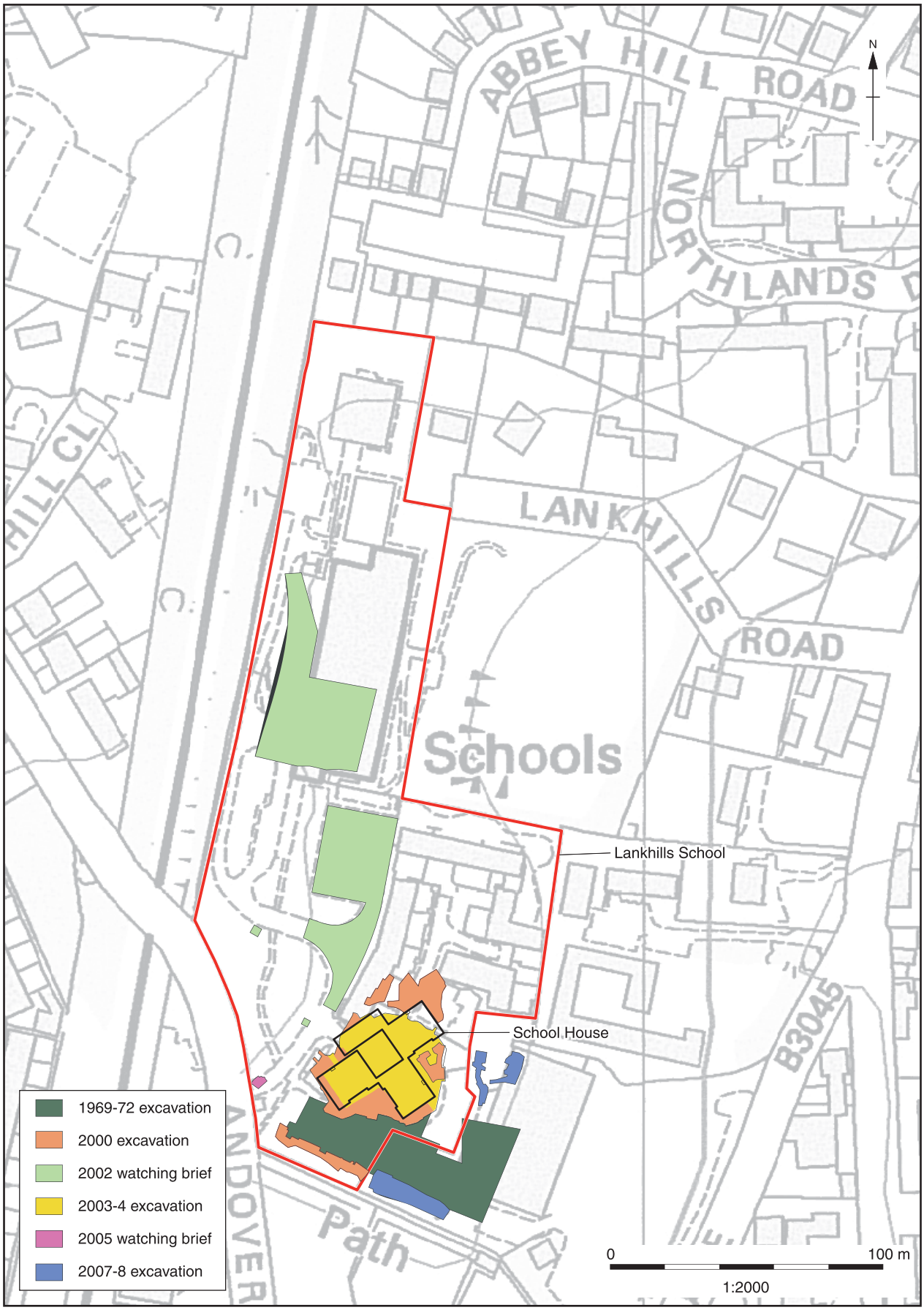


Fig. 1.5 Plan of Lankhills School showing the areas investigated

Fig. 1.6 Area 1 excavation in 2000

Fig. 1.7 Area of 2005 watching brief

Table 1.1: The excavation programme

Excavation phase	*Excavation areas*	*Dates of fieldwork*
1	Areas 1-7	27.7.00 - 31.8.00
Watching brief		4.3.02 - 11.10.03 (intermittent)
2	Main excavation area	27.10.03 - 19.3.04
Watching brief		5.4.05 - 8.4.05

of a soakaway. The watching brief comprised examination of a discrete area located 17 m west of the main excavation area, measuring 4.8 x 3.5 m (Fig. 1.7).

Subsequent to completion of the fieldwork a post-excavation assessment was undertaken (OA 2006), on the basis of which a research design and proposals for analysis work and final reporting were established. The principal issues to be considered in the course of the work are outlined below.

Excavation methodology

During each phase of the investigation the modern overburden was removed under close archaeological supervision using a mechanical excavator fitted with a toothless ditching bucket. The fill of a former pump room within the northern part of School House was also emptied using the machine. Apart from this, the fills of service trenches and other modern intrusions were removed by hand. The entire site was cleaned by hand in order to define archaeological features (Figs 1.8 and 1.9).

Recording of inhumations was carried out in accordance with the recommendations of IFA Technical Paper No. 13 (McKinley and Roberts 1993). Each burial was assigned a group number. Each individual burial component, including the grave cut, grave fill, skeleton, coffin, coffin fill and some deliberately deposited grave goods, was issued a unique context number from a continuous running sequence. Pottery vessels, deposits of hobnails, and other grave goods were also assigned unique small find numbers. During the 2000 phase skeletons and associated grave goods were planned by hand at a scale of 1:10; in the 2003-4 excavation and the 2005 watching brief they were recorded by means of geo-referenced photography, from which digital plans were generated using a CAD programme. In addition to the standard context records skeletons were recorded using *pro forma*

Fig. 1.8 The central part of the main excavation area after cleaning in November 2003. Service trenches and other intrusions associated with School House can be clearly seen

sheets on which the preservation and completeness of the skeleton, the presence of individual bones, and body position were noted. A black and white and colour slide photographic record was made of each burial. An osteologist examined each inhumation *in situ* to make a preliminary assessment of age and sex. Bulk samples of soil from the abdomen, chest and neck areas of each skeleton were retained for sieving in order to recover any calcified soft tissues, calcified masses (eg gall bladder and urinary stones) or foetal bones. Samples were also taken from around the hands and feet to ensure complete bone recovery, and from around the head area to recover any teeth that had come loose from their sockets.

All cremation burials were subjected to full recovery to maximise the retrieval of cremated bone, charred plant remains and small artefacts. Each individual context, including the cut of the cremation pit, the cremation urn, the cremation deposit, and the backfill was given a unique context number and recorded on a *pro forma* sheet. Where sufficiently well-preserved, the cremation urn was lifted intact with the cremation deposit *in situ* for laboratory excavation by an osteologist. Un-urned cremations were half-sectioned in order to record the distribution of archaeological components, followed by completion of the 100% excavation of the feature. All recording followed procedures detailed in the OAU Fieldwork Manual (Wilkinson 1992).

Preservation of archaeological remains

Archaeological features were found in the main excavation area and Area 1, and subsequently in the 2005 watching brief (see Fig. 2.1). No archaeological remains survived above the level of the chalk bedrock. The surface of the chalk was overlain by a variable depth of overburden that increased to the east to counteract the natural slope of the site and create the level terrace on which the School Building stood. A former soil layer (4) of clay silt 0.2 m thick was recorded across the eastern part of the excavation, overlain by levelling deposits composed of dumps of chalk and re-deposited topsoil (3). This made ground was up to 0.8 m thick at the eastern edge of the excavation (clearly visible in the section at the top of Fig. 1.9), but became progressively less thick to the west and eventually petered out toward

Fig. 1.9 The south-east corner of the main excavation area after cleaning, showing grave cuts and the linear features on the east side of the cemetery

the western edge of the footprint of the building. To the west of the School House the overburden comprised only a layer of topsoil (2) no more than 0.20 m thick.

In the main excavation area the chalk bedrock was penetrated by foundations and service trenches associated with the former School House, the depth of the intrusions varying across the site (Fig. 1.10). In the eastern part of the site the effect of these intrusions was minimal, as the raising of the ground level here to level the site had created a deeper buffer, but across much of the central and western areas footings and trenches were dug into the chalk substrate to a depth of 0.2-0.5 m. The most severe impact was located in the north-western part of the site, where basements associated with the north-west and south-west wings of the building had penetrated to a depth of up to 1 m, destroying all but the deepest graves in this area (Fig. 1.11). With the exception of these areas, however, the impacts of these modern intrusions were restricted to the lines of the foundation and service trenches, leaving most of the site unaffected.

AIMS OF THE REPORT

A series of aims and related questions to be addressed in the present report was identified in post-excavation assessment report (OA 2006) and set out under the following headings:

- The chronology of the cemetery
- The development of the cemetery
- Burial rites
- Artefacts
- The cemetery population
- The cemetery in its wider context

These issues, many of which are intimately linked, are not discussed in detail at this point, but many of them obviously related to questions raised initially by Giles Clarke's work as well as from subsequent thinking both about his conclusions and more recent work on Romano-British cemeteries. Key aspects of the interpretation of the cemetery established by Clarke that were targeted

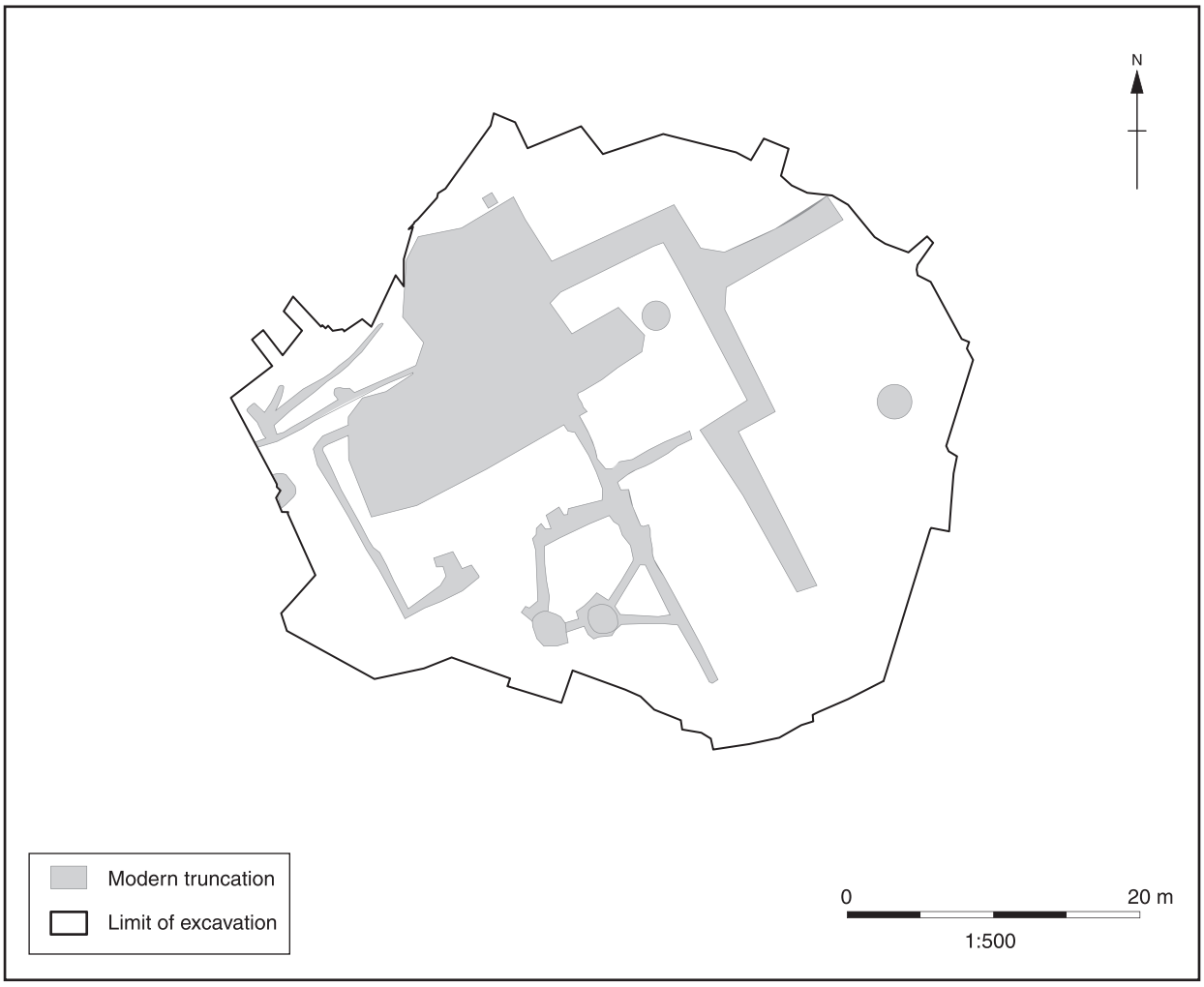


Fig. 1.10 Extent of modern disturbance in the main excavation area

Fig. 1.11 Overall view of site from the south after cleaning. Areas of deep disturbance relating to the former School House building can be seen in the top left

for reconsideration included the end date of use of the cemetery and the possibility of identifying normative and intrusive burial rites. An emphasis on the osteological material provided an opportunity to consider the cemetery population from a perspective not much considered in the earlier work on Lankhills and to integrate this evidence with that from the graves and associated finds to explore a range of aspects of urban life and social identities in late Roman Winchester. Among the many questions for consideration the issue of intrusive populations inevitably loomed large and in part lay behind the application of isotope analyses, but the questions of diet and origin that could be addressed by isotope work were considered highly desirable angles of research anyway. It is fair to say that, in relation to the high profile 'intrusive population' question, analysis started from a broadly sceptical position, but the existence and perceived importance of the question allowed consideration of a range of characteristics of the cemetery to an extent that might otherwise not have been possible.

Throughout this volume, specialist contributions are attributed to named individuals. The remaining, unattributed text is the work of one or both of the first two principal authors.

A note on nomenclature

The terms 'grave' and 'burial' are used more or less interchangeably in this report. When specific numbered graves are referenced, those from Giles Clarke's excavation appear in lower case (eg 'grave 106') while those from the OA excavation are in upper case (eg 'Grave 1846').

ARCHIVE

The finds, paper record and digital archive are to be deposited at Winchester City Museum under the accession code WINCM:AY21 for the main phases of work and WINCM:AY226 for the 2005 watching brief. Owing to increasing inaccessibility to microfilm services the basic digital archive will take the form of a pdfA scan of the hard copy records. These pdfA scans will be preserved on the OASouth archive server and a copy on disk will accompany the hard copy with the archive. Born digital data such as jpeg digital images and databases or geomatics data, which are not suitable for hard copy, will also be stored in this way. In time it is hoped that these digital archives will be made publicly available through the internet but in the interim anyone unable to access the hard copy or museum disk copy may approach OASouth for access.

Chapter 2:
The cemetery – layout and other characteristics

PREHISTORIC ACTIVITY

Evidence for pre-Roman activity on the site was uncovered in the form of a small assemblage of worked flint and prehistoric pottery. No features predating the Roman period were identified, and this material was recovered from the fills of features associated with the Roman cemetery and from the overburden. The majority of the flint assemblage was not chronologically diagnostic, but a small number of blades, bladelets and blade-like flakes that can be attributed to the Mesolithic or early Neolithic period on technological grounds were present. These pieces came exclusively from graves located along the southern edge of the main excavation area and from a single grave in Area 1, perhaps indicating a focus of activity to the south of the area of the investigation. A backed knife of probable early Bronze Age date was recovered from the layer of former topsoil (4) sealed by the landscaping associated with the construction of the School House.

The pottery assemblage mostly comprised small, frequently abraded individual sherds, scattered thinly across the site with no significant concentrations. The only rim sherd recovered was from a shouldered jar of a form typical of the later part of the middle Iron Age, and most of the remaining sherds are also likely to be of Iron Age date, although some of the more coarsely flint-tempered sherds might date from the middle or late Bronze Age.

THE CEMETERY

The excavation (Fig. 2.1) uncovered the northern end of the northern cemetery of Venta Belgarum, bounded to the north by an east-west ditch (1318) beyond which no graves were recorded. A boundary defined by a hedgeline and a gully, and later by a more substantial ditch, which may at some stage have defined the eastern edge of the cemetery, was also excavated, but had clearly gone out of use during the period of use of the cemetery, as many graves were dug into the fills of these features.

In all, 335 inhumation graves and 25 cremation burials were identified, of which 313 graves and all the cremation burials were excavated (Table 2.1). This total includes five instances in which a grave was re-opened for the insertion of a second burial and a burial (1725) placed in the base of the eastern boundary ditch, apparently without a grave cut (burial 2064 may have been another example of this). The graves that were left unexcavated were located along the eastern edge of the main excavation area and the southern edge of Area 1, and were left *in situ* as they extended beyond the limits of the excavation and consequently it would not have been possible to recover their full contents. The total number of graves excavated also includes the completion of the excavation of six graves (Graves 28, 141, 150, 178, 242, 313, Clarke graves 99, 228, 116, 265, 73 and 115 respectively) that had been partly

Table 2.1: Summary of Lankhills graves

	Clarke		*OA*		*WA*	*Combined total discounting overlaps*	
INHUMATION BURIALS	*Graves*	*Human remains*	*Graves*	*Human remains*	*Graves*	*Human remains*	*Graves*
Excavated with human remains	375		281*	284	51	51	701
Part excavated	33						33
(Largely) destroyed by later grave(s)	31		9		2		42
Fragmentary/no human remains recovered	5		23		3		31
TOTAL excavated graves	444	408?	313*	284	56	51	807
Unexcavated	*c* 24**		22		7		*c* 46
CREMATION BURIALS	7	7	25	25	-	-	32

* Includes 6 graves partly excavated by Clarke

** Includes 7 graves subsequently excavated by OA

? Based on Clarke 1979, 137, Table 9. Gowland's (2002) total of 488 individuals must include disarticulated and other material

excavated during the 1967-72 excavations. These varied from Graves 28 and 242, of which only the east end had been excavated, removing the lower parts of the legs from the knees down, to Grave 178, which had been almost completely excavated leaving only a single coffin nail *in situ*. In addition to this, five graves that had been completely excavated during the 1967-72 excavations were exposed within the main excavation area. Table 2.1 correlates the numbers of excavated graves with those for the 1967-72 excavations and the more recent work by Wessex Archaeology, in order to provide a consistent basis for subsequent comparative discussion. The status of part-excavated graves is problematic, however, in respect of their significance for scoring the presence or absence of particular attributes of burials. The grave catalogue is presented in Chapter 3 below.

Features defining the boundaries of the cemetery

Along the northern and eastern edges of the excavation were features that formed an east-west boundary and a north-south boundary, which may at some time have defined the limits of the cemetery (Fig. 2.2). Subsequent expansion of the area used for

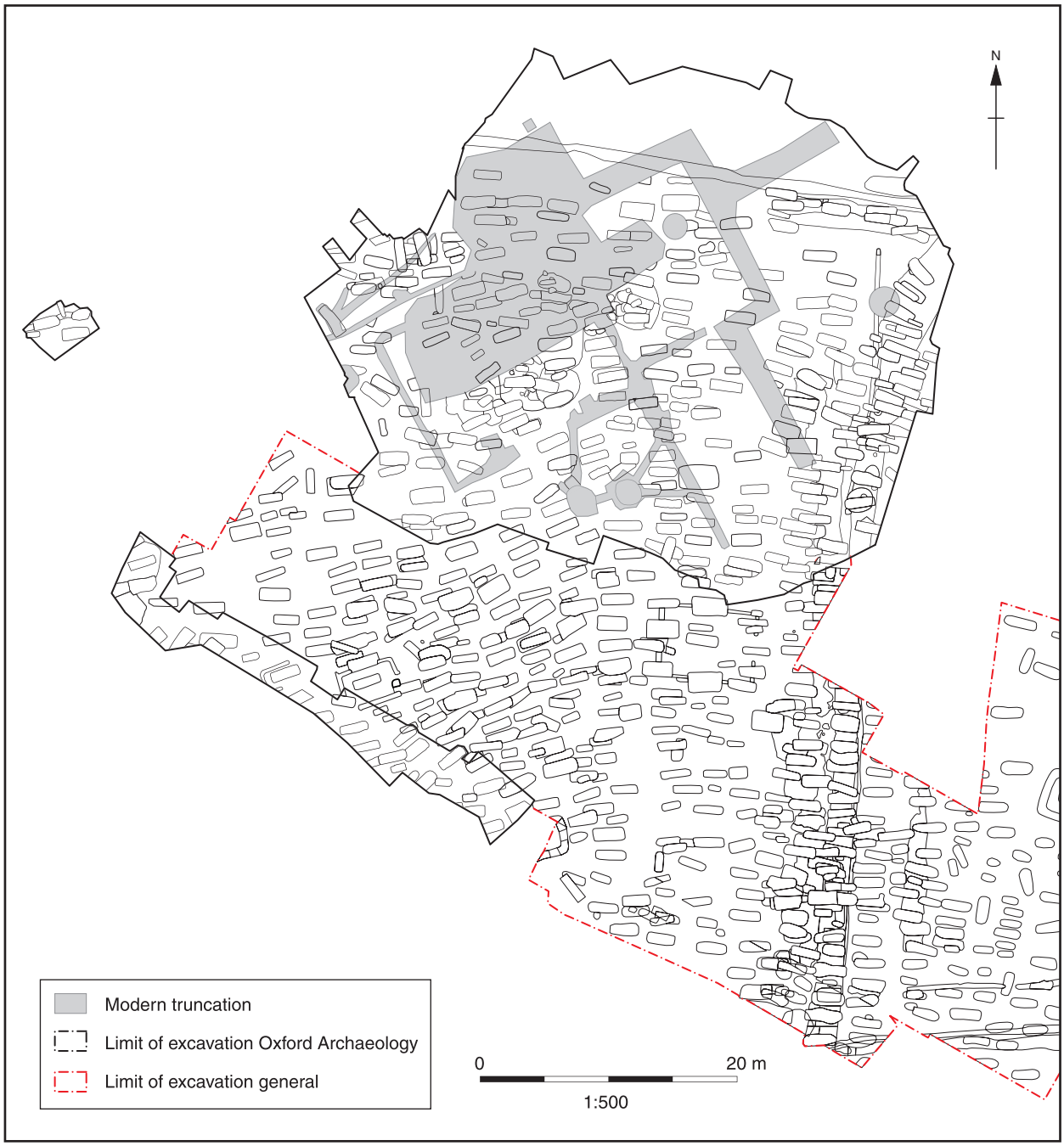


Fig. 2.1 Plan of all archaeological features

burial had resulted in a large number of graves being dug into and beyond the putative eastern boundary. No burials had been placed beyond the northern boundary, although a group of graves in the north-eastern part of the site had been dug into the backfills of the ditches defining this boundary.

The east-west boundary

The east-west boundary, which appeared to define the northern limit of the cemetery, comprised a single continuous ditch (1318) that extended unbroken across the entire length of the excavation area, although three further ditches (1352, 1420, 1430) that projected a short distance westward from the north-east corner of the excavation may also have represented phases of this boundary (Fig. 2.3). If this were the case, then much of the lengths of these ditches must have been destroyed by truncation associated with the construction of the School House.

Ditch 1318

Ditch 1318 extended east-west across the entire length of the excavation, continuing beyond the area exposed in both directions. A total of six interventions were excavated across the ditch, revealing

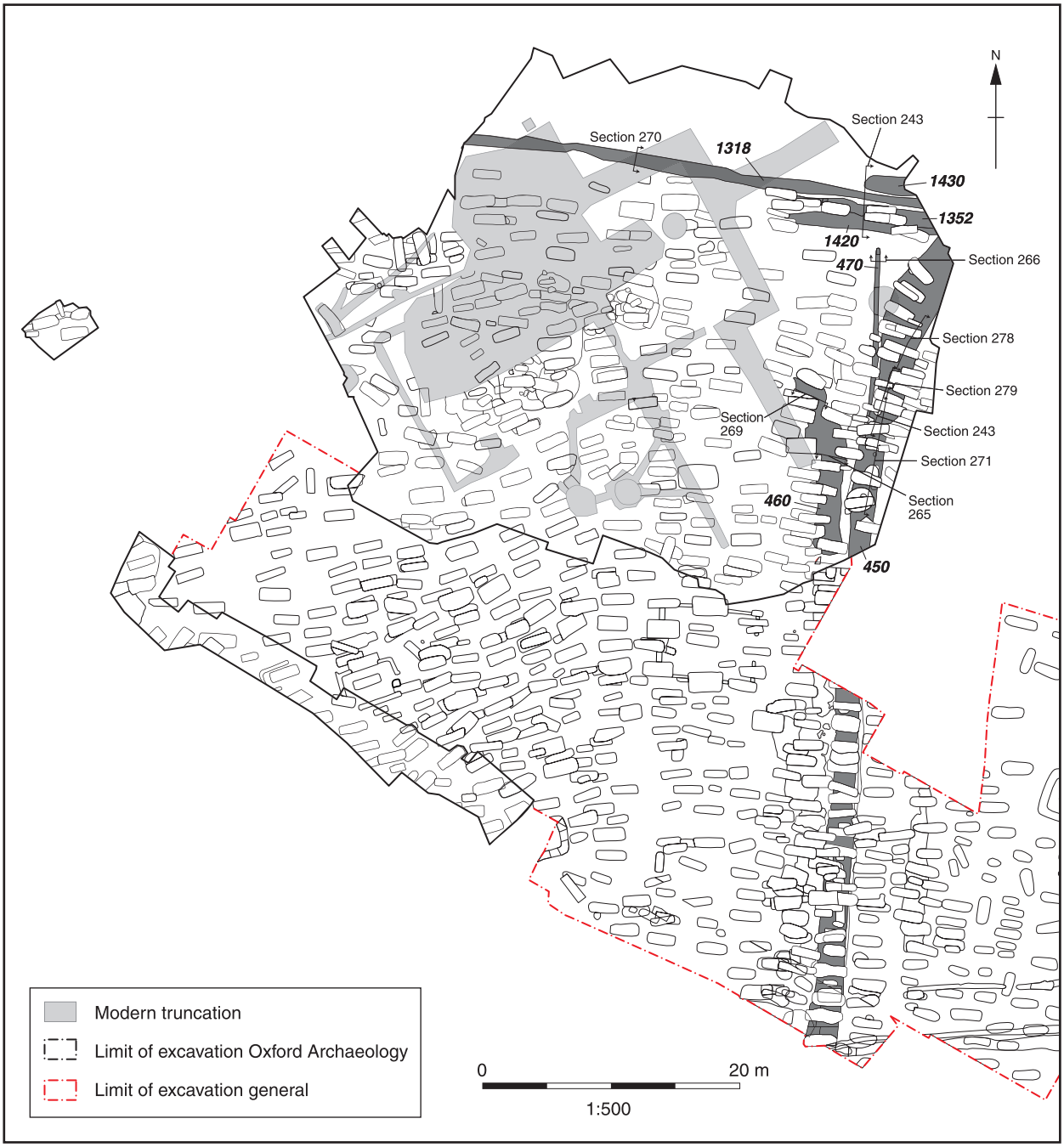
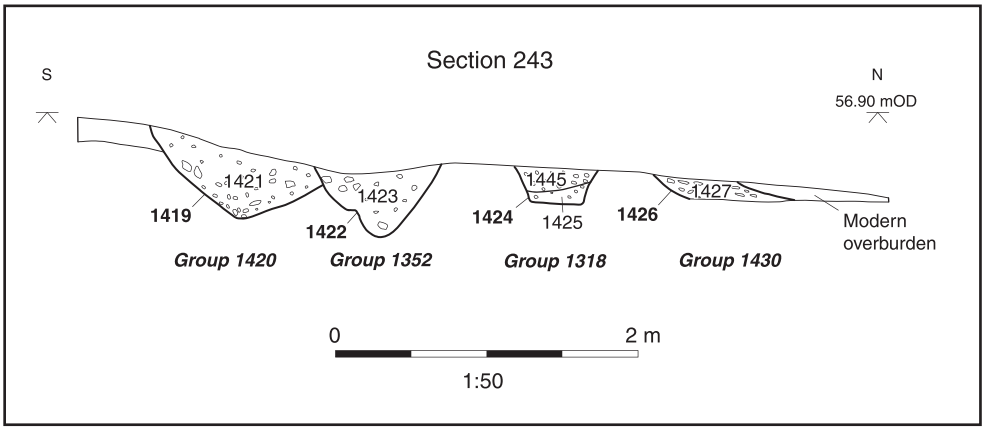


Fig. 2.2 Features defining the boundaries of the cemetery



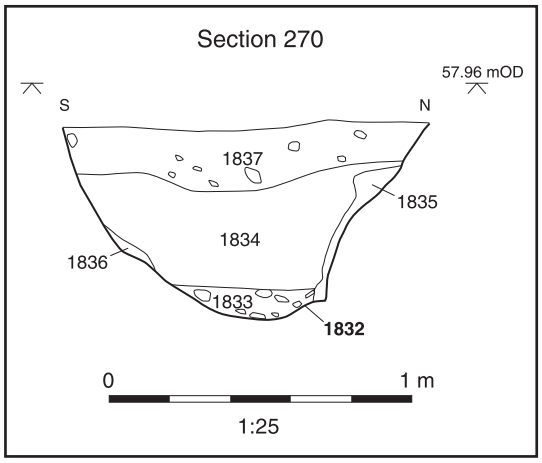


Fig. 2.3 (above) Section across the ditches defining the northern boundary of the cemetery

Fig. 2.4 (left) Section across the deepest surviving part of ditch 1318, the main ditch defining the northern boundary of the cemetery

Fig. 2.5 (below) North-south boundaries at the east edge of the site before excavation

a generally steep-sided profile with a narrow, flat base. The ditch measured up to 1.2 m wide and 0.65 m deep, although its dimensions varied slightly along its length as a consequence of differential truncation caused during the construction of the School House. A primary fill of brown silt (1425, 1833) had accumulated in the base, above which was a more substantial deposit of chalk and soil (1445, 1834). In the intervention in which the greatest depth of the feature survived (Fig. 2.4), this layer was 0.3 m thick and was overlain by a final silting deposit 0.2 m thick (1837).

Ditches 1352 and 1420

Ditches 1352 and 1420 lay on the south side of ditch 1318 and each extended a short distance into the area of the excavation from the east. Ditch 1420 was stratigraphically the earlier of the two and was also slightly the more substantial, measuring up to 1.48 m wide and 0.52 m deep. It had a very open profile, with gradually sloping sides and a concave base, and was filled with a single deposit of chalky soil (1421) likely to derive from the erosion of the ditch sides. The northern side of the ditch was cut by the southern edge of ditch 1352, which was steeper and more V-shaped in profile, with a depth of 0.45 m. It too contained a single fill resulting from natural silting processes (1423). Both ditches extended into the excavation for a distance of 10-12 m, but it is uncertain if they ended in deliberate terminals as their western ends were obscured by later graves. The depths of both features decreased progressively from east to west, most likely a consequence of truncation during the construction of the School House, and it is possible that they had extended much further in this direction prior to being thus affected. A greater concentration of graves had been dug into these infilled ditches than was present along most of the northern edge of the cemetery, perhaps suggesting that they were considered a desirable location for burial, and one of these graves (1300) had also impinged slightly on ditch 1318. The only artefact recovered from either ditch was a radiate coin dated AD 260-295 (SF 3028) found on the surface of ditch 1352 between Graves 1300 and 1302 during cleaning.

Ditch 1430

Ditch 1430 lay on a parallel alignment on the northern side of ditch 1318. It was slightly shallower than the other ditches, and wider in relation to its depth. It extended only 4 m into the area of the excavation, most likely because its shallower depth made it more susceptible to destruction by modern truncation. In one of the two interventions excavated across this feature an initial fill of compact chalk rubble (1448) was located against the northern side of the ditch; this may have eroded from an adjacent bank. The main fill was a mixture of chalk and soil (1427, 1434) similar in character to the fills of the other ditches defining this boundary. No artefacts were recovered from any of these fills.

The north-south boundary

The north-south boundary was defined by three elements, from west to east a hedgeline (460), a gully (470) and a ditch (450) (Fig. 2.5). Gully 470 was stratigraphically earlier than ditch 450. No direct stratigraphic relationship could be established between these features and hedgeline 460, as they did not intersect with it, but the results of the 1967-1972 excavations indicated that the hedgeline was earlier than ditch 450. It was uncertain whether the hedgeline and gully represented successive phases of the boundary, or were contemporary elements.

Hedgeline 460

Hedgeline 460 was the most westerly of the features defining the north-south boundary and was composed of an alignment of intersecting pits that extended for a total distance of *c* 58 m, curving slightly towards the north-west at the northern end. The individual pits were irregular in plan and varied in profile from concave to steep-sided (Fig. 2.6). They measured 1.1-1.5 m across and 0.44-0.76 m deep, and were each filled with a single deposit of dark reddish brown clay soil that contained lenses of chalk and many flint nodules. This material did not resemble the results of natural silting and is likely to have derived from deliberate backfilling. The similarity of these fills made it very difficult to establish any stratigraphic relationships between the pits, and it is possible that they were dug in a single episode, although their irregular forms make it clear that they were not intended to form a single continuous ditch. No artefactual material was recovered from any of the pits.

Gully 470

Gully 470 was located *c* 2 m east of hedgeline 460, and it is possible that this consistency in their alignment indicates that they were in use contemporaneously. The gully had a particularly straight alignment, perpendicular to the ditches defining the east-west boundary. At its northern end it ended in a definite terminal that appeared to respect the latter feature, lying 1.25 m distant from the nearest east-west boundary element (ditch 1420), perhaps indicating that there was an entrance at this corner of the cemetery. The gully was 0.50-0.66 m wide and had a steep-sided U-shaped profile up to 0.44 m deep (Fig. 2.7).

It contained two fills; a thin lower layer of loose, dark grey clay soil that contained a large proportion of pea grit (1775) overlain by the main fill of browner soil (1777). A cluster of flint nodules located at the northern terminal may have served as packing stones supporting a post at the end of the gully, but if so the post had been removed and the nodules disturbed, as they were not *in situ* at the time of excavation. Although the location and alignment of this feature suggest that it marked the boundary of the cemetery, the precise form of this

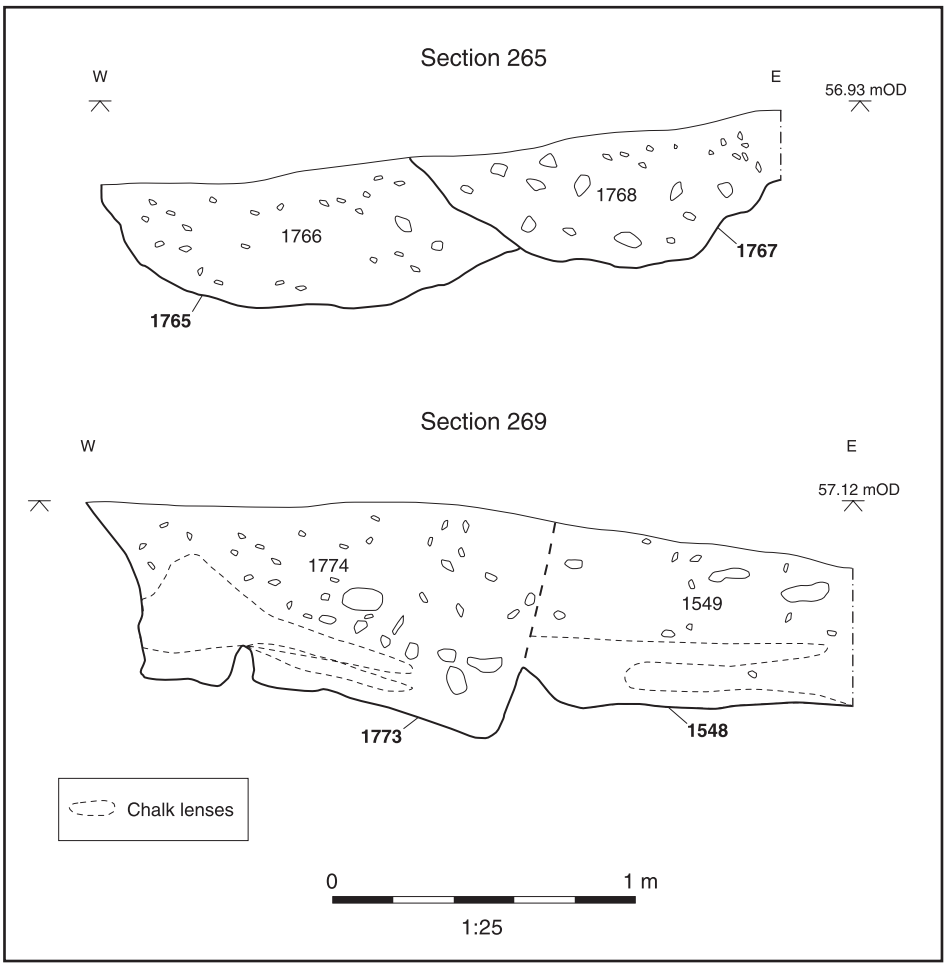


Fig. 2.6 Sections across hedgerow feature 460

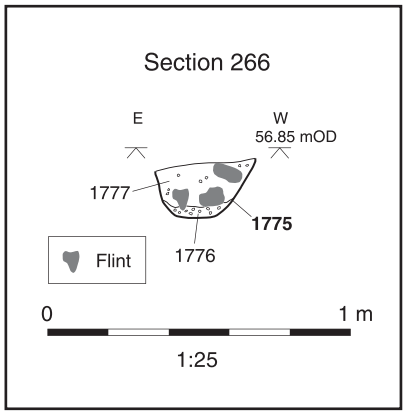


Fig. 2.7 Section across the northern terminus of gully 470

boundary was unclear. The absence of evidence for erosion of the sides indicated that it was not an open feature, so it is likely that it was either the bedding trench for a hedgeline (although, if so, one very different in character from the adjacent feature to the west) or the foundation trench for a small fence or palisade.

Ditch 450

In the southern part of the excavation, gully 470 had been completely dug away by ditch 450, which extended north-south along the eastern edge of the excavation. The northern end of this ditch curved away from the gully toward north-east, with the result that it did not meet with the ditches defining the east-west boundary within the area of the excavation.This intersection was presumably located some short distance beyond the north-eastern corner of the area investigated. To the south, the ditch extended into the area of Clarke's excavation, where it had been recorded as Feature F.12. The ditch (Figs 2.8-2.10) was 1.5-2.0 m wide and up to 0.6 m deep, with a slightly asymmetrical profile, the eastern side being relatively steep-sided compared to the western side, which had a more gentle gradient.

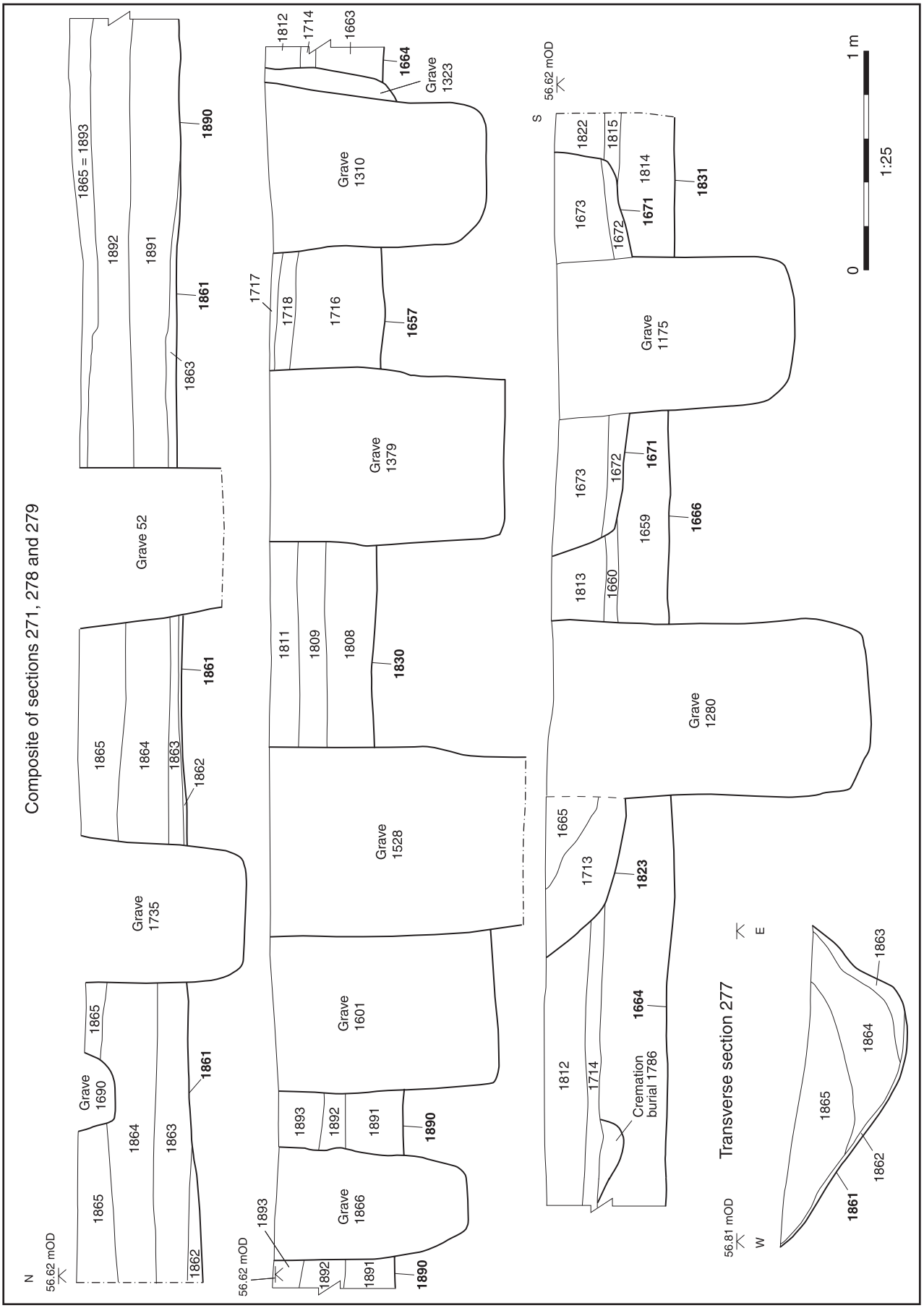


Fig. 2.8 Transverse and longitudinal sections across ditch 450

Fig. 2.9 Photograph of longitudinal section through ditch 450

Fig. 2.10 Photograph of ditch 450 looking north after removal of fill

The body of a neonate (1723) had been placed in the bottom of the ditch, apparently before the fills had started to accumulate, although it is not impossible that the remains were within a cut that was not recognised owing to truncation by later cremation burial 1724. The skeleton lay in a crouched position on the left side, with the head to the north resting on the left arm (Fig. 2.11). The lower part of the body had been removed by the digging of the pit for the cremation burial.

The earliest fill of the ditch comprised a thin deposit of dark, silty soil (1862, 1863) that is likely to have derived from the erosion of the contemporary topsoil at the edge of the ditch shortly after the feature was originally dug. The deposit was somewhat discontinuous along the length of the ditch, and was most easily observed in the transverse sections rather than at the base of the longitudinal ones. It was overlain by the main fill of the feature (1659=1663=1716=1808=1814=1864=1891), a deposit of chalk and soil 0.15-0.40 m thick that contained no artefactual material apart from a single small piece of animal bone. This layer was decidedly thicker on its eastern side, suggesting that it had accumulated from this side of the ditch, perhaps having slumped in from an adjacent bank. Two cremation burials (1724, 1786) had been inserted into this layer toward the southern end of the ditch. Both were of simple form, consisting of a shallow bowl-shaped pit into which the cremated remains had been placed, with no urn or other grave goods.

The ditch appears to have attained a stable profile by this point, as the main phase of silting, involving chalk eroded from the sides, now ceased and a tertiary fill of brownish grey sandy silt (1660=1714=1718=1815=1865=1892) began to accumulate, most likely resulting in the development of a turf-line. This layer undulated somewhat due to the variations in the thickness of the underlying fills, and increased in thickness from 0.05 m at the southern end of the excavation to 0.35 m north of Grave 1866. To the north of this grave its thickness was uncertain as it was exposed at the level of the surrounding chalk subsoil and may have been truncated during the construction of the School House. This was the earliest fill of the ditch to yield

Fig. 2.11 Neonatal skeleton 1723 (Group 1725) in base of ditch 450

any datable artefacts, containing 31 sherds (146 g) of pottery, mostly comprising New Forest ware dating from no earlier than *c* AD 270, as well as 31 fragments (146 g) of animal bone. A discrete cluster of sherds from the body and rim of a single jar (1785) was also recovered from the surface of this layer, between Graves 1280 and 1323.

In the central and southern parts of the ditch this layer was overlain by a deposit (1717=1811=1812=1813=1822=1893) containing a much higher proportion of chalk rubble, and presumably representing an episode of deliberate backfilling, perhaps with spoil created during the digging of graves immediately to the west. This uppermost fill of the ditch was subsequently cut by a large number of graves and pits.

The main phase of the cemetery

The layout of the cemetery

The inhumation burials of the main period of use of the cemetery were distributed across the entire area south of ditch 1318, although the density of graves varied. In the north-western part of the main excavation area this is likely to be partly due to truncation of burials within the footprint of the basement of the School House, which had destroyed all but the deepest graves. However, across most of the site the variation in the density of burials appeared to be a genuine representation of the original distribution. The densest concentrations were located in a complex of intercutting features in the central part of the main excavation area, and toward the eastern edge of the site, where there was a large concentration of graves dug into the backfilled ditch 450 and hedgeline 460. There was also a smaller concentration of burials to the north-west of the area affected by the basement of the School House. Conversely, the graves dug into the ditch and hedgeline were separated from the central area of the site by a zone *c* 6 m wide in which a much lower density of burials was evident, and the density of graves also tailed off significantly toward the northern limit of the cemetery. There were also smaller blank areas among the general distribution of graves, such as those south of Grave 690 and west of Grave 82 (see Figure 3.1 for a full display of the numbered graves).

The orientation of the graves showed a general shift from WSW-ENE in the western part of the site, most clearly demonstrated in the burials in Area 1, to a more strictly cardinal west-east alignment in the eastern part of the main excavation area. Burials close to ditch 1318, the northern edge of the cemetery, also tended to be aligned west-east. A group of graves dug into the northern end of ditch 450 were aligned NW-SE, and had clearly been laid out in relation to the line of the ditch, which curved toward the north-east at this point.

In contrast to the general consistency of the orientation of the graves, ten graves were aligned at a right angle to the other burials. The south-north orientation of two of these (Graves 665 and 1070) may be associated with their location within a complex of late burials in the central part of the site, where anomalous practices appear to have been more common.

Early pits and cremation burials

A cluster of pits and cremation burials in the central part of the excavation appeared to pre-date the main period of use of the cemetery. The precise date of these features was uncertain due to a paucity of artefactual evidence, but where stratigraphic relationships existed with graves that formed part of the main distribution of burials, the latter were invariably later, and most of these early features were sealed by a layer interpreted as being a possible turf-line (see below). A group of pits that was partly exposed at the western end of Area 1, and which similarly pre-dated the graves in this area, may be of similar date.

Activity in both areas appeared to have been initiated by the digging of large, shallow pits. The group of pits in the central part of the excavation extended for *c* 20 m from south-west to north-east, although its full extent could not be verified as the north-western part of the complex had been destroyed by the foundations of the School House. A number of graves and cremation burials had subsequently been dug through these pits, resulting in something of a palimpsest of intercutting features which was not easy to disentangle, particularly with regard to the pits as they had similar fills and in some instances had been substantially destroyed by the later burials. However, there appeared to have been a cluster of at least seven pits (1261, 1623, 1645, 1674, 1678, 1680, 2062), with an eighth (794) located a short distance to the north-east. They were consistently circular or sub-circular in shape and measured up to 4 m in diameter, but the deepest was only 0.35 m deep. They were characterised by generally gently sloping, concave sides and flat bases. (Fig. 2.12)

The earliest pits in this group were pits 1261 and 2062, which were both dug into virgin chalk and were among the largest of these features. Both pits had been partly cut away during the construction of the School House, as well as being affected by the digging of subsequent pits and burials, but their surviving parts indicated that they had diameters of more than 2.70 m and 3.95 m respectively. They were both filled with mixed deposits of chalk and soil which provided no clear indication of whether they were deliberately backfilled or had been left to silt up naturally. Two localised patches of charcoal-rich soil (1794, 1796) were recorded filling undulations in the upper surface of pit 2062. The uppermost fill (1266) of pit 1261 may have produced the only datable artefact recovered from any of the pits in the complex, a nummus of Maximian (SF 3379), dated AD 303-5. However, the findspot was

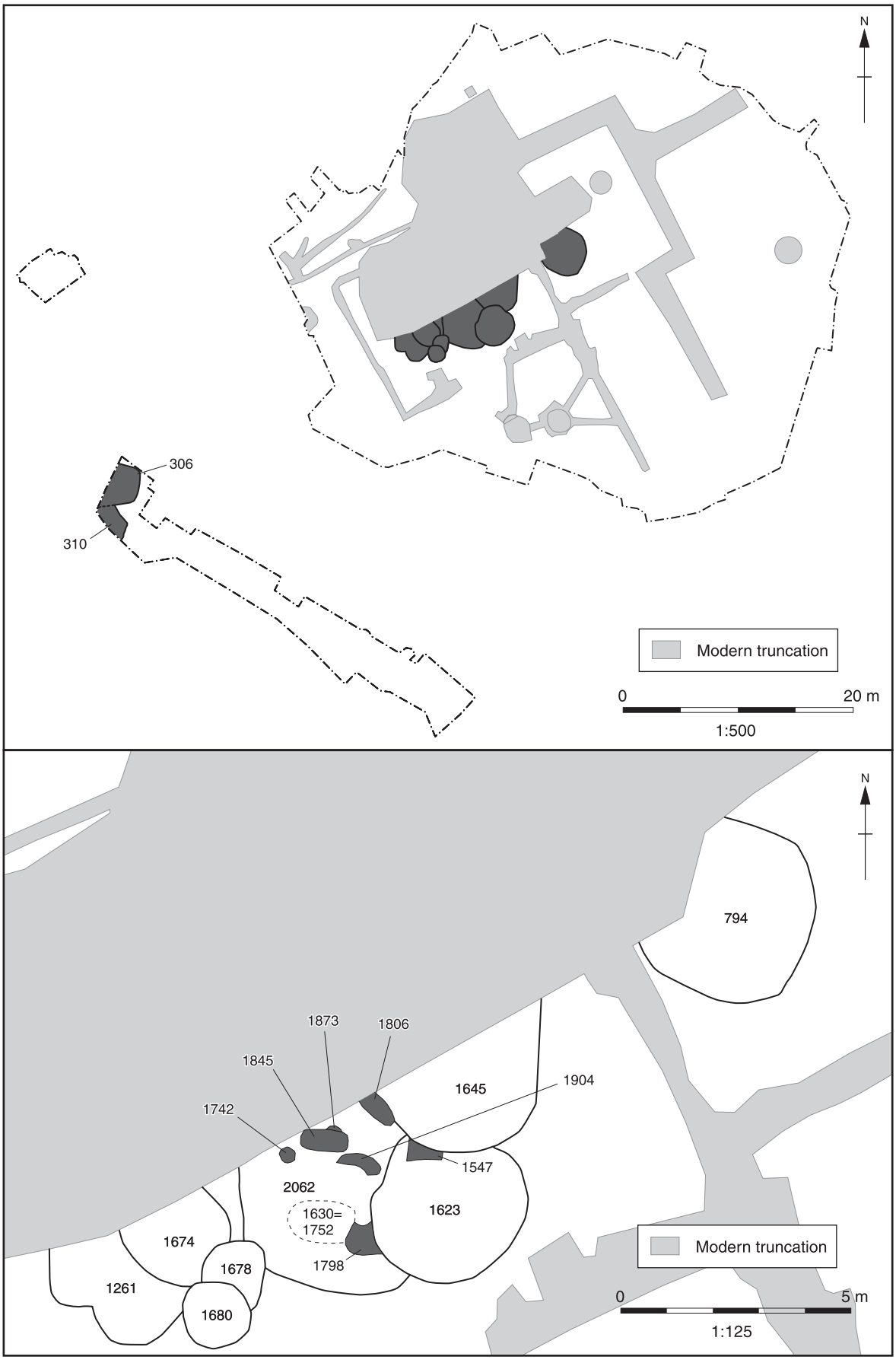


Fig. 2.12 Plan showing early group of pits and cremation burials in the central part of the site

in close proximity to inhumation Grave 1329, which was dug through the pit, and it is not certain whether the coin came from the grave or the pit.

The subsequent pits in the sequence were dug on the north-eastern side of pit 2062 and between pits 1261 and 2062. A sequence of three pits (1674, 1678, 1680) had been dug between pits 1261 and 2062. The earliest and largest of these was pit 1674, which measured 2.25 m in diameter and was dug into the eastern side of pit 1261. It was in turn cut by pit 1678, which also intersected with the western side of pit 2062, and pit 1680. Pits 1678 and 1680 were significantly smaller than the earlier features, with diameters of only 1.2 m and 1.4 m respectively, although they were filled with similar deposits of chalk and soil.

Pit 2062 was cut by a number of features that did not all intersect, so it is consequently difficult to establish the sequence in which they were dug. The most southerly of these features was cremation burial 1798, a large but shallow feature measuring at least 1 m across but only 0.12 m deep. It was filled with a single deposit of cremation debris that included the remains of an adult of undetermined sex, and it was cut by pits 1623 and 1630=1752. The latter was a relatively small pit, *c* 1.60 m in diameter and largely destroyed by subsequent burials. The northern part of the pit had been dug through by cremation burial 1904, which comprised the remains of an older adolescent or adult of undetermined sex, interred in an oval or sub-circular pit (1748). The southern side of the feature had been destroyed by the later inhumation graves that had also affected pit 1630, but the dimensions of the surviving part indicated that 1748 measured at least 1 m east-west and was 0.24 m deep. The cremated remains were distributed throughout the three fills of the pit, which comprised a thin primary layer of black silt (1751), overlain by layers of light orange (1750) and dark brown (1749) gravelly silt. A radiocarbon determination obtained for cremated bone from fill 1749 indicated a date range of AD 84-254 or 308-312 at 95% (NZA 30116; see also Chapter 6).

Much of the eastern side of pit 2062 had been dug away by pit 1623, a substantial feature similar to pits 1261 and 2062 that measured 3.5 m in diameter and 0.35 m deep. The primary fill of this pit comprised a deposit of chalk located around the edge of the feature (1624), with subsequent fills consisting of a mixture of chalk and silty soil (1625-7). The pit was cut by inhumation Grave 1622, which also cut cremation burial 1904 and which contained the burial of an adult female aged 26-35 years, accompanied by a New Forest ware jar dated AD 300-350. A layer of chalk pieces and silty soil 0.13 m thick (1696) was observed overlying grave 1622 in section (Fig. 2.13), but was of limited extent, as it was not recorded elsewhere.

Layer 1696 may have originated as the mound of soil over the grave, or may have been spoil created by the upcast from the repeated digging of features in this area. Inhumation Grave 1547 and cremation burial 1527 had also been dug into the backfill of pit 1623. Grave 1547 was only 1.28 m long, and so is likely to have contained the burial of a child, but no skeletal material was preserved. The burial had been accompanied by an iron knife and a coin of Constantine dated AD 330-1, and a horse skull had been placed in the backfill. The surviving part of cremation burial 1527 was unusually square in plan and was very shallow, with a depth of only 0.05 m. It contained the remains of an adult of undetermined sex, and the northern side had been destroyed by the digging of another large pit (1645). Approximately half of this pit had been destroyed by the construction of the School House. It measured *c* 4 m in diameter and 0.35 m deep, the lower 0.15 m being filled with two layers of chalk

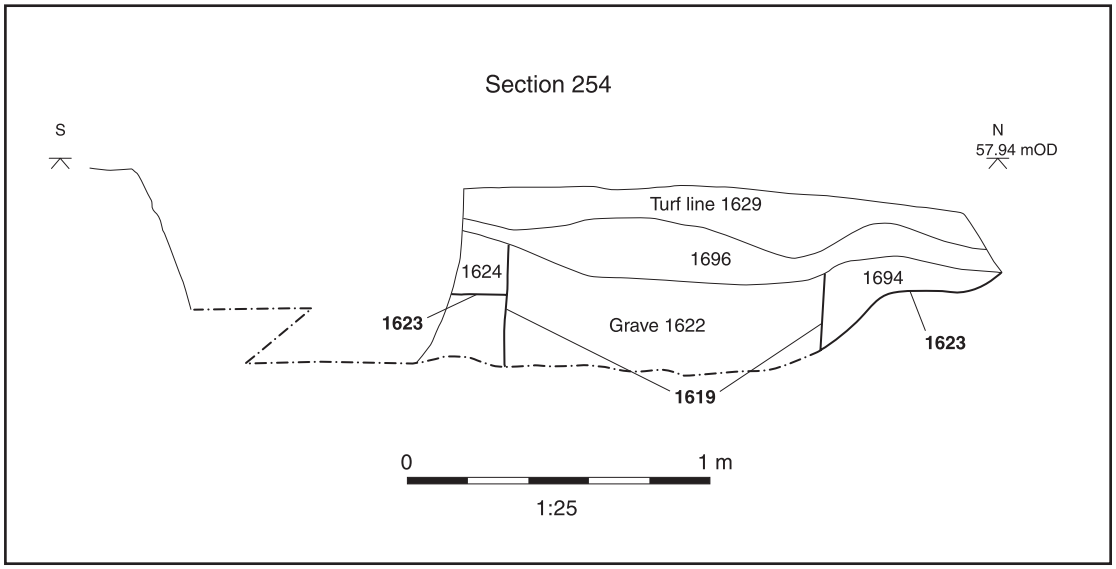


Fig. 2.13 Section through possible mound associated with Grave 1622

and soil (1647, 1648) and the upper part with two layers of silty soil (1652, 1653). The western side of pit 1645 was cut by pit 1898, which was substantially smaller, measuring 1.25 m in diameter and 0.40 m deep and was filled by two deposits of mixed chalk and soil (1646, 1649=1651), the upper of which was cut by posthole 1899. The latter measured 0.26 m in diameter and 0.18 m deep, and contained a single fill of dark brown silt from which no finds were recovered.

Pit 2062 was also cut by a small pit (1873) that measured 0.4 m in diameter and 0.2 m deep. No evidence was uncovered to elucidate the function of this feature, which was filled with a single deposit of brown silty soil from which no finds were recovered. Its southern side had been destroyed by the insertion of cremation burial 1845. This feature comprised a sub-rectangular pit oriented east-west, measuring 1.0 x 0.4 m and 0.3 m deep. The base of the pit was filled with a deposit of charcoal and burnt soil 0.1 m thick (1843), including the cremated remains of a child aged *c* 2 years, and the remainder of the pit had subsequently been backfilled with silty soil (1844). Also dug into the backfilled pit 2062 were two further cremation burials (1742, 1806). Burial 1742 was a shallow circular feature containing the cremated remains of an adult female, and burial 1806 was an oval or grave-shaped burial lying on an unusual NW-SE orientation, the north-western end of which had been destroyed by the foundations of the School House. Burial 1806 may have intersected slightly with pit 1645, but not sufficiently to enable a stratigraphic relationship to be established.

These features were all sealed by thin soil layers with a combined thickness of *c* 0.15 m, that were initially interpreted as representing the formation of a turf-line (1629, 1654, 1655; Fig. 2.14), although micromorphological analysis has indicated that this interpretation is unlikely (MacPhail, Chapter 6). It is more probable that these layers were formed from spoil created during the repeated digging of features in this area. Layer 1629, which was recorded in the vicinity of pit 2062, and layer 1654, which overlay the eastern part of pit 1645, were both composed of light brown chalky silt, whereas layer 1655, which overlay pit 1898 and part of pit 1645, was a deposit of dark brown silt with few inclusions, and this heterogenous composition may reflect the differing substrates into which features had been dug, whether native chalk or the fills of previous features.

Cremation burial 1180, which was located in the same part of the excavation (see Fig. 3.1), may also have formed part of this group of early features, but this could not be demonstrated stratigraphically as it was situated beyond the limit of the soil layers that sealed the other early features. It did, however, contain a belt set and pot that were both of 4th-century date.

Another large pit (794) was located *c* 2.5 m north-east of the main complex of such features. It measured 4.0 m in diameter and was by far the deepest of these features, with a depth of 0.75 m. Like most of these pits it had been truncated by the foundations of the School House, which had destroyed part of its north-western side, and had been particularly disturbed by burials, a dense concentration of which had been dug through it.

Two large pits (306, 310) were exposed at the western end of Area 1, and it is possible that they were part of a more extensive cluster that continued beyond the area of the excavation. The shape and full extent of these pits could not be established as both extended beyond the western edge of the site, but pit 306, the larger of the two, measured at least 4.35 m across. It contained two fills, the lower being a mixture of chalk and silt (302) overlain by a layer

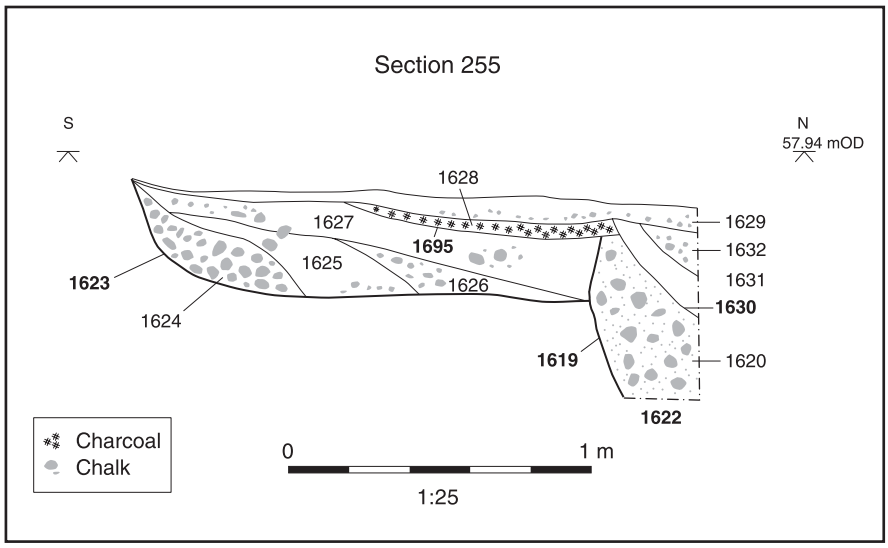


Fig. 2.14 Section across Grave 1622 (cut 1619) and pit 1623, showing pyre debris deposit 1628 and possible turf line 1629

of brown silt with only few inclusions. Pit 310 was only seen in plan, but appears to have possessed two similar fills, both of which were exposed on the surface. Although the two pits are likely to have intersected, the stratigraphic relationship between them had been destroyed by the subsequent digging of Graves 263 and 307.

The late complex of intercutting burials in the central part of the excavation (Figs 2.15 and 2.16)

An unusually dense concentration of intercutting cremation and inhumation burials was located in the central part of the main excavation area. The chronology of these burials may have spanned much of the 4th century; although the inception of this group cannot be dated with precision, the early burials include cremation burials interred in urns broadly dated to the 4th century. The length of this sequence is such that it suggests that burial in this area continued for a considerable length of time, possibly later than the rest of the cemetery. They may therefore be chronologically distinct from the group of early cremation burials (see above), despite being located only a short distance from them. Most of these burials were dug into a large, backfilled pit (794) that was similar in form to the pits predating the earliest burials at the site, and may have been of similarly early date, although this pit stood slightly apart from the main complex of such features and so could have been dug at a later date.

The sequence of burials may have started with a cluster of cremation burials at the south-western edge of the group, although they had no direct stratigraphic relationship with the earliest inhumation graves. The first cremation burial in the sequence was burial 1255, an urned cremation burial containing the remains of an adult of undetermined sex. The remains had been buried in a New Forest grey ware jar (1186) dated to AD 270-400, placed in a small pit. The survival of the cinerary urn intact was remarkably fortuitous, since the northern and western sides of the pit had been destroyed by later features and the eastern side by the foundations of the School House, and the pit itself survived to a depth of only 0.16 m. On its western side the burial was cut by a shallow pit (1182) measuring *c* 0.9 m in diameter. This was filled with a single deposit of silty soil with fragments of chalk (1183), from which no finds were recovered.

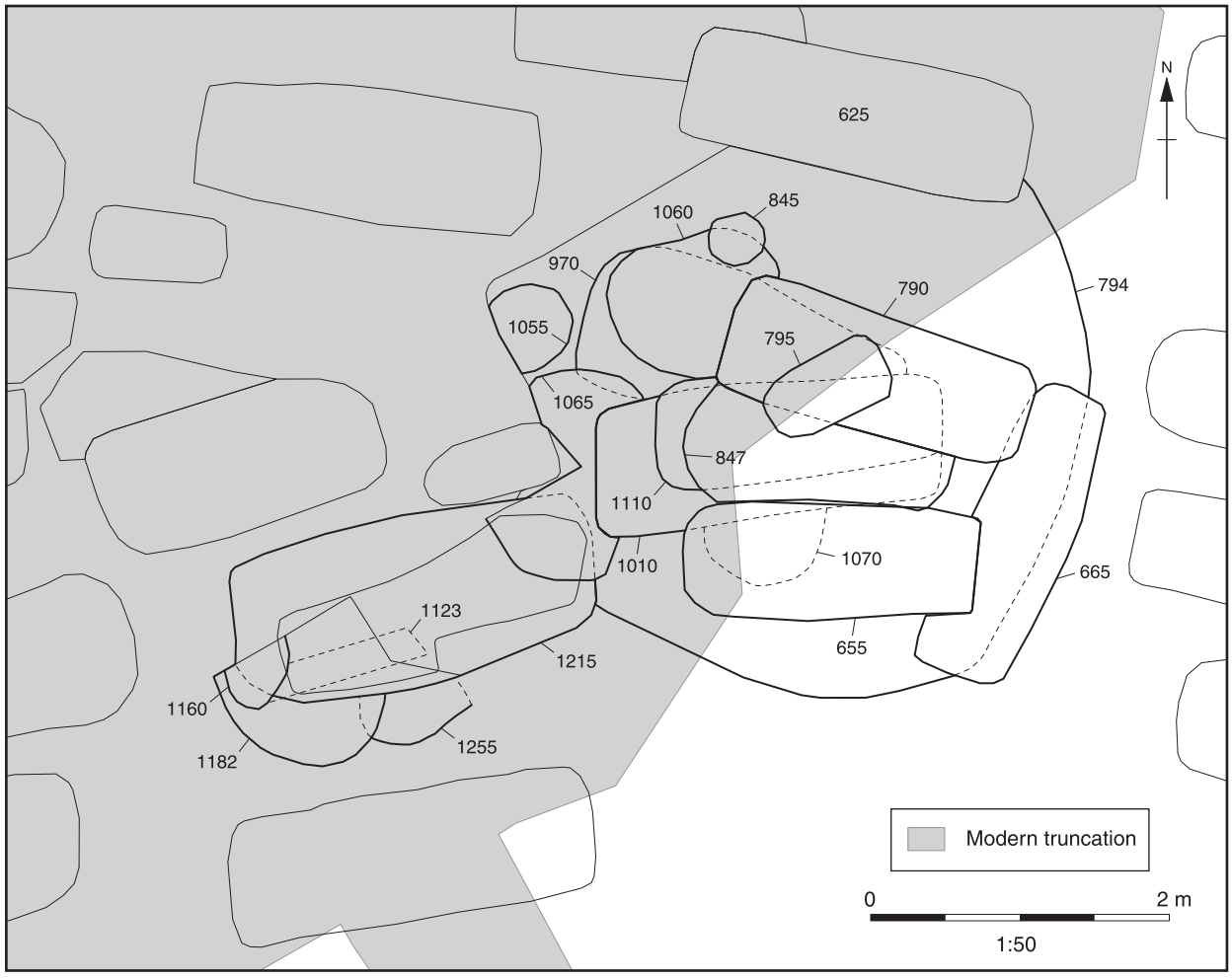


Fig. 2.15 Plan of the late complex of intercutting graves in the central part of the excavation

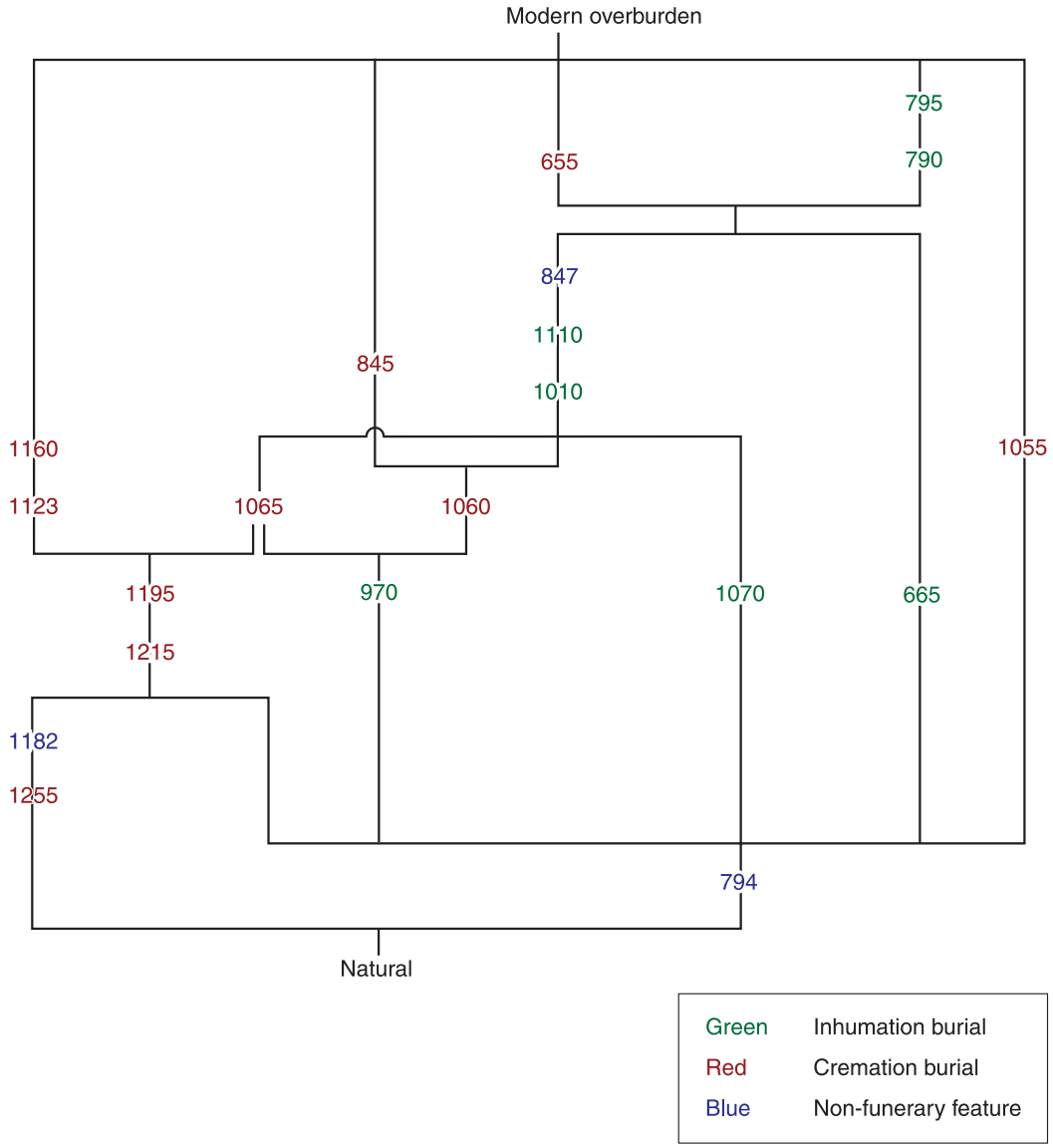


Fig. 2.16 Matrix for the late complex of intercutting graves in the central part of the excavation

The purpose of the pit was uncertain, but its location within a sequence of burials is likely to indicate that it had some role in funerary or commemorative practices, possibly as a receptacle for libations. The north sides of both the pit and cremation burial 1255 were truncated by cremation burial 1215. This was a large, rectangular feature containing a probable *bustum* burial (ie a pyre site with an underlying pit which functioned as a grave. Typically the pyre burnt down into the pit, in which the human remains are buried *in situ*. The term is used without qualification hereafter, but see further discussion in Chapter 7) of an adult ?male, and measured 2.44 m x 1.14 m and 1.2 m deep. Its eastern end was dug into the south-western edge of pit 794. The burial was aligned WSW-ENE, an orientation that it shared with a number of surrounding inhumation graves, most obviously Grave 1140 immediately to the west, and Graves 1000, 1090, 1105 and perhaps also Grave 1135 to the south. Burial 1215 and the latter group appeared to form a distinct row, and as such burial 1215 conforms spatially with the distribution of burials forming the main period of use of the cemetery. A coin dated AD 350-364 was recovered from the backfill of Grave 1000. A second *bustum* burial, grave 1195, had subsequently been inserted directly into the backfilled grave pit of burial 1215. This had clearly been done deliberately, as the pit containing the second burial was dug entirely within the confines of that containing burial 1215, shared the same alignment, and had been dug to a shallower depth of only 0.68 m, so as not to disturb the earlier burial. A nummus of Valens (AD 364-378), which was burnt on one side and had presumably been placed on the pyre, was found within the cremation deposit at the base of the burial. At its western end, burial 1195 was cut by a short linear gully (1123).

The western end of the gully intersected with an unurned cremation burial (1160), and the eastern end had been destroyed by the foundations of the School House. The gully measured *c* 1.0 x 0.22 m and 0.17 m deep, and was filled with a deposit of dark, charcoal-rich soil. Unfortunately no soil sample was taken from this deposit during the excavation. Cremation burial 1160 appeared to cut the gully, although the fills of the two features were very similar, and the feature had itself been partly dug away by the foundations of the School House. The eastern end of burial 1195 was cut by cremation burial (1065), which cut its eastern end and provided a stratigraphic link with the sequence of burials dug into the central part of pit 794.

The earliest burials in this sequence are likely to have been inhumation Graves 970 and 1070, and possibly Grave 655. Graves 970 and 1070 were located within the densest concentration of burials, at the centre of this complex, and both lay on rather anomalous orientations compared to those of the majority of the burials in the cemetery. Grave 970 was oriented ESE-WNW and Grave 1070 south-north, and they are almost certain to have intersected, but it was not possible to determine which was the earlier as they had both been largely cut away by subsequent burials. The individuals buried in both graves had been placed in a prone position. The only dating evidence for these burials came from Grave 1070. Only the upper part of the body survived, but this was sufficient to demonstrate that the individual, a child aged between four and seven years, had been buried with a silver finger ring worn on the second finger of the left hand and two bracelets on the left arm, one of copper alloy and one of shale (see Fig. 2.29 below). The setting for the ring was missing, but where they survive in other rings of this sort from southern Britain, they are of a type that appears to be a development of the 3rd century, and the copper alloy bracelet is of a type that was most common during the 4th century (Cool, Chapter 4). Grave 665 was located on the south-eastern periphery of this complex of burials. As with Graves 970 and 1070, it contained a prone burial and lay on an unusual orientation. In this instance the grave was oriented SSW-NNE, perhaps because it had been deliberately aligned with the edge of this side of pit 794. Because of its peripheral location it had few stratigraphic relationships with the other burials, and so its position within the sequence of burials is uncertain, beyond being demonstrably earlier than Graves 655 and 790, but its obvious similarities with Graves 970 and 1070 may indicate that it occurred similarly early in the sequence. It is, however, also possible that this grave was placed at the edge of the complex because the central part of the area was already densely packed with graves.

This group of burials was linked stratigraphically with the group of cremation burials immediately to the south-east by cremation burial 1065, which cut both Grave 970 and cremation burial 1195. Burial 1065 comprised a shallow, concave pit measuring 1.44 x 0.89 m and only 0.14 m deep, filled with a single homogenous deposit of dark, charcoal-rich soil that contained 47.3 g of cremated bone from an adult of undetermined sex. A very similar feature, cremation burial 1060, was located immediately north-east of 1065, and similarly cut Grave 970. The proximity and similarity of these two features may indicate that they were contemporary, or at least not far separated in time.

Cremation burial 1065 was cut by the western end of Grave 1010, and it is possible that cremation burial 1060 was also cut by this feature, although if so any evidence for the relationship had been destroyed by the digging of subsequent graves. Grave 1010 was the first of a sequence of burials oriented approximately west-east that were dug into the centre of this complex of features. It was by far the deepest burial in this area, at 1.40 m deep, and had caused much destruction to the earlier burials, particularly Graves 970 and 1070. The individual interred within it, a ?male aged over 45 years, was associated with two coins, a barbarous radiate and a nummus of Constantius II dated to AD 352-354. The upper part of the backfill of this grave was composed of dark brown sandy soil quite distinct from the lighter material filling the lower part of the feature, and was interpreted as evidence that the grave had been re-opened for the insertion of a second burial (1110), although no material evidence survived for this burial in the form of a skeleton, grave goods or coffin remains. The putative re-opening of the grave only penetrated to a depth of 0.68 m, 0.72 m above the base of the original grave pit.

A substantial pit (847) had been dug into the eastern half of Graves 1010 and 1110. Much of the pit had in turn been destroyed by later burials, but the form and dimensions of the surviving part suggested that it was roughly circular, with a diameter of *c* 1.8 m. It was steep-sided with a flattish base, and was only 0.37 m deep and so not deep enough to disturb the burials in the earlier graves. The fills of this pit appeared to have built up from the east, the earliest being a deposit of light brown silty soil (856) at the eastern edge of the feature, above which lay a thin layer of charcoal (857) that tipped downward to the west at a rather steep angle. This layer contained a little over 100 g of cremated bone, which may have been disturbed from earlier cremation burials within this complex, or may be an indication that pyre debris was lying loosely around the site. The majority of the pit was filled with a deposit of chalk rubble (854) and two layers of silty soil (853 and 848).

The northern and southern sides of pit 847 had been destroyed by the digging of a pair of subsequent burials (655, 790). Both lay on approximate west-east alignments, although they were not parallel. The more southerly of these two features was burial 655, a *bustum* burial, the eastern end of which also cut Grave 665. A horse skull had been

placed on the cremation deposit at the base of the grave pit prior to backfilling. The base of a large grog-tempered ware jar dated *c* AD 300-400 was inverted over the nose, and a colour-coated ware jug dating from AD 340-400 placed beside them. The northern side of pit 847 was cut by Grave 790, an inhumation burial that contained the remains of a mature adult male. He was accompanied by a coin dated to AD 383-388 recovered from a soil sample taken from the region of the abdomen. This burial was in turn cut by the rather smaller Grave 795, which lay obliquely across it on a NE-SW orientation. No evidence for a skeleton or coffin was identified in Grave 795, the dimensions of which would have been appropriate for the burial of a child.

Two further cremation burials appeared to be associated with this complex of features. Cremation burial 1055 was also dug into the backfill of pit 794, but did not intersect with any of the other burials in this complex and so its position relative to the sequence of burials could not be confirmed. Its cinerary urn was, however, broadly datable to the 4th century, and so it forms part of this complex of late Roman burials rather than the group of less well-dated cremations identified a short distance to the south-west. Cremation burial 845 was quite similar. It cut cremation burial 1060, but had no other stratigraphic relationships, and the cremated remains were placed in a cinerary urn dated to *c* AD 300-400.

The northern edge of pit 794 was cut by Grave 625, although it is uncertain whether this burial was associated with the sequence of graves dug into the central part of the pit or whether this relationship is purely fortuitous. The grave, which also cut Grave 1270, shared the same alignment as many of the surrounding graves and therefore presumably formed part of the main period of use of the cemetery.

Late burials in the north-western part of the excavation

In the north-western part of the excavation was located a concentration of graves which included burials that may represent a very late phase in the use of the cemetery. Graves 1373 and 1440 stood out from the general distribution of burials by virtue of being aligned north-south, at right angles to the predominant orientation. They had also been dug through Graves 1334, 1515 and 1555 and were stratigraphically the latest features in this area of the site. The individuals buried in these graves had both been provided with a glass vessel and a pottery vessel, placed on either side of the head, and a group of coins dating from no earlier than AD 388. Grave 1760, a west-east burial located immediately to the east of these graves, contained a coin of similarly late date, and it is possible that two other north-south aligned graves (1545 and 1635) should also be considered to be part of this group, although they produced no datable artefacts.

The graves

Inhumation burials

The remains of 284 individuals were recovered from 281 inhumation graves (see Table 2.1), excluding redeposited bones (charnel) occurring in the backfill of graves. The total includes three graves that contained two individuals. In each of these cases an adult female was buried with a young child (two of them neonates), presumably representing a mother and child. One further neonate (1725) was recorded as lying on the base of ditch 450, with no identifiable grave cut, and burial 2064, of an infant, may have been similarly placed. The cemetery population comprised 64 definite and 29 possible adult males, 66 definite and 24 possible adult females, 69 subadults (including one sexed as possible male, two as female and two as possible female) and 32 adults that could not be sexed due to inadequate preservation. A total of 24 excavated graves contained no surviving bone.

The grave pit

Grave pits were generally rectangular or sub-rectangular in shape, with vertical sides and a flat base. A few graves had more rounded ends, the most extreme example of which was Grave 3029 which had an almost oval pit. With the exception of four very large graves that had been dug with stepped profiles, the pits were dug to a size to accommodate the body and coffin. Graves containing adults varied in length from 1.8 m to 2.9 m, and in width from 0.4 m to 1.45 m, although most were between 0.6 and 1.1 m wide. Establishing the original depth of graves was more problematic because of the loss of an unknown depth of soil and bedrock due to truncation. This was particularly so within the footprint of the basemented part of the School House, where the depths of the graves had been substantially reduced and only the lower parts of the deepest graves survived. Where not thus affected, the surviving depths measured from the surface of the chalk bedrock varied greatly, up to a maximum of 1.80 m deep. The shallowest grave (1080) survived to a depth of only 0.09 m, but was nevertheless deep enough to contain the relatively well-preserved skeleton of a male aged 45+ (1232), with a coin placed in his mouth (Fig. 2.17). The majority of the graves were between 0.60 m and 1.20 m deep, with an average of 0.92 m, although the latter figure was slightly inflated by a small number of very deep graves measuring more than 1.50 m deep. Both the range of depths and the average depth were identical for the graves of males and females, and males and females were represented equally in the ten graves measuring more than 1.50 m deep.

The graves of children were generally smaller than those of adults, reflecting the size of the body to be accommodated. As might be expected the graves increased in size with the age, and therefore the size, of the individual, although for individuals

Fig. 2.17 Grave 1080

Fig. 2.18 Stepped Grave 82

from the age of about twelve years graves not much smaller than those of adults were provided, albeit dug to a shallower depth. Even the smallest children, including neonates, were provided with graves measuring at least 0.80 m long. The average depth of the graves of children was 0.60 m, and this figure remained remarkably consistent throughout the age groups, albeit with the occasional exception such as the anomalously deep grave measuring 1.30 m in depth that was provided for a 2 year old (Grave 277). The dimensions of this grave (it was 1.80 m long) suggest, however, that it was originally dug for an adult.

Fourteen graves (63, 760, 820, 865, 900, 1040, 1085, 1323, 1395, 1521, 1535, 1781, 1942, 1946) had been substantially destroyed by the digging of later graves or modern disturbance, leaving too little surviving for meaningful measurements to be established. These graves have been excluded from the foregoing discussion.

Stepped graves

Four very large graves (82, 635, 1349, 1907) had been dug with stepped profiles, with a ledge part way down the grave pit across which planks could be placed to create an enclosed lower chamber (Figs 2.18-20).

These stepped graves were distributed randomly throughout the main area of the excavation, Grave 82 being near the south-western corner, Grave 635 near the ditch defining the northern limit of the cemetery, and Graves 1349 and 1907 in the south-eastern part of the site. All four burials were aligned west-east. Grave 1349 was dug partly into the in-filled hedgerow 460 and truncated the south-eastern corner of Grave 1351, and also intersected with Grave 620 although the sequence could not be established as the features only intercut slightly. The other three stepped graves were dug into areas of previously undisturbed ground and were not intersected by any subsequent burials. The dimensions of the grave pits at the surface varied from 2.30 x 1.18 m to 3.10 x 1.90 m, and their depths ranged from 1.10 m to 1.80 m. Only in Grave 635 was the step present on all four sides of the grave, the other graves having steps only along the long sides. The steps in Graves 82 and 635 were located 0.40 m below the surface of the chalk, while those in

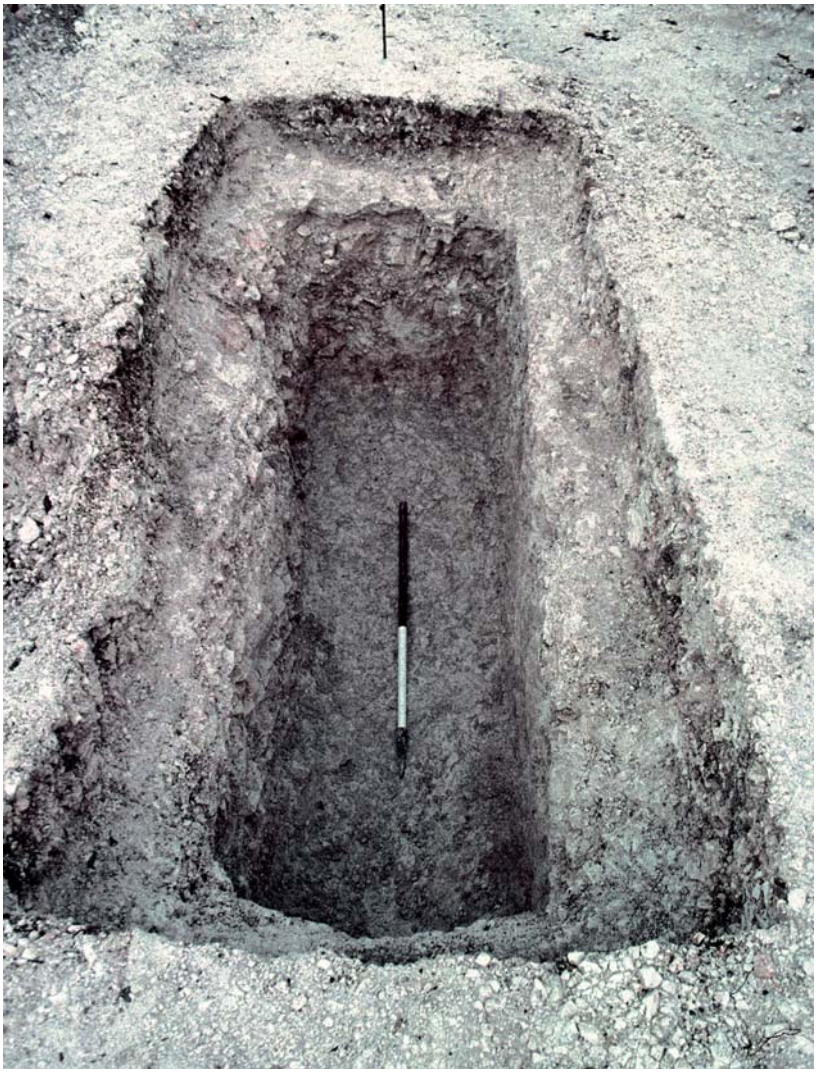


Fig. 2.19 Stepped Grave 635

Fig. 2.20 Stepped Grave 1349

Graves 1349 and 1907 were 0.60 m and 0.70 m deep respectively. They were generally 0.15-0.25 m wide, although those in Grave 1907 were considerably wider at 0.40 m.

Evidence for timbers supported on the steps was recorded in Graves 82, 635 and 1907. In Grave 1907 this took the form of areas of brown silt (1583-5) on the surface of the steps, and in Grave 635 a similar deposit (634) extended across the grave at the level of the step. Nine nails (SF 239-44, 272, 319-20) were recorded at the level of the step in Grave 82 and are likely to have secured planks placed across it.

Each stepped grave contained the individual burial of an adult, those in Graves 82, 1349 and 1907 all being female and the burial in Grave 635 male. Each burial was laid in a supine posture in a coffin fixed with iron nails. Coffin 85, in Grave 82, was unusual in being represented by an assemblage of 30 nails, whereas the other coffins were more typical of coffins from the cemetery in being constructed with between 10 and 18 nails.

All four burials in stepped graves were furnished with grave goods. Grave 82 contained two pottery unguentaria (147, 148) probably imported from northern Tunisia, located between the coffin and the edge of the grave pit beside the left foot (Fig. 2.21), and a bone pin (SF 579) was also recovered from the foot end of this grave. Grave 1349 likewise contained a vessel (1256) located beside the left foot, although this time placed inside the coffin along with a group of hobnails (SF 3347) likely to be the remains of an item of footwear. Footwear represented by hobnails was also placed in Grave 1907, where it was the only grave good, and in Grave 635, which contained two separate items of footwear, located outside the coffin beside the left foot (1565) and at the foot of the grave (1566), as well as a coin of AD 326 (SF 1558) that had probably been placed in the mouth.

Fig. 2.21 Pottery vessels 147 and 148 in situ in the backfill of Grave 82

Multiple burials

Although the normal burial rite was for individual burial, one possible and two certain instances were recorded of graves containing the remains of an adult female and an infant. Grave 620 contained an adult female (562) buried with the remains of a neonate (574) placed on a pair of hobnailed shoes at her feet, within the coffin. A New Forest colour-coated ware flagon had been placed at the head of the grave, outside the coffin. In Grave 1351, a female aged 36-45 years (1341), also buried in a coffin, lay on her left side, wearing hobnailed shoes and with a beaker with barbotine decoration placed beside her skull. An infant (1287) aged about 3 years had been placed against the north edge of the grave, lying on its left side with the head to the east. Although the child lay outside the woman's coffin and some 0.40 m above the base of the grave pit, it is likely that both bodies were buried at the same time, as it was not possible to identify a second grave cut associated with the interment of the child. Such a cut, which would have been *c* 0.40 m deep, should have been clearly visible if present.

A third possible example was represented by Grave 87, which comprised the body of an adult female of uncertain age (157), wearing a bronze bracelet and accompanied by a New Forest colour-coated ware jug, with the remains of a neonate (289) near her head. However, the child was represented only by the left humerus and a distal femur, and it is possible that these bones were incorporated into the backfill of the grave incidentally, rather than being a deliberate burial accompanying the adult.

Re-opened graves

Five graves (summarised in Table 2.2) were identified in which a second burial had been dug directly into the backfill of the first, the relationship being too exact to be fortuitous. These appeared to represent the deliberate re-opening of the grave for the insertion of a secondary burial some time after the initial burial had been interred. All of the individuals for which evidence was preserved, both primary and secondary burials, were adults, although in two secondary burials (800, 1110) no skeletal material survived. In four instances the secondary burial had been placed above the initial burial, but in one case the original burial had been disturbed. In the latter grave (530/535), the primary burial was of a probable male aged at least 45 years (434) buried in a coffin in a grave of standard shape and size, and 0.95 m deep, with at least one hobnailed shoe placed beside the right leg. At some time after this individual had decomposed sufficiently for the bone to be no longer held together by

Table 2.2: Re-opened graves

Grave number	*Primary burial*	*Secondary burial*
210/263	Male, 36-45 years (281)	?Female, 60+ years (212)
530/535	Male, 45+ years (434)	Female, 45+ years (435)
1090/850	Female, 26-35 years (879)	Female, 60+ years (806)
995/990	Male, 45+ years (939)	Male, 36-45 years (938)
1790/2066	Male, 60+ years (1852)	Female, 26-35 years (1793)

Fig. 2.22 The lower left leg of male skeleton 434 (Grave 535) lies in situ while other parts of the skeleton have been moved to make way for female skeleton 435 (Grave 530)

connective tissue, the grave was re-opened and most of the bones pushed to the southern edge of the grave to allow the body of a female of similar age (435) to be placed, without a coffin, on the base of the original grave. Only the lower part of the left leg of burial 434 and the nails defining the northern side of the coffin were left *in situ* (Fig. 2.22).

In none of the four graves where the secondary burial had been placed above the original burial was it likely that the two bodies had been interred in a single event. In two instances the cut created by the re-excavation of the grave for the insertion of the later burial could be clearly identified. The pit dug for the secondary burial in Grave 850/1090 was smaller than and located entirely within the original grave pit, but in Grave 210/263 the pit for secondary burial 210 was slightly wider than the original grave, and consequently its southern edge had been dug partly into the chalk bedrock (Fig. 2.23).

Although no such cut was identified for the secondary burials in Graves 990/995 or 1790, this is likely to be because the grave diggers used the edge of the original grave pit as a guide when digging the pit for the secondary burial. The depth at which the secondary burials were placed above the original burials varied from 0.30 m (Grave 1790) to 0.77 m (Grave 1010/1110). In none of these burials is it likely that the secondary burial was placed directly on the coffin of the earlier burial, as in such a

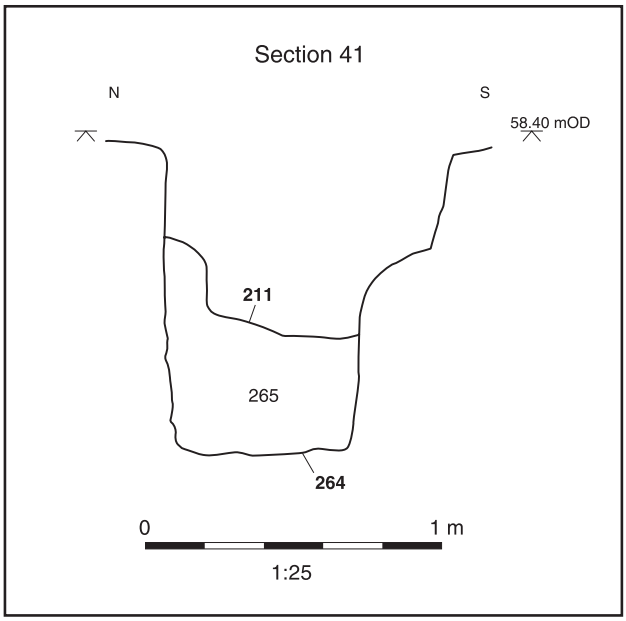


Fig. 2.23 Section across Graves 210 (cut 211) and 263 (cut 264)

circumstance the eventual collapse of the coffin would have caused the upper body to slump into the void thus created.

In all five graves the original interment was buried in a coffin, but only one secondary burial (in

Grave 990) had a coffin. The only evidence for grave goods buried with these individuals comprised hobnailed shoes found with two primary burials and two secondary burials. In the primary burial in Grave 995 (939) the shoes were worn, and 1852 in Grave 1790 had footwear placed beside the feet, while the secondary burial in Grave 210 was shod and that in Grave 990 provided with shoes placed beside the skull. All but one of the primary burials were male (the fifth was female), but the secondary burials were a more varied group, comprising one male and three definite and one probable females. All were buried in supine, extended postures, except for the male individual in Grave 995, a primary burial placed in a prone position. The secondary burial in this case was also of a male.

A possible sixth example was represented by Grave 1010, into which had been dug a possible second burial (1110), although the latter was not associated with any skeletal remains and it is possible that this feature was not in fact a grave.

Funerary enclosure 153

Grave 28, the burial of an adult male (32), was partly enclosed within a shallow, rectilinear gully (153) (Fig. 2.24). Although the grave pit was slightly off-centre in relation to the gully, the alignment and spatial association of the two are sufficiently close to indicate that they were deliberate, and that the gully was intended to enclose the burial. The gully was 0.27 m wide but only 0.05 m deep, and encircled the north-western and south-western sides and part of the north-eastern side of the grave. It is likely that the other sides of the feature had been cut away by the levelling associated with the construction of the School House, which also explains the shallowness of the surviving parts of the feature. The gully was filled with a single deposit of chalky soil (154) that contained no finds.

A gully (3021) recorded in the 2005 watching brief area may have formed one side of a second such enclosure, although only part of the feature was exposed within the confines of the area investigated. It is uncertain which grave the feature might have enclosed, although it is more than likely that the burial lay outside the area exposed in the watching brief. The gully shared the same WSW-ENE orientation as the graves in this area and extended for at least 3.8 m, beyond the limits of the area investigated. It was 0.38 m wide and 0.19 m

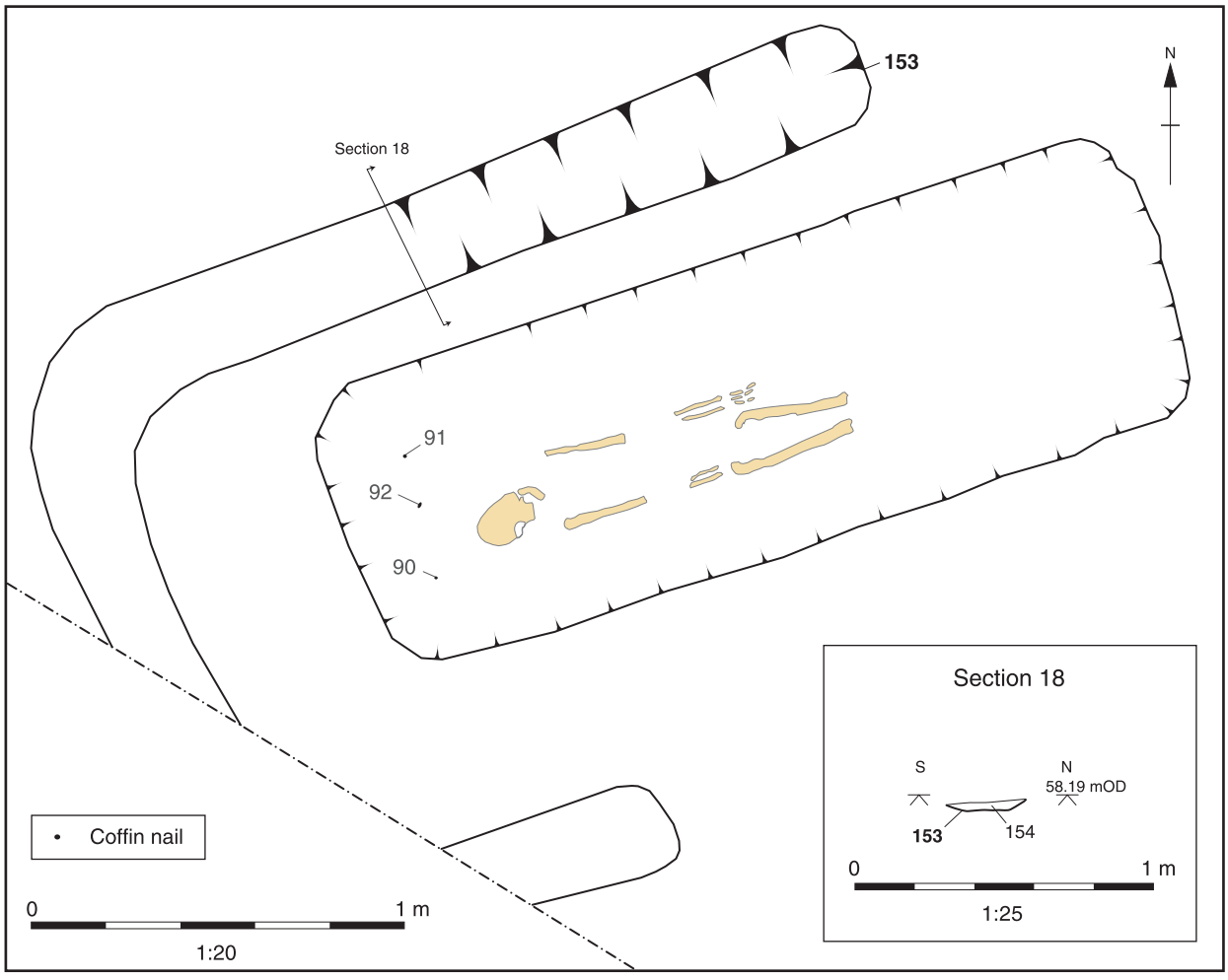


Fig. 2.24 Plan and section of funerary enclosure 153

deep and contained a single fill of chalk and soil (3022) from which no finds were recovered. Graves 3026 and 3029 were subsequently dug through the backfilled gully, on the same alignment.

Posture

The majority of the individuals for which evidence survived were buried in an extended, supine posture. This was the case for 185 of the 196 adult burials where the skeleton was sufficiently preserved to allow the posture to be established. The positions of the legs could be established for 173 burials, and were overwhelmingly dominated by those with legs extended, which comprised 165 individuals. Seven individuals had been buried with the legs crossed at the ankle, and one with the legs bent. The adult burials that were not supine comprised seven individuals buried in a prone position, three on the left side, and one on the right side. Three of the four adults lying on their side were each also unusual in some other aspect of their burial. Skeleton 1517, the only adult lying in a crouched position on his right side (in Grave 1515), had been decapitated; Grave 1335, in which skeleton 1258 lay on his left side, had packing stones around the coffin, and in Grave 1351 skeleton 1341, the remains of a female aged 36-45 years, was buried with an infant who lay in a similar posture.

The positions of the arms were surprisingly varied (Table 2.3). They were most frequently either extended beside the body, semi-flexed with the hands resting on the pelvis, or flexed and lying across the waist, although a few individuals had one arm tightly flexed, with the hand resting on the chest or opposite shoulder. Only 53 of the 115 individuals for which the positions of both arms could be established were arranged symmetrically, the most common of these arrangements being with both arms semi-flexed (29 individuals).

The postures of the sub-adult burials were more difficult to establish as their bones were less robust and so survived less well. Of the 48 sub-adults for

Fig. 2.25 Prone burial in Grave 1350

Fig. 2.26 Prone burial in Grave 665

which posture was recorded, the majority (41) were again placed in the grave in a supine position. Five sub-adults, all aged less than three years, lay in a crouched position on the left side, and a single sub-adult, aged 13-17 years, lay on his/her right side. A single sub-adult, perhaps aged *c* 4-7 years, had been buried in a prone position in Grave 1070 (see below).

Table 2.3: Positions of arms in supine adult burials (n=146)

	Left arm				
Right arm	*Along side*	*Semi-flexed*	*Flexed*	*Tightly flexed*	*Unknown*
Along side	15	13	6	-	4
Semi-flexed	26	29	1	1	7
Flexed	5	3	10	3	7
Tightly flexed	-	4	2	-	4
Unknown	-	4	-	1	41

Prone burials

A total of eight prone burials were excavated (Graves 665, 735, 905, 970, 995, 1070, 1345, 1350), distributed throughout the main excavation area (Figs 2.25-30). All of the prone burials were buried in individual graves, no different from those of the supine burials that made up the majority of the cemetery population, and generally lying on the same west-east alignment. The only exceptions to this orientation were burials in Graves 970 and 1345, the grave pits of which were on the same alignment but the bodies placed the other way round, that is east-west, and those in Graves 665 and 1070, which were aligned south-north. The latter two burials, as well as Grave 970, lay within the complex of intercutting features in the central part of the site, and it is possible that this unusual location influenced their orientation. The grave pits themselves were very consistent in size, measuring 2.0-2.25 m long and 0.70-1.0 m wide, although the depths were more variable, ranging

Fig. 2.27 Prone burial in Grave 905

Fig. 2.28 Prone burial in Grave 995

Fig. 2.29 Prone burial in Grave 1070

from 0.31-0.90 m. Burial 995 was slightly larger, measuring 2.60 x 1.34 m and 0.95 m deep, but it is possible that these measurements were distorted slightly by the additional presence of Grave 990, which was dug into the upper part of this grave. The individuals buried in prone postures were a single young child in Grave 1070 and seven adults. Four of the adults were female, all categorised as prime adults (26-35 years) or mature adults (36-45 years), and three males, the latter comprising a mature adult and two older adults (45+ years).

The postures of the bodies that had been buried prone were somewhat varied, although all lay extended with legs straight. Those in Graves 665, 905, 995 and 1350 were placed with their arms semi-flexed and the hands beneath the pelvis, although the hands of the body in Grave 1350 were beneath the left side of the pelvis (Fig. 2.25) whereas the hands of the others were positioned more centrally (Figs 2.26-2.28). Skeleton 686, in Grave 735, and skeleton 1277, in Grave 1345, were both buried with their hands behind their backs and to the left. The most unusual posture was that of the young child in Grave 1070, the left arm of which lay flexed to the left of the skull, while the right arm did not survive (Fig. 2.29). The latter was also the only prone burial accompanied by grave goods other than the hobnailed shoes worn by the skeletons in Graves 665, 905, 970, 939 and 1350. The individual wore two bracelets, one of shale (SF 2728) and one of bronze (SF 2729) on the left forearm and a silver ring (SF 2730) on the second finger of the corresponding hand. The posture of the body in Grave 970 was uncertain as the upper part of the body had been dug through by later burials. Burials 970, 995 and 1345 had been placed in coffins. The coffins in the first two graves were constructed using 14 and 13 nails respectively and appear to have been identical in form to the coffins in which supine burials were placed, and although Grave 1345 had been truncated by modern service trenches, leaving only six coffin nails *in situ*, there was no evidence to indicate that this was not also a typical coffin.

Decapitated burials

This central part of the site was also the location of one of the five burials of individuals who had been decapitated. Grave 1329 was located at the south-western end of the complex, where it was one of the group of burials that were dug through the layer 1629. It contained the burial (1289) of an adult male, buried in a coffin in an extended, supine position with the head placed between the feet, facing the eastern end of the grave (Fig. 2.31).

The adult female (1084) buried in Grave 1150, one of the graves dug into the backfilled ditch 450 (Fig. 2.32), had also been decapitated, and so too had the infant (118) in Grave 110, a shallow feature in the southern part of the main area of excavation

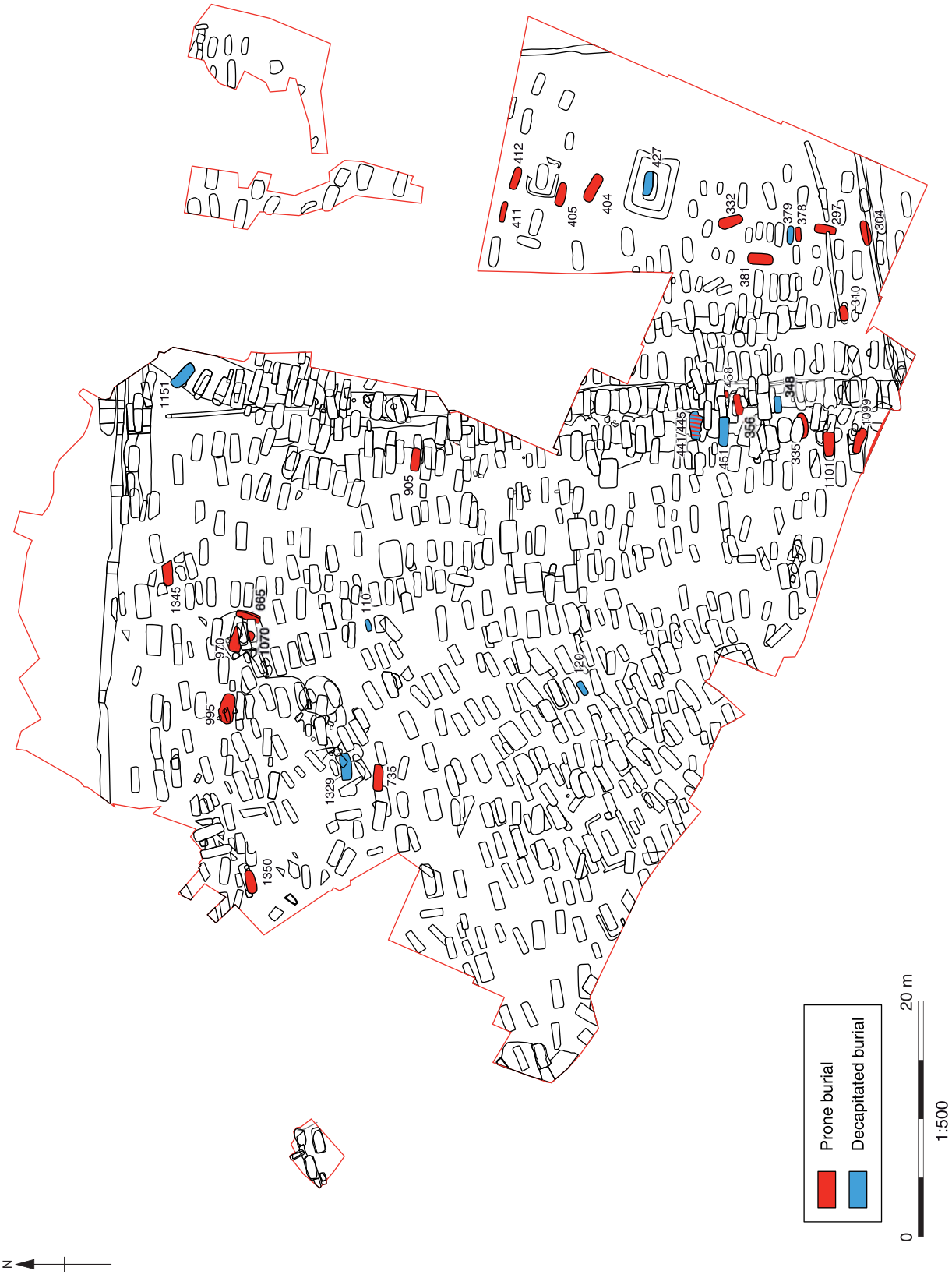


Fig. 2.30 Location of prone and decapitated burials

Fig. 2.31 Decapitated burial in Grave 1329

Fig. 2.32 Decapitated burial in Grave 1150

(Fig. 2.33). Like burial 1329, these were buried in coffins and laid in a supine position, and in these respects were not dissimilar from the majority of the burials whose heads and necks were intact. In addition to having been decapitated, the older adult male (1517) in burial 1515 had been placed in a crouched position, lying on his right side with his legs tightly flexed and the head placed on or between them. The skull of burial 118 had been placed on the lower part of the legs and that of 1084 on the knees, the latter face-downwards. Cut marks probably resulting from the process of decapitation were observed on the 5th cervical vertebrae of skeletons 1084 and 1517, consistent in both cases with a slice made by a sharp knife, cutting from the front from left to right across the vertebral body. The corresponding vertebrae of skeletons 118 and 1289 had not survived. The grave pits for the adult burials were not insubstantial, Grave 1150 being 1.50 m deep and Grave 1329 1.0 m deep, but Grave 110 was smaller, as was common for the graves of infants, measuring 1.04 x 0.38 m and only 0.22 m deep. The crouched burial in grave 1515 had been buried in a fairly shallow, concave scoop only 0.33 m deep. Burial 110 had been furnished with a string of beads and three bracelets, two of bone (SF 633-5, 651) and one of bronze (SF 260, 643, 645), all of which had been placed on the chest. The only artefacts accompanying the adult burials were a pair of hobnailed shoes (SF 3540, 3541) worn by burial 1289 in Grave 1329.

A probable fifth instance of decapitation was represented by the remains of a young child (2064) that survived only as disarticulated bone in Graves 1736 and 1739. This individual, who had presumably been buried in a grave later destroyed by the digging of these two graves, exhibited a deep cut on the front of the mandible that is likely to be associated with decapitation. As young children have shorter necks the chin is more easily damaged during decapitation than would be the case with an adult.

Fig. 2.33 Decapitated infant burial in Grave 110

Coffins

A total of 245 burials contained coffin nails, the disposition of which preserved the shape of the coffin (see Powell, Chapter 4). The number of nails used in the construction of these coffins was very variable, ranging from six to 62. Coffin nails were also recovered from an additional 16 graves that were too severely truncated to be certain whether they had formed parts of coffins. The outlines of 36 of these coffins had been preserved, in full or in part, by coffin stains of dark soil interpreted as decayed wood, including Grave 35, where a similar stain representing the remains of the lid of the coffin was also preserved, and Grave 565, where a stain representing the remains of the base was recorded. In addition to these burials, the coffin lid was similarly preserved in Grave 1105, although in this instance the sides were not. This material forming these coffin stains was extremely friable and in all instances crumbled to nothing on excavation, and so could not be collected for analysis. The soil filling the coffin could be distinguished from the surrounding backfill in 43 graves, including six that also had identifiable coffin stains. Coffin stains and coffin fills were only identified in graves where the coffin was also defined by an assemblage of nails.

Packing stones

Packing stones were recorded in four burials. In all four graves the stones were nodules of flint, and the three instances where a coffin was present, they had clearly been placed along the outside of the coffin. The most complete packing was found in Grave 1150, containing a female aged 26-35 years who had been decapitated, where the stones had been placed along both sides of the western half of the coffin. The packing in Grave 735 was rather intermittent, comprising occasional stones placed next to the left shoulder and hip and at the feet. Like Grave 1150, this was the burial of a female aged 26-35 years, who in this case had been buried in a prone position. No skeletal material survived in Grave 233, but a small group of packing stones were located against the northern edge of the grave pit. The only grave with packing stones that lacked a coffin was Grave 1335, in which a male aged 60+ years had been placed with the upper part of his body turned to the right and his arms extended in font of him. Packing stones were only recorded along the northern side of the grave, against the back of the individual. Much of the western half of the grave had been destroyed by Grave 1350, but there were certainly no corresponding packing stones on the opposite side of the grave.

Footwear

The most impressive evidence for footwear came from Grave 1846, a richly furnished grave which, in addition to a gilded silver crossbow brooch and belt set, contained a pair of copper alloy spurs, one of which had some mineralised leather attached. These are likely to have been attached to a pair of shoes suitable for a rider, and their location within the grave would have been consistent with a pair of such items placed beside the lower left leg.

A further 111 inhumation burials were accompanied by footwear represented by assemblages of

Fig. 2.34 Grave 1412, the stain of the coffin fill is well-defined. Hobnailed shoes are worn on the feet

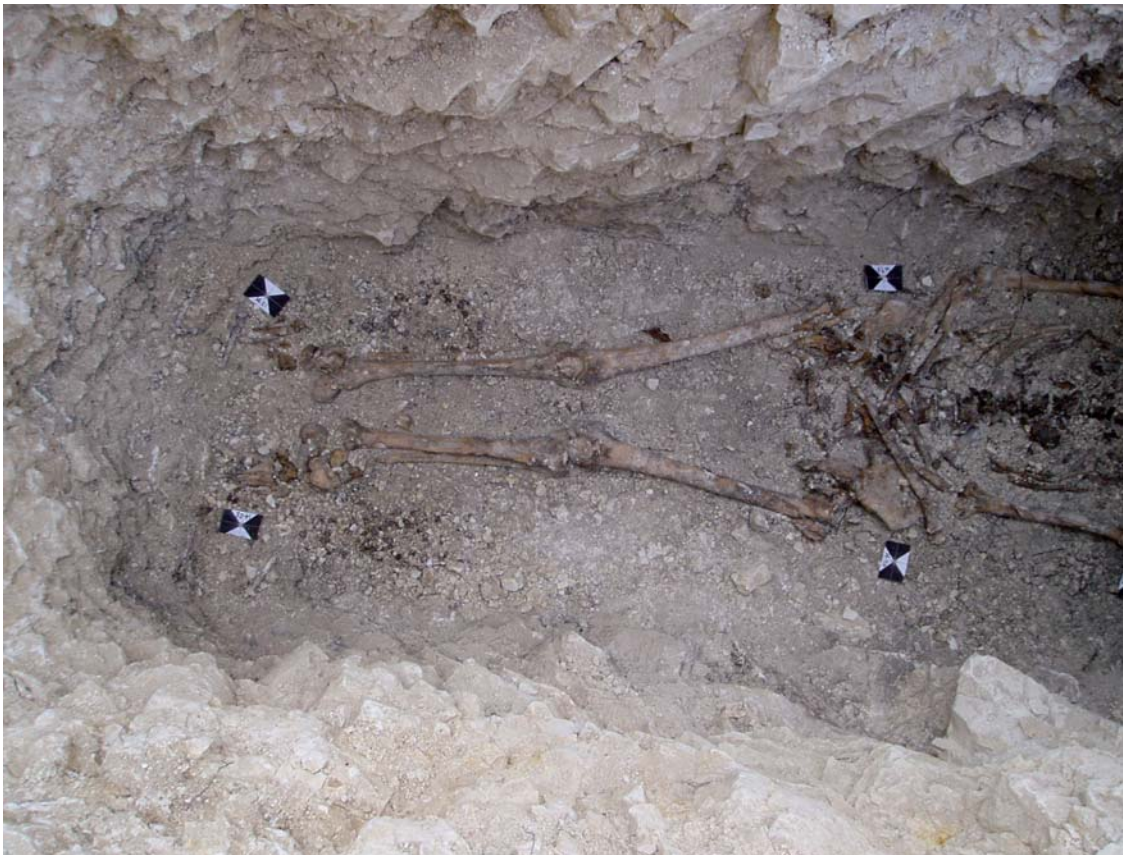


Fig. 2.35 Grave 1790, showing shoes placed beside the lower legs

hobnails interpreted as having been used in the construction of shoes (see Powell, Chapter 4). The construction of 20 of these sets of footwear also included boot plates. In 14 instances the association of the hobnails with the bottom of the feet was sufficiently close to indicate that they represented items of footwear that were worn at the time of burial (Fig. 2.34). Hobnails occurred in eight additional graves, where their significance was less certain.

In an additional 53 burials, the hobnails formed an amorphous scatter around the feet. It is likely that many of these represent cases in which the footwear was worn, but that the hobnails, and to a lesser extent the foot bones, had become scattered as the remains decayed and settled. However, the evidence is not sufficient to rule out the possibility that the items of footwear had been placed over the feet, or the feet rested on the footwear, rather than that the shoes were worn. Items of footwear that were certainly not worn had been placed in 38 graves. These were generally placed inside the coffin, beside the legs (Fig. 2.35), although in four instances they were placed under the lower part of the legs, and in 17 cases the footwear had been placed outside the coffin, including Graves 277 and 570 where items of footwear were placed outside the coffin in addition to footwear directly associated with the feet. It was not possible to be certain whether the footwear in Grave 705 was inside or outside the coffin. The most unusual occurrence of hobnails was in Grave 590, where, in addition to hobnails associated with the feet, a single hobnail appeared to have been held in the individual's left hand and a second placed on the sternum.

Hobnails were recovered from 15 of the 25 cremation burials, including four with very large assemblages of 72-168 nails. None of these groups preserved the original shape of the footwear of which they had formed a part, and because of the corroded condition of the hobnails it was not possible to be certain whether or not they had been burnt. Consequently it is uncertain whether these groups represent items that accompanied the deceased on the pyre, either worn or placed with the body, or whether they were unburnt grave goods that were placed in the burial subsequently. If footwear had been burnt on the pyre it is unlikely that the collection of hobnails for transferral with the cremated remains to the burial was carried out assiduously, and so the quantities present in the burials can only be viewed as representing the minimum number of nails used in the construction of the footwear accompanying these individuals. The large quantities of nails present in some of the cremation burials might therefore suggest that these represent shoes deposited with the cremated bone, rather than remains of footwear collected from the pyre.

Other grave goods

Grave goods are discussed in detail in Chapter 4, while a short summary is given here. Pottery vessels placed as grave goods were recovered from a total of 39 inhumation graves, six of which contained two pots. Glass drinking vessels were found in two adult graves (1373, 1440), each of which also contained a pot, the two vessels being placed on either side of the head. The only other glass vessel was a tettine accompanying the burial of a child (1760). Coins had been placed as grave goods with 24 burials. The majority of these contained only a single coin, although nine graves produced larger groups, the largest comprising seven coins. In three a single coin derived from the backfill of the grave, while a further coin may have been in the upper fill of Grave 1490 or in a layer immediately overlying it, and it is possible that these too were deliberately deposited.

A total of five graves contained composite combs deliberately placed as grave goods, and a sixth comb was recovered from a grave backfill. The excavations produced five shale spindle whorls deposited as grave goods and a sixth that was found on the surface of Grave 595 during machining. Seven graves contained iron knives.

Brooches were recovered from seven graves. Five individuals had been buried with crossbow brooches, including a particularly fine gilded and inscribed example from Grave 1846 (a sixth crossbow brooch was associated with a cremation burial). Two further burials were accompanied by penannular brooches. Belt equipment was associated with eight burials. Seven of these belts were represented by buckles, including two that also had strap ends, and a single example contained a strap end, located beside the femur in the correct position for a worn belt, but no buckle. The finest belt set was found in Grave 1846, and comprised a buckle and strap end both made from gilded silver. Most of the remaining buckles were of copper alloy, although two were iron, and the other strap ends were of copper alloy, one of which had been tinned or silvered. A silver buckle pin in Grave 1355 appeared to have been reused as a pendant.

Four graves, all of sub-adults, contained bead strings. Most of the beads are of glass, all but one bead being coloured, although three strings also included amber beads, one bead was of coral and five were shaped stones. None of the bead strings was worn at the time of burial. A total of 14 individuals had been buried with bracelets. Due to the fragmentary condition of some of these items, particularly those made of bone, it is not possible to be absolutely certain about the numbers represented, but there were at least 34 of copper alloy, 26 of bone, three each of iron and shale, and a single example that may have been ivory. The bracelets were definitely worn in three burials, and probably in a fourth, as the bracelet in Grave 87 was in the correct location to be worn on the left forearm, but the bones of the arm did not survive. The remainder had been placed separately in the grave (see Chapter 4 for detailed discussion), usually in a neat stack in the cases where multiple items were present. Hairpins, all of copper alloy, were recov-

ered from three graves, two being individual items while the third grave contained one definite hairpin and two copper alloy shanks that may be from additional such items. Five graves were recorded as containing between one and three finger rings, although one of the three rings in Grave 1360 may be an earring. Three additional rings were recorded that were associated with belt equipment and may have been connected with the suspension of knife sheaths.

In addition to these items, a pair of shears had been placed in Grave 730, Grave 1940 contained a stylus, and a chalk disc that may have functioned as a loom weight was recovered from Grave 1015. Part of an inscribed bone plaque was recovered from Grave 620; its location at the base of the grave pit, near the feet, strongly suggests that it was placed deliberately as a grave good.

Three inhumation burials contained possible ritual deposits of faunal remains (see Chapter 6). Two burials (Graves 530 and 1547) had horse skulls or parts of horse skulls placed in the grave fill, and a domestic fowl had been placed at the head end of Grave 870, beyond the end of the coffin.

Cremation burials

A total of 25 cremation burials was excavated, mostly located in the complexes of intercutting features in the central part of the excavation, although there was also an outlier to the north-west and two dug into the lower fill of the eastern boundary ditch (450). These were a somewhat heterogeneous group, comprising five urned cremation burials, seven cremation burials in grave-shaped pits, and 13 simple un-urned cremation burials. Deposits of pyre debris were also found in the backfill of three features that were not formal cremation burials.

Urned cremation burials

All five of the cremation burials certainly contained in urns were located in areas of the excavation that had been affected by the levelling of the site for construction of the School House, and consequently had all been subject to some degree of truncation. The best preserved was cremation burial 1055 (Fig. 2.36), which was located in the north-eastern feature complex and had been dug into the fill of pit 794, one of the large pits that characterise these areas. The burial comprised a circular, vertical-sided pit (1006) measuring 0.65 m in diameter and 0.34 m deep, within which had been placed a reduced ware jar (1007) containing the cremated remains of an adult male (1008). The remainder of the burial had then been backfilled with a mixture of subsoil and chalk, presumably the material excavated in digging the pit. Part of the upper part of the urn had been removed when the south-western edge of the pit was dug away by the foundations of the School House, but otherwise both the vessel and its contents survived intact, albeit with the rim in rather fragmentary condition.

The plan of cremation burial 1255 was uncertain on account of the destruction of its northern side by a later burial and its eastern side by the foundations of the School House. The shape of the surviving, western part suggests that it was either oval, with the foundations having caused only a small amount of truncation of the eastern side, or more sub-rectangular, in which case a greater proportion of the feature has been lost. Despite the truncation of parts

Fig. 2.36 Cremation Grave 1055

of the cremation pit the cinerary urn, a New Forest grey ware jar (1186), survived intact as it had been placed close to the southern edge of the feature. It contained the remains of an adult of undetermined sex.

The other three urned cremation burials (510, 845, 2060) were all badly affected by truncation, but appear to have been generally similar in form to burial 1055. In each case the cremated remains were placed in an urn deposited in a roughly circular pit that survived to a depth of no more than 0.10 m. The truncation had seriously reduced the urns, only the lower parts of which survived, resulting in the probable loss of some of the cremated material contained within them. This loss was particularly severe in the case of burial 845, in which only 21.7 g of bone remained, while in burials 510 and 2060 some of the contents of the urn had been disturbed and incorporated into the surrounding backfill. The individuals represented by these cremated remains were a young adult male (766) in burial 510 and adults of undetermined sex (766, 424) in burials 845 and 2060. As was the case with burial 1055, the vessels used as funerary urns were all coarse ware jars, that in burial 2060 being a New Forest grey ware jar of type NFC 30 and the others being in grog-tempered fabric SG. The only possible evidence for any of these burials being accompanied by an ancillary vessel was a fragment from a flanged bowl in burial 510, but this could have been an incidental inclusion.

Grave-shaped cremation burials

Seven cremation burials had been buried in grave-shaped pits (655, 910, 1180, 1195, 1215, 1806, 1845) and are interpreted here, with varying degrees of certainty, as being *bustum* burials (for further discussion see Chapter 7). All seven were located in the feature complexes in the centre of the site, and shared the same roughly west-east alignment as the majority of the inhumation graves, except for burial 1806 which was aligned NW-SE. They were all individual, discrete features with the exception of burial 1195, which was dug directly, and presumably deliberately, into the backfill of burial 1215, though not to so great a depth as to disturb the deposit of cremated remains at the base of the earlier burial. The burial pits measured 1.0-2.44 m long and 0.4-1.14 m wide, most being at the larger end of the range and the smallest, burial 1845, perhaps being smaller on account of being the burial of a child aged about two years. Most were between 0.25 m and 0.68 m deep, although burial 1215 was considerably deeper, at 1.2 m. In each burial, the lower part of the pit was filled to a depth of 0.07-0.15 m with a layer of burnt material, typically consisting of dark red and black heat-discoloured soil with pieces of burnt and heat-discoloured chalk and a large charcoal content, and the cremated remains were within this material, although the excavator of burial 655 observed that the remains lay on the surface of the burnt deposit as much as they did within it. The cremation deposits in burials 655, 1195, 1215, 1806 and 1845 were sealed by layers of backfill consisting of mixed chalk and soil, likely to be the material excavated during the digging of the burial pits. The absence of such backfill from burials 910 and 1180 may be explained by truncation, which is likely to have had a more significant impact on these two burials as they were shallower than the others.

The cremated bone in burials 655 and 1806 appeared to be arranged in approximate anatomical order, with the heads to the west, on the same orientation as most of the inhumation burials. In order to establish whether the distribution of the skeletal elements was consistent with this, these deposits were excavated in a series of blocks, the results of which appear to support the suggestion. Similar spatial sampling of the burnt deposits from burials 1180 and 1845 produced similar results. This suggests that the bodies had been cremated within or directly over the pit rather than being cremated on a separate pyre and the cremated remains subsequently collected and placed in the pit for burial, a suggestion that gains some support from the discolouration due to heat of the base and sides of the pits containing cremation burials 655 and 1195. No such patterning of the disposition of the cremated remains was recorded in cremation burials 910, 1195 and 1215, but no spatial sampling was undertaken for these burials. Apart from the child in cremation burial 1845 all were of adults, four (655, 1180, 1215, 1806) being definite or probable males, one (910) a probable female and one (1195) of indeterminate sex. In all cases sufficient burnt bone was present to indicate that these deposits represented individual burials rather than, for example, the remains of pyre sites.

Artefacts whose presence may be attributed to their having played a role in the funerary rites were recovered from the cremation deposits in five of these seven burials. A total of 19 cremation burials contained hobnails, with individual groups varying in size from two to 22 nails. Structural nails were present in 15 burials, and although distributed throughout the cremation deposits forming no coherent pattern they are likely to have derived from the coffins or biers on which the bodies were burnt. In addition to this, burial 1180 contained the base of a grog-tempered ware jar, inverted in the surface of the cremation deposit, and small quantities of pottery were also recovered from the deposits of burnt material in burials 1195 and 1215, although no complete vessels were found. Burning noted on sherds in burials 1195 and 1215 may indicate that they derived from vessels that had been placed on the pyre. A burnt coin of Valens, dating from 364-378, was recovered from the cremation deposit (1121) in cremation burial 1195.

In two burials deposits had been placed, apparently deliberately, on the surface of the deposit of burnt material before the burials were backfilled. A horse skull (603) had been placed at the western end

Fig. 2.37 Inverted pot base and horse skull within the fill of bustum Grave 655

of burial 655, with the lower part of a grog-tempered ware jar (604) inverted over the nose, and a New Forest colour-coated ware vessel (606) lay beside it (Fig. 2.37). Neither vessel was complete. In burial 1215 the western end of the cremation deposit was covered by a thin layer of burnt flint pebbles, the significance of which is unknown.

Simple un-urned cremation burials

A total of 13 simple un-urned cremation burials was discovered (895, 915, 945, 1060, 1065, 1160, 1320, 1527, 1724, 1742, 1786, 1798, 1904). They were located in the same areas as the other types of cremation burials, namely the central part of the site, with one outlying example near the western edge of the excavation, and two (1724, 1786) that had been inserted into the lower fill of ditch 450. Each burial consisted of a shallow circular pit, typically measuring 0.30-0.45 m in diameter and the deepest being no more than 0.23 m deep, into which had been placed a single deposit of charcoal and calcined bone. Unlike the urned and grave-shaped cremation burials, no evidence was found for backfill deposits sealing the cremated remains. Although this might be attributed to the removal of the upper parts of these features due to the later truncation of the site, this was clearly not the case for cremation burial 1786, which was sealed by the tertiary silting of ditch 450, and was thus protected from such disturbance (see Fig. 2.8).

Cremation burials 1060 and 1904 differed slightly from this general pattern, both being larger than the other such features and more oval in plan. Burial 1060 measured 1.17 x 0.93 m, and although the southern part of burial 1904 had been destroyed by the digging of Graves 1491 and 1622 it measured at least 1.0 m across, but their depths were similar to those of the other un-urned cremation burials. Burial 1060, like the other un-urned cremation burials, was filled with a single deposit of pyre debris (808), but burial 1904 contained a sequence of three fills comprising a thin layer of charcoal (1751)

overlain by deposits of orange soil (1750) and dark brown soil (1749), the cremated bone deriving from the latter two deposits. Of the 13 un-urned cremation burials, all 12 for which age data could be collected were of adults, three (1724, 1742, 1786) being probable females, one (895) a probable male and the remainder of undetermined sex.

Small quantities of pottery that are likely to be incidental incorporations of residual material were recovered from cremation burials 1320, 1724, 1742 and 1904, but burials 1060 and 1160 contained just over half a jar and sherds from a flanged bowl respectively, both in grog-tempered ware, which may be deliberate inclusions. Some of the sherds of the former were re-fired, possibly indicating that it had been placed on the pyre and subsequently collected with the cremated bone. This burial was also unique among the cremation burials in containing a pair of boot plates (SF 2034, 2370) as well as an assemblage of at least 11 hobnails. Fragments of a crossbow brooch (SF 2212, 2219-21) and a possible belt plate recovered from cremation burial 895 are likely to have been pyre goods, while the status of a base of a glass vessel (SF 2189) and an iron object (SF 2211) from the same burial is less certain.

Deposits of pyre debris

Deposits of pyre debris were discovered in the backfills of inhumation Graves 795 and 950, which produced 10.3 g and 9.8 g of calcined bone respectively. Small quantities of cremated bone were also recovered from soil samples taken from pits 847 (68.3 g) and 909 (34.6 g) and from inhumation Grave 790 (11.7 g), but no discrete deposits of bone or burnt material were observed in these features. The bone in these features is most likely to be residual, as all three were located in the north-eastern feature complex and occurred late in the stratigraphic sequence, cutting earlier cremation burials that are likely to have been the source of this material. Two patches of charcoal-rich soil (1795, 1797) in the upper part of pit 2062 may also have derived from pyres, although neither contained any cremated bone.

Pits dug into ditch 450

Three pits (1671, 1816, 1823) of varying sizes were dug into the partly backfilled ditch 450, near the southern edge of the excavation area. All three were dug into ditch fill 1717=1811=1812=1813=1822=1893, which has been interpreted as an episode of deliberate backfilling, perhaps with spoil created during the digging of graves immediately to the west. All three pits intersected with inhumation burials that had likewise been dug into the fills of the ditch, and the stratigraphic relationships between the pits and the burials were somewhat difficult to discern owing to the similarity of their fills, all of which comprised material derived from the ditch fills. The largest of these features was pit 1671, which measured 2.0 m in diameter and 0.6 m deep. It was steep-sided and contained a lower fill with a high proportion of chalk rubble (1672), overlain by a main fill of grey soil (1673) from which were recovered 464 g of pottery, six fragments of shell, five nails, a minimum of 18 hobnails and a small piece of slag. The digging of this pit had truncated a cremation burial (1724), and 39 g of cremated human bone that was presumably derived from the burial was recovered from this layer. Inhumation Grave 1175 had been dug through the middle of the pit, further truncating the cremation burial.

Pit 1816 was located immediately north of pit 1671. It was considerably smaller, measuring 0.5 m in diameter and 0.2 m deep, and had steep sides and a concave base. Its fill was similar to the upper fill of pit 1671, but contained no finds. Although the dimensions of this pit would be consistent with a role as a posthole, no post-pipe was identified and no similar features were identified that might suggest that it formed part of a structure, and so an interpretation as a pit is indicated. The pit intercut with inhumation Grave 1280, but the stratigraphic relationship between the two features could not be established with any certainty.

Pit 1823 also intersected with Grave 1280, and the stratigraphic relationship between the pit and the burial was similarly uncertain. The pit did, however, cut Grave 1946, truncating most of the burial and leaving only the eastern end intact, and was dug through pottery spread 1785 (see discussion of ditch 450 above). The pit was slightly smaller than pit 1671, with a diameter of 1.4 m and a depth of 0.37 m. It was steep-sided with a rounded base, and had a primary fill (1713) from which was recovered 89 g of pottery. The upper part of the pit had been backfilled with a deposit of chalk rubble and soil (1665).

Chapter 3: Grave catalogue

INTRODUCTION

The grave catalogue is divided into two sections, one for inhumation graves and one for cremation graves, each presented in numerical order of Grave (group) number. Only fully excavated (albeit often incomplete) graves are included. Grave centre co-ordinates (to the nearest metre) are given to allow the graves to be located on Figure 3.1. The entries summarise information under a series of headings, which are omitted in the case of graves where there is no relevant information, except that positive evidence for the absence of a coffin is noted. The first heading deals with the grave cut and fills (and feature relationships where appropriate). Context numbers, both here and in reference to finds, are given in brackets with no prefix. Under the second heading is found a summary of the osteological record for the grave, based on the detailed records in the project archive. In this section estimated heights are given in cm. The fragmentation categories used are as follows:

excellent – virtually no fragmentation
good – slight fragmentation
fair – moderate fragmentation
poor – most bones fragmented
destroyed – considerable fragmentation

- and the condition categories used are:

0 – surface morphology clearly visible with fresh appearance to bone and no modification
1 – slight and patchy surface erosion
2 – more extensive erosion of surface
3 – most of the bone surface affected by some degree of erosion, general morphology maintained but detail of parts of surface masked by erosive action
4 – all of bone surface affected by erosive action; general profile maintained and depth of modification not uniform across the whole surface
5 – heavy erosion across whole surface, completely masking normal surface morphology with some modification of profile
5+ as for Grade 5 with extensive penetrating erosion resulting in modification of profile (includes near-destroyed bone)
9 – the anatomical area concerned does not survive

Descriptions of the terms used in relation to pathology will be found in Chapter 5. The sequence in which pathologies are listed broadly follows that in which they are presented in Chapter 5. Dental pathologies are listed last. Common abbreviations used in this section are AMTL (ante mortem tooth loss) and DEH (dental enamel hypoplasia).

Evidence for the coffin, for grave goods and other finds (usually from the backfill of the grave) is followed by an assessment of the date of the grave. This date is based on artefactual evidence, or occasionally on radiocarbon determinations (summarised in Table 6.15), either from the grave itself or from others with which the grave may have a clear stratigraphic relationship. Any such date, which is usually expressed as a range, is only a *terminus post quem*. Discussion of dating of relevant objects will be found in the contributions to Chapter 4. No attempt has been made here to assign dates to discrete graves with no artefacts on the basis of their spatial location, nor are dates assigned in cases where stratigraphic relationships exist with earlier features that are not themselves closely dated.

Illustration of graves is selective. Plans are given for all graves containing grave goods (including footwear) and/or evidence for coffins. Graves with distinctive structural features (such as stepped graves) or containing packing material, and those with bodies in atypical positions, are also illustrated. Most grave contents are illustrated. The principal exceptions are coffin nails, hobnails and coins. Other 'not-illustrated' items, such as additional and effectively identical examples of bracelet types or fragmentary iron objects, are indicated (NI) in the catalogue text. The key for conventions used in the grave catalogue illustrations is given separately as Figure 3.2.

In these illustrations the grave plans are shown at 1:20. Pottery vessels are at 1:4, glass vessels and iron objects at 1:2 and other objects at 1:1 except where indicated.

INHUMATION BURIALS

Inhumation Grave 6 (7887/0285, not illustrated)

Grave cut 7
Orientation: WSW-ENE
Shape: Rectangular
Dimensions: 1.18 x 0.53 m, 0.37 m deep
Fill: Loose light yellowish brown silt with 50% chalk pieces (9)

Skeleton 8
Posture: Supine, legs bent

Fig. 3.1 Site plan showing grave numbers


130340
130330
130320
130310
130300
130290
130280
447900
447910
447920
447930
Modern truncation
0
10 m
1:250
Cremation
Scale 1:100

Arm position: Both arms slightly flexed and angled away from body
Age: 10-12 months. Infant
Fragmentation: Good
Condition: Skull 1, arms 1, hands 4, torso 1, legs 3, feet 4
Pathology: Scurvy

Coffin: None

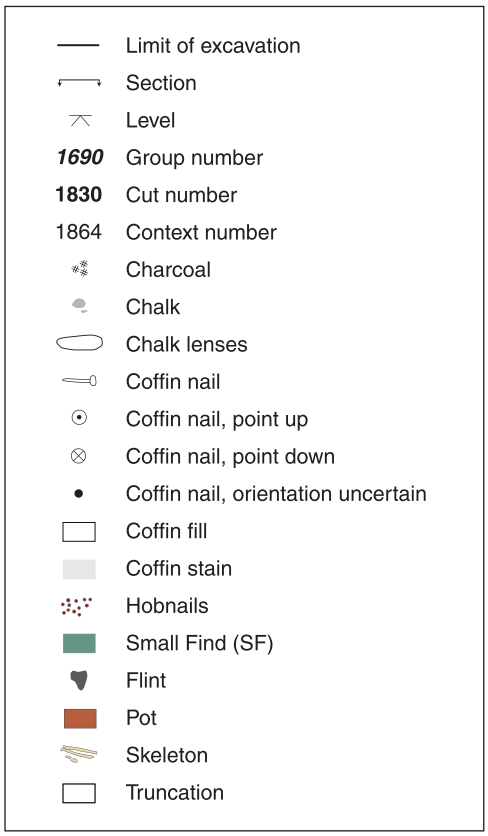


Fig. 3.2 Key to conventions on grave plans

Inhumation Grave 10 (7884/0288, Fig. 3.3)

Grave cut 11
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.26 x 0.75 m, 1.00 m deep
Fill: Loose yellowish white silty chalk (13)

Skeleton 12
Posture: Supine, legs extended and parallel
Arm position: Left arm extended with the hand resting on the head of the left femur; right arm flexed, lying across the stomach
Sex: Male
Age: 36-45. mature adult
Height: 169.9
Fragmentation: Good
Condition: Skull 3, arms 3, hands 0, torso 3, legs 2, feet 3
Pathology: Non-specific periostitis left and right tibiae. Incomplete lumbarisation. Calculus, caries, DEH

Coffin: Represented by an assemblage of 13 nails. L: 1.68-0.69 m. B: 0.40 m (146)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 83 nails located outside the coffin, to the left of the torso. SF 415
2 **Hobnailed shoe**. Represented by a minimum of 104 nails located outside the coffin, to the left of the pelvis. SF 416

Other finds: A minimum of three hobnails were recovered from soil sample <73> and one from soil sample <74>, associated with the left and right hand respectively, and a single hobnail (SF 112) was recovered from the backfill.

Inhumation Grave 14 (7916/0303, Fig. 3.4)

Grave cut 15
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.90 x 0.65 m, 0.70 m deep
Fill: Loose white chalk and sandy silt (17)
Relationships: Cut Clarke's grave 233. Relationship

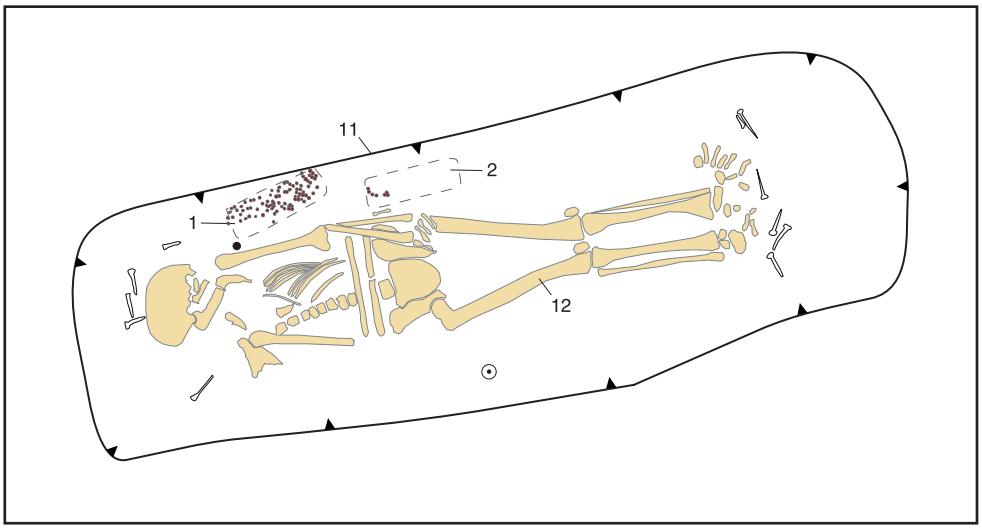


Fig. 3.3 Inhumation Grave 10

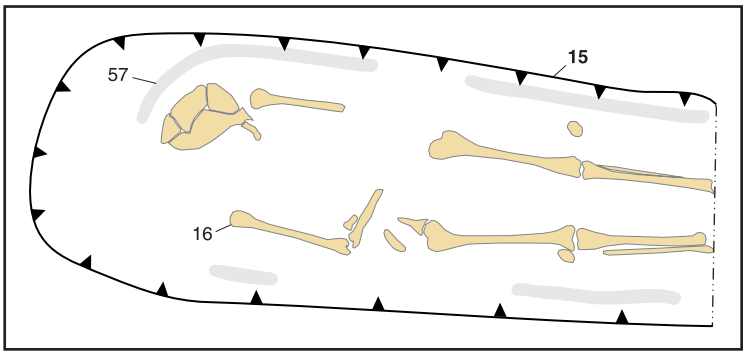


Fig. 3.4 Inhumation Grave 14

with grave 111 uncertain as the features only intersected slightly

Skeleton 16
Posture: Supine, legs extended and parallel
Arm position: Position of the left arm uncertain, as only the humerus survived; right arm flexed, lying across the stomach
Sex: ?Male
Age: Adult
Fragmentation: Fair
Condition: Skull 2, arms 2, hands 9, torso 9, legs 2, feet 9
Pathology: AMTL, caries

Coffin: Represented by an assemblage of 14 nails and a coffin stain defining the sides and part of the western end (57)

Date: Vessels in Clarke's grave 233 were dated AD 270-370 and 310-325

Comments: The eastern end of the grave had been dug away during Clarke's excavation of his grave 233. He recorded that Grave 14 cut grave 233, but did not otherwise record Grave 14.

Inhumation Grave 18 (7906/0307, Fig. 3.5)

Grave cut 19
Orientation: W-E
Shape: Rectangular
Dimensions: 2.30 x 0.65 m, 0.45 m deep
Fill: Loose light brownish grey silty sand with frequent chalk pieces (21)

Skeleton 20
Posture: Supine, legs extended with feet together
Arm position: Both arms extended with the hands resting on the tops of the corresponding femurs
Sex: Female
Age: 15-16. Adolescent
Fragmentation: Excellent
Condition: Skull 2, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Rickets. Cribra femora. Cribra orbitalia. DEH, shovelling and calculus

Coffin: Represented by an assemblage of 17 nails defining the corners (320)

Grave goods:
1 **Copper alloy bracelet** (leaded bronze); Three fragments incomplete and terminals missing. Rectangular section, widest to wrist. Upper face decorated by boxed zig-zag with V-shaped notch on each box. Diameter 50 mm, section 3 x 1.5 mm. (21). SF 73
2 **Copper alloy bracelet**. Rectangular-sectioned, widest to wrist, one side tapering to hook, other terminal broken. Upper face decorated by row of ring and dots with edge notches. Diameter 58 mm, section 5 x 1.5 mm. (21). SF 73
3 **Bone bracelet**, in three joining fragments. Rectangular-sectioned hoop tapering slightly to terminals, fastened by copper alloy plate on upper face with iron rivet in each terminal. Hoop is intermittently stained green. Diameter 58 x 53 mm, section 5 x 3 mm. (21). SF 100a
4 **Bone bracelet**, in four joining fragments, now sprung out of shape. Shallow D-sectioned hoop tapering slightly to terminals, fastened by copper alloy sheet on upper face. Iron corrosion products suggest it was fastened by an iron rivet in each terminal. Total length 170 mm, original diameter *c* 55 mm, section 6 x 3 mm. (21). SF 100b
5 **Bone bracelet**, in four joining fragments, now sprung out of shape. Rectangular-sectioned hoop tapering slightly to terminals, each of which has small rivet hole. One has iron rivet. Total length 186 mm, original diameter *c* 60 mm, section 4 x 3.5 mm. (21). SF 100c. **(NI)**
6 **Bone bracelet**, in four joining fragments, probably lacking small area of hoop. Shallow D-sectioned hoop tapering slightly to terminals, each of which has small rivet hole. One has iron rivet and the upper face is stained green. Present length *c* 175 mm, section 6 x 3 mm. (21). SF 100d. **(NI)**
7 **Bone bracelet**, two fragments clearly joining at terminals, also one other hoop fragment probably from this bracelet; part of hoop missing. Shallow D-sectioned hoop tapering slightly to terminals, fastened by copper alloy sheet on upper face with iron rivet in each terminal. Present length 138 mm, section 5 x 2 mm. (21). SF 100e. **(NI)**
8 **Bone bracelet**, in four joining fragments, now sprung out of shape. Rectangular-sectioned hoop tapering slightly to terminals with rivet hole in each, one has iron corrosion, green staining on terminals with fragment of copper alloy sheet. Hoop intermittently stained green. Present length *c* 220 mm, original diameter *c* 70 mm, section 5 x 3 mm. (21). SF 100f. **(NI)**
9 **Bone bracelet**, in two joining fragments; approximately half extant. Rectangular -sectioned hoop tapering slightly to terminal which retains an iron rivet and green staining. Present length 86 mm, section 4.5 x 2.8 mm. (21). SF 100g. **(NI)**

Fig. 3.5 Inhumation Grave 18

10 **Bone bracelet**, in two joining fragments with third fragment being the second terminal. Rectangular-sectioned hoop, terminals with small rivet hole in each, iron corrosion on the terminals. Present length 93 mm, section 4 x 2.5 mm. (21). SF 100h. **(NI)**
11 **Bone bracelet**, in three joining fragments, part of hoop missing. D-sectioned hoop tapering slightly to terminals, fastened by a sleeve of ribbed copper alloy sheet with small rivets. Present length 148 mm, section 4 x 3 mm. (21). SF 73 and SF 100. **(NI)**
12 **Vessel**. Fabric ZM, New Forest reduced coarse ware with black slip on rim and shoulder. Small jar comparable to Fulford (1975a) grey ware type 30.11, dated *c* AD 270-350, but without the lattice decoration. Complete except for chips on rim and three notches deliberately cut in the rim. (27)

Date: The pot is dated AD 270-350, but the bracelets are dated to the later 4th century (or later)

Inhumation Grave 22 (7892/0306, Fig. 3.6)

Grave cut 23
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.40 x 1.00 m, 1.10 m deep
Fill: Loose white chalk and clay silt (26)
Relationships: Cut Grave 63

Skeleton 25
Posture: Supine, legs extended and parallel
Arm position: Left arm beside body, slightly flexed; right arm semi-flexed with the hand resting on the opposite side of the pelvis
Sex: Male
Age: 35-45. mature adult
Height: 164.4
Fragmentation: Good
Condition: Skull 1, arms 1, hands 0, torso 2, legs 1, feet 1
Pathology: Thoracic osteophytosis. Clavicle sternal joint osteophytosis. Healed periostitis left and right tibia. Ossified cartilage rib, thyroid.

Additional human remains: Fragments of a neonate (26)

Coffin: The remains of a coffin were represented by an assemblage of 22 nails and a rectangular area of coffin fill of friable light yellowish brown clay. L: 1.89-1.94 m. B: 0.35-0.49 m. Ht: 0.12. (24)

Other finds:
1 Coin. Nummus of Constantine I, Beata Tranquillitas, Trier. AD 322 (as RIC VII, Trier 343). SF 159

Date: AD 322 or later based on the coin

Inhumation Grave 28 (7878/0291, Fig. 3.7)

Grave cut 29
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.30 x 0.80 m, 1.10 m deep
Fill: Loose light whitish grey silty sand with frequent chalk pieces (31)

Skeleton 32
Posture: Supine, legs extended and parallel
Arm position: Both arms extended beside body
Sex: ?Male
Age: 36-45. Mature adult
Fragmentation: Good
Condition: Skull 1, arms 2, hands 9, torso 9, legs 2, feet 9
Pathology: Cribra orbitalia. AMTL, calculus, periodontal disease

Additional human remains: Fragments of an additional adult in modern backfill of top of grave (34)
Coffin: Represented by an assemblage of 5 nails defining the north-eastern end, a coffin stain of darker soil defining the outline, and an area of coffin fill (31, 33, not on plan)

Comments: Partly excavated in 1967-72 as Clarke's grave 99. The grave was enclosed within a rectilinear gully (153)

Inhumation Grave 35 (7918/0324, Fig. 3.8)

Grave cut 36
Orientation: WNW-ESE
Shape: Sub-rectangular

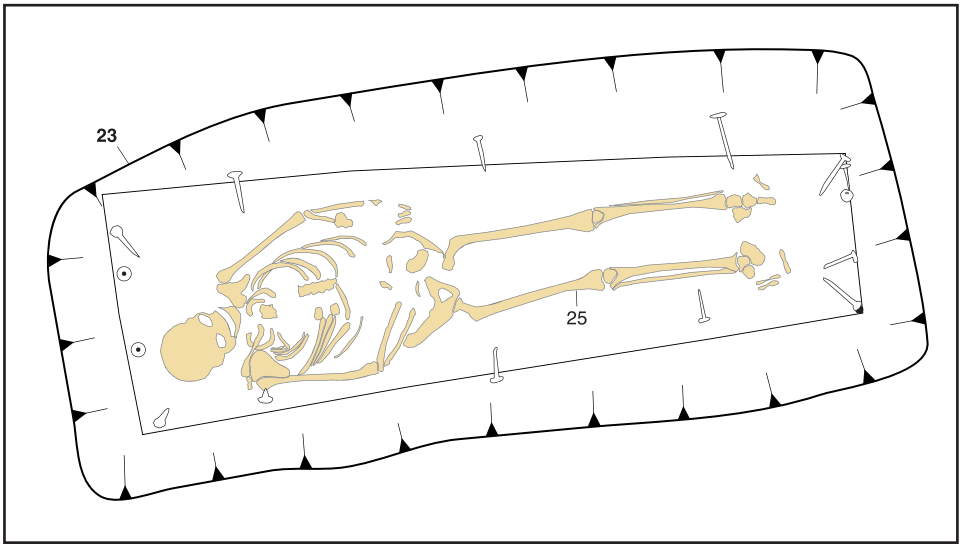


Fig. 3.6 Inhumation Grave 22

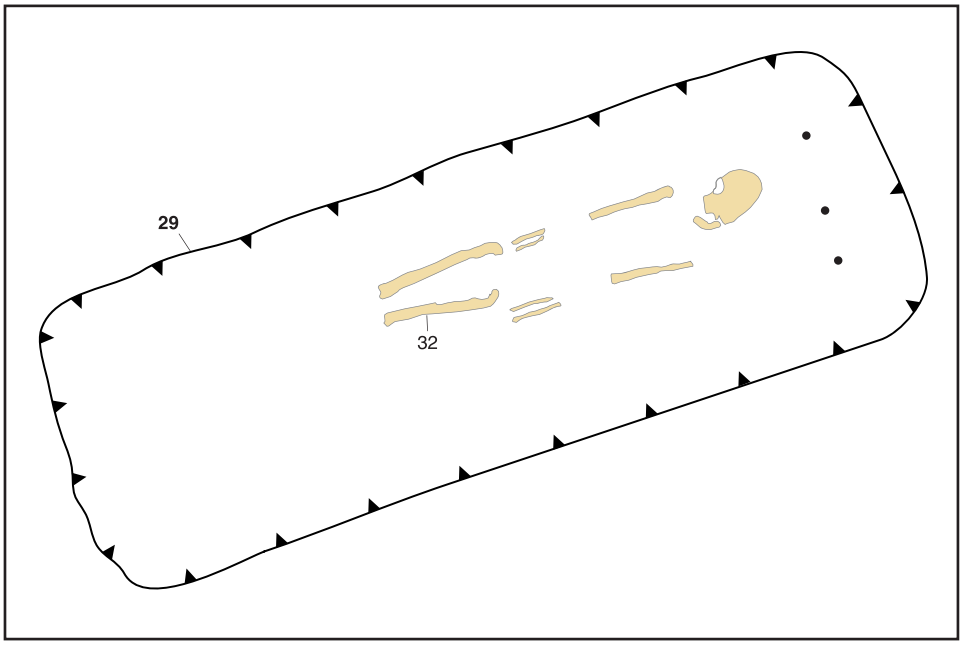


Fig. 3.7 Inhumation Grave 28

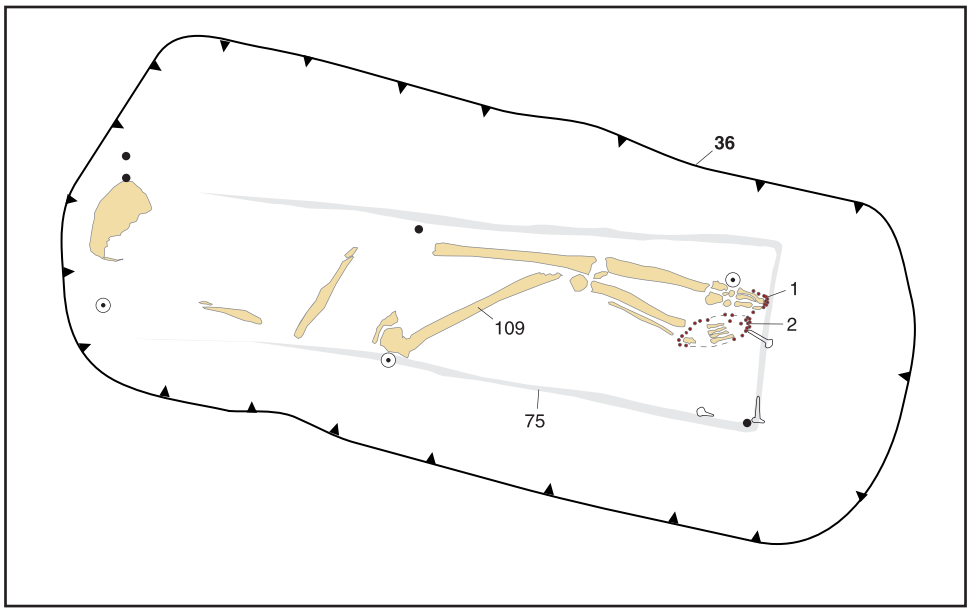


Fig. 3.8 Inhumation Grave 35

Dimensions: 2.30 x 0.95 m, 0.77 m deep
Fill: Chalk rubble with 20% friable light greyish brown silt (37)
Relationships: Cut Grave 1235

Skeleton 109

Posture: Supine. Left leg extended, right leg bent inward
Arm position: Left arm did not survive; right arm flexed, lying across the stomach
Sex: ?Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 5, arms 5, hands 9, torso 9, legs 3, feet 2
Pathology: Perthes' right femoral head and acetabulum with secondary OA.

Coffin: The remains of a coffin were represented by an assemblage of 11 nails, a coffin stain (75) defining the sides, south-eastern end and the central part of the lid, and a coffin fill of friable light greyish brown silt (76). L: 1.73-1.74 m. B: 0.35-0.41 m. Ht: 0.23 m

Grave goods:

1 **Hobnailed shoe**. Represented by a minimum of 111 hobnails (including soil sample <60>), worn on the left foot . SF 309
2 **Hobnailed shoe**. Represented by a minimum of 96 hobnails (including soil sample <61>), worn on the right foot. SF 310

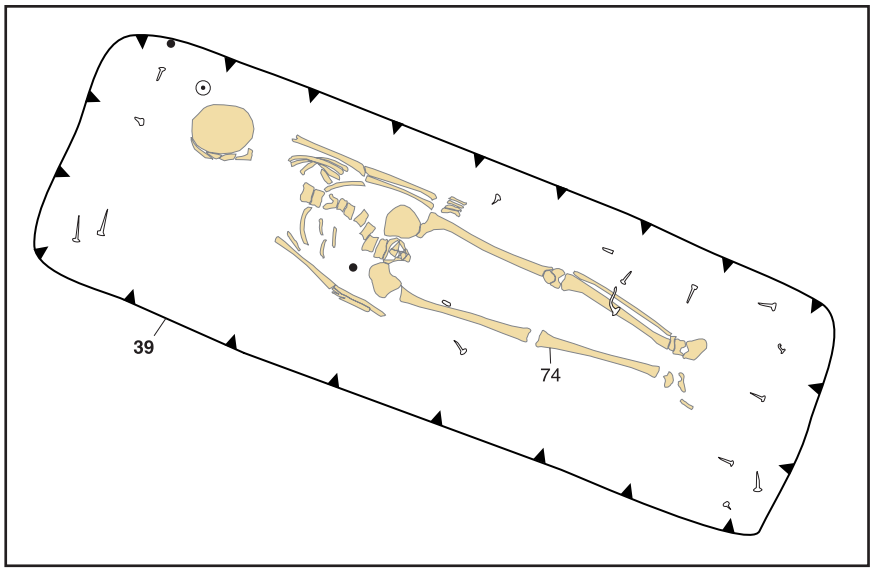


Fig. 3.9 Inhumation Grave 38

Other finds: Lead sheet fragment with bent-over tang. Dimensions 28 x 20 mm. Weight 14 g. (37). SF 94
Two sherds of pottery (9 g), one prehistoric and one in fabric TF (37)

Inhumation Grave 38 (7923/0318, Fig. 3.9)

Grave cut 39
Orientation: WNW-ESE
Shape: Rectangular
Dimensions: 2.10 x 0.70 m, 0.70 m deep
Fill: Loose light greyish brown clay silt and chalk (40)
Relationships: Cut Grave 1638, unexcavated Grave 167 and ditch 450

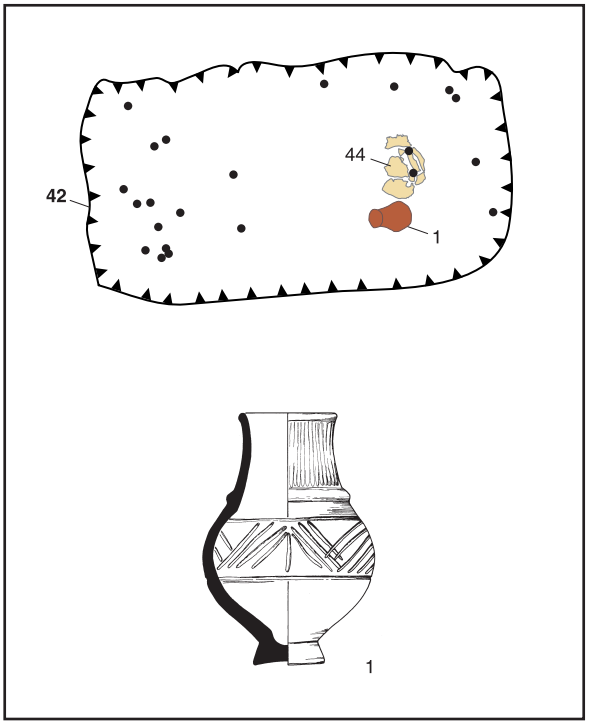


Fig. 3.10 Inhumation Grave 41

Skeleton 74
Posture: Supine, legs extended with feet together
Arm position: Both arms extended beside body
Age: 10-14. Older child
Fragmentation: Good
Condition: Skull 3, arms 5, hands 5, torso 5, legs 3, feet 3
Pathology: Non-specific periostitis left and right tibiae and left humerus. Caries, DEH

Coffin: Represented by an assemblage of 21 nails, defining the ends and north-eastern side. L: 1.79-1.88 m. B: 0.54-0.55 m. Ht: 0.17 m. (321)

Date: Grave 1638 contained coins dated AD 364-375

Inhumation Grave 41 (7893/0283, Fig. 3.10)

Grave cut 42
Orientation: E-W
Shape: Sub-rectangular
Dimensions: 1.24 x 0.64 m, 1.01 m deep
Fill: Loose light brown silty sand with 50% chalk pieces (43)
Relationships: Relationship with Grave 87 uncertain as the features only intersected slightly.

Skeleton 44
Posture: Unknown
Arm position: The arms did not survive
Age: 1-2. Infant
Fragmentation: Good
Condition: Skull 2, arms 9, hands 9, torso 9, legs 9, feet 9

Additional human remains: Fragments of a neonate (43)

Coffin: Represented by an assemblage of 22 nails. L: 0.87-0.93 m. B: 0.35-0.41 m. (45)

Grave goods:
1 **Vessel**. Fabric ZM, New Forest reduced coarse ware with black slip on neck and shoulder. Beaker similar to Fulford (ibid.) grey ware type 1.3, dated *c* AD 300-350. Tooled vertical and oblique line decoration, mostly in stylised 'tree-like' form, but with one limited area of superimposed oblique lines forming a lattice pattern. Base and rim rather battered. Located to the left of the skull. (46)

Date: Pottery dated AD 300-350

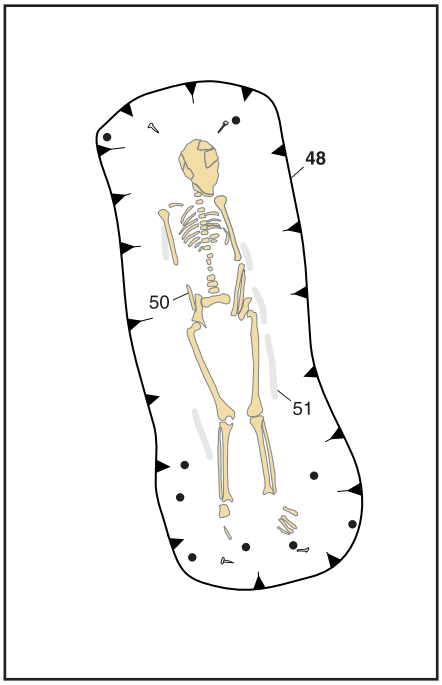


Fig. 3.11 Inhumation Grave 47

Inhumation Grave 47 (7883/0311, Fig. 3.11)

Grave cut 48
Orientation: NNW-SSE
Shape: Sub-rectangular
Dimensions: 1.95 x 0.75 m, 0.31 m deep
Fill: Loose light brown sandy silt (49)

Skeleton 50
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed with the hands resting over the pelvis
Sex: Female
Age: 45+. Older adult
Height: 155.3
Fragmentation: Good
Condition: Skull 2, arms 1, hands 1, torso 1, legs 1, feet 0
Pathology: Osteophytosis of lumbar spine. Caries, AMTL, periodontal disease . Sinusitis.

Additional human remains: Fragments of a second adult (49)

Coffin: Represented by an assemblage of 15 nails and a coffin stain defining parts of each of the long sides. L: 1.69-1.71 m. B: 0.33-0.44 m. (51)

Inhumation Grave 52 (7923/0321, Fig. 3.12)

Grave cut 53
Orientation: WNW-ESE
Shape: Rectangular
Dimensions: 2.50 x 0.70 m, 1.50 m deep
Fill: Chalk rubble with 30% friable light reddish grey clay silt (54)
Relationships: Cut Grave 1599 and ditch 450. Relationship with Grave 1707 uncertain as the features only intersected slightly

Skeleton 55
Posture: Supine with legs extended and parallel
Arm position: Left arm semi-flexed with the hand resting on the central part of the pelvis; right arm extended beside body
Sex: Female
Age: 50+. Older adult
Height: 156.6
Fragmentation: Good
Condition: Skull 1, arms 1, hands 0, torso 1, legs 0, feet 0
Pathology: Osteophytosis, intervertebral disc disease and osteoarthritis spine. Healed fracture right distal ulna. Cribra orbitalia. Calculus, periodontal disease, lesion, caries

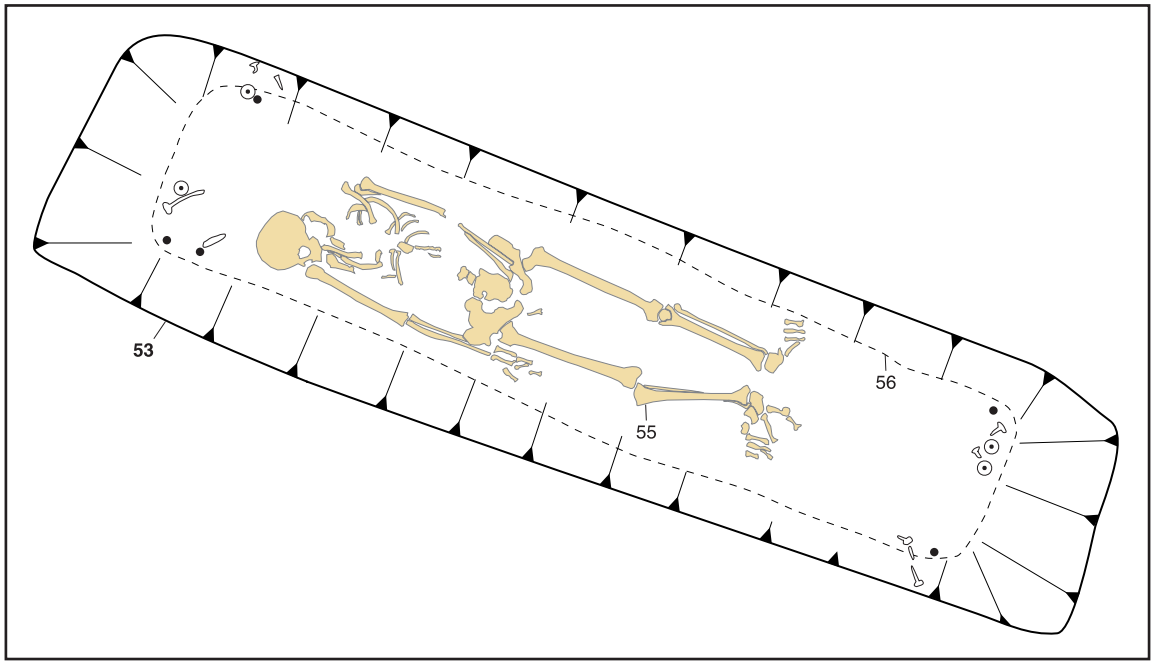


Fig. 3.12 Inhumation Grave 52

Additional human remains: Fragments of a second adult (54)

Coffin: Represented by an assemblage of 19 nails and a rectangular area of coffin fill of friable reddish grey clay silt measuring. L: 2.04-2.12 m. B: 0.39-0.41 m. Ht: 0.30 m. (56)

Other finds: Lead strip. Bent in two. Total length *c* 60mm, section 7 x 1.5 mm. Weight 2 g. SF 269
One sherd of pottery (8 g), fabric ZF (54)

Inhumation Grave 58 (7898/0305, Fig. 3.13)

Grave cut 59
Orientation: SW-NE
Shape: Rectangular
Dimensions: 2.40 x 0.72 m, 0.90 m deep
Fill: Loose light whitish grey chalk and loam (62)

Skeleton 61
Posture: Supine, legs extended and parallel
Arm position: Left arm extended with the hand resting over the left side of the pelvis; right arm semi-flexed with the hand resting on the opposite side of the pelvis
Sex: Female
Age: 26-35. Prime adult
Height: 158
Fragmentation: Good
Condition: Skull 0, arms 1, hands 1, torso 2, legs 1, feet 1
Pathology: Schmorl's nodes. Button osteoma. Healed fracture right nasal bone and juvenile epiphyseal fracture of right distal humerus, resulting in malformation of limb. Right femur greater trochanter absent. Dental crowding, caries, DEH, calculus, periodontal disease. Sinusitis.

Coffin: Represented by an assemblage of 21 nails and a rectangular area of coffin fill. L: 2.11 m. B: 0.41-0.43 m. Ht: 0.10 m. (60)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 170 hobnails. Location not recorded so not on plan. SFs 140, 155, 335, 336

Inhumation Grave 63 (7891/0306, not illustrated)

Grave cut 64
Orientation: WSW-ENE
Shape: Uncertain
Dimensions: >0.50 x 0.80 m, 0.50 m deep
Fill: Loose yellowish white and greyish brown chalk and silty clay (65)
Relationships: Cut by Grave 22

Comments: The grave was substantially destroyed by Grave 22, only the south-western end surviving. No skeletal remains or evidence for a coffin survived

Inhumation Grave 66 (7887/0286, Fig. 3.14)

Grave cut 67
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.22 m x 0.74 m, 1.18 m deep
Fill: Loose light yellowish brown silty clay with 30% chalk pieces (68)
Relationships: Cut Grave 73 and unexcavated Grave 72

Skeleton 108
Posture: Supine, legs extended and parallel
Arm position: Both arms flexed across the stomach
Sex: Male
Age: 26-35. Prime adult
Height: 165.8
Fragmentation: Good
Condition: Skull 2, arms 3, hands 2, torso 2, legs 2, feet 1
Pathology: non-specific periostitis right tibia. DEH, calculus, enamel pearl

Additional human remains: Fragments of a second adult (68)

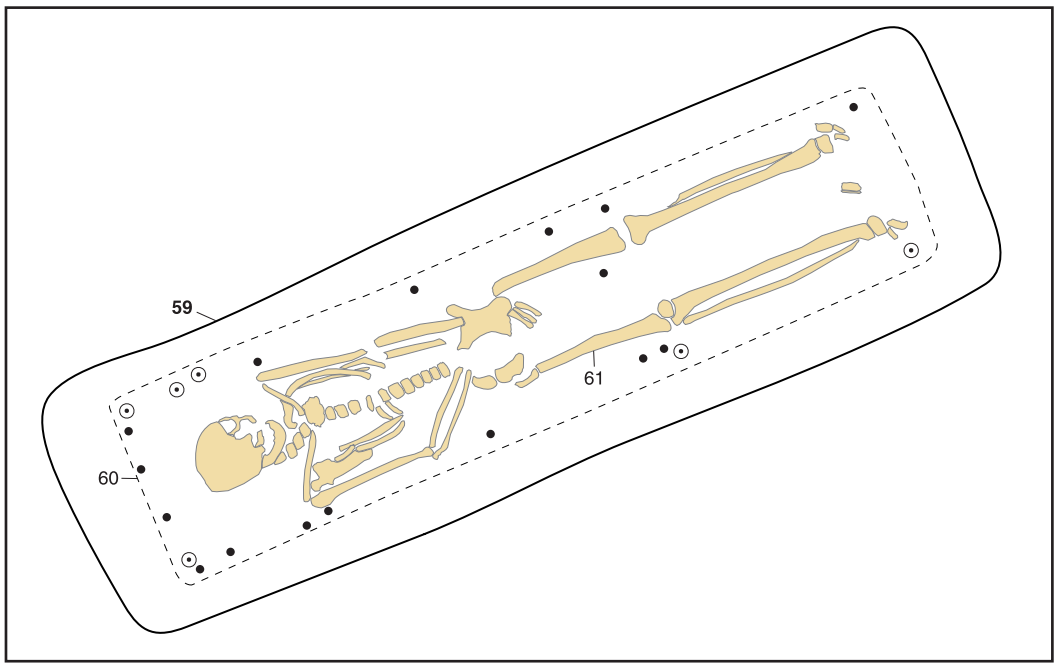


Fig. 3.13 Inhumation Grave 58

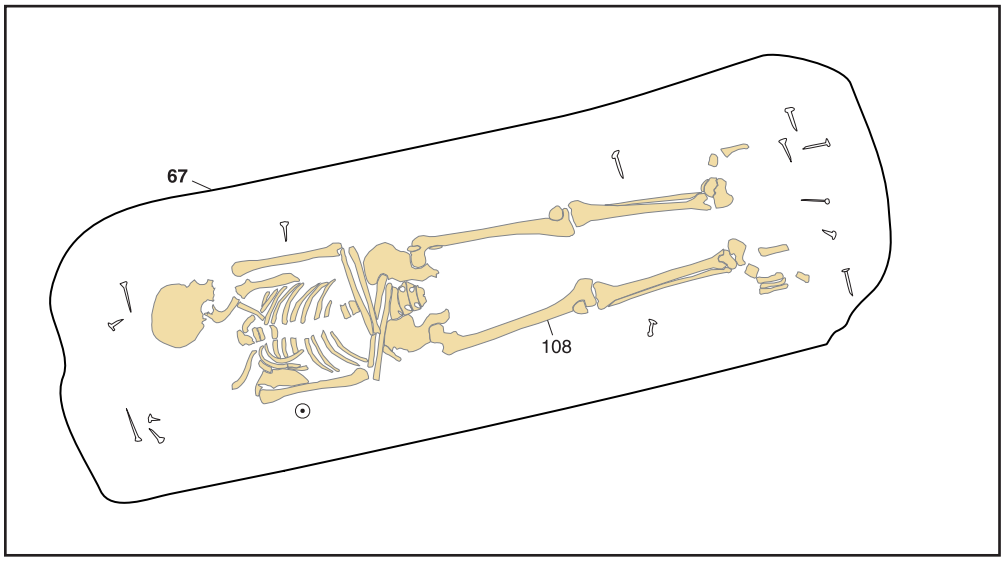


Fig. 3.14 Inhumation Grave 66

Coffin: Represented by an assemblage of 21 nails and an area of coffin fill. L: 1.89-1.92 m. B: 0.45-0.48 m. Ht: 0.17 m. (107)

Other finds: One sherd of pottery (4 g), fabric SG (68)

Inhumation Grave 69 (7906/0305, Fig. 3.15)

Grave cut 70
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.30 x 0.95 m, 0.31 m deep
Fill: Loose light yellowish brown silty sand (71)

Skeleton 77
Posture: Supine, legs extended and parallel
Arm position: Position of the left arm uncertain as only the humerus survived; right arm flexed across stomach
Sex: Female
Age: Adult
Fragmentation: Good
Condition: Skull 1, arms 2, hands 9, torso 9, legs 3, feet 1
Pathology: Cribra orbitalia. Non-specific periostitis left and right tibiae. Impaction left canines, caries, calculus, peg molar. Bilateral os acromiale.

Coffin: Represented by an assemblage of 11 nails defining the sides. B: 0.34 m. (322)

Grave goods:
1 **Hobnailed shoe**. Represented by 9 hobnails recovered from a soil sample taken from around the right foot. <40>.
2 **Hobnailed shoe**. Represented by 9 hobnails recovered from a soil sample taken from around the left foot. <41>.

Other finds: Lead strip. Bent in two. Total length *c* 60mm, section 7 x 1.5 mm. Weight 2 g. SF 269
Two sherds of pottery (5 g), one prehistoric, one fabric ZM (71)

Inhumation Grave 73 (7888/0286, Fig. 3.16)

Grave cut 201
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 2.03 x 0.98 m, 1.07 m deep
Fill: Loose light yellowish grey silt with 30% chalk pieces (202)
Relationships: Cut by Grave 66

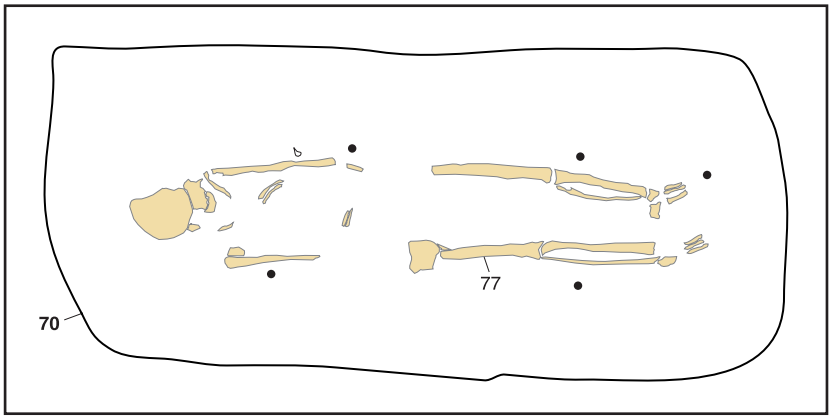


Fig. 3.15 Inhumation Grave 69

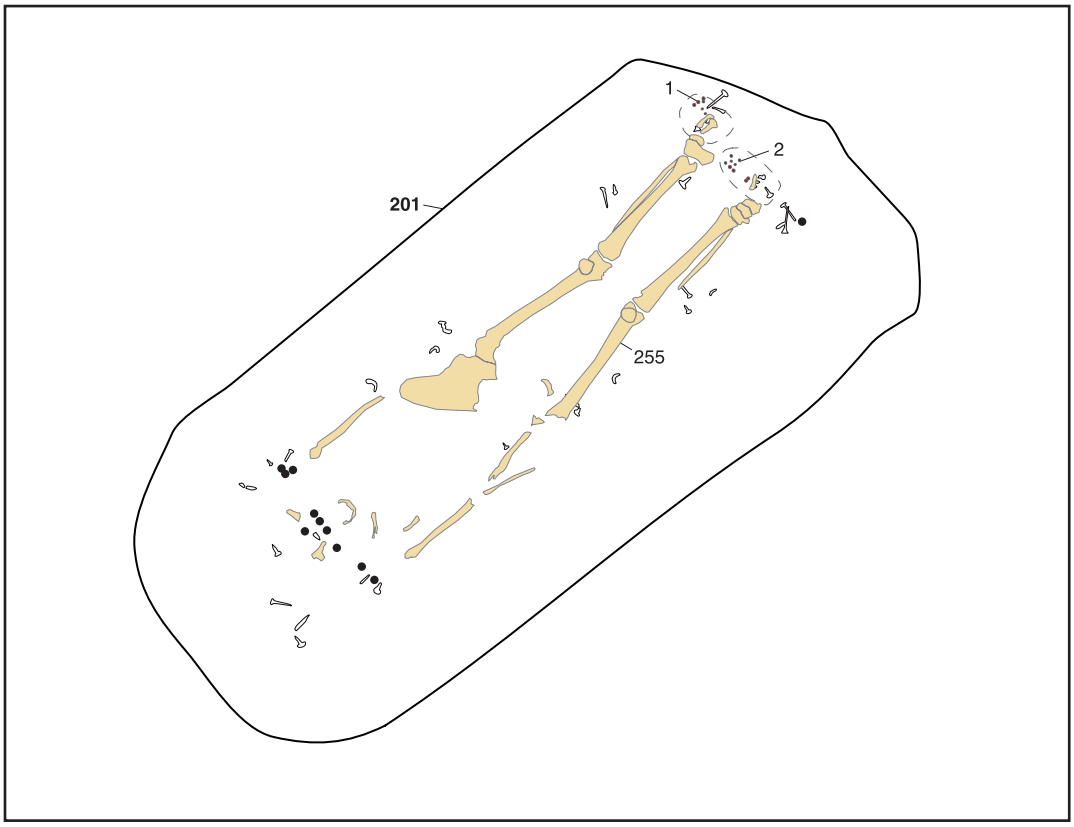


Fig. 3.16 Inhumation Grave 73

Skeleton 255
Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed; right arm extended beside body
Sex: ?Male
Age: Adult
Height: 163.5
Fragmentation: Fair
Condition: Skull 9, arms 3, hands 9, torso 9, legs 2, feet 2
Pathology: Healed fracture left talus and calcaneus. Non-specific periostitis left tibia. Caries

Additional human remains: Fragments of a second adult (202)

Coffin: Represented by an assemblage of 62 nails, defining the ends and sides. L: 1.59-1.72 m. B: 0.40-0.47 m. Ht: 0.37 m. (236)

Grave goods:
1 **Hobnailed shoe.** Represented by a minimum of 67 hobnails (including a minimum of 13 recovered from soil sample <204>), worn on the left foot. SF 780
2 **Hobnailed shoe.** Represented by a minimum of 61 hobnails (including a minimum of six recovered from soil sample <205>), worn on the right foot. SF 781

Other finds: Two hobnails (SF 657) were recovered from the backfill

Comments: The south-western end of the grave was cut by Grave 66, removing part of the skull of skeleton 255

Inhumation Grave 82 (7887/0306, Fig. 3.17)

Grave cut 83
Orientation: W-E
Shape: Rectangular, stepped profile
Dimensions: 2.60 x 1.20 m, 1.80 m deep, with a step 0.17-0.25 m wide along each of the long sides at a depth of 0.40 m
Fill: Loose brownish white silty chalk (86)

Skeleton 84
Posture: Supine, legs extended with feet together
Arm position: Left arm extended beside body; right arm semi-flexed with the hand resting on the right side of the pelvis
Sex: Female
Age: Adult
Height: 161.7
Fragmentation: Good
Condition: Skull 0, arms 0, hands 0, torso 0, legs 0, feet 0
Pathology: Cribra orbitalia. Non-specific infection left tibia. L5-S1 intervertebral disc disease. Caries, lesion, AMTL, calculus, periodontal disease

Coffin: Represented by an assemblage of 31 nails and a rectangular area of coffin fill. L: 1.93-1.94 m. B: 0.40-0.50 m. Ht: 0.39 m. (85)

Grave goods:
1 **Vessel**. Buff-brown sandy fabric (fabric Y). Handleless ?flask as Clarke 1979 fig. 69, no. 61. A Trier source seems most likely. The rim and part of the shoulder were broken off in antiquity. Located beside the left foot, outside the coffin. (147)

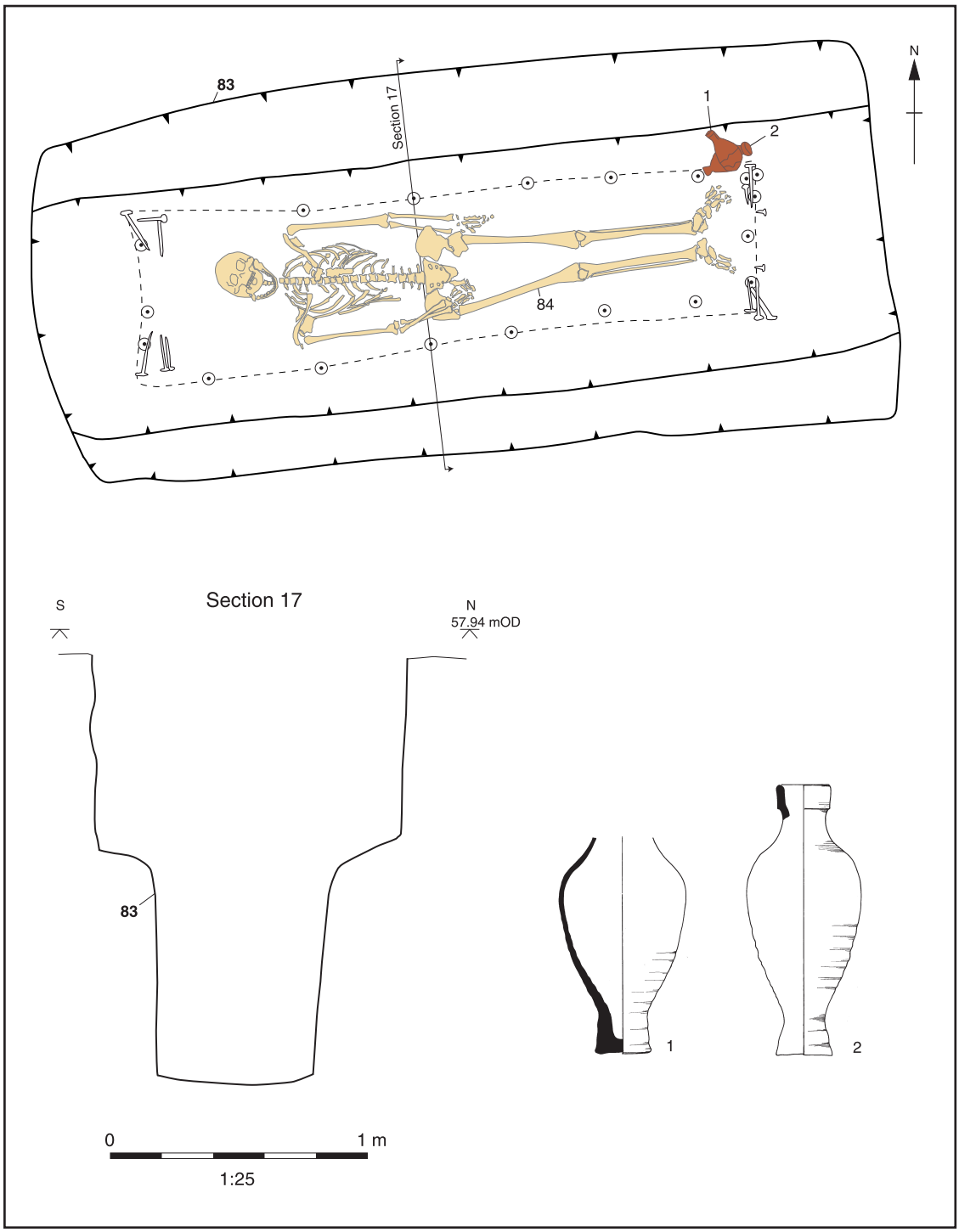


Fig. 3.17 Inhumation Grave 82

2 **Vessel**. Vessel as 147 above, but complete. Located beside the left foot, outside the coffin. (148)
3. **Bone pin?** Located at the eastern, foot end of the grave, outside the coffin. SF 579 (not illustrated). **(NI)**

Date: A vessel as 147 and 148 above from Clarke's grave 45 was dated AD 300-350. More recent comparanda suggest a similar date

Comments: A group of nine nails (149, SF 239-44, 272, 319-20) were recorded at the level of the step in the profile of the grave, and are likely to represent the former presence of timbers at this level, creating a separate lower chamber within the grave

Inhumation Grave 87 (7894/0284, Fig. 3.18)

Grave cut 156

Orientation: WSW-ENE
Shape: Sub-rectangular with squared corners at the north-eastern end and rounded corners at the south-western end
Dimensions: 2.60 x 0.95 m, 1.60 m deep

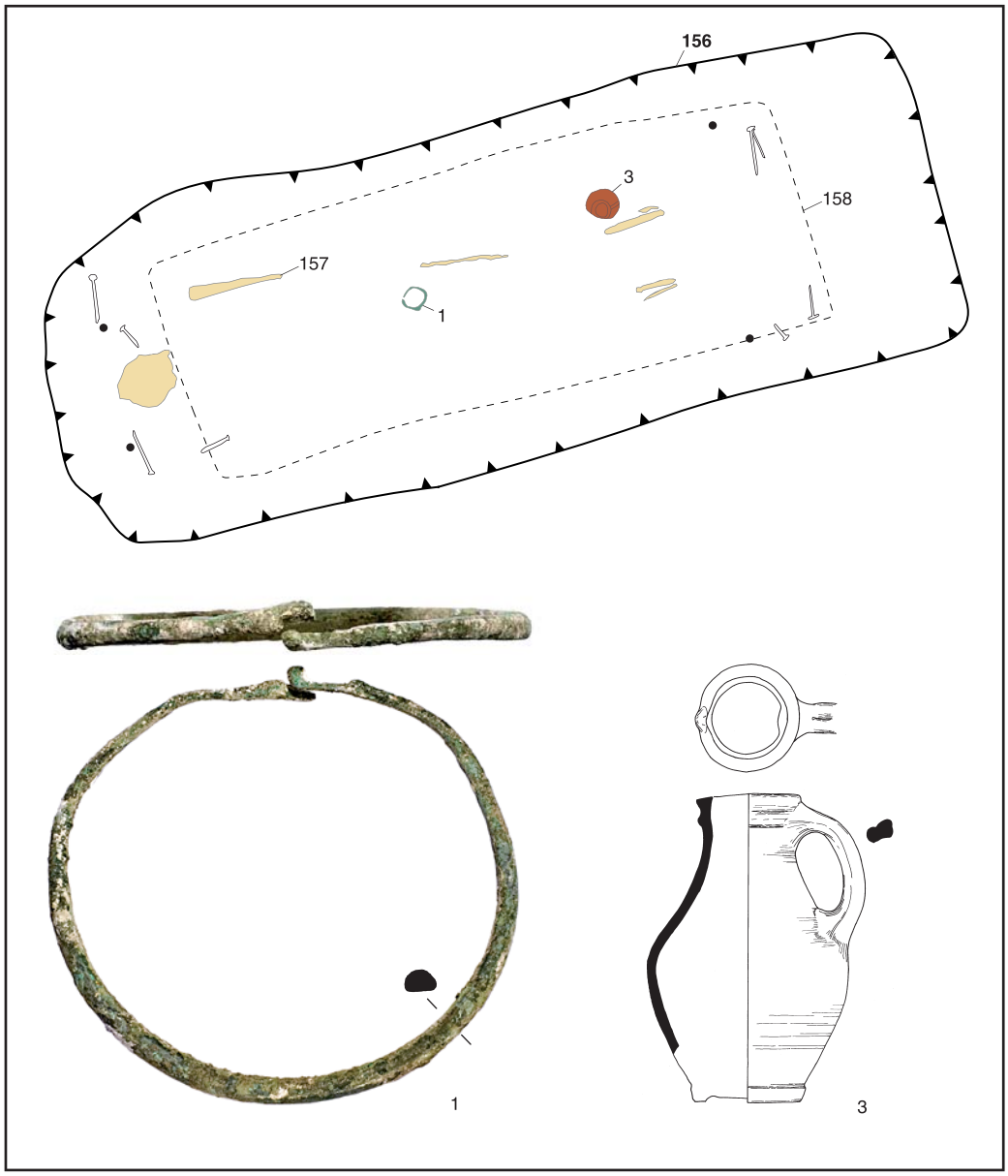


Fig. 3.18 Inhumation Grave 87

Fill: Loose light brownish grey sandy silt with frequent chalk pieces (159)
Relationships: Cut Grave 313. Relationship with Grave 41 uncertain as the features only intersected slightly

Skeleton 157
Posture: Supine, legs extended and parallel
Arm position: Position of arms uncertain as only the left humerus survived
Sex: ?Female
Age: Adult
Fragmentation: Fair
Condition: Skull 4, arms 4, hands 9, torso 9, legs 3, feet 9
Pathology: DEH

Additional human remains: Fragments of a neonate (289)

Coffin: Represented by an assemblage of 13 nails defining the corners and an area of coffin fill of loose light greyish brown silty. L: 1.87-1.88 m. B: 1.44-0.46 m. Ht: 0.28 m. (158)

Grave goods:
1 **Copper alloy bracelet**. 'D'-sectioned tapering to hook and eye terminal, small blocks behind terminal, eye broken. Diameter 63 x 59 mm. (159). SF 681
2 **Bead**, shattered fragment from long hexagonal bead, translucent deep blue. (159) <142> – found while processing skull (not illustrated) **(NI)**
3 **Vessel**. Fabric TR, New Forest colour-coated ware, variably-fired, slip ranging from buff-orange to dark grey-brown. Jug, closest to Fulford (1975a) fine ware type 17.4. *c* AD 350-400+. Complete. Located beside the left leg, inside the coffin. (230)

Other finds: Base fragment, glass (colourless?) with very heavy enamel-like weathering. Side curving into concave base, very possibly traces of base of indentation just above the base. Dimensions 28 x 24 mm, wall thickness 1 mm. SF 695

Date: Vessel dated 350-400. Calibrated radiocarbon date (2σ) AD 141-152 & 169-388

Inhumation Grave 89 (7882/0313, Fig. 3.19)

Grave cut 91
Orientation: NW-SE
Shape: Sub-rectangular
Dimensions: 2.50 x 1.00 m, 0.46 m deep
Fill: Loose mid to dark brown sandy silt (90)

Skeleton 93
Posture: Supine, legs extended and parallel
Arm position: Left arm extended wit the hand resting on the head of the left femur; right arm extended beside body
Sex: Female
Age: 26-35. Prime adult
Fragmentation: Fair
Condition: Skull 1, arms 2, hands 2, torso 2, legs 2, feet 1
Pathology: Schmorl's nodes. Spondylolysis. AMTL, periodontal disease. Cribra orbitalia. Left os acromiale.

Coffin: Represented by an assemblage of 16 nails and a coffin stain defining the outline of the south-eastern end and part of the south-western side, and the coffin lid. L: 1.85-1.87 m. B: 0.37-0.38 m. Ht: 0.27 m. (92)

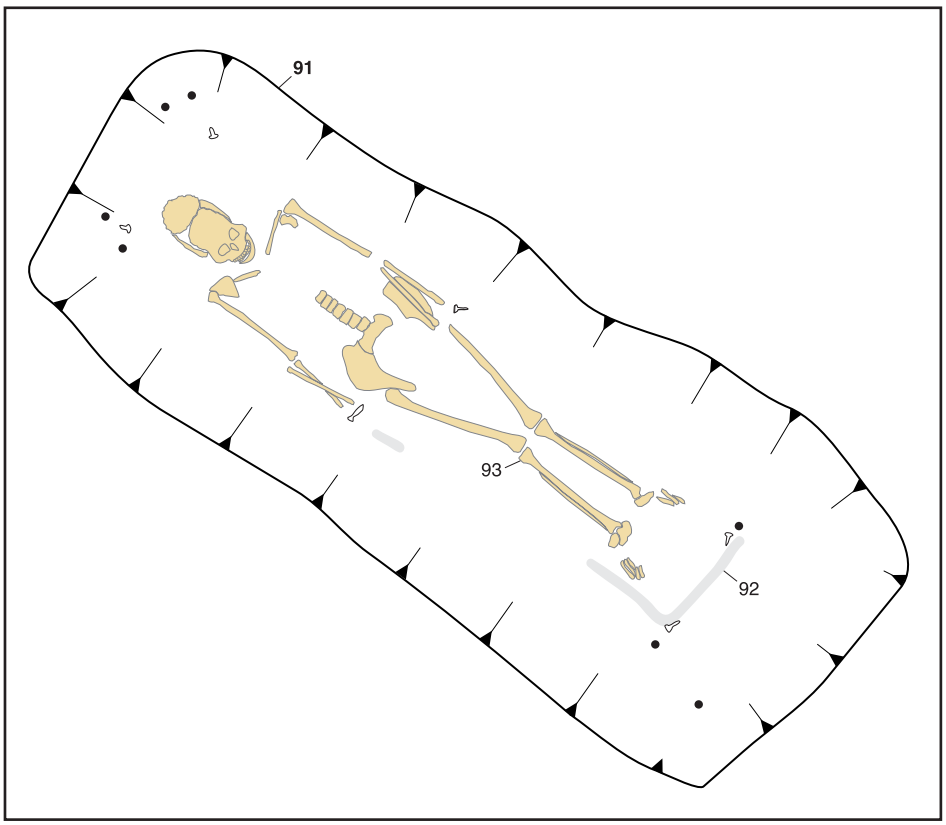


Fig. 3.19 Inhumation Grave 89

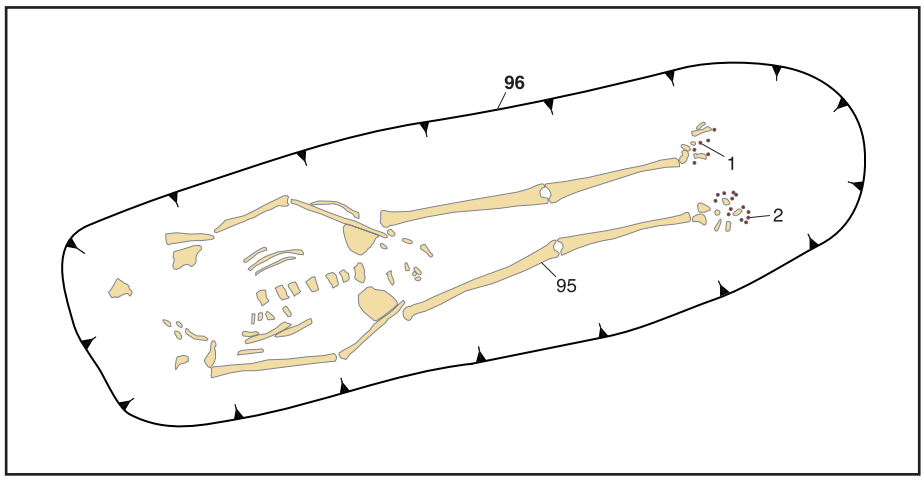


Fig. 3.20 Inhumation Grave 97

Inhumation Grave 97 (7884/0307, Fig. 3.20)

Grave cut 96
Orientation: WSW-ENE
Shape: Sub-rectangular with rounded ends
Dimensions: 2.15 x 0.60 m, 0.30 m deep
Fill: Chalk rubble with 40% friable mid brownish grey clay silt (94)

Skeleton 95
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed with the hands resting below the pelvis
Sex: Male
Age: 45+. Older adult
Fragmentation: Poor
Condition: Skull 0, arms 0, hands 0, torso 0, legs 0, feet 1
Pathology: Healed fracture right 1st metacarpal head and 1st proximal phalanx. Osteophytosis bilateral glenoid fossa.

Additional human remains: Fragments of a second adult (94)

Coffin: None

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of eight hobnails (including soil sample <64>), worn on the left foot. SF 346
2 **Hobnailed shoe**. Represented by a minimum of eight hobnails (including soil sample <63>), worn on the right foot. SF 345

Inhumation Grave 99 (7900/0310, Fig. 3.21)

Grave cut 79
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.24 x 0.66 m, 1.30 m deep
Fill: Loose white chalk rubble (78)

Skeleton 119
Posture: Supine, legs extended with feet together
Arm position: Both arms semi-flexed with the hands resting on the pelvis
Sex: Female
Age: 18-25. Young adult
Height: 152.4
Fragmentation: Excellent
Condition: Skull 3, arms 0, hands 0, torso 0, legs 1, feet 0
Pathology: Non-specific periostitis right tibia and fibula. Calculus, impaction upper left third molar

Coffin: Represented by an assemblage of 39 nails and a rectangular area of coffin fill of loose light greyish brown silt. L: 1.79-1.86 m. B: 0.34-0.47 m. Ht: 0.16 m. (98)

Grave goods:
1 **Vessel**. Fabric ZM, New Forest reduced coarse ware with black slip on rim and shoulder. Narrow mouthed jar comparable to Fulford (1975a) grey ware types 35 (but without the cordon at the base of the neck) and 33. *c* AD 270-350. Complete except for the outer lip of the rim, more than half of which was lost, apparently ancient damage. Located beside the left foot, outside the coffin. (128)

Date: Pottery date AD 270-350

Inhumation Grave 106 (7896/0307, Fig. 3.22)

Grave cut 105
Orientation: SW-NE
Shape: Sub-rectangular with rounded ends
Dimensions: 2.23 x 0.75 m, 0.92 m deep
Fill: Loose light whitish grey chalk rubble (104)

Skeleton 134
Posture: Supine, legs extended and together
Arm position: Both arms flexed across the stomach, although the left ulna had become displaced
Sex: Male
Age: 36-45. Mature adult
Height: 170.8
Fragmentation: Good

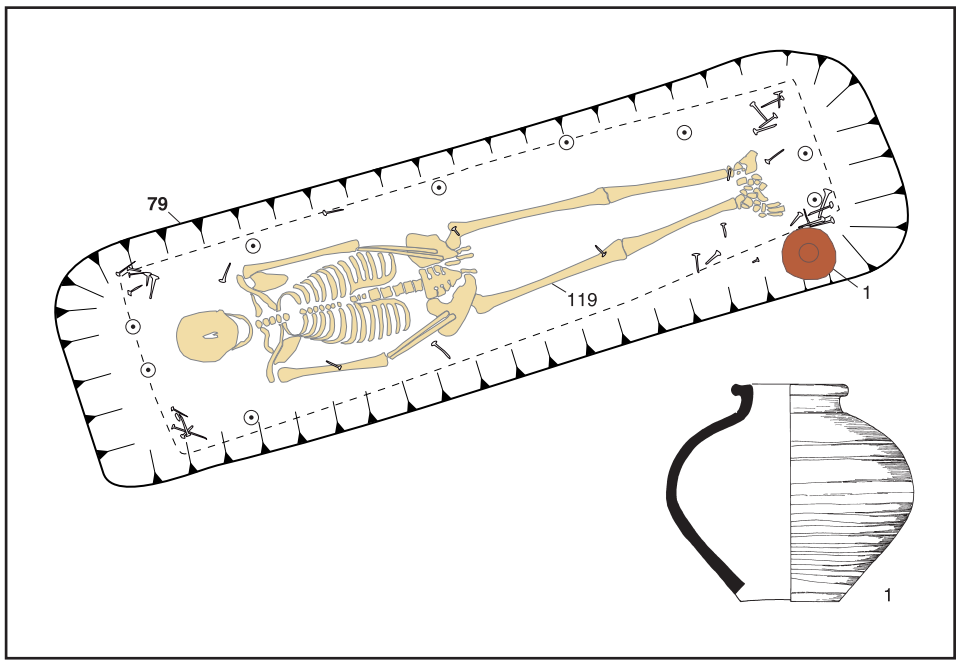


Fig. 3.21 Inhumation Grave 99

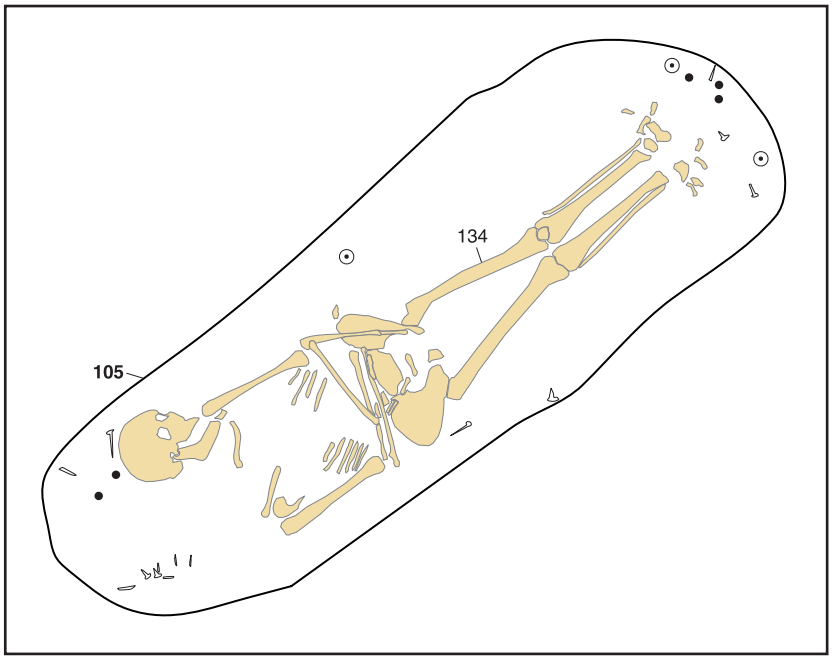


Fig. 3.22 Inhumation Grave 106

Condition: Skull 2, arms 2, hands 1, torso 1, legs 2, feet 4
Pathology: left hand 5th proximal phalanx head amputated. Calculus.

Coffin: Represented by an assemblage of 19 nails and a coffin fill. L: 1.99-2.04 m. B: 0.39 m. (117)

Inhumation Grave 110 (7902/0311, Fig. 3.23)

Grave cut 81
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 1.04 x 0.38 m, 0.22 m deep
Fill: Compact light brown clay silt with frequent chalk pieces (80)

Skeleton 118
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body; position of the right arm uncertain as only parts of the humerus survived
Age: 10 months-2 years. Infant
Fragmentation: Poor
Condition: Skull 1, arms 2, hands 1, torso 2, legs 1, feet 2

Additional human remains: Fragments of a subadult (80)

Coffin: Represented by an assemblage of 17 nails defining the corners. L: 0.89-0.94 m. B: 0.26-0.27 m. Ht: 0.16 m. (323)

Grave goods:
1 **Bone bracelet**; three joining fragments approximately half extant. Rectangular-section. Present diameter 45 mm, section 5 x 2 mm. (80) SF 651, 634, 635 **(NI)**
2 **Bone bracelet**; fragment approximately half extant, both ends broken. Rectangular-section. Present diameter 48 mm, section 4 x 2 mm. (80) SF 633
3 **Copper alloy bracelet** (five fragments), torc-twisted, rectangular-sectioned, left-hand twist, one end hooked, other terminal broken. Diameter *c* 40 mm, section 2 x 1.5 mm. (80) SF 260, 639, 643, 645
4 **Bead string** consisting of 26 beads. The majority lay among the bracelets, with two lines extending out to the south, plausibly the end of the strings. That to the west consisted of blue beads (SF 269, 267, 266). The eastern end had green/blue and peacock beads (d – SF 264, b – SF 262) separated by a blue bead (SF 263). The position of the third green/blue bead is unknown as it came from a sample. The amber bead (f – SF 364) was centrally placed in cluster
4a 22 short biconical beads with conical perforation, translucent deep blue glass

Diameter	*Length*	*Perforation diameter*	*Context*	*SF*
6.5	4	1.5	80	261
6.5	3.5	2	80	263
7	4	2	80	265
5	2.5	1.5	80	266
5.5	3	1.5	80	268
6	4	1.5	80	362
7 x 6	3.5	1.5	80	363
6	3.5	1.5	80	365
5.5	3	1.5	80	636
6	3	2	80	637
5.5	3	1	80	638
6	3	2	80	640
5.5	3	1	80	641
6	4	2	80	642
5	2.5	1.5	80	648
5	2.5	1	80	649
4	2.5	1	80	650
7.5 x 6.5	3.5	1	80	978
4.5	2	0.5	80	979
6	4	1	80	980
5.5	3	1.5	80	981
6	3.5	2	80	<141>

4b **Bead**, cylindrical. Green/blue translucent glass. Diameter 3.5 x 3 mm, length 10 mm, perforation diameter 1.5 mm. (80) SF 262
4c **Bead**, cylindrical. Green/blue translucent glass. Diameter 3 mm, length 6 mm, perforation diameter 1 mm. (80) <141>
4d **Bead**, cylindrical (slightly faceted). Peacock translucent glass. Diameter 3.5 mm, length 5 mm, perforation diameter 2 mm. (80) SF 264
4e **Bead**, annular. Deep blue translucent glass. Diameter 5 x 4 mm, length 2 mm, perforation diameter 2.5 mm. (80) SF 267
4f **Bead**, shape unclear. Red amber, granulated and much fragmented. Length at least 8 mm, perforation diameter 2 mm. (80) SF 364

Date: Later 4th century based on the bracelets

Comments: The infant had been decapitated and the skull placed on the lower part of the legs.

Inhumation Grave 111 (7915/0304, Fig. 3.24)

Grave cut 112
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 1.90 x 0.70 m, 0.50 m deep
Fill: Loose white chalk and sandy silt (114)
Relationships: Relationship with Grave 14 uncertain as the features only intersected slightly

Skeleton 113
Posture: Supine, legs extended and parallel

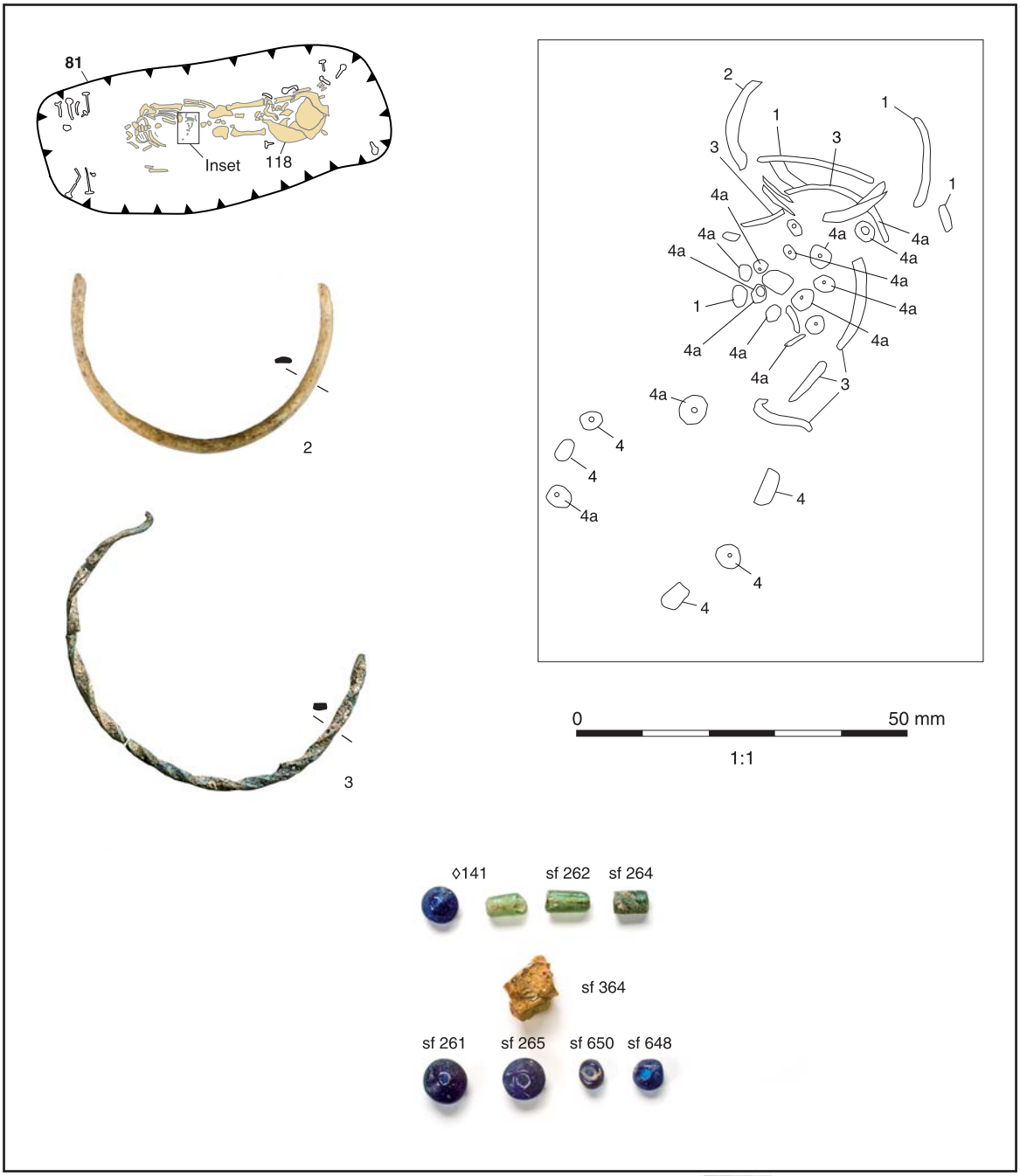


Fig. 3.23 Inhumation Grave 110

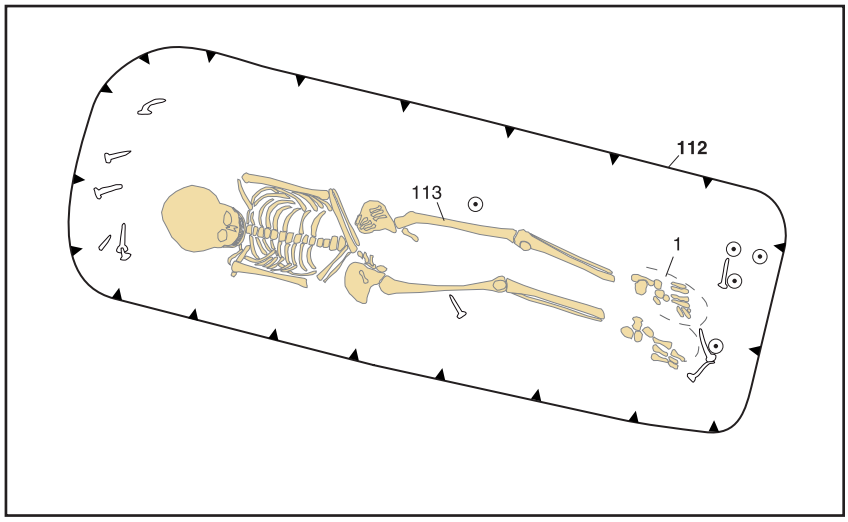


Fig. 3.24 Inhumation Grave 111

Arm position: Both arms semi-flexed with the hands on the pelvis
Age: 9-13. Older child
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Lesion, periodontal disease, DEH.

Coffin: Represented by an assemblage of 15 nails defining the ends. L: 1.62-1.67 m. B: 0.34-0.39 m. Ht: 0.16 m. (324)

Grave goods:

1 **Hobnailed shoes**. Represented by a minimum of 48 hobnails (including soil samples <87> and <88>), worn on the feet. SF 375

Inhumation Grave 120 (7889/0305, Fig. 3.25)

Grave cut 116

Orientation: WSW-ENE
Shape: Sub-rectangular with rounded ends
Dimensions: 2.70 x 0.85 m, 1.10 m deep
Fill: Loose mid to dark greyish brown loam with chalk pieces (115)
Relationships: Cut Grave 243 and unexcavated Grave 296

Skeleton 122

Posture: Supine, legs extended with feet together
Arm position: Both arms semi-flexed
Sex: Female
Age: 26-35. Prime adult
Height: 158
Fragmentation: Fair
Condition: Skull 4, arms 5, hands 5, torso 3, legs 2, feet 1
Pathology: sinusitis

Coffin: Represented by an assemblage of 10 nails, a coffin stain defining the ends and parts of the sides, and a coffin fill of light brown sandy clay. L: 1.79-1.84 m. B: 0.48-0.57 m. (121, 123)

Grave goods:

1 **Hobnailed shoe**. Represented by a minimum of 29 hobnails (including soil sample <119>), worn on the left foot. SF 413, 472

2 **Hobnailed shoe**. Represented by a minimum of 18 hobnails (including soil sample <118>), worn on the right foot. SF 471

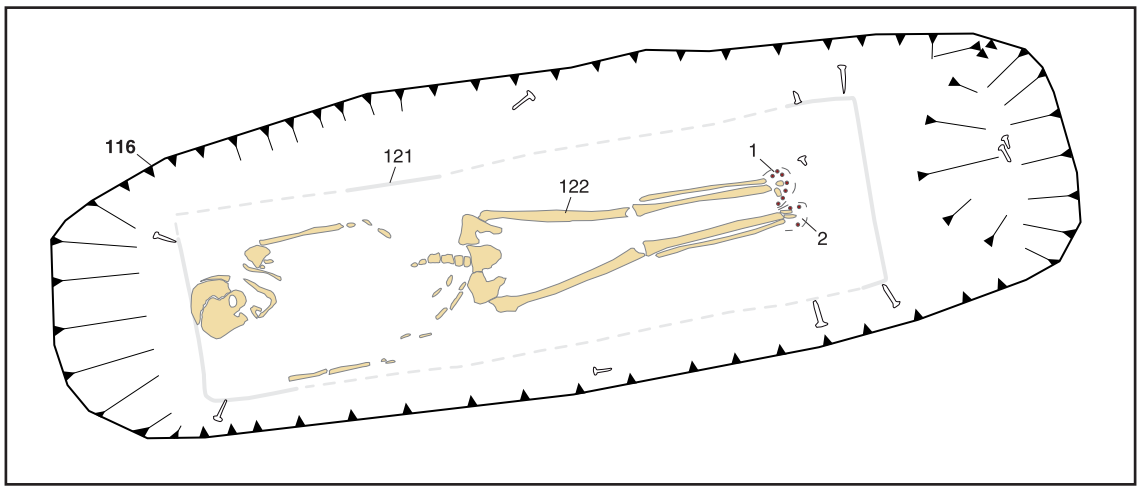


Fig. 3.25 Inhumation Grave 120

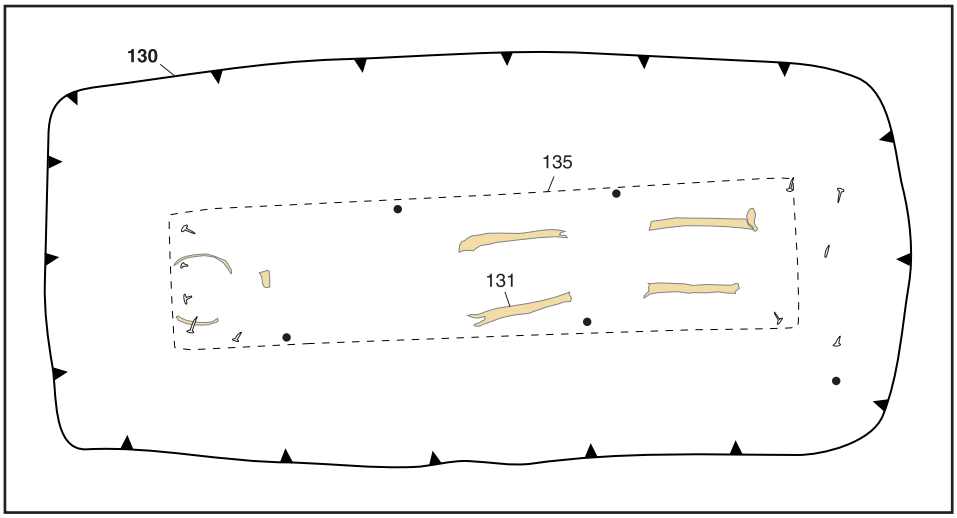


Fig. 3.26 Inhumation Grave 129

Other finds: Six sherds of pottery (175 g), body sherds and a wide mouthed jar rim in fabric ZM, 'cooking pot type' jar rim in fabric SG (115) and (121) (1 sherd)

Inhumation Grave 129 (7884/0308, Fig. 3.26)

Grave cut 130
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.30 x 1.08 m, 0.82 m deep
Fill: Chalk rubble with 30% loose, mid reddish brown clay silt (132)
Relationships: Cut by Grave 97

Skeleton 131
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Sex: ?Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 2,arms 9 hands 9, torso 9, legs 2, feet 2
Pathology: Right tibia periostitis non-specific infection. Caries, AMTL

Coffin: Represented by 13 nails and a rectangular area of coffin fill of loose light reddish grey clay silt. L: 1.69-1.72 m B: 0.35 m. Ht: 0.29 m. (135)

Comments: Some nails were located well outside the limits of the coffin, including two (SF 426, 427) located in the north-western and south-western corners of the grave respectively

Inhumation Grave 136 (7902/0313, Fig. 3.27)

Grave cut 137
Orientation: W-E
Shape: Sub-rectangular with rounded ends
Dimensions: 1.40 x 0.60 m, 0.60 m deep
Fill: Loose light whitish grey chalk (140)
Relationships: Cut Grave 233

Skeleton 139
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Age: 5-7. Child
Fragmentation: Fair
Condition: Skull 4, arms 9, hands 5, torso 5+, legs 5, feet 4
Pathology: Cribra orbitalia. DEH

Coffin: Represented by an assemblage of 6 nails defining the western end and north-eastern corner, and an area of coffin fill. L: 1.24. Ht: 0.25. (138)

Other finds: Double-sided composite comb; antler (?). Two non-joining fragments consisting of central connecting plate on either side with tooth plates held between by close-spaced iron rivets; also four other fragments of connecting plate; six fragments of tooth plates, numerous detached teeth. Two tooth plate fragments join and form complete end plate, straight edge with five V-shaped notches. Connecting plate rectangular-sectioned, groove parallel to each edge and diagonal groove across front faces between each iron rivet. Edges of connecting plate show notches from cutting of teeth. Teeth slightly narrower on one side than other *c* 7 to one side and 5-6 to other. Width of comb 45 mm, width of connecting plate 13 mm, thickness of connecting plate 3 mm. (140) SF 605
One pottery sherd (2 g), fabric WFA (140)

Date: Comb (SF 605) should date after *c* AD 360

Inhumation Grave 141 (7902/0305, not illustrated)

Grave cut 142
Orientation: WSW-ENE
Shape: Sub-rectangular with slightly rounded ends
Dimensions: 1.10 x 0.75 m, 0.90 m deep
Fill: Loose light brown sandy silt with chalk pieces (143)

Skeleton 144
Posture: Unknown
Arm position: Unknown
Sex: Indeterminate
Age: Adult
Fragmentation: Good
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 2

Coffin: Two coffin nails were located *in situ* at the western end. The rest of the coffin, comprising a further 12 nails, had been excavated during the 1967-72 excavations

Other finds: A coffin nail was recovered from Clarke's backfill (145)

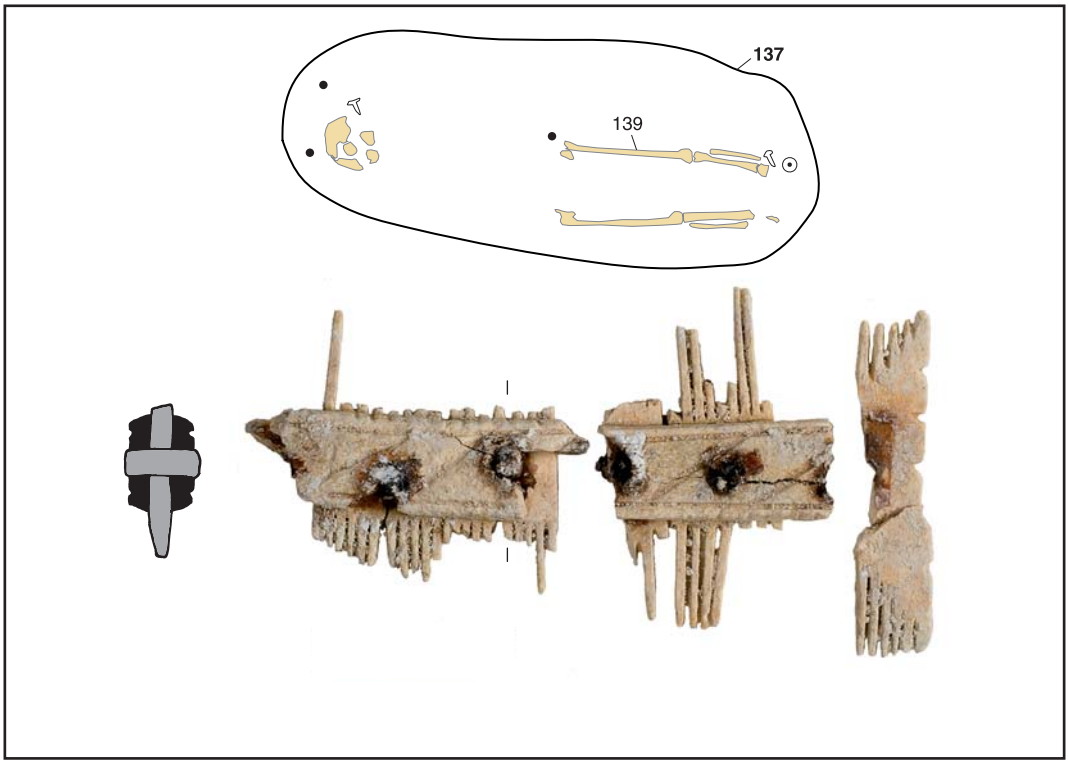


Fig. 3.27 Inhumation Grave 136

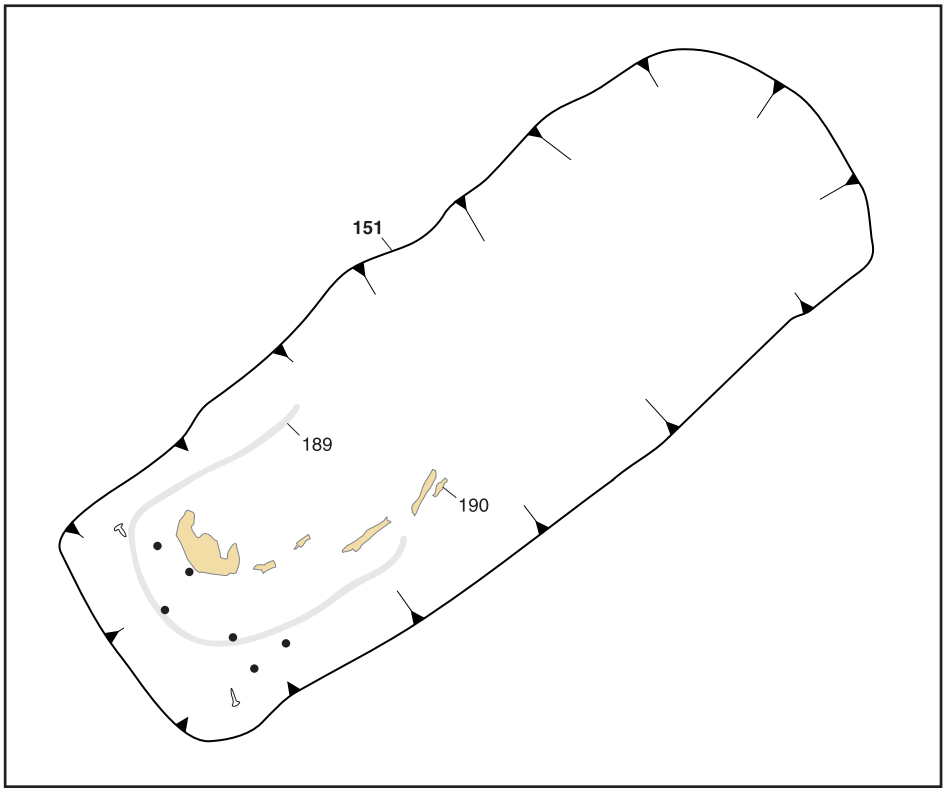


Fig. 3.28 Inhumation Grave 150

Date: Clarke's grave 228 contained a coin of AD 322-4

Comments: The grave had been largely excavated during the 1967-72 excavations as Clarke's grave 228, leaving only the feet

Inhumation Grave 150 (7891/0286, Fig. 3.28)

Grave cut 151
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 2.25 x 0.88 m, 1.40 m deep
Fill: Loose greyish brown silty with chalk rubble (191)

Skeleton 190
Posture: Supine
Arm position: Unknown
Sex: Female
Age: Adult
Fragmentation: Fair
Condition: Skull 4, arms 5+, hands 9, torso 9, legs 9, feet 9
Pathology: Possible porotic hyperostosis

Additional human remains: Fragments of a second adult (191) and further fragments in modern backfill overlying grave (152)

Coffin: Represented by an assemblage of 8 nails and a coffin stain of mineralised wood defining the base, south-western end and sides. B: 0.53. (189)

Comments: The eastern half of the grave had been excavated during the 1967-72 excavations as Clarke's grave 116

Inhumation Grave 178 (7906/0304, not illustrated)

Grave cut 179
Orientation: NNE-SSW
Shape: Sub-rectangular
Dimensions: >1.87 x 0.75 m, 0.85 m deep
Fill: Loose chalk rubble (180)
Relationships: Cut Clarke's grave 276

Coffin: The remains of a coffin (181) were represented by a single coffin nail, the rest having been excavated during the 1967-72 excavations

Date: Clarke's grave 265 contained a coin of 388-402

Comments: The grave had been largely excavated during the 1967-72 excavations, as Clarke's grave 265, removing the burial and leaving only a single *in situ* coffin nail

Inhumation Grave 197 (7875/0292, Fig. 3.29)

Grave cut 198
Orientation: WSW-ENE
Shape: Sub-rectangular with square corners at the south-western end and a rounded north-eastern end
Dimensions: 1.67 x 0.60 m, 0.84 m deep
Fill: Loose white chalk with silty sand (200)

Skeleton 199
Posture: Unknown, as only skull fragments survived
Arm position: The arms did not survive
Age: 3-9 months. Infant
Fragmentation: Poor
Condition: Skull 5, arms 9, hands 9, torso 9, legs 9, feet 9

Coffin: Represented by an assemblage of 12 nails. L: 1.04 m. B: 0.36 m. (325)

Inhumation Grave 210 (7866/0297, Fig. 3.30)

Grave cut 211
Orientation: WSW-ENE
Shape: Sub-rectangular

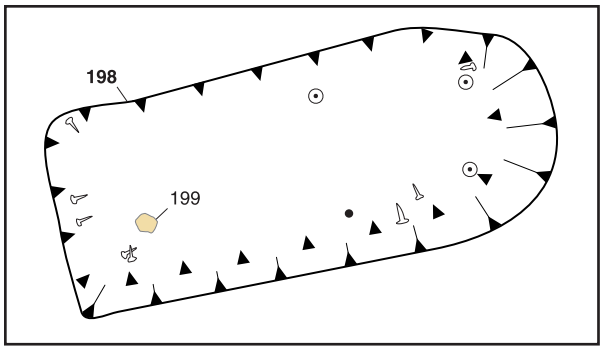


Fig. 3.29 Inhumation Grave 197

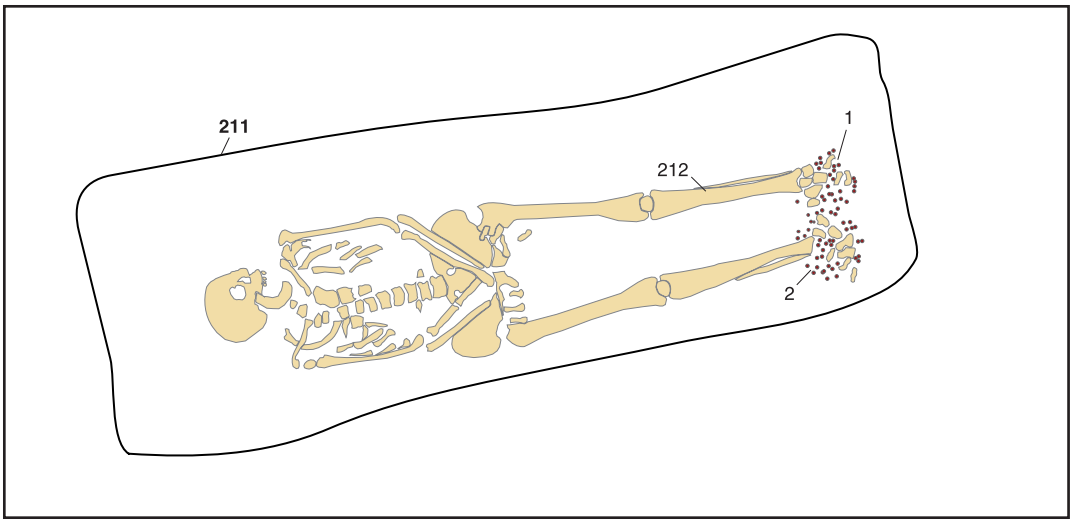


Fig. 3.30 Inhumation Grave 210

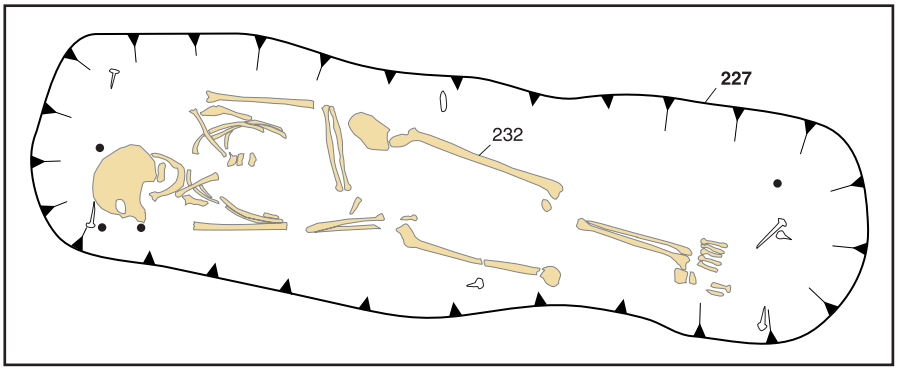


Fig. 3.31 Inhumation Grave 226

Dimensions: 2.16 x 0.60 m, 0.65 m deep
Fill: Loose, yellowish brown silty chalk (214)
Relationships: Cut Grave 263

Skeleton 212
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed with the hands crossed over the pelvis
Sex: ?Female
Age: 60+. Much older adult
Height: 172.1
Fragmentation: Poor
Condition: Skull 0, arms 0, hands 0, torso 0, legs 0, feet 0
Pathology: 1st right rib fracture. Right rib soft tissue damage. Osteophytosis, intevertebral disc disease, Schmorl's nodes and osteoarthritis in spine. Joint degeneration, rotator cuff, TMJ, phalanges. Caries, AMTL, calculus, periodontal disease. Bilateral Os acromiale. Sinusitis

Additional human remains: Fragments of a second adult (214)

Coffin: None

Grave goods:
1 **Hobnailed shoes**. Represented by a minimum of 18 hobnails (including from soil sample <148>), worn on the left foot. SF 704
2 **Hobnailed shoes**. Represented by a minimum of 29 hobnails (including from soil sample <149>), worn on the right foot. SF 703

Other finds: Five sherds (53 g) of pottery, fabric SG 'cooking pot type' jar (214)

Date: Grave 263 contained a coin of 324-5

Comments: This burial had been dug entirely into the backfill of Grave 263 and appears to represent a re-opening of that grave to insert skeleton 212 as a secondary burial

Inhumation Grave 226 (7911/0302, Fig. 3.31)

Grave cut 227
Orientation: W-E
Shape: Sub-rectangular with rounded ends
Dimensions: 2.23 x 0.63 m, 0.50 m deep
Fill: Chalk rubble with 40% friable mid reddish brown clay silt (228)

Skeleton 232
Posture: Supine, legs extended, although the lower part of the right leg is missing
Arm position: Left arm flexed across the stomach; right arm extended with the hand on the right femur
Sex: Male
Age: 36-45. Mature adult
Fragmentation: Poor
Condition: Skull 2, arms 3, hands 4, torso 5, legs 5, feet 4
Pathology: Cribra orbitalia. Healed fracture right distal ulna and nasal. Right clavicle sternal end osteoarthritis. Osteophytosis spine upper cervical and thoracic. AMTL

Additional human remains: Fragments of an adult from Clarke's backfill (229)

Coffin: Represented by an assemblage of 11 nails. L: 1.79-1.81 m. B: 0.36-0.40 m. Ht: 0.13 m. (326)

Comments: The south-eastern part of the grave has been disturbed, and the lower part of the right leg removed in modern times, presumably during Clarke's excavation although he did not record it

Inhumation Grave 231 (7891/0284, Fig. 3.32)

Grave cut 196
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.33 x 0.59 m, 0.45 m deep
Fill: Loose light brown silt with frequent chalk pieces (195)
Relationships: Relationship with an unexcavated (unnumbered) grave uncertain, as the features only intersected slightly

Skeleton 221
Posture: Supine, legs bent
Arm position: Both arms slightly flexed, lying beside body

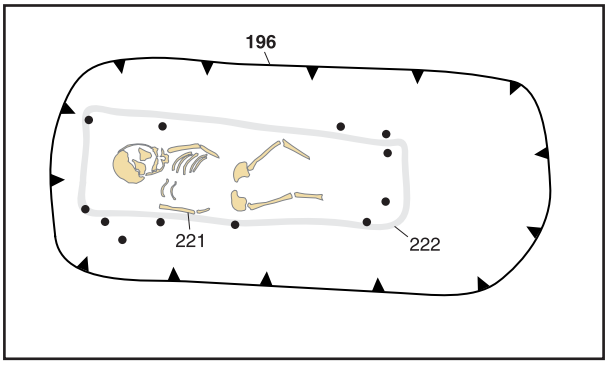


Fig. 3.32 Inhumation Grave 231

Age: 12 months. Infant
Fragmentation: Good
Condition: Skull 1, arms 1, hands 9, torso 1, legs 1, feet 9
Pathology: Scurvy. Cribra orbitalia

Coffin: Represented by an assemblage of 12 nails and a coffin stain defining the outline. L: 0.78-0.79 m. B: 0.25 m. (222)

Inhumation Grave 233 (7902/0313, Fig. 3.33)

Grave cut 234
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.35 x 0.90 m, 1.05 m deep
Fill: Loose light whitish grey chalk and loam (235)
Relationships: Cut by Grave 136

Coffin: Represented by an assemblage of 14 nails and a rectangular area of coffin fill. L: 1.87-1.89 m. B: 0.38 m. Ht: 0.35 m. (246)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 39 hobnails associated with the feet. SF 718 and 727

Other finds: One sherd (2 g) of pottery, fabric WFA (235)

Comments: A number of flints located against the northern side of the grave pit may represent deliberate packing around the coffin

Inhumation Grave 237 (7887/0304, Fig. 3.34)

Grave cut 238
Orientation: W-E
Shape: Sub-rectangular, with a rounded eastern end
Dimensions: 2.36 x 0.73 m, 0.52 m deep
Fill: Chalk rubble with 40% friable mid reddish brown clay silt (239)
Relationships: Cut unexcavated Grave 296

Skeleton 240
Posture: Supine, legs extended and parallel
Arm position: position of left arm uncertain, as only the humerus survived; right arm semi-flexed
Sex: Female
Age: 26-35. Prime adult
Fragmentation: Fair
Condition: Skull 2, arms 3, hands 9, torso 3, legs 3, feet 1
Pathology: Button osteoma

Coffin: Represented by an assemblage of 7 nails defining the ends. L: 1.73-1.98 m. B: 0.47-0.53 m. (327)

Other finds: Four sherds (23 g) of pottery, fabrics SG, ZC and ZM (239)

Inhumation Grave 242 (7887/0287, Fig. 3.35)

Grave cut 275
Orientation: SW-NE
Shape: Sub-rectangular

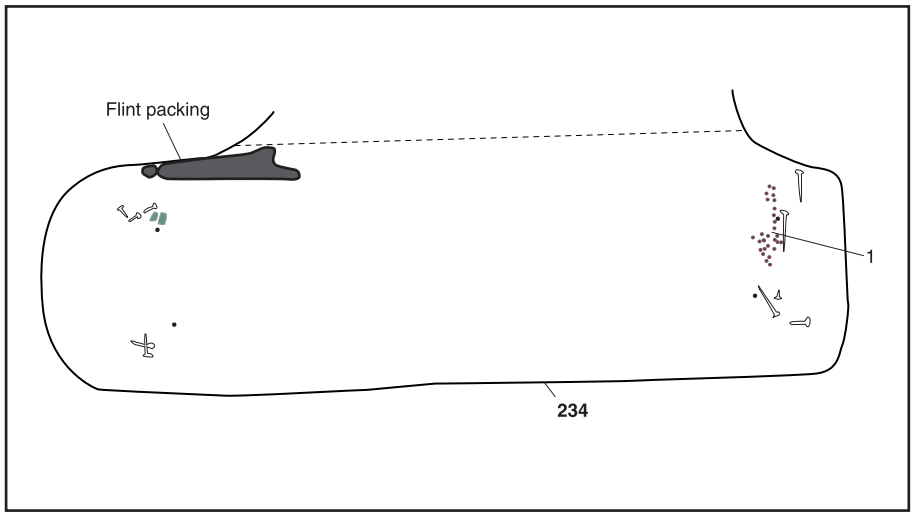


Fig. 3.33 Inhumation Grave 233

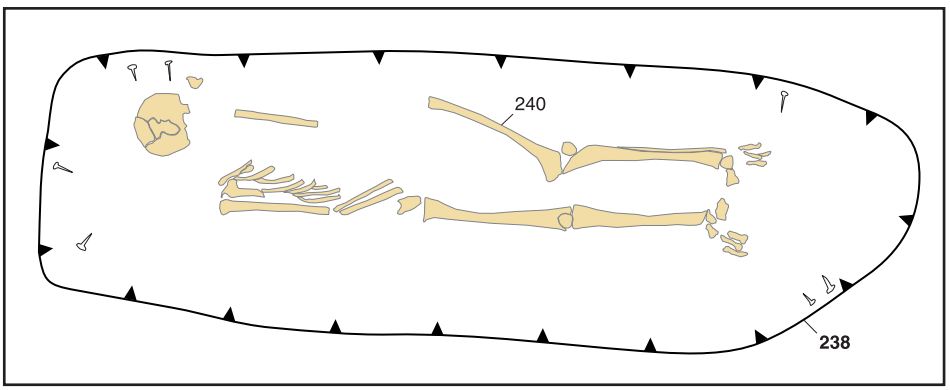


Fig. 3.34 Inhumation Grave 237

Dimensions: 2.00 x 0.80m, 1.00 m deep
Fill: Loose yellowish brown chalk rubble with clay silt (274)

Skeleton 284
Posture: Supine, legs extended and parallel
Arm position: Left arm tightly flexed with the hand on the right shoulder; right arm flexed, lying across the stomach
Sex: Female
Age: 60+. Much older adult
Height: 161
Fragmentation: Good
Condition: Skull 2, arms 1, hands 2, torso 3, legs 1, feet 9
Pathology: Spinal osteophytosis and intervertebral disc disease. Left lunate and right trapezium osteoarthritis. AMTL

Additional human remains: Fragments of a subadult in modern backfill overlying grave (241)

Coffin: Represented by an assemblage of 25 nails defining the south-western end and both sides. B: 0.47. (304)

Comments: The north-eastern end of the grave had been excavated during Clarke's excavations as grave 73, removing the lower parts of both legs

Inhumation Grave 243 (7890/0304, Fig. 3.36)

Grave cut 125
Orientation: WSW-ENE

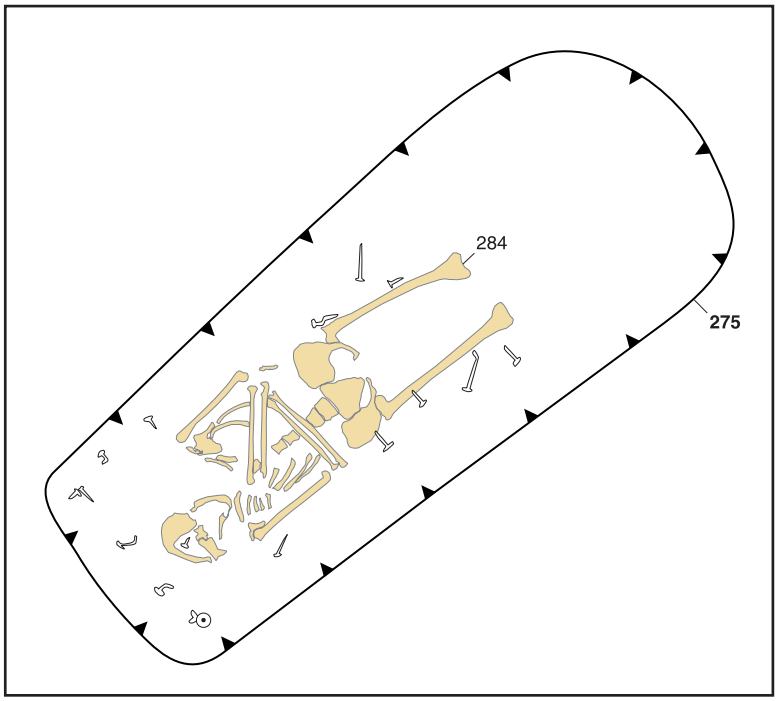


Fig. 3.35 Inhumation Grave 242

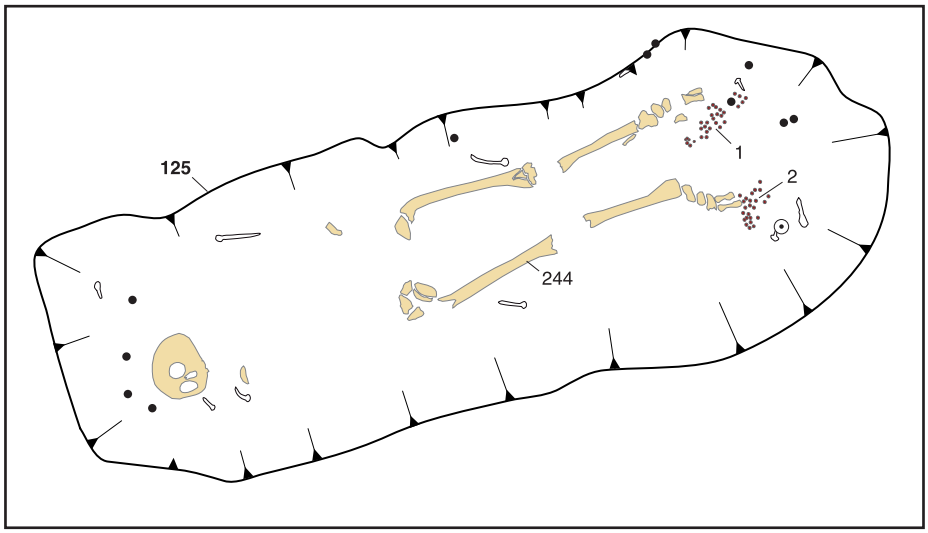


Fig. 3.36 Inhumation Grave 243

Shape: Sub-rectangular with a rounded north-western end
Dimensions: 2.25 x 0.80 m, 0.85 m deep
Fill: Loose greyish brown sandy clay with 30-40% chalk pieces (124)
Relationships: Cut by Grave 120

Skeleton 244
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Sex: ?Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 1, arms 5+, hands 5, torso 5+, legs 2, feet 1
Pathology: Left and right TMJ degeneration. Caries, AMTL. sinusitis

Coffin: Represented by an assemblage of 26 nails defining the ends and parts of the sides. L: 1.81-1.83 m. B: 0.42 m. Ht: 0.23 m. (299)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 102 hobnails (including a minimum of four from soil sample <221>), worn on the left foot. SF 778, 779, 812, 813, 917
2 **Hobnailed shoe**. Represented by a minimum of 86 hobnails (including a minimum of four recovered from soil sample <222>), worn on the right foot. SF 814, 815, 918

Other finds: Four sherds of pottery (26 g), one prehistoric fragment and fabrics ZM and ZC (124)

Inhumation Grave 256 (7894/0305, Fig. 3.37)

Grave cut 257
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.30 x 0.75 m, 0.90 m deep
Fill: Loose greyish white chalk with lumps of silty clay (258)

Skeleton 259
Posture: Supine, legs extended and close together
Arm position: Both arms semi-flexed, crossing over the pelvis
Sex: Female
Age: 18-25. Young adult
Fragmentation: Excellent
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 9
Pathology: Caries, calculus

Coffin: Represented by an assemblage of 11 nails and a rectangular area of coffin fill. L: 1.49 m. B: 0.36. (285)

Grave goods:
1 **Vessel**. Fabric ZM, New Forest reduced coarse ware. Jug of Fulford (1975a) grey ware type 20, closest to 20.2, but with a lattice band on the upper shoulder.
c AD 270-350. Complete, but surfaces quite battered/eroded, particularly below the handle. Located at the north-eastern, foot end of the grave, outside the coffin. (286) **(NI)**

Other finds: Two complete imbrices in the grave fill on the left hand side of the coffin (SF 724, SF 725)

Date: Vessel dated AD 270-350

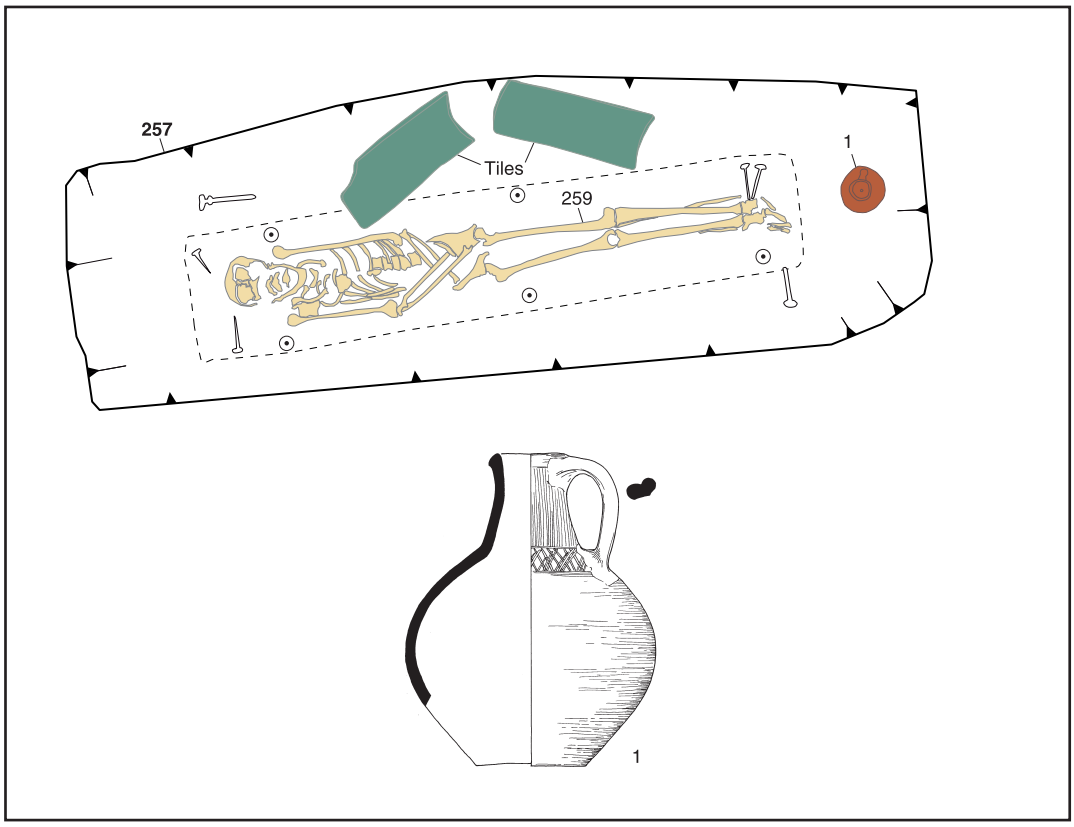


Fig. 3.37 Inhumation Grave 256

Inhumation Grave 260 (7900/0304, Fig. 3.38)

Grave cut 261
Orientation: SW-NE
Shape: Rectangular
Dimensions: 1.78 x 0.78 m, 0.95 m deep
Fill: Loose light whitish grey chalk rubble (262)

Skeleton 282
Posture: Posture could not be established as little skeletal material survived
Arm position: The arms did not survive
Age: 6-12. Older child
Fragmentation: Destroyed
Condition: Skull 5+, arms 9, hands 9, torso 9, legs 9, feet 9

Additional human remains: Fragments of an adult associated with skeleton 282

Coffin: Represented by an assemblage of 11 nails defining the ends, and a rectangular area of coffin fill. L: 1.52-1.62 m. B: 0.33 m. (290)

Grave goods:
1 **Hobnailed shoe**. Worn on the left foot. SF 818
2 **Hobnailed shoe**. Worn on the right foot. SF 819

Other finds: One sherd (13 g) of prehistoric pottery (262)

Inhumation Grave 263 (7866/0297, Fig. 3.39)

Grave cut 264
Orientation: WSW-ENE
Shape: Rectangular
Dimensions: 2.16 x 0.75 m, 1.10 m deep
Fill: Loose yellowish brown silty chalk (265)
Relationships: Cut unexcavated Grave 307. Cut by Grave 210

Skeleton 281
Posture: Supine, legs extended and parallel
Arm position: Left arm tightly flexed with the hand resting on the left shoulder; right arm flexed, lying across the stomach
Sex: Male

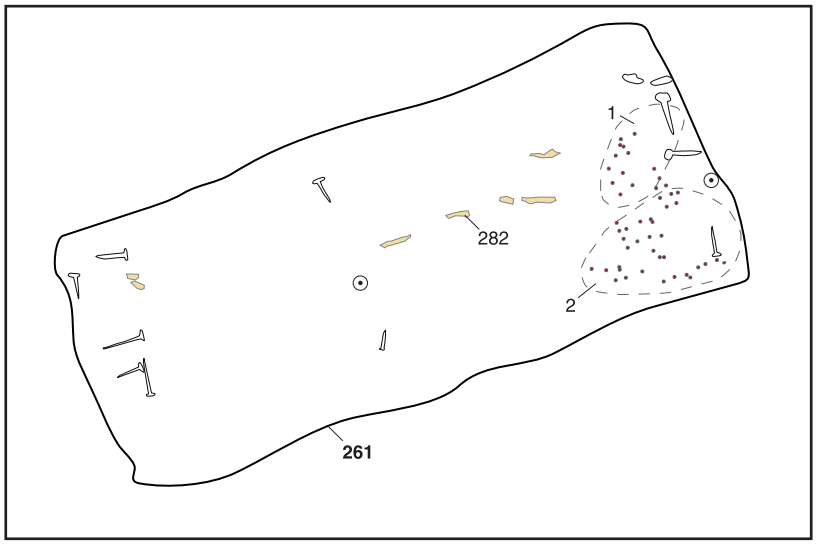


Fig. 3.38 Inhumation Grave 260

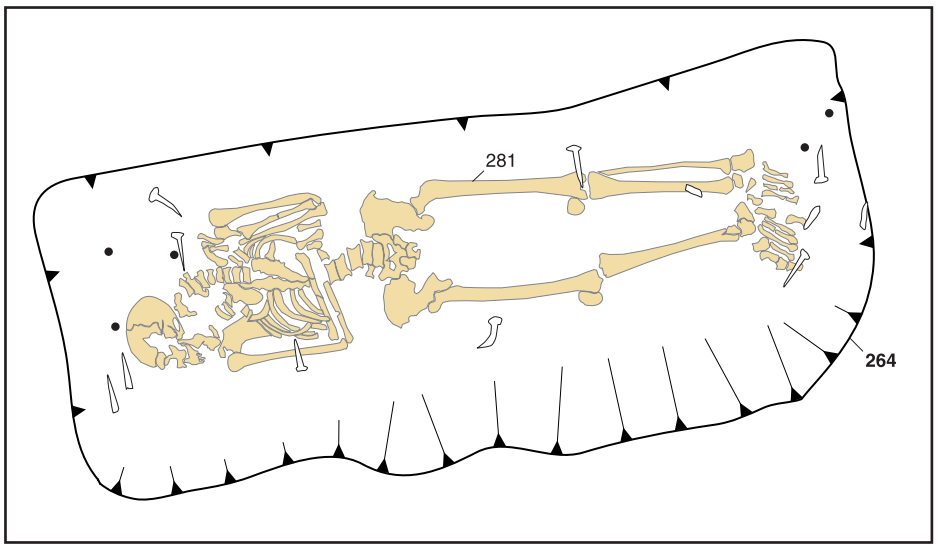


Fig. 3.39 Inhumation Grave 263

Age: 36-45. Mature adult
Height: 181.8
Fragmentation: Good
Condition: Skull 1, arms 1, hands 0, torso 0, legs 1, feet 0
Pathology: DISH. Healed fracture left clavicle. Spinal ostephytosis and ankylosis T6-7, T8-9. Periodontal disease, AMTL. Sinusitis.

Additional human remains: Fragments of a second adult (265)

Coffin: Represented by an assemblage of 18 nails. L: 1.92-2.03 m. B: 0.49 m. (283)

Other finds: Coin. Nummus of Constantine II, Providentiae Caess, London. AD 324-5 (RIC VII, London, 296). SF 886
One sherd (13 g) of pottery, fabric SG (265)

Date: Coin date AD 324-5

Comments: Grave 210 was dug into the backfill of this grave, apparently to insert a secondary burial

Inhumation Grave 272 (7894/0308, Fig. 3.40)

Grave cut 270
Orientation: WSW-ENE
Shape: Rectangular
Dimensions: 2.40 x 1.00 m, 1.40 m deep
Fill: Loose light-mid brown silt with frequent chalk pieces (269)

Skeleton 271
Posture: Supine, legs extended and parallel
Arm position: Left arm flexed, lying across stomach; right arm extended beside body
Sex: Female
Age: 26-35. Prime adult
Fragmentation: Good
Condition: Skull 1, arms 2, hands 3, torso 3, legs 3, feet 1
Pathology: Healed fracture left 1st metacarpal and left tibia. Metacarpal 1 and trapezius osteoarthritis. Lumbar spine osteophytosis. DEH, calculus, periodontal disease, caries, rotation upper left premolar, transposition lower left premolar.

Coffin: Represented by an assemblage of 16 nails. L: 1.94-1.95 m. B: 0.48-0.49 m. Ht: 0.25 m. (297)

Grave goods:
1 **Vessel**. Fabric ZF, New Forest reduced coarse ware. Jug of Fulford (1975a) grey ware type 20.2. *c* AD 270-350. Complete, but the rim is slightly battered/eroded. Located beside the right arm, outside the coffin. (273)
2 **Group of hobnails**. A minimum of 24 hobnails, located outside the coffin, beside the left leg. SF 882
3 **Group of hobnails**. A minimum of 41 hobnails, located outside the coffin, beside the left leg.. SF 883
4 **Group of hobnails**. A minimum of nine hobnails, located outside the coffin, beside the left leg. SF 884

Other finds: Glass fragment SF 806 from the backfill

Date: Pottery date AD 270-350

Comments: The groups of hobnails are quite closely adjacent, and it is unclear if they represent one, two or more shoes

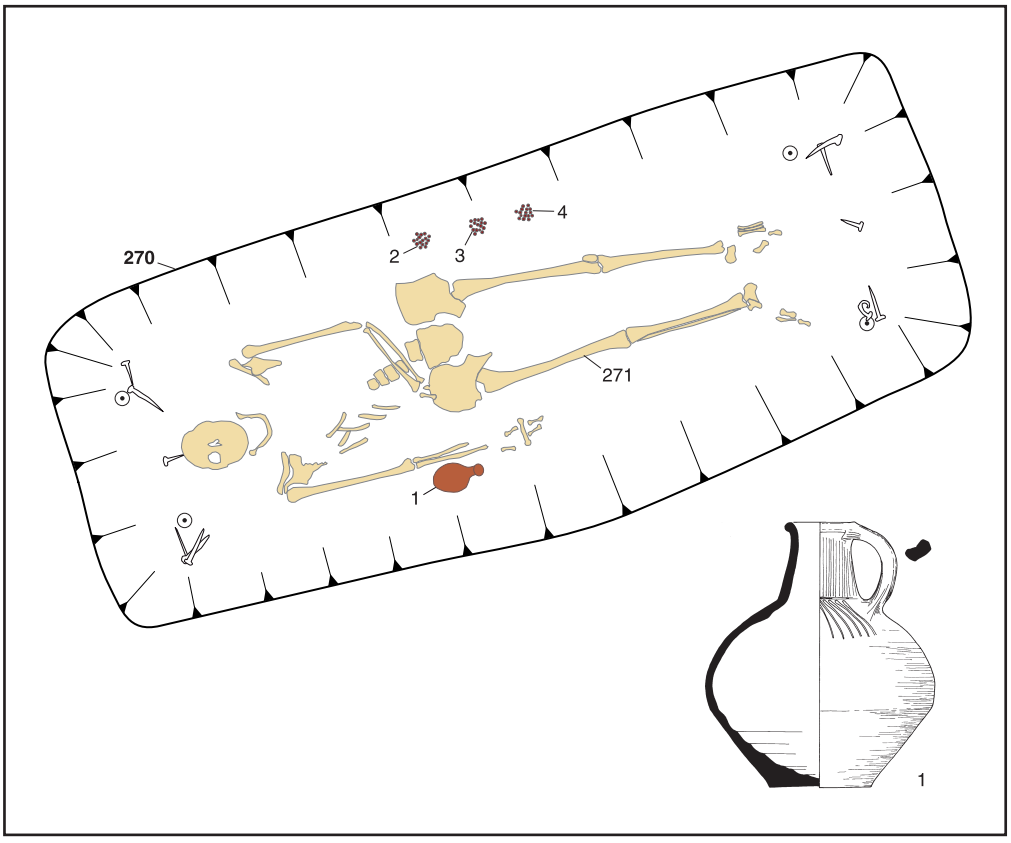


Fig. 3.40 Inhumation Grave 272

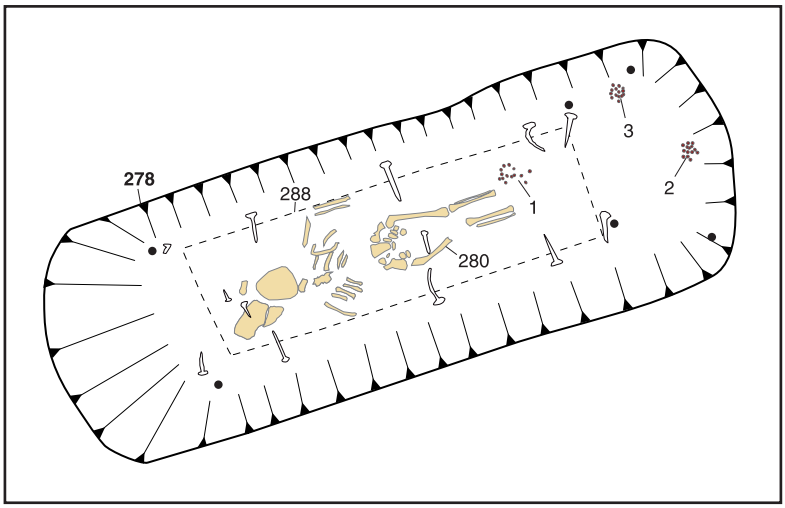


Fig. 3.41 Inhumation Grave 277

Inhumation Grave 277 (7900/0311, Fig. 3.41)

Grave cut 278
Orientation: SW-NE
Shape: Sub-rounded
Dimensions: 1.80 x 0.65 m, 1.30 m deep
Fill: Chalk rubble with 25% friable light greyish brown soil (279)

Skeleton 280
Posture: Supine, legs extended and parallel
Arm position: The left arm was angled away from the body, the forearm resting against the side; the right arm did not survive
Age: 1-2 years. Infant
Fragmentation: Good
Condition: Skull 2, arms 2, hands 9, torso 2, legs 9, feet 2

Coffin: Represented by an assemblage of 18 nails and a rectangular area of coffin fill. L: 1.09-1.11 m. B: 0.31-0.36 m. (288)

Grave goods:
1 **Hobnailed shoe(s)**. Located inside the coffin in the area of the feet. SF 945
2 **Hobnailed shoe(s)**. Represented by a minimum of 14 hobnails, located outside the coffin at the foot of the grave SF 941
3 **Hobnailed shoe(s)**. Represented by a minimum of 19 hobnails, located outside the coffin at foot of the grave. SF 928, 942

Other finds: Three hobnails (SF 802, 864, 927) were recovered from the backfill

Inhumation Grave 291 (7902/0310, Fig. 3.42)

Grave cut 292
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.45 x 0.90 m, 0.82 m deep
Fill: Friable mid orange brown silt (293)
Relationships: Cut Grave 1495

Skeleton 303
Posture: Posture could not be established due to poor preservation, although the legs appear to have been extended and parallel
Arm position: The arms did not survive
Age: 2-5. Young child
Fragmentation: Destroyed
Condition: Skull 5+, arms 9, hands 9, torso 9, legs 5+, feet 9

Coffin: Represented by an assemblage of 17 nails defining the ends, and a rectangular area of coffin fill. L: 1.17 m. B: 0.31. Ht: 0.16 m. (293)

Grave goods:
1 **Vessel**. Fabric TR, New Forest colour-coated ware

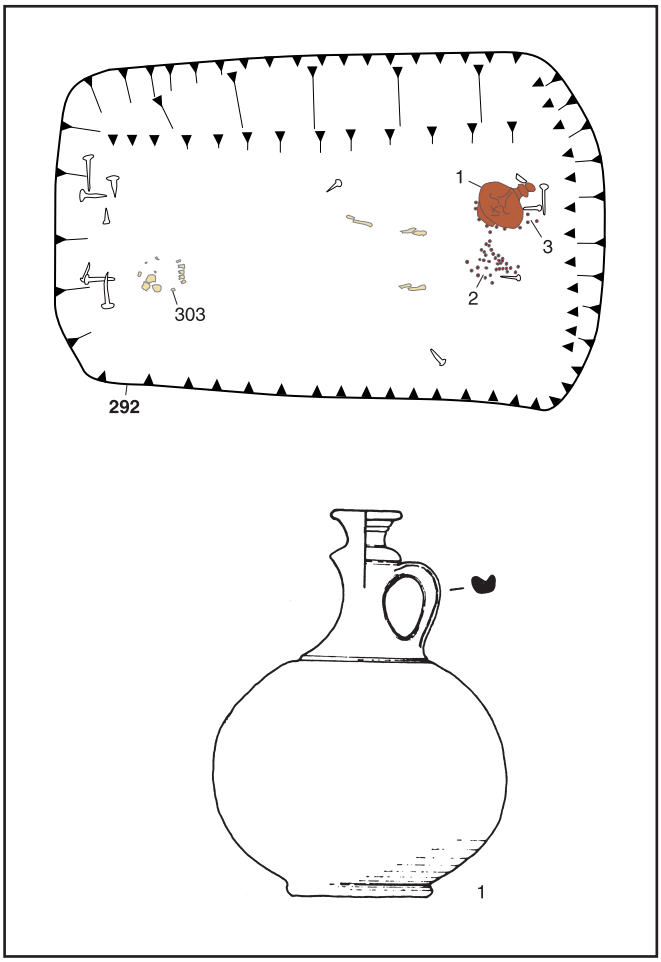


Fig. 3.42 Inhumation Grave 291

with variable slip. Flagon of Fulford (1975a) fine ware type 13, but with fewer rings on the rim than most examples. Linear white paint decoration and 'chattered' line on upper body. AD 300-400. Complete except for chip out of rim, apparently ancient. Located beside the left foot, inside the coffin. (319)
2 **Hobnailed shoe**. Represented by a minimum of 38 hobnails, located in the probable position of the left foot, although the foot bones did not survive. SF 968
3 **Hobnailed shoe**. Represented by a minimum of 12 hobnails, located in the probable position of the right foot, although the foot bones did not survive. SF 969

Other finds: A single hobnail (SF 951) was recovered from the backfill
Three sherds (10 g) of pottery, fabric TR (298, 300)

Date: Pottery vessel dated AD 300-400

Inhumation Grave 313 (7896/0284, Fig. 3.43)

Grave cut 314
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: >1.60 x 1.00 m, 1.20 m deep
Fill: Loose white to yellowish brown chalk and silty clay (315)
Relationships: Cut by Grave 87

Skeleton 317
Posture: Supine
Arm position: The arms did not survive
Sex: Female
Age: 36-45. Mature adult
Fragmentation: Excellent
Condition: Skull 2, arms 1, hands 9, torso 1, legs 9, feet 9

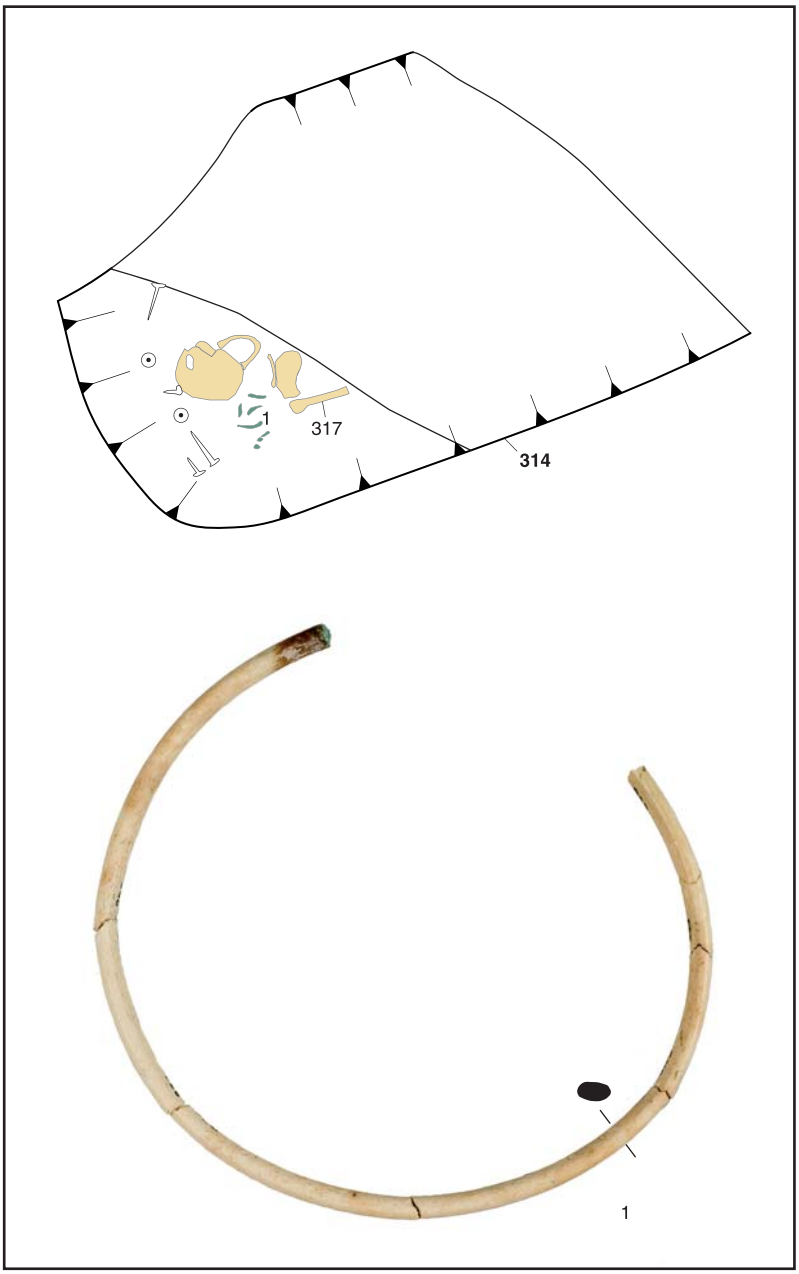


Fig. 3.43 Inhumation Grave 313

Pathology: DEH, calculus

Additional human remains: Fragments of a second adult female in modern backfill (318)

Coffin: Represented by an assemblage of 7 nails defining the south-western end. B: 0.45. (316)

Grave goods: 1 **Bracelet**, possibly ivory; seven joining fragments, one end a terminal, other broken. Terminal end broken and stained green. Oval section. Present length 196 mm, section 4 x 3 mm. (315) SF 955-9

Date: Later 4th century based on the bracelet

Comments: The grave had been substantially excavated as Clarke's grave 115, leaving only the south-western end, including the skull and right shoulder of skeleton 317 and the end, intact

Inhumation Grave 423 (7909/0312, Fig. 3.44)

Grave cut 419
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.08 x 0.66 m, 0.80 m deep
Fill: Mixed chalk and soil (422)

Skeleton 421
Posture: Supine, legs extended with feet together
Arm position: The positions of the arms are uncertain as only the humeri survived
Sex: Male
Age: Adult
Fragmentation: Fair
Condition: Skull 1, arms 2, hands 9, torso 9, legs 4, feet 1

Additional human remains: Fragments of a neonate (422)

Coffin: Represented by an assemblage of 13 nails. L: 1.80 m. B: 0.46-0.49 m. Ht 0.12 m. (420)

Grave goods:

1 **Vessel**. Fabric TR, New Forest colour-coated ware. Indented beaker of Fulford (1975a) fine ware type 27.3. *c* AD 270-350. Complete, except for a chip in the rim. Located beside the right leg, inside the coffin. (427)

Other finds: One sherd (1 g) of pottery, fabric ZF (422)

Date: Vessel dated AD 270-350

Inhumation Grave 430 (7906/0316, Fig. 3.45)

Grave cut 415
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.26 x 0.90 m, 0.62 m deep
Fill: Friable mid brown silty clay and chalk (416)

Skeleton 429
Posture: Supine, legs extended with feet together
Arm position: Left arm semi-flexed with the hand on the opposite side of the pelvis; right arm extended with the hand on the head of the right femur
Sex: Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 2, arms 2, hands 2, torso 1, legs 2, feet 2
Pathology: Osteoarthritis lumbar vertebra, osteophytosis spine. Healed fracture right tibia. Rotation lower right 2nd incisor, 2nd premolar, lesion, AMTL

Coffin: Represented by an assemblage of 6 nails defining the ends. L: 2.00 m. B: 0.45 m. (1947)

Inhumation Grave 445 (7889/0326, not illustrated)

Grave cut 403
Orientation: NW-SE
Shape: Sub-rectangular
Dimensions: 0.60 x 0.42 m, 0.60 m deep

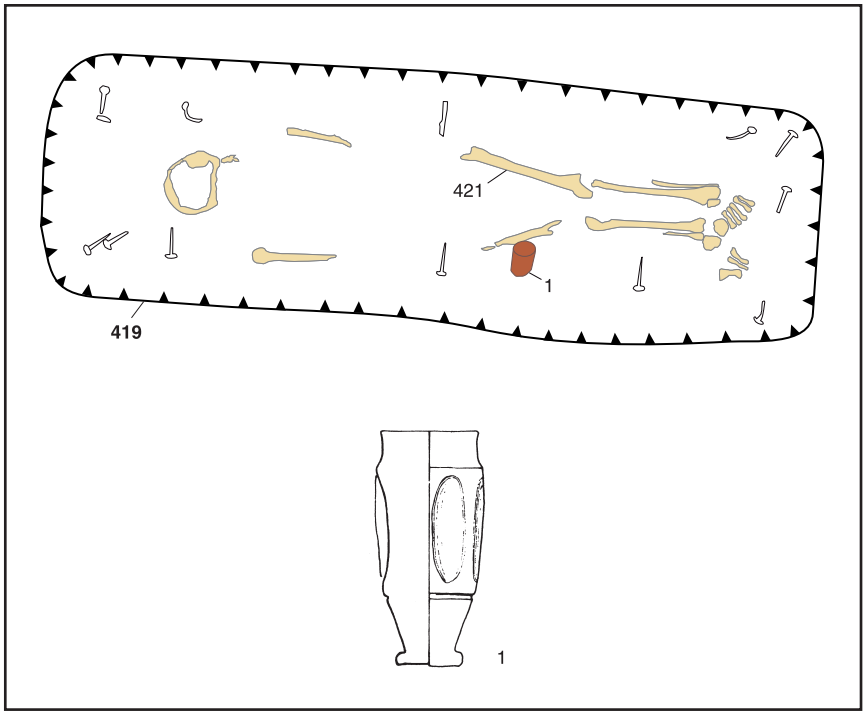


Fig. 3.44 Inhumation Grave 423

Fill: Compact mid-brown silty chalk (425)
Relationships: Cut by cremation burial 2060

Skeleton 404
Posture: Unknown, due to poor preservation
Arm position: The arms did not survive
Age: Neonate
Fragmentation: Fair
Condition: Skull 1, arms 1, hands 9, torso 1, legs 9, feet 9
Pathology: Profuse periosteal reactive bone over entire skeleton

Coffin: None

Other finds: Two sherds (10 g) of pottery, fabrics ZM and SG (425)

Inhumation Grave 465 (7912/0307, Fig. 3.46)

Grave cut 406
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.58 x 0.64 m, 0.43 m deep
Fill: Chalk rubble and friable mid greyish brown clay silt (407)

Skeleton 436
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Age: 6-12. Older child
Fragmentation: Fair
Condition: Skull 3, arms 9, hands 9, torso 9, legs 3, feet 1

Coffin: Represented by an assemblage of 13 nails, mostly located at the corners. L: 1.25-1.30 m. B: 0.28-0.29 m. (408)

Grave goods:
1 **Hobnailed shoes**. Represented by a minimum of 38 hobnails (including a minimum of eight recovered from soil samples <267> and <268>), associated with the feet. SF 1025

Comments: An additional five hobnails were recovered from a soil sample <267> taken from around the left foot, and three from a sample <268> taken from around the right foot

Inhumation Grave 475 (7905/0309, Fig. 3.47)

Grave cut 413
Orientation: W-E
Shape: Sub-rectangular with rounded ends
Dimensions: 2.30 x 0.75 m, 0.75 m deep
Fill: Friable light greyish brown chalky gravel and silt (414)

Skeleton 459
Posture: Supine, legs extended and parallel
Arm position: Both arms were semi-flexed, crossing over the pelvis
Sex: Male
Age: Adult
Fragmentation: Fair
Condition: Skull 5, arms 4, hands 4, torso 5+, legs 2, feet 9
Pathology: Right tibia healed fracture

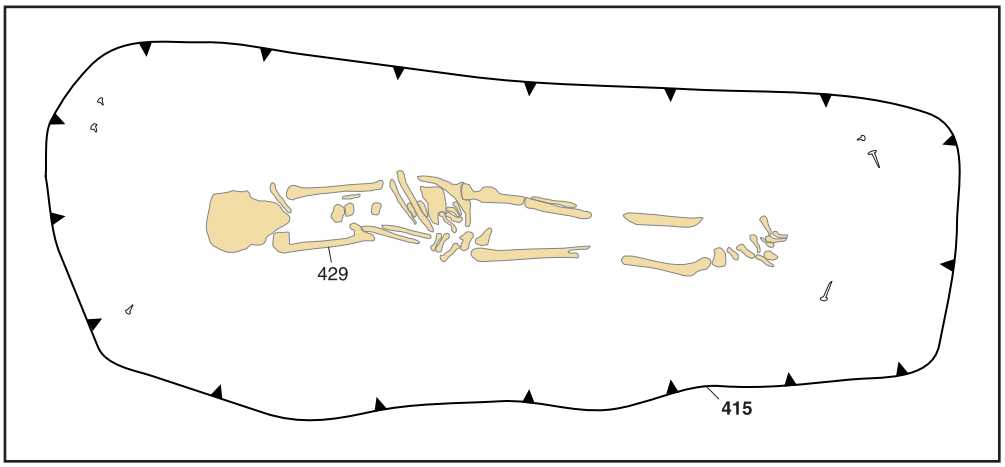


Fig. 3.45 Inhumation Grave 430

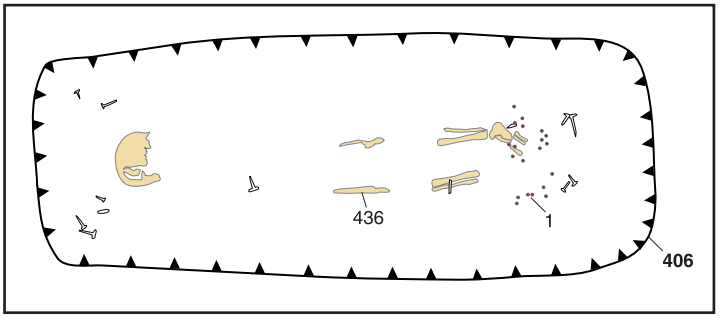


Fig. 3.46 Inhumation Grave 465

Coffin: The remains of a coffin were represented by an assemblage of 43 nails defining the sides and ends. L: 1.80-1.84 m. B: 0.35-0.36 m. Ht: 0.15 m. (2061)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 114 hobnails, located inside the coffin, placed laterally to the body in the vicinity of the right ankle. SF 1080
2 **Hobnailed shoe**. Represented by a minimum of 37 hobnails, located inside the coffin, placed laterally to the body in the vicinity of the right ankle. SF 1124

Other finds: Two other hobnails were recovered, but their locations were not recorded

Inhumation Grave 480 (7905/0323, Fig. 3.48)

Grave cut 417
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.20 x 0.80 m, 0.85 m deep
Fill: Friable mid yellowish brown clay silt and chalk (418)

Skeleton 441
Posture: Supine, legs extended with feet together
Arm position: Left arm extended beside body; right arm flexed, lying across the stomach
Sex: Male
Age: 36-45. Mature adult
Fragmentation: Fair
Condition: Skull 2, arms 5, hands 5+, torso 5+, legs 4, feet 1
Pathology: Left parietal depressed cranial fracture. Caries

Coffin: Represented by an assemblage of 15 nails, located at each corner and halfway along each side. L: 1.77-1.79 m. B: 0.42-0.49 m. (1948)

Inhumation Grave 485 (7907/0318, Fig. 3.49)

Grave cut 473
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.06 x 0.87 m, 0.64 m deep
Fill: Friable mid brown silt and chalk (474)

Skeleton 476
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body; right arm semi-flexed with the hand resting on the opposite side of the pelvis
Sex: Female
Age: 36-45. Mature adult
Height: 157
Fragmentation: Fair
Condition: Skull 1, arms 2, hands 2, torso 3, legs 2, feet 2
Pathology: Osteophytosis and pitting cervical and upper thoracic. Caries (x7), AMTL, DEH, periodontal disease. Sinusitis

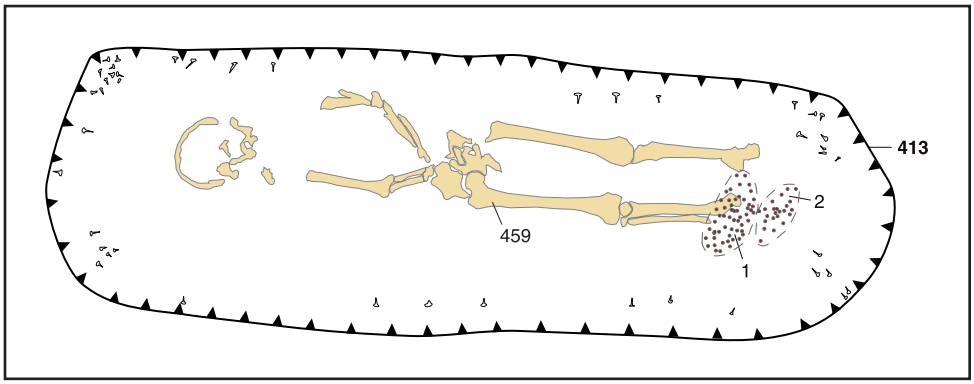


Fig. 3.47 Inhumation Grave 475

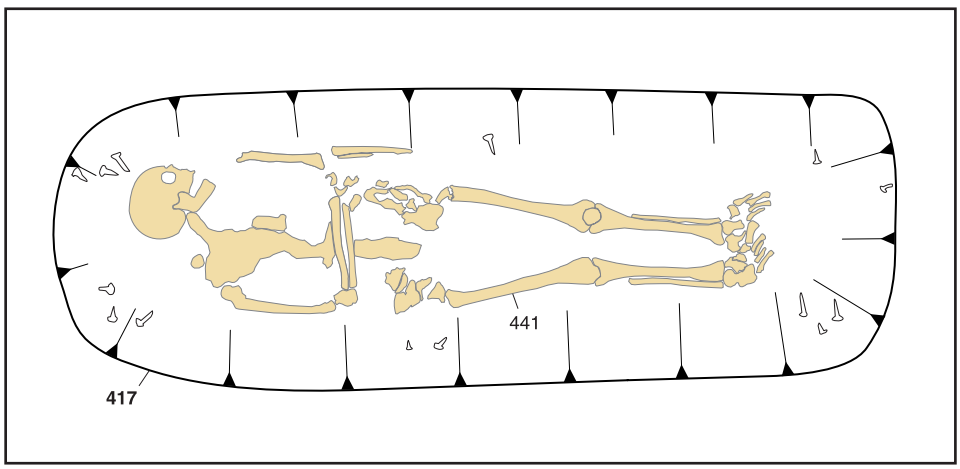


Fig. 3.48 Inhumation Grave 480

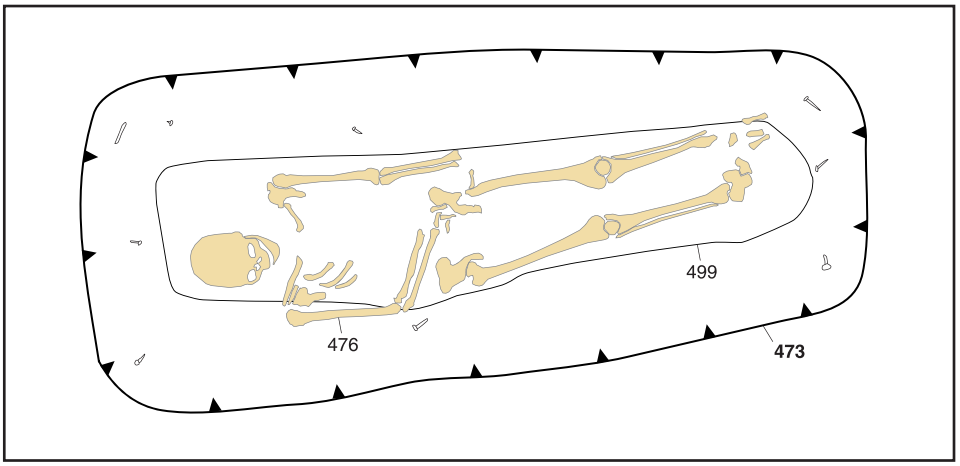


Fig. 3.49 Inhumation Grave 485

Coffin: Represented by an assemblage of 9 nails defining the ends, with a single nail halfway along each side, and an area of coffin fill. L: 1.70-1.75 m. B: 0.37-0.50 m. (499)

Inhumation Grave 490 (7912/0309, Fig. 3.50)

Grave cut 484
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.20 x 0.70 m, 0.85 m deep
Fill: Mixed chalk and former topsoil (486)

Skeleton 488
Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed with the hand resting on the central part of the pelvis; right arm extended beside the body
Sex: ?Female
Age: Adult
Fragmentation: Fair
Condition: Skull 4, arms 4, hands 5, torso 5+, legs 3, feet 1
Pathology: Cribra orbitalia

Additional human remains: Fragments of a second adult (487)

Coffin: Represented by an assemblage of 25 nails, defining the ends and side, and a small patch of dessicated wood along the southern side. L: 1.77-1.82 m. B: 0.42-0.43 m. (487)

Grave goods:
1 **Vessel**. Fabric TR, New Forest colour-coated ware. Small indented beaker of Fulford (1975a) fine ware type 27, closest to type 27.7. *c* AD 270-350. Complete. Located to the left of the skull, outside the coffin. (493)
2 **Hobnailed shoe**. Represented by a minimum of 67 hobnails, worn on the left foot. SF 1237
3 **Hobnailed shoe**. Represented by a minimum of 47 hobnails, worn on the right foot. SF 1243

Other finds: Two sherds (5 g) prehistoric pottery (486)

Date: Pottery dated AD 270-350

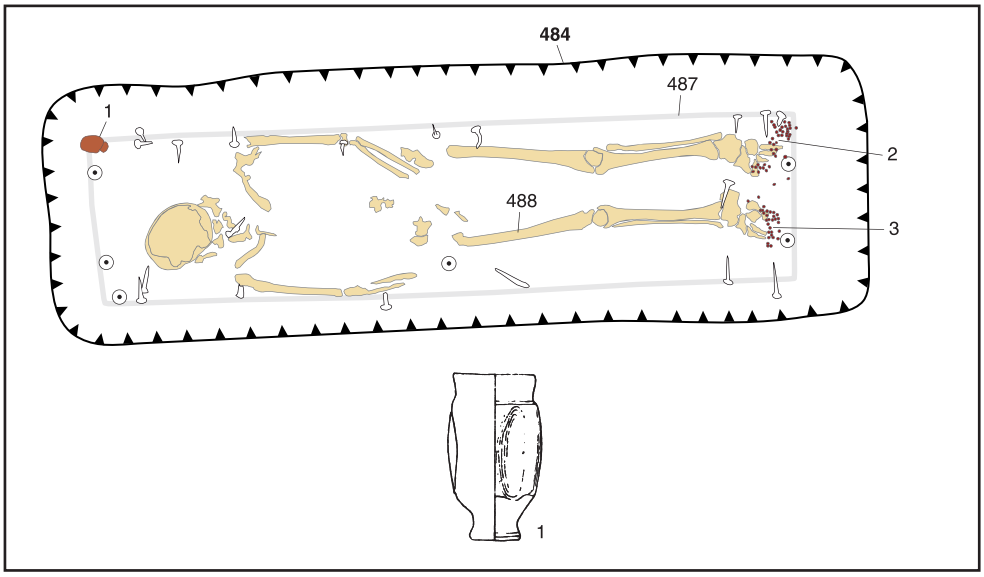


Fig. 3.50 Inhumation Grave 490

Inhumation Grave 495 (7912/0311, Fig. 3.51)

Grave cut 494
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.05 x 0.73 m, 1.00 m deep
Fill: Loose mid brown sandy silt and chalk (496)

Skeleton 497
Posture: Supine, legs extended and parallel
Arm position: Position of left arm uncertain as only the humerus survived; right arm extended beside body
Sex: Female
Age: 18-25. Young adult
Fragmentation: Good
Condition: Skull 1, arms 5+, hands 9, torso 9, legs 3, feet 1

Coffin: Represented by an assemblage of 16 nails, mostly located at the corners. L: 1.69-1.72 m. B: 0.41-0.48 m. (2055)

Grave goods:
1 **Copper alloy bracelet**, in three fragments, part of the hoop missing. A repoussé decorated sheet formed into a D-shaped hollow hoop with irregular seam on convex underside. No indication of whether the bracelet was originally annular or had terminals. Repoussé decoration consists of diagonal ribs dividing hoop into units that appear to have different patterns. (1) close diagonal cross-hatching, (2) three embossed ring and dots, (3) a running scroll of semi-circles. On detached fragment wide diagonal cross-hatching. Second detached fragment is damaged but broken around a curve as if from another ring and dot or edge of a scroll. Diameter 68 mm, section 8 x 6 mm, thickness of sheet 1 mm. (496) SF 1266
2 **Copper alloy bracelet**, complete. Oval-sectioned wire tapering slightly towards expanding joints of two and a half turns. Diameter 55 x 54 mm, section 1.5 mm. (496) SF 1266
3 **Hobnailed shoe(s)**. Represented by a minimum of 43 hobnails, located inside the coffin, beside the left leg. SF 1265

Date: Bracelet ?mid-late 4th century

Inhumation Grave 500 (7920/0312, Fig. 3.52)

Grave cut 431
Orientation: W-E
Shape: Sub-rectangular with rounded ends
Dimensions: 2.34 x 0.88 m, 1.24 m deep
Fill: Friable pinkish grey chalk, silt and subsoil (432)

Skeleton 491
Posture: Supine, legs extended and parallel
Arm position: Left arm did not survive; right arm semi-flexed
Sex: Indeterminate
Age: Adult
Fragmentation: Fair

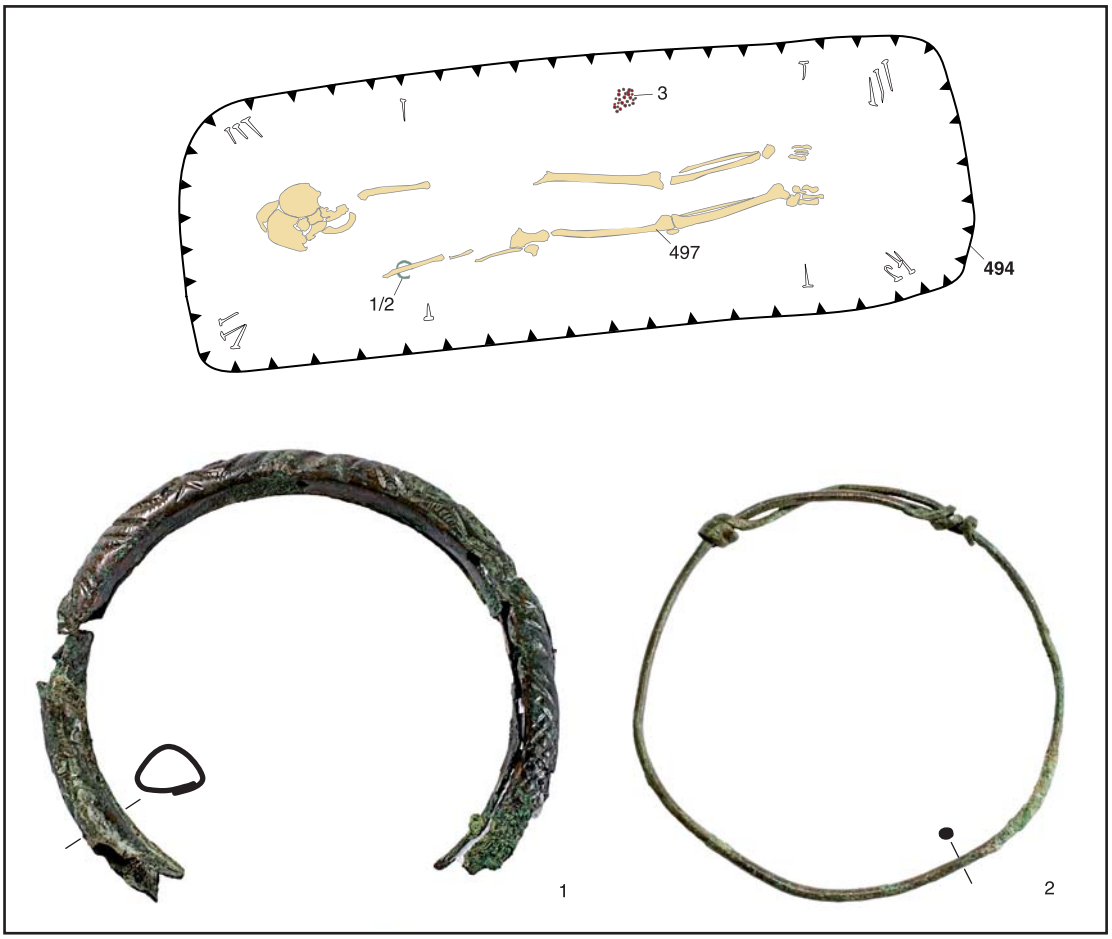


Fig. 3.51 Inhumation Grave 495

Condition: Skull 5+, arms 5+, hands 9, torso 5+, legs 5, feet 5
Pathology: Calculus

Additional human remains: Fragments of a second adult (432)

Coffin: Represented by an assemblage of 18 nails defining the corners and sides. L: 2.00-2.02 m. B: 0.37-0.58 m. Ht: 0.22 m. (508)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 118 hobnails, in an undifferentiated group associated with the feet, SF 1140. Plus one from soil sample <309> (left foot)

Other finds: A single hobnail was recovered from soil sample <321>, taken from the pelvis area

Inhumation Grave 515 (7904/0332, Fig. 3.53)

Grave cut 478
Orientation: W-E
Shape: Sub-rectangular with rounded ends
Dimensions: 2.00 x 0.49 m, 0.17 m deep
Fill: Mixed chalk and clay silt (481)

Skeleton 479
Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed with the hand resting on the central part of the pelvis; right arm tightly flexed with the hand on the left side of the chest
Sex: Female
Age: 36-45. Mature adult
Fragmentation: Poor
Condition: Skull 1, arms 5, hands 9, torso 5+, legs 1, feet 9
Pathology: Caries, lesion, calculus

Additional human remains: Fragments of a subadult associated with skeleton 479

Coffin: Represented by an assemblage of 4 nails defining the western end. (2056)

Comments: The grave had been truncated by levelling associated with the construction of the School House. This had particularly affected the eastern end, resulting in the loss of the lower parts of the legs and evidence for that end of the coffin

Inhumation Grave 520 (7900/0326, not illustrated)

Grave cut 501
Orientation: WSW-ENE
Shape: Sub-rectangular with rounded ends
Dimensions: 1.80 x 0.40 m, 0.05 m deep
Fill: Compact light greyish brown clay silt with 20-40% chalk pieces (502)

Skeleton 477
Posture: Supine
Arm position: Left arm tightly flexed with the hand on the right shoulder; position of the right arm uncertain as only the humerus survived

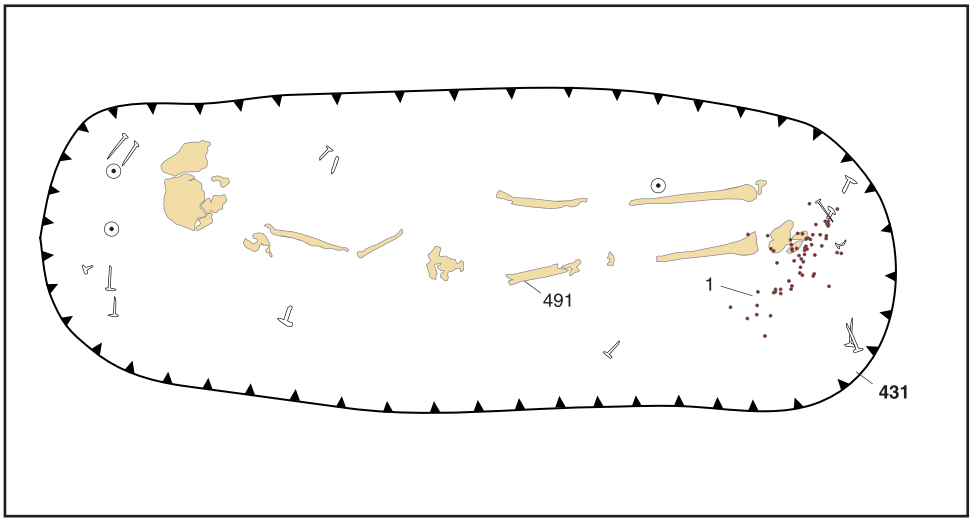


Fig. 3.52 Inhumation Grave 500

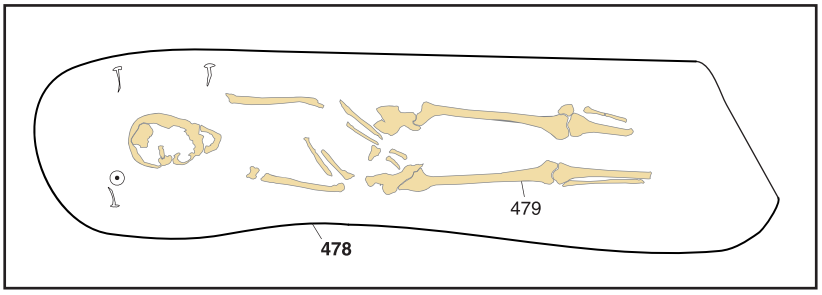


Fig. 3.53 Inhumation Grave 515

Age: 6-12. Older child
Fragmentation: Poor
Condition: Skull 2, arms 2, hands 9, torso 2, legs 2, feet 9

Coffin: Two nails were recovered, but as only part of the grave survived it was uncertain whether they had formed part of a coffin

Comments: The grave was severely truncated by a pond associated with the School House, resulting in the loss of the lower parts of the legs, the right forearm, the right side of the pelvis, and possibly most of the evidence for a coffin

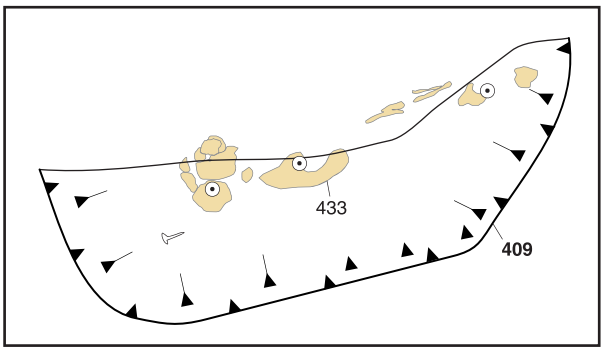


Fig. 3.54 Inhumation Grave 525

Inhumation Grave 525 (7898/0309, Fig. 3.54)

Grave cut 409
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 1.35 x >0.50 m, 0.65 m deep
Fill: Friable light creamy brown clay sand and chalk (410)
Relationships: Cut by Grave 535

Skeleton 433
Posture: Supine
Arm position: The arms did not survive
Age: 1-2. Infant
Fragmentation: Destroyed
Condition: Skull 5+, arms 9, hands 9, torso 9, legs 9, feet 9

Coffin: Represented by an assemblage of 4 nails and a small area of desiccated wood that had formed part of the base. (498)

Comments: The northern side of the grave had been destroyed by the digging of Grave 535, resulting in the loss of the left side of skeleton 433

Inhumation Grave 530 (7897/0309, Fig. 3.55)

Grave cut 411
Orientation: WSW-ENE
Shape: Sub-rectangular

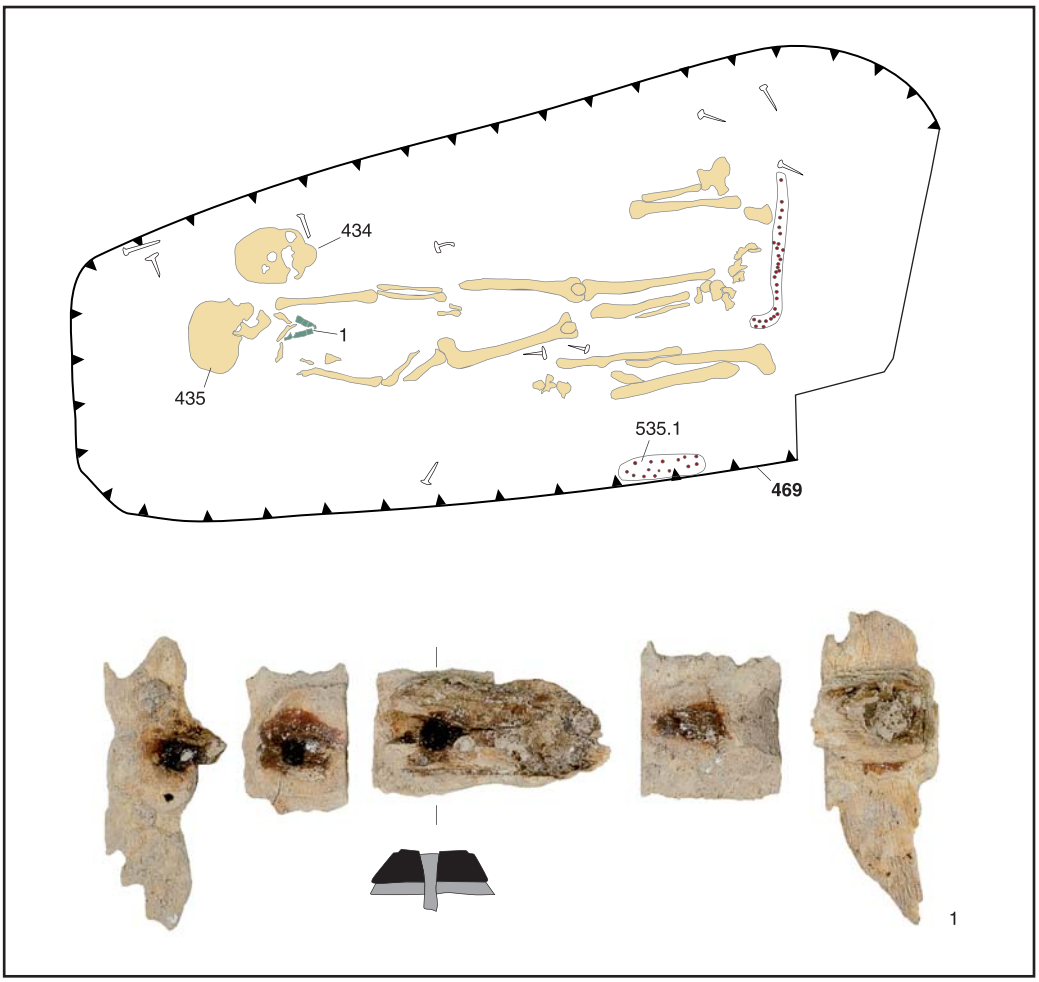


Fig. 3.55 Inhumation Graves 530 and 535

Dimensions: 2.20 x 0.80 m, 0.95 m deep
Fill: Friable light creamy brown clay sand and chalk (412)
Relationships: Cut Graves 525 and 535

Skeleton 435
Posture: Supine, legs extended with feet together
Arm position: Left arm extended with the hand resting on the left femur; right arm semi-flexed with the hand resting on the central part of the pelvis
Sex: Female
Age: 45+. Older adult
Height: 155.6
Fragmentation: Good
Condition: Skull 1, arms 3, hands 1, torso 3, legs 2, feet 2
Pathology: Button osteoma. Caries, lesion, AMTL, DEH, calculus, periodontal disease, shovelling upper first incisors

Additional human remains: Fragments of an older adult male (412)

Coffin: None

Grave goods:
1 **Double-sided composite comb** , antler (?). Very eroded and fragmentary comb retaining central part of both end plates (one with one central bar still attached by iron rivet), one tooth plate with parts of central bar; two other tooth plates and 10 other small fragments. Various elements fastened with iron rivets (6 extant). Width of central bar *c* 15 mm. (472) SF 1097
2 **Horse skull**. The left mandible and left and right premaxilla of a mare aged *c* 3.5-4.5 years old at death (based on eruption of the third molar) was recovered from the backfill **(NI)**

Other finds: A group of hobnails containing a minimum of 125 nails (SF 1039) was located in the backfill above the legs of skeleton 435, and is likely to have been disturbed from Grave 535
One sherd (10 g) of pottery, fabric ZG, possibly prehistoric (412)

Date: Comb probably dated after *c* AD 360

Comments: This grave was dug directly into the backfill of Grave 535, the bones of the original skeleton in the earlier grave being moved to the side of the grave pit to accommodate the new occupant

Inhumation Grave 535 (7897/0309, Fig. 3.55)

Grave cut 469
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.20 x 0.65 m, 0.95 m deep
Fill: Friable light creamy brown clay sand and chalk (471)
Relationships: Cut Grave 525. Cut by Grave 530

Skeleton 434
Posture: The original posture is unknown, as the bones had been moved to make room for burial 435 in Grave 530
Arm position: Unknown
Sex: ?Male
Age: 45+. Older adult
Fragmentation: Poor
Condition: Skull 1, arms 2, hands 9, torso 1, legs 1, feet 1
Pathology: Femoral head necrosis. Osteophytosis thoracics and ankylosis T11-12. AMTL, caries

Coffin: Represented by an assemblage of 4 nails. Most of these were disturbed during the insertion of burial 530, although those along the northern side might still be *in situ*. (1949)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 58 hobnails, located outside the coffin against the southern edge of the grave pit. SF 1010

Comments: The grave appears to have been deliberately re-opened and the bones of skeleton 434 pushed to the side of the grave pit, for the insertion of a second burial

Inhumation Grave 540 (7900/0309, Fig. 3.56)

Grave cut 446
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 1.97 x 0.61 m, 0.67 m deep
Fill: Mid greyish brown gritty chalk (448)
Relationships: Cut Grave 1495

Skeleton 447
Posture: Supine, legs extended and parallel
Arm position: Both arms are semi-flexed with the

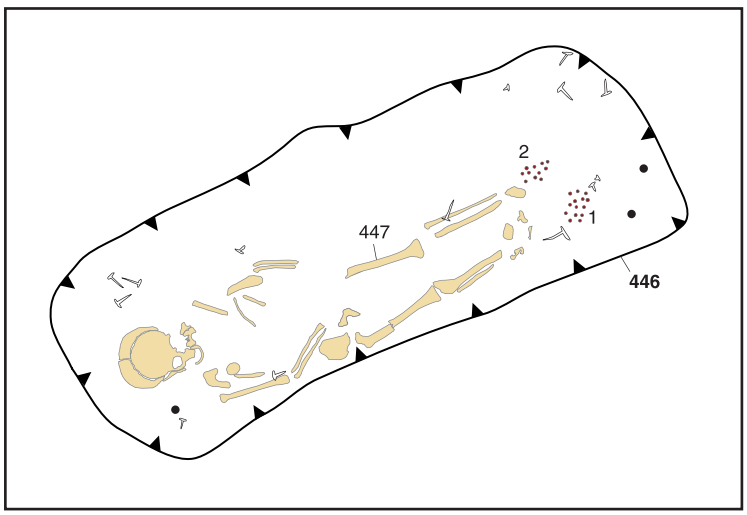


Fig. 3.56 Inhumation Grave 540

hands crossing over the pelvis
Age: 5-7. young child
Fragmentation: Good
Condition: Skull 3, arms 3, hands 2, torso 4, legs 2, feet 2
Pathology: Cribra orbitalia. Caries, DEH, periodontal disease

Coffin: Represented by an assemblage of 14 nails, mostly located at the ends, and an area of grave fill. L: 1.30. B: 0.30-0.40 m. (458)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of eight hobnails, worn on right foot. SF 1125
2 **Hobnailed shoe**. Represented by a minimum of 31 hobnails, worn on left foot. SF 1133

Other finds: A single hobnail (SF 1134) was recovered from the backfill
Three sherds (7 g) of pottery, fabrics TF, ZF and ZM (448)

Date: Grave 1495 contained a pottery vessel dated AD 270-350

Inhumation Grave 545 (7905/0327, Fig. 3.57)

Grave cut 482
Orientation: W-E
Shape: Sub-rectangular with rounded ends
Dimensions: 2.30 x 0.50 m, 1.10 m deep
Fill: Friable greyish white chalk (483)

Skeleton 507
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed with the hands crossing over the pelvis
Sex: Female
Age: 13-17. Adolescent
Height: 155.6
Fragmentation: Good
Condition: Skull 3, arms 2, hands 5, torso 1, legs 2, feet 1
Pathology: cribra femora. Endo cranial lesions

Coffin: Represented by an assemblage of 22 nails defining the sides and ends and an unidentified iron fitting, 29 mm long and 12 mm wide, possibly part of a handle. L: 1.90 m. B: 0.50 m. Ht: 0.24 m. (1950)

Grave goods:
1 **Hair pin**, copper alloy (XRF – heavily leaded gunmetal). Hollow cubic head with diamond and triangle facets, circular perforation in each diamond face on side; circular-section shank tapering to point at end. Length 84 mm, head section 3 mm, shank section 2 mm. (483) SF 1209
2 **Shanks**, copper alloy **(NI)**
2a Circular-section shank, both ends broken; tapering slightly towards one end. Present length 52 mm, section 2 mm. (483) SF 1364
2b Broken shank fragment. (483). SF 1268
3 **Vessel**. Fabric TF, New Forest colour-coated ware with orange slip. Flask of Fulford (1975a) fine ware type 1. The body form is closest to type 1.2, but the rim is much more everted and slightly overhung. *c* AD 300-330. Rim partly missing, apparently in antiquity, and a hole in the body seems to have been made deliberately. Located beside the right leg, outside the coffin. (509)
4 **Hobnailed shoe(s)**. Represented by a minimum of 13 hobnails (including a minimum of one from soil sample <370>), located at foot of coffin. SF 1242

Date: Pottery dated *c* AD 300-330. Cu alloy pin not closely dated

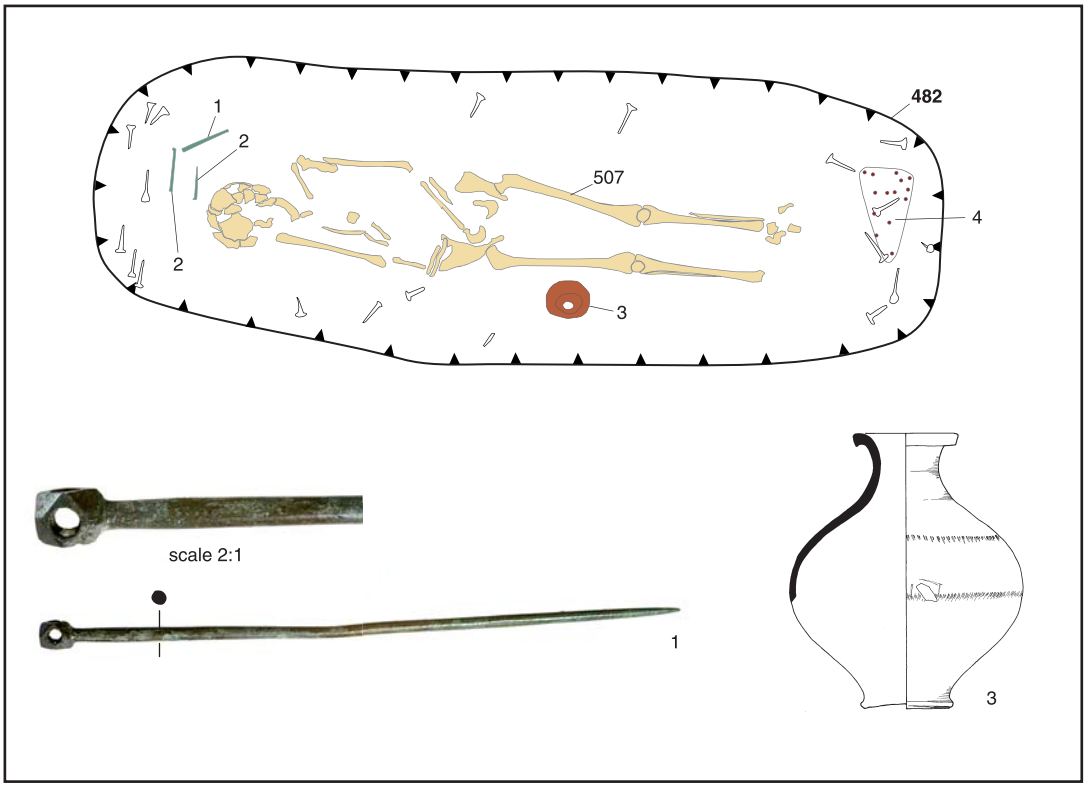


Fig. 3.57 Inhumation Grave 545

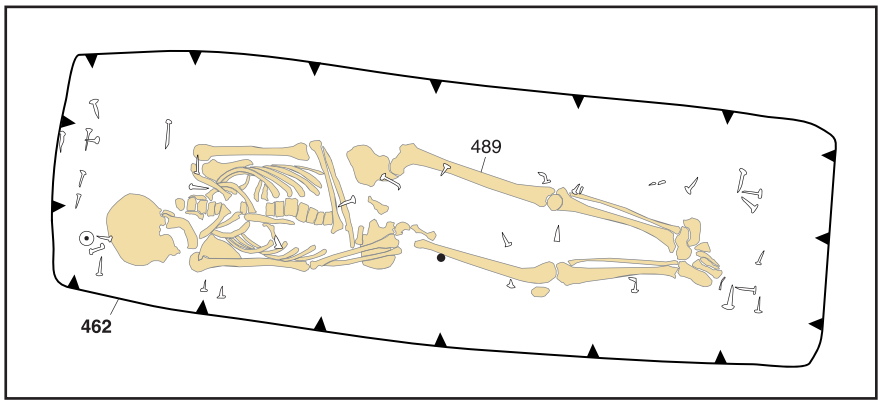


Fig. 3.58 Inhumation Grave 550

Inhumation Grave 550 (7909/0304, Fig. 3.58)

Grave cut 462
Orientation: W-E
Shape: Rectangular
Dimensions: 2.05 x 0.70 m, 0.80
Fill: Loose mid brown chalk and clay silt (463)

Skeleton 489
Posture: Supine, legs extended with feet together
Arm position: Left arm flexed, lying across stomach; right arm extended with the hand on the right femur
Sex: ?Male
Age: 45+. Older adult
Height: 168.9
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Right hip and right femur infection. Left wrist osteoarthritis. Thoracic osteophytosis. Caries, lesion, AMTl, calculus, periodontal disease

Additional human remains: Fragments of a second adult (463)

Coffin: Represented by an assemblage of 38 nails defining the sides and ends, and a coffin stain. L: 1.76-1.82. B: 0.40-0.43 m. Ht: 0.22 m. (464)

Other finds: Three sherds (11 g) of prehistoric pottery (463)

Inhumation Grave 555 (7913/0302, not illustrated)

Grave cut 511
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.65 x 0.40 m, 0.30 m deep
Fill: Chalk and silty clay (512)
Relationships: Cut by Graves 560 and 580

Comments: This grave was almost completely destroyed by the digging of Grave 560, only the south-eastern corner surviving. No skeletal remains or evidence for a coffin survived

Inhumation Grave 560 (7912/0302, Fig. 3.59)

Grave cut 513
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.20 x 0.70 m, 0.70 m deep
Fill: Mid brownish grey clay silt and chalk (514)
Relationships: Cut Grave 555. Cut by Grave 580

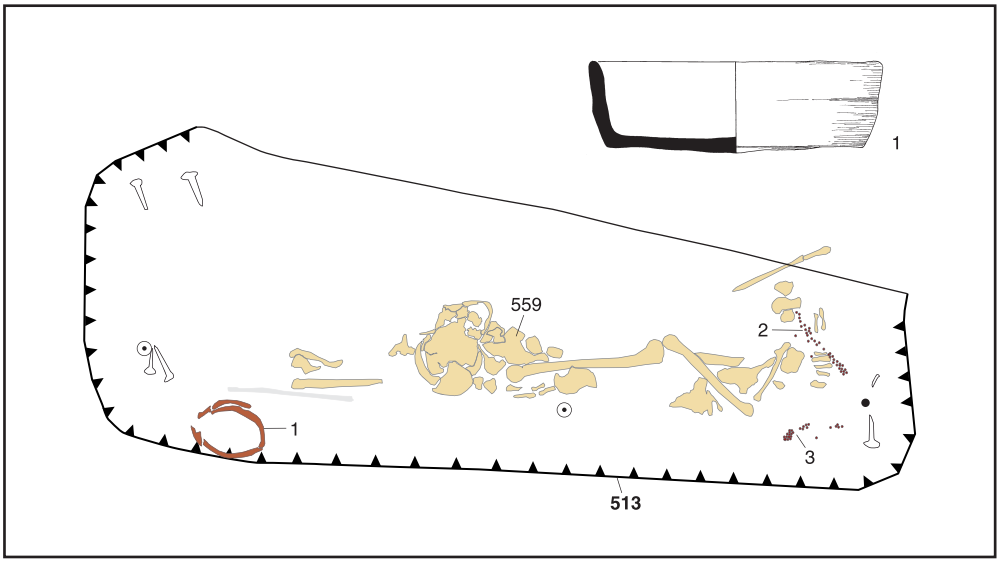


Fig. 3.59 Inhumation Grave 560

Skeleton 559
Posture: Supine, legs extended and parallel. The skull was located on the pelvis
Arm position: Position of arms uncertain as only the right humerus survived
Sex: Female
Age: 45+. Older adult
Fragmentation: fair
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Cribra orbitalia. Sacrilisation. DEH, calculus, periodontal disease. Sinusitis

Coffin: Represented by an assemblage of 9 nails, mostly located at the corners, a coffin stain defining part of the southern side, and an area of coffin fill. L: 1.88 m. B: 0.54 m. Ht: 0.23. (537, 529)

Grave goods:
1 **Vessel**. Fabric SG, local grog-tempered ware. Straight-sided dish, burnished overall internally and externally. *c* AD 300-400. Complete, with external sooting. Located to the right of the skull, inside the coffin. (568)
2 **Hobnailed shoe**. Represented by a minimum of 42 hobnails, worn on the left foot. SF 1386
3 **Hobnailed shoe**. Represented by a minimum of 43 hobnails, worn on the right foot. SF 1387

Other finds: Two sherds (17 g) of pottery, one prehistoric fragment, one fabric TR (514)

Date: Pottery dated AD 300-400

Comments: The northern side of the grave had been destroyed by Grave 580, resulting in the removal of the skull and most of the left side of the skeleton. The diggers of Grave 580 appear to have pushed the left side of the pelvis and left arm back in to the surviving fill of Grave 560. The pelvis and leg bones were not 'fleshed' while this happened, but the mandible was still articulated with the skull

Inhumation Grave 565 (7917/0326, Fig. 3.60)

Grave cut 442
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.50 x 0.90 m, 0.60 m deep
Fill: Friable light brown chalky loam (443)

Skeleton 518
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Sex: ?Male
Age: 26-35. Prime adult
Fragmentation: Fair
Condition: Skull 1, arms 5+, hands 9, torso 9, legs 1, feet 5

Coffin: Represented by an assemblage of 23 nails, a coffin stain defining the outline of a coffin, and a second area of coffin stain representing part of the base of the coffin. L: 1.90 m. B: 0.50 m. (444, 517)

Grave goods:
1 **Vessel**. Fabric TR, New Forest colour-coated ware with red-brown slip. Jug of Fulford (1975a) fine ware type 18 with a cordon at the base of the neck and a groove at the girth. *c* AD 320-370. Complete. Located between the feet. (516)
2 **Hobnailed shoe(s)**. Represented by a minimum of 188 hobnails, located in the area of the feet and presumably worn. SF 1281

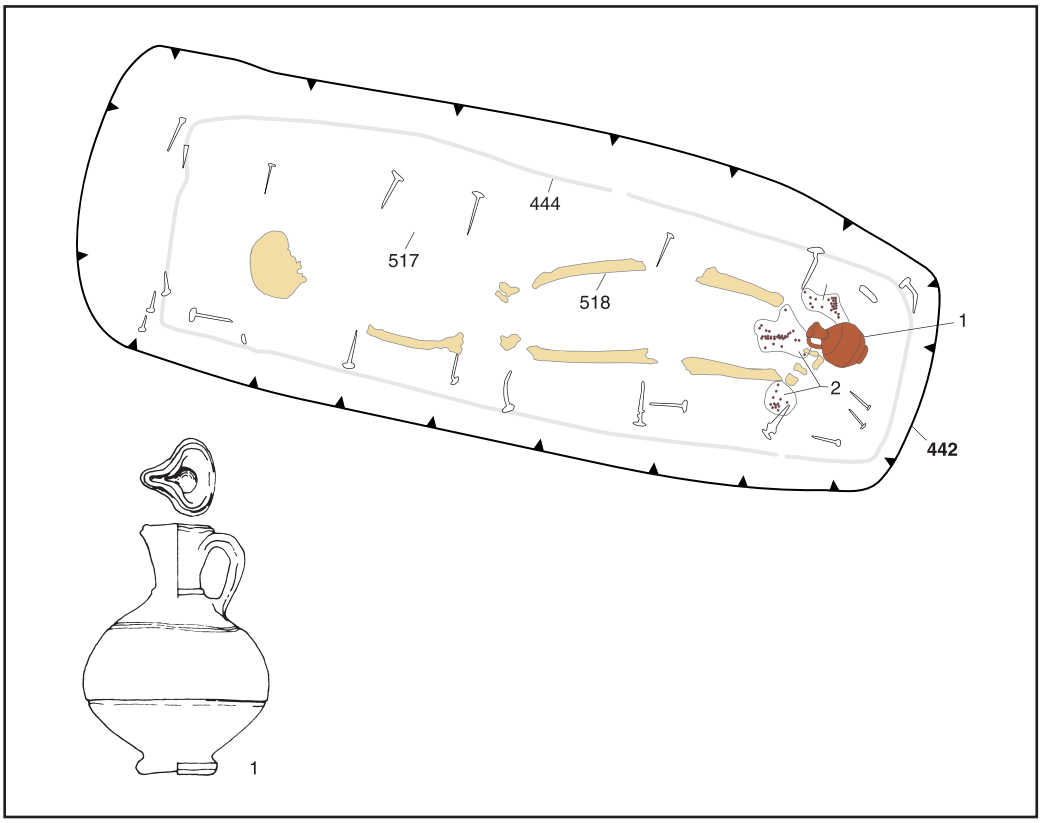


Fig. 3.60 Inhumation Grave 565

Date: Pottery dated AD 320-370

Comments: An amorphous deposit of orange brown silt (517) was recorded in the base of the grave, and may possibly represent a decay product of some kind

Inhumation Grave 570 (7913/0318, Fig. 3.61)

Grave cut 519
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.30 x 0.08 m, 0.75 m deep
Fill: Friable light brown and white clay silt and chalk (521)

Skeleton 522
Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed with the hand resting on the central part of the pelvis; right arm extended with the hand on the right femur
Sex: Male
Age: 60+. Much older adult
Height: 170.1
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: 2 right rib healed fractures. Osteoarthritis of left and right elbow joint. Spinal osteophytosis, eburnation and Schmorl's nodes. 6th lumbar sacrilisation. Periodontal disease, calculus, DEH, AMTL, lesions (x3), caries (x4), rotation upper left premolar. Sinusitis

Coffin: Represented by an assemblage of 8 nails. L: 1.90 m. B: 0.50 m. (2057)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 74 hobnails, located in the area of the feet. SF 1420
2 **Hobnailed shoe(s)**. Represented by a minimum of 75 hobnails, located outside the coffin , beside the right leg. SF 1381

Inhumation Grave 575 (7912/0306, Fig. 3.62)

Grave cut 528
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.75 x 0.61 m, 0.60 m deep
Fill: Mid greyish brown clay silt and chalk (587)

Skeleton 589
Posture: Unknown, as only tooth enamel survived
Age: 2-3. Infant
Fragmentation: Destroyed
Condition: Skull 5+, arms 9, hands 9, torso 9, legs 9, feet 9

Coffin: Represented by an assemblage of 13 nails defining the corners and sides. L: 1.04-1.09 m. B: 0.27. (588)

Grave goods:
1 **Vessel**. Fabric ZM, New Forest reduced coarse ware, with slip on rim and shoulder. The slip is burnished, as is the unslipped lower part of the body. Medium mouthed jar of Fulford (1975a) grey ware type 30.9. *c* AD 300-350. Complete except for ancient chip on rim. Located at the eastern, foot, end of the grave, outside the coffin. (608)
2 **Vessel**. Fabric TR, New Forest colour-coated ware. Small bag shaped beaker of Fulford (1975a) fine ware type 44.3, with groove on upper body and two rows of rough 'rouletted' decoration below. *c* AD 270-350. Complete except for small chips on rim and base. Located beside the left leg, inside the coffin. (609)

Date: Pottery dated AD 300-350

Inhumation Grave 580 (7912/0303, Fig. 3.63)

Grave cut 531
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.70 x 0.85 m, 0.79 m deep
Fill: Mid brownish grey clay silt and chalk (532)

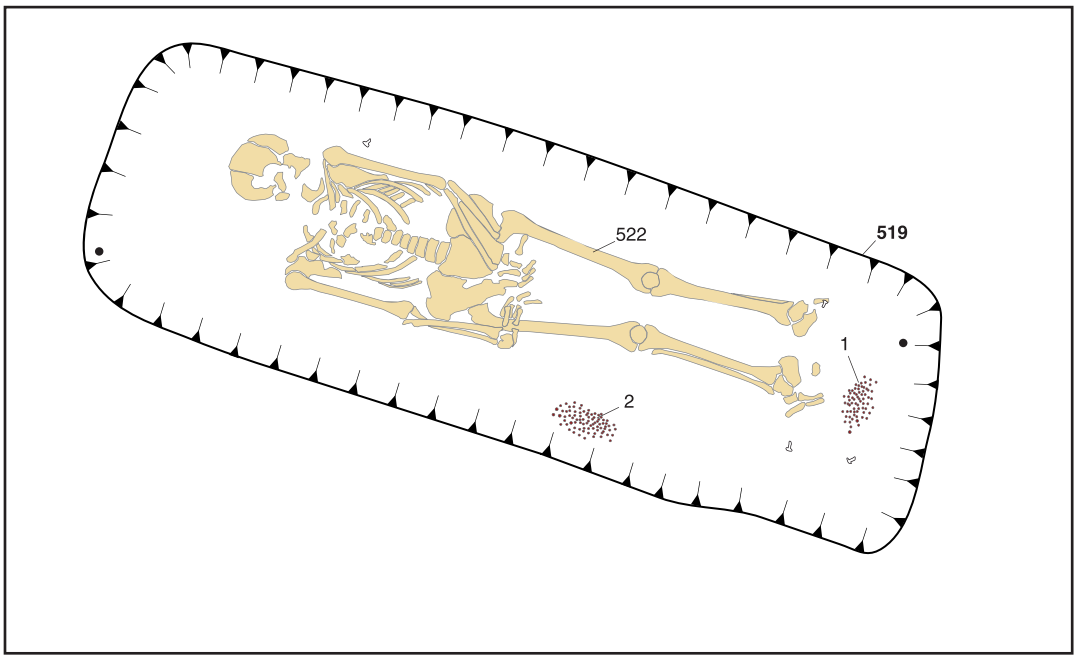


Fig. 3.61 Inhumation Grave 570

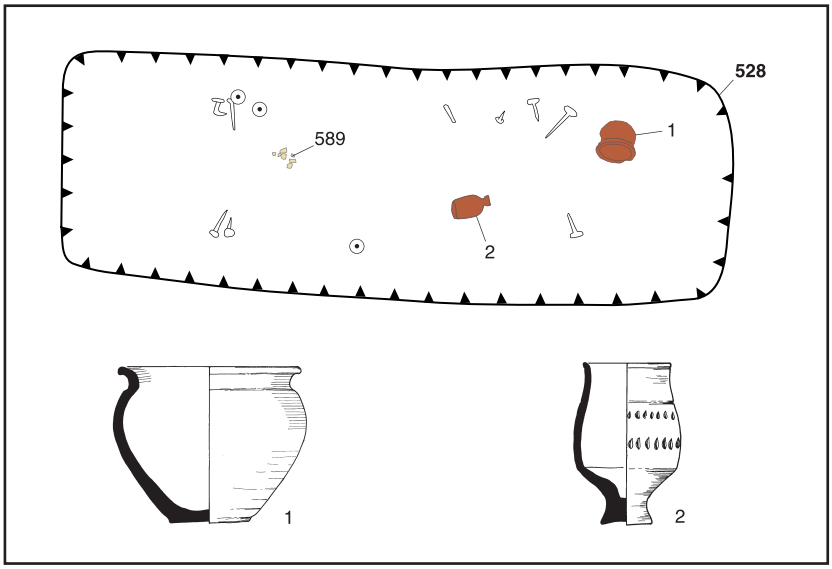


Fig. 3.62 Inhumation Grave 575

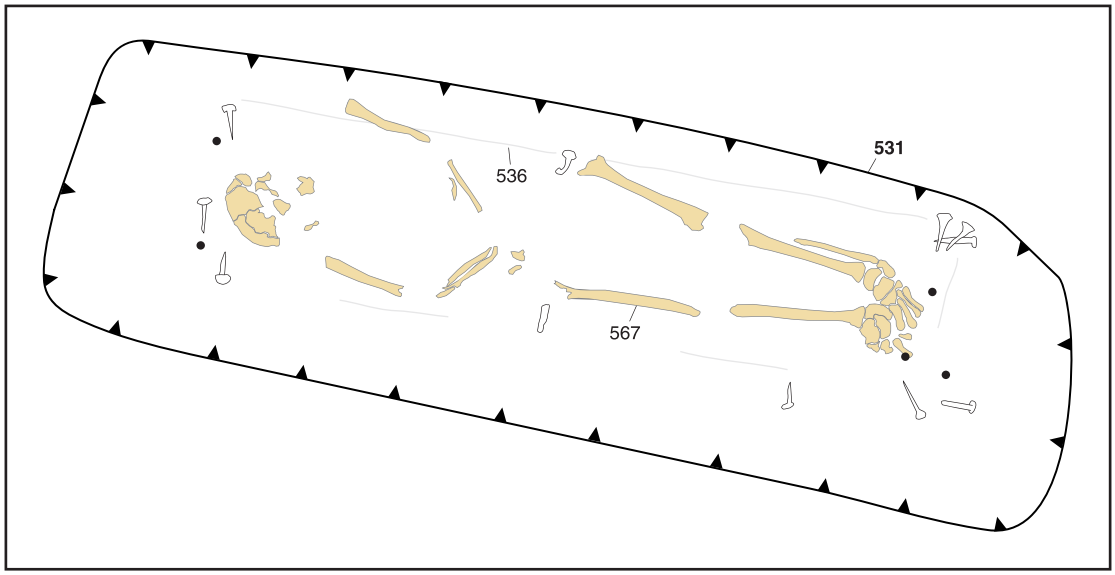


Fig. 3.63 Inhumation Grave 580

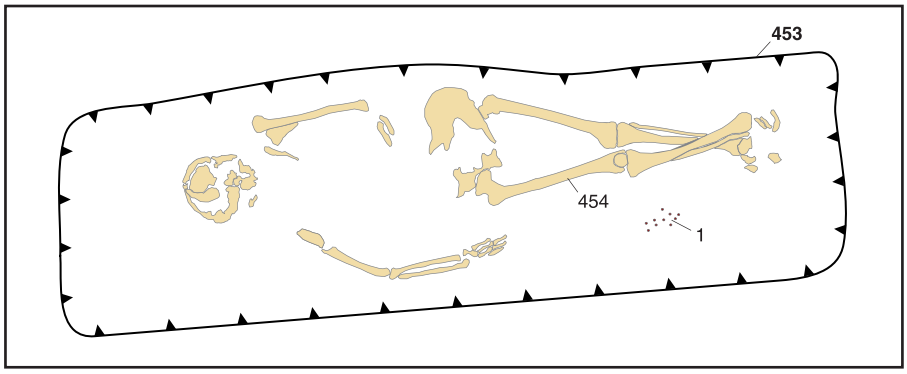


Fig. 3.64 Inhumation Grave 585

Skeleton 567
Posture: Supine, legs extended with feet together
Arm position: Both arms semi-flexed with wrists crossing over the pelvis
Sex: Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 3, arms 4, hands 9, torso 9, legs 3, feet 1
Pathology: Right tibia periostitis. Left and right tali lesion

Additional human remains: Fragments of a second adult (532)

Coffin: Represented by an assemblage of 15 nails, and a coffin stain defining parts of the sides and eastern end. L: 1.92-1.93 m. B: 0.36-0.46 m. Ht: 0.20. (536)

Other finds: Two sherds (12 g) of prehistoric and 7 sherds (392 g) of Roman pottery. Fabrics ZF, TR (see Fig. 4.2, No. 1) and SG (see Fig. 4.2, No. 2) (532)

Date: Pottery in the grave backfill is dated AD 300-400 and AD 320-370

Inhumation Grave 585 (7922/0330, Fig. 3.64)

Grave cut 453
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.00 x 0.60 m, 0.70 m deep
Fill: Friable white and brown chalk and silt (455)
Relationships: Cut Grave 590

Skeleton 454
Posture: Supine, legs extended and crossed at the ankle
Arm position: The position of the left arm is uncertain as the hands and most of the forearm did not survive, but it is either flexed or semi-flexed; right arm is angled slightly away from the torso, resting against the side
Sex: Female
Age: 45+. Older adult
Height: 154.3
Fragmentation: Fair
Condition: Skull 2, arms 2, hands 1, torso 1, legs 2, feet 1
Pathology: Hyperostosis frontalis interna. Left and right tibia periostitis. AMTL

Additional human remains: Fragments of a second adult (455)

Coffin: None

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 12 hobnails, located beside the right leg. SF 1192

Inhumation Grave 590 (7923/0330, Fig. 3.65)

Grave cut 449
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.40 x 0.80 m, 1.50 m deep
Fill: Friable white chalk with silty patches (452)
Relationships: Cut by Grave 585

Skeleton 451
Posture: Supine, legs extended and parallel
Arm position: Left arm flexed, lying across stomach; right arm tightly flexed with the hand resting on the left side of the chest
Sex: Male
Age: 36-45. Mature adult
Height: 166.8
Fragmentation: Fair
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Rickets. Left clavicle and scapula, right 1st metatarsal osteoarthritis. Left foot osteophytosis growth calcaneus and 1st metatarsal. Schmorl's nodes, osteophytosis spine. Periodontal disease,

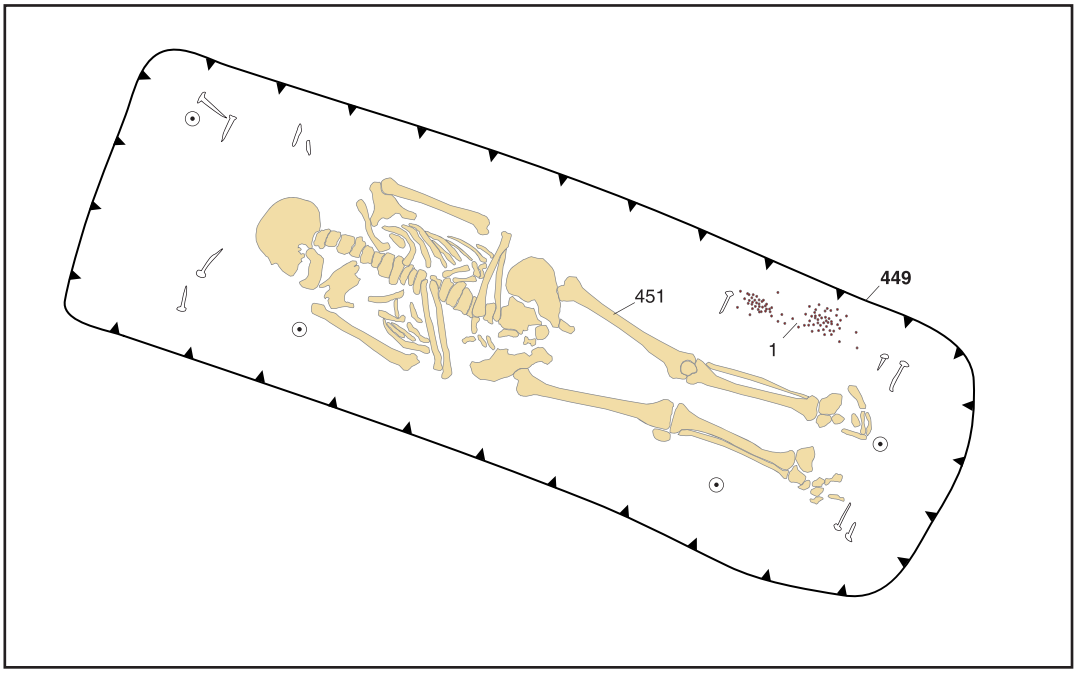


Fig. 3.65 Inhumation Grave 590

calculus, lesion (x2), caries (x3), peg molar upper left and right 3rd molar

Coffin: Represented by an assemblage of 17 nails. L: 1.87-1.93 m. B: 0.47-0.56 m. Ht: 0.30 m. (1951)

Grave goods:

1 **Hobnailed shoe(s)**. Represented by a minimum of 106 hobnails, located outside the coffin, beside the left leg. SF 1298

2 **Hobnail**. Held in left hand. SF 1322 (not located on plan)

3 **Hobnail**. On sternum. SF 1302 (not located on plan)

Inhumation Grave 595 (7887/0318, Fig. 3.66)

Grave cut 523

Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 2.15 x 0.60 m, 0.12 m deep
Fill: Chalk and silt (524)

Skeleton 527

Posture: Supine, legs extended and parallel
Arm position: Left arm did not survive; right arm extended with the hand resting on the top of the right femur
Sex: Indeterminate
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 5+, arms 2, hands 2, torso 9, legs 2, feet 9

Coffin: Represented by an assemblage of 17 nails. L: 1.80 m. B: 0.34 m. (526)

Other finds: Shale spindle whorl. Squashed biconical with slight flat faces around cylindrical perforation
Turning has left a ridge around widest girth. Scratches on both faces. Diameter 33 mm, thickness 17 mm, perforation diameter 7 mm, weight 12 g. SF 1376
One sherd (3 g) of medieval pottery (524)

Date: Spindle whorl probably after *c* AD 340

Comments: This grave was located in the area of the site truncated by the School House boiler room, which had removed all but the bottom 0.12 m of the feature, including much of the skeleton. Spindle whorl SF 1396 was dislodged from the surface of the grave during machining

Inhumation Grave 600 (7890/0322, Fig. 3.67)

Grave cut 552

Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.14 x 0.80 m, 0.85 m deep
Fill: Friable light cream chalk and silt (553)
Relationships: The relationship with Grave 805 was obscured by a modern foundation

Skeleton 554

Posture: Supine, legs extended
Arm position: Left arm extended beside body with the hand resting on the top of the left femur; right arm semi-flexed with the hand resting on the central part of the pelvis
Sex: Male
Age: 45+. Older adult
Height: 178.9
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1

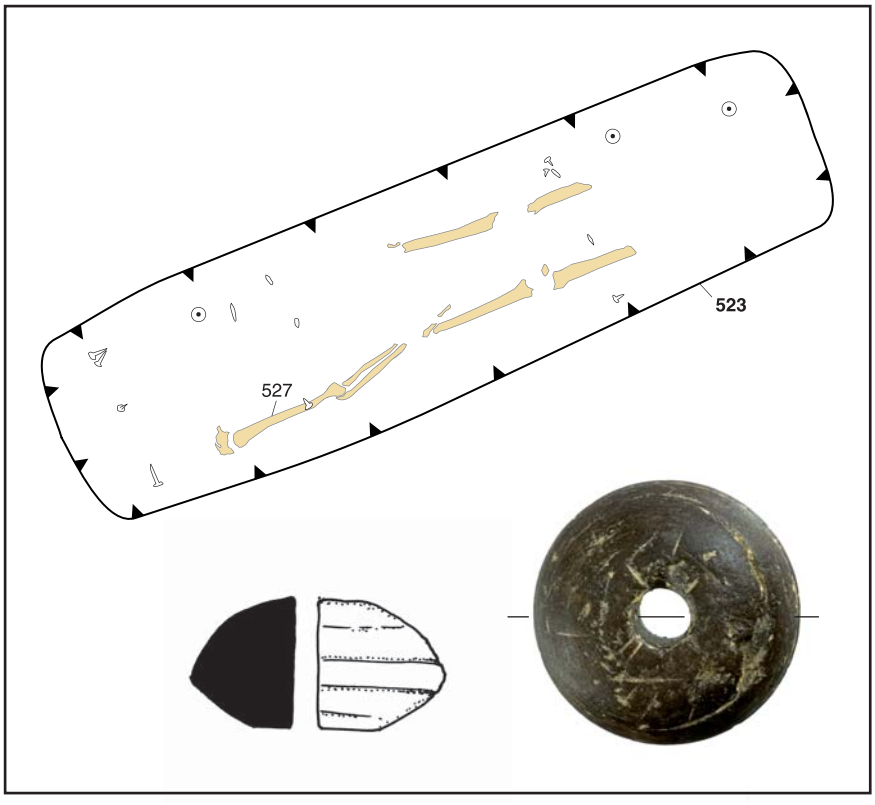


Fig. 3.66 Inhumation Grave 595

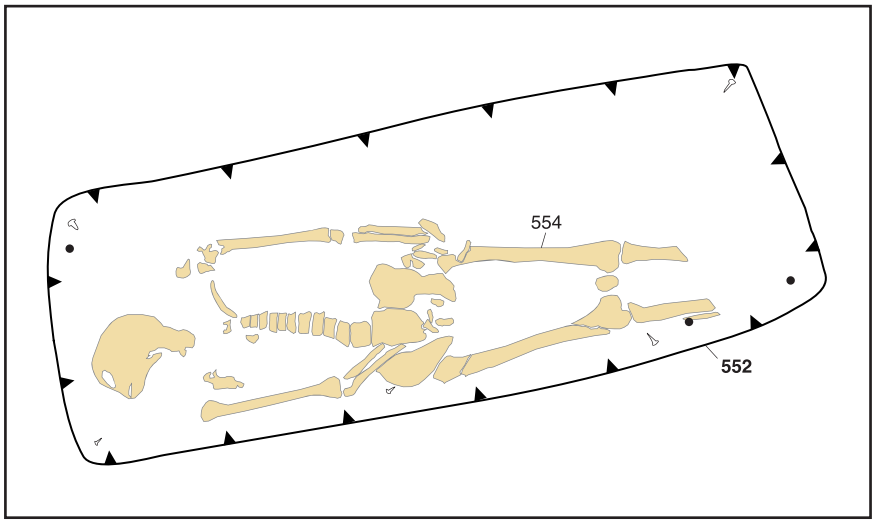


Fig. 3.67 Inhumation Grave 600

Pathology: Osteophytosis and Schmorl's nodes spine. Osteophytosis joint surfaces. Periodontal disease, calculus, AMTL, caries

Coffin: Represented by an assemblage of 8 nails defining the corners and part of the south-eastern side. L: 2.00 m. B: 0.60 m. (1952)

Inhumation Grave 605 (7881/0315, not illustrated)

Grave cut 556
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.00 x 0.70 m, 0.10 m deep
Fill: Friable brown and grey silty sand (558)

Skeleton 557
Posture: Supine, legs extended with feet together
Arm position: The arms did not survive
Sex: Indeterminate
Age: Adult
Fragmentation: Poor
Condition: Skull 9, arms 5+, hands 9, torso 9, legs 3, feet 9
Pathology: Osteophytosis left and right distal femur

Coffin: No evidence for a coffin survived

Comments: This grave was very shallow, and the western half had been removed by a modern soakaway. Due to the severity of the truncation it was not possible to be certain whether a coffin had been present

Inhumation Grave 610 (7908/0314, Fig. 3.68)

Grave cut 533
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.21 x 0.88 m, 0.56 m deep
Fill: Loose whitish grey chalk and silt (534)
Relationships: Cut Grave 820

Skeleton 566
Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed with the hand resting on the pelvis; right arm tightly flexed with the hand on the left shoulder
Sex: Male
Age: 26-35. Prime adult
Height: 173.2
Fragmentation: Good
Condition: Skull 2, arms 2, hands 1, torso 1, legs 2, feet 1

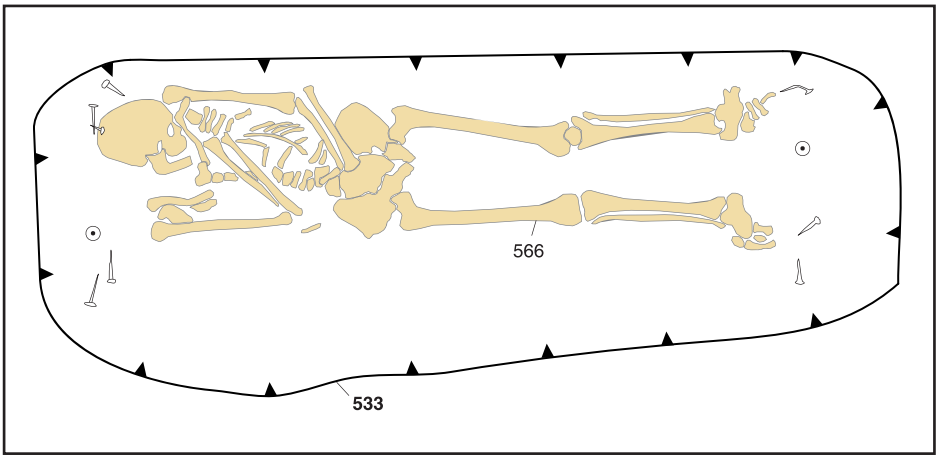


Fig. 3.68 Inhumation Grave 610

Pathology: Schmorl's nodes. Lumbarisation. Caries. Left and right navicular os tibiale exernum.

Additional human remains: Fragments of a second adult and a neonate (534)

Coffin: Represented by an assemblage of 11 nails defining the ends. L: 1.85-1.91 m. B: 0.50 m. (2058)

Inhumation Grave 615 (7907/0326, Fig. 3.69)

Grave cut 438
Orientation: WSW-ENE
Shape: Sub-rectangular with an irregular south-western end
Dimensions: 2.38 x 0.83 m, 0.80 m deep
Fill: Loose light brownish yellow clay silt with frequent chalk pieces (440)

Skeleton 543
Posture: Supine, legs extended with feet together
Arm position: Left arm extended with the hand resting on the head of the left femur; right arm semi-flexed
Sex: Male
Age: 45+. Older adult
Fragmentation: Good
Condition: Skull 1, arms 2, hands 1, torso 9, legs 2, feet 1
Pathology: Cribra orbitalia. AMTL

Coffin: Represented by an assemblage of 14 nails, a coffin stain defining most of the outline, and a deposit of coffin fill. L: 1.76 m. B: 0.40 m. (461, 573)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 170 hobnails, located outside the coffin at the foot of the grave. SF 1402

Inhumation Grave 620 (7914/0312, Fig. 3.70)

Grave cut 561
Orientation: WNW-ESE
Shape: Rectangular
Dimensions: 2.35 x 0.98 m, 0.88 m deep
Fill: Loose mottled white and brown chalk rubble and topsoil (563)
Relationships: Relationship with Grave 1349 uncertain as the features only intersected slightly

Skeleton 562
Posture: Supine, legs extended and parallel
Arm position: Little survived of the left arm; right arm semi-flexed
Sex: ?Female
Age: Adult
Fragmentation: Fair
Condition: Skull 2, arms 4, hands 5+, torso 9, legs 4, feet 2
Pathology: Hyperostosis frontalis interna. Caries

Skeleton 574
Posture: Unknown
Age: Neonate
Fragmentation: Fair
Condition: Skull 0, arms 9, hands 9, torso 0, legs 9, feet 9

Coffin: Represented by an assemblage of 13 nails and a coffin stain defining the outline. L: 1.74-1.86 m. B: 0.41-0.54 m. Ht: 0.25 m. (564)

Grave goods:
1 **Bone inlay**. Rectangular strip, one end straight, other end broken and eroded; original edges slightly bevelled to underside. Groove parallel to each long side, diagonal grooves between groove and edge. Inscription occupying field between grooves – DIVV[, which may be expanded as DIV V[IVAS, 'May you live long'. Present length 28 mm, section 9 x 2 mm. (563) SF 1536
2 **Vessel**. Fabric TR, New Forest colour-coated ware. Flagon of Fulford (1975a) fine ware type 12, with a single line of 'chattered' decoration on the shoulder and barbotine rather than painted decoration below. *c* AD 300-350. Complete. Located at the north-western, head, end of the grave, outside the coffin. (569)
3 **Hobnailed shoe**. Represented by a minimum of 38 hobnails, located inside the coffin, beside the right foot of skeleton 562, placed laterally in relation to the orientation of the grave. SF 1467
4 **Hobnailed shoe**. Represented by a minimum of 33 hobnails, located inside the coffin, beside the right

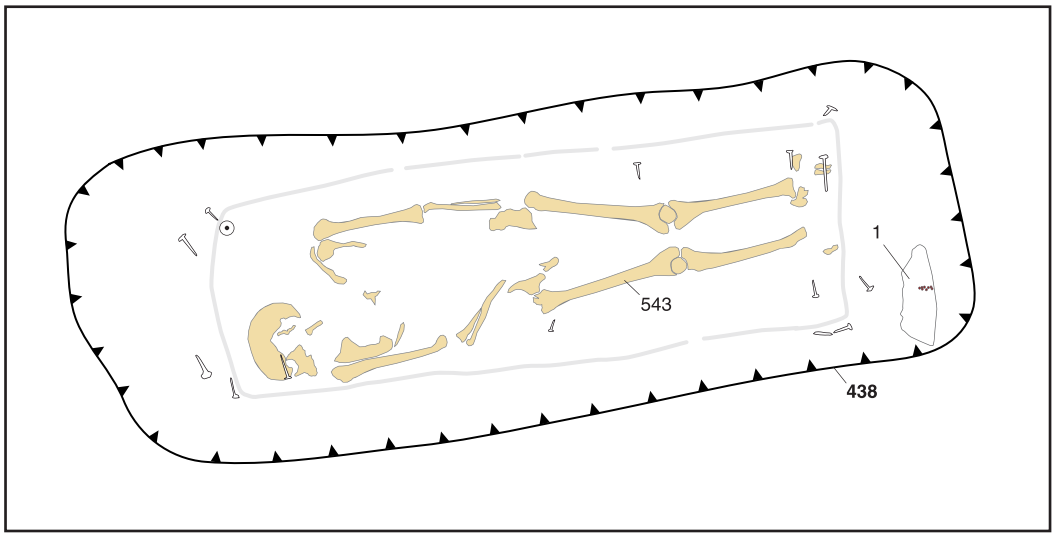


Fig. 3.69 Inhumation Grave 615

foot of skeleton 562, placed laterally in relation to the orientation of the grave and east of SF 1467. SF 1468

Date: Pottery dated AD 300-350

Comments: Infant skeleton 574 lay on top of hobnailed shoes SF 1467 and 1469, to the right of the right foot of skeleton 562

Inhumation Grave 625 (7902/0324, Fig. 3.71)

Grave cut 544

Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.40 x 0.83 m, 1.05 m deep
Fill: Friable light creamy brown clay silt with 30-40%

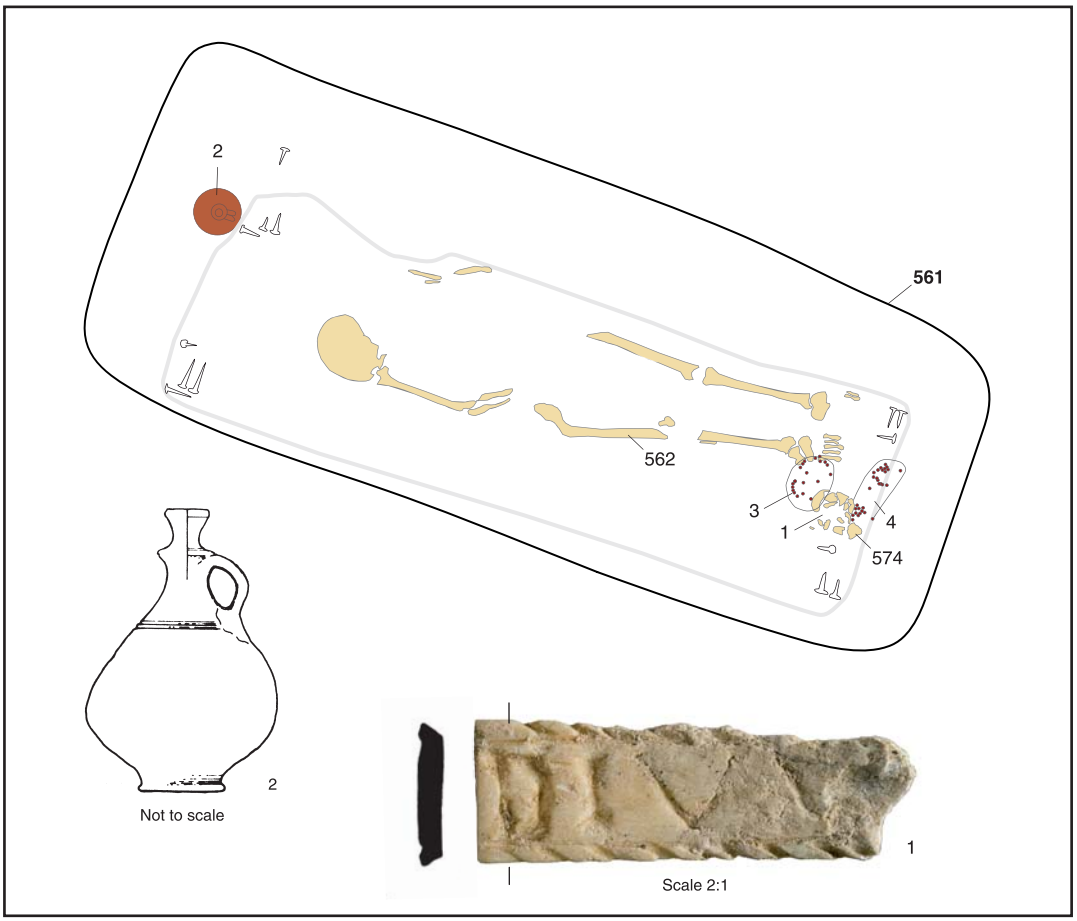


Fig. 3.70 Inhumation Grave 620

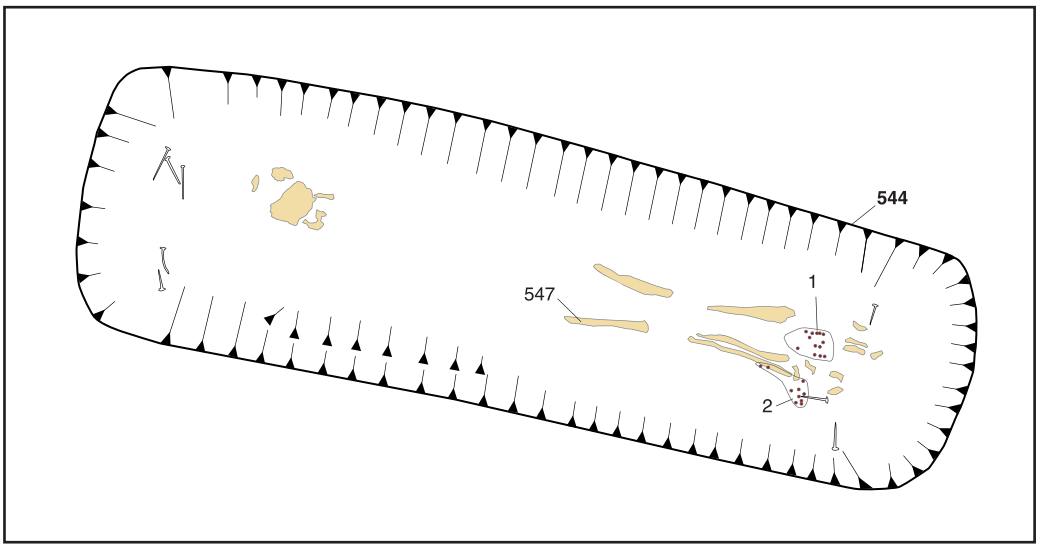


Fig. 3.71 Inhumation Grave 625

chalk pieces (546)
Relationships: Cut Grave 1270 and pit 794

Skeleton 547
Posture: Supine, legs extended
Arm position: The arms did not survive
Sex: ?Female
Age: Adult
Fragmentation: Poor
Condition: Skull 5+, arms 9, hands 9, torso 9, legs 4, feet 2

Coffin: Represented by an assemblage of 8 nails defining the corners. L: 1.80-1.90 m. B: 0.35-0.45 m. (1953)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 59 hobnails, associated with the left foot. SF 1404
2 **Hobnailed shoe**. Represented by a minimum of 53 hobnails, associated with the right foot. SF 1405

Date: Grave 1270 contained a comb dated to the later 4th century

Inhumation Grave 630 (7905/0320Fig. 3.72)

Grave cut 571
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.12 x 0.80 m, 1.50 m deep
Fill: Loose light whitish brown chalk with 40% clay silt (572)

Skeleton 612
Posture: Supine, legs extended and parallel
Arm position: Left arm poorly preserved but appears to be extended beside body; right arm semi-flexed
Sex: Male
Age: 36-45. Mature adult
Fragmentation: Fair
Condition: Skull 3, arms 4, hands 9, torso 4, legs 5+, feet 4
Pathology: ectocranial surface pitting. Possible spondylolysis

Coffin: Represented by an assemblage of 19 nails defining the ends and southern side. L: 1.76-1.82 m. B: 0.41-0.43 m. Ht: 0.21 m. (1954)

Grave goods:
1 **Vessel**. Fabric ZM, New Forest reduced coarse ware with slip on rim, neck, handle and shoulder. Jug of Fulford (1975a) grey ware type 20.5, with groups of oblique burnished lines on the shoulder. *c* AD 270-350. Complete. Located beside the left foot, inside the coffin. (613)
2 **Hobnailed shoe**. Represented by a minimum of 60 hobnails associated with the left foot. SF 1510
3 **Hobnailed shoe**. Represented by a minimum of 89 hobnails associated with the right foot. SF 1509

Other finds: A minimum of fifteen hobnails were recovered from soil sample <471>, taken from around the feet, but could not be allocated to a specific shoe

Date: Pottery dated AD 270-350

Inhumation Grave 635 (7901/0329, Fig. 3.73)

Grave cut 576
Orientation: W-E
Shape: Rectangular, with a step 0.15-0.20 m wide around all four sides at a depth of 0.40 m
Dimensions: 2.40 x 1.30 m, 1.10 m deep
Fill: Grey chalk and silt (633)

Skeleton 579
Posture: Supine, legs crossed at the ankles
Arm position: Left arm extended beside body; right arm extended with the hand on the right femur

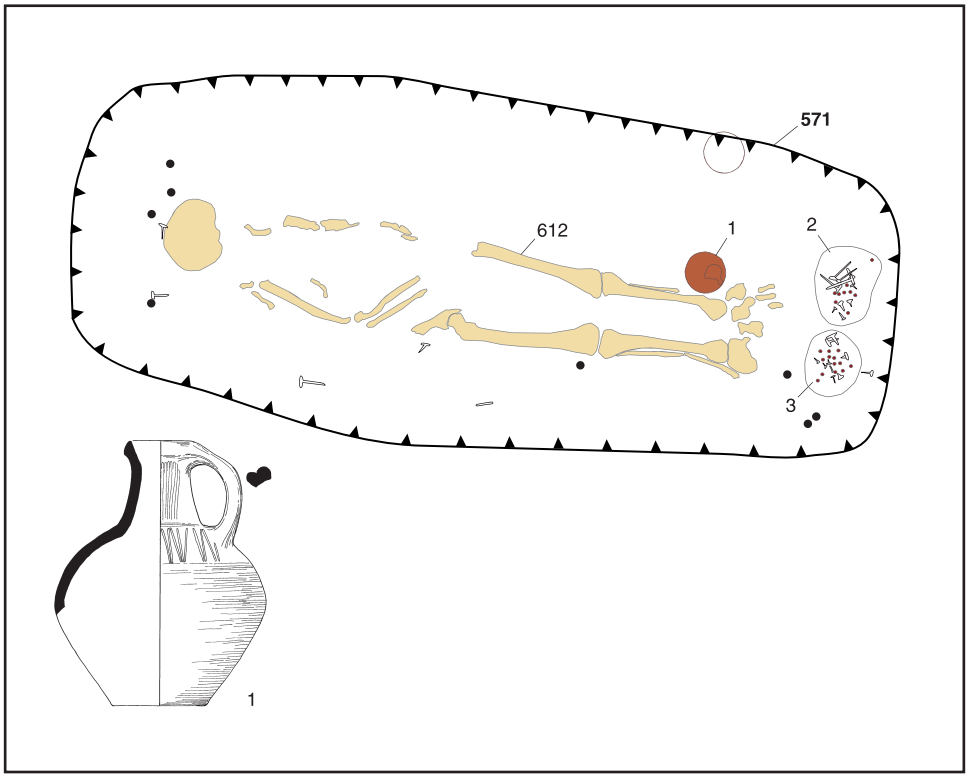


Fig. 3.72 Inhumation Grave 630

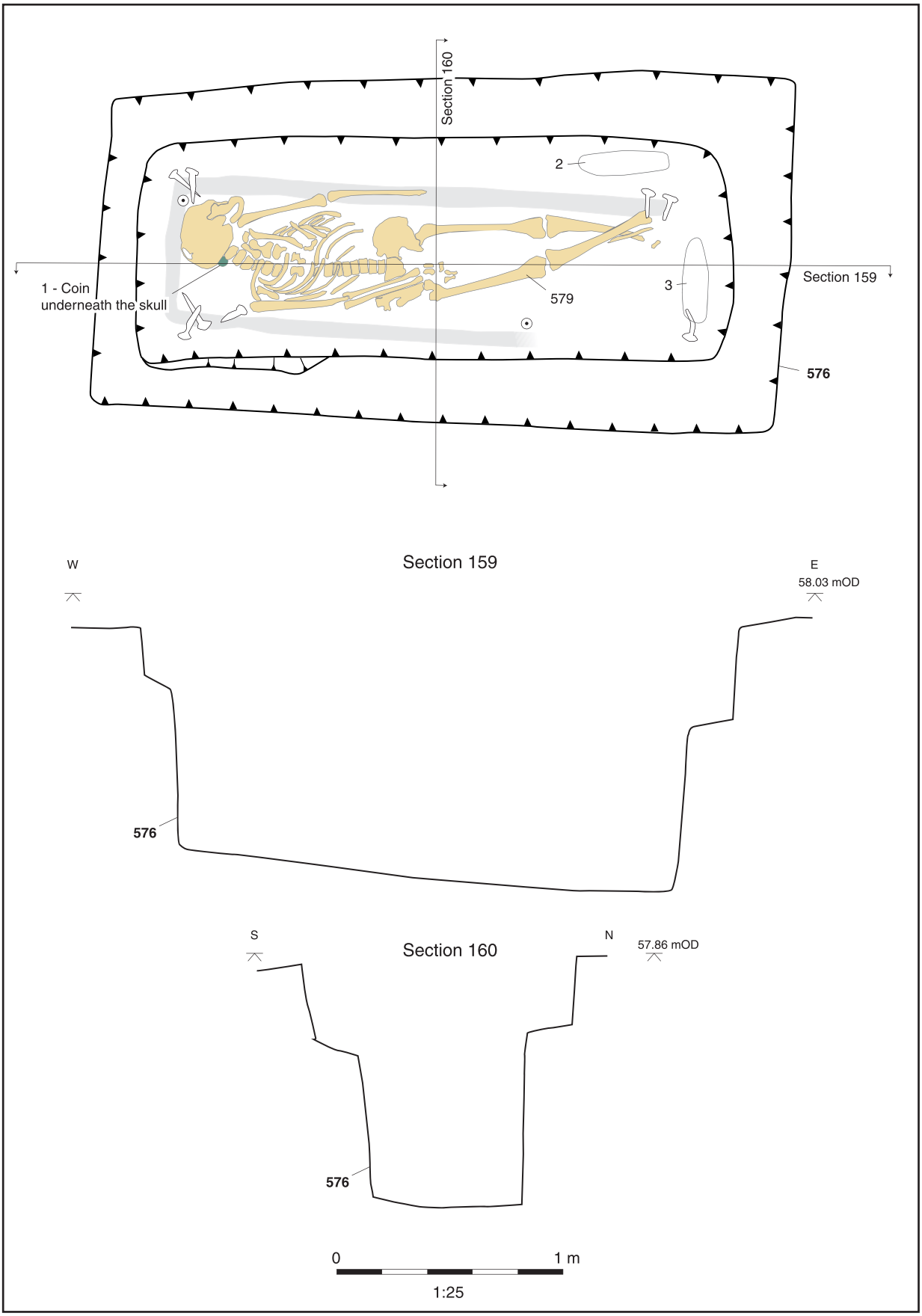


Fig. 3.73 Inhumation Grave 635

Sex: Male
Age: 18-25. Young adult
Height: 174.2
Fragmentation: Poor
Condition: Skull 2, arms 2, hands 2, torso 1, legs 1, feet 5
Pathology: Schmorl's nodes. Caries (x5), DEH, lesion (x2)

Coffin: Represented by an assemblage of 10 nails, a coffin stain defining the outline of the western end, northern side and a little over half of the southern side, and a coffin fill. L: 1.95 m. B: 0.45-0.50 m. Ht: 0.20 m. (577, 578)

Grave goods:
1 **Coin**. Nummus of Constantine II, Providentiae Caess, Trier. AD 326 (RIC VII, Trier, 479). Located under the skull, and may have originally been placed in the mouth. SF 1558
2 **Hobnailed shoe**. Located outside the coffin, beside the left leg. Represented by a minimum of 100 hobnails. SF 1565
3 **Hobnailed shoe**. Located outside the coffin, at the foot of the grave. Represented by a minimum of 79 hobnails. SF 1566

Date: Coin dated AD 326

Comments: A sub-rectangular stain (634) measuring 2.40 x 1.30 m was located immediately above the step in the grave pit, and is likely to be the remains of timbers placed across the step to create a separate lower chamber within the grave

Inhumation Grave 640 (7905/0326, Fig. 3.74)

Grave cut 584
Orientation: E-W
Shape: Sub-rectangular with rounded ends
Dimensions: 2.10 x 0.60 m, 0.30 m deep
Fill: Friable mottled brown silty chalk (586)

Skeleton 614
Posture: Lying on the right side with legs bent, the left leg lying directly on top of the right
Arm position: Left arm semi-flexed with the hand in front of the pelvis; right arm tightly flexed with the hand under the chin
Age: 11-13. Adolescent
Fragmentation: Fair
Condition: Skull 1, arms 2, hands 2, torso 3, legs 2, feet 3
Pathology: Possible Scheuermann's disease. DEH

Coffin: Represented by an assemblage of 11 nails. L: 1.60 m. B: 0.30 m. (1955)

Other finds: One sherd (6 g) of pottery, fabric ZF (586)

Inhumation Grave 645 (7904/0319, Fig. 3.75)

Grave cut 581
Orientation: WSW-ENE
Shape: Rectangular
Dimensions: 2.00 x 0.70 m, 0.70 m deep
Fill: Friable light brown chalky loam (582)

Skeleton 636
Posture: Supine, legs extended and parallel
Arm position: Position of the left arm uncertain as

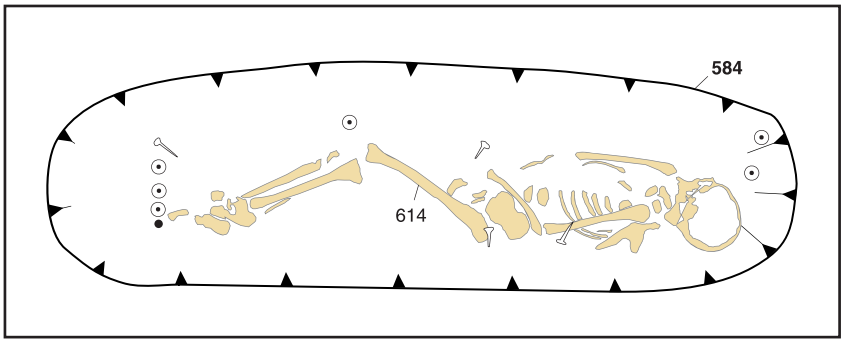


Fig. 3.74 Inhumation Grave 640

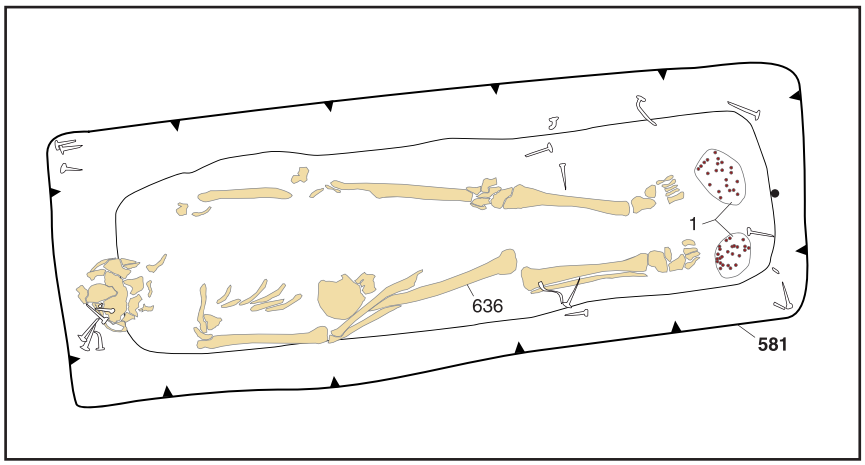


Fig. 3.75 Inhumation Grave 645

only the humerus survived; right arm semi-flexed
Sex: ?Male
Age: 60+. Much older adult
Fragmentation: Poor
Condition: Skull 2, arms 2, hands 1, torso 5, legs 1, feet 1
Pathology: Healed fracture right tibial condyle and left and right nasal bones. Sacrum 1 intervertebral disc disease and osteophytes. AMTL

Coffin: Represented by an assemblage of 22 nails, and a sub-rectangular area of coffin fill. L: 1.84 m. B: 0.45-0.50 m. (583)

Grave goods:
1 **Hobnailed shoes**. Represented by a minimum of 166 hobnails and eight boot plates originally forming two discrete groups, one associated with each foot. It is uncertain whether they were worn, or placed beyond the feet. SF 1489 and sample 505

Other finds: A single hobnail (SF 1487) was recovered from the backfill

Inhumation Grave 650 (7914/0322, Fig. 3.76)

Grave cut 641
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.20 x 0.83 m, 0.81 m deep
Fill: Loose white and brown chalk rubble and former topsoil (643)

Skeleton 642
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed, the wrists crossing over the pelvis
Sex: Male
Age: Adult
Fragmentation: Fair
Condition: Skull 1, arms 1, hands 1, torso 9, legs 2, feet 1
Pathology: DEH, lesions (x2), periodontal disease. Left maxilla possible wound with active infection.

Coffin: Represented by an assemblage of 11 nails, defining the corners with a single nail halfway along each side, and an area of coffin fill. L: 1.80 m. B: 0.42 m. (653)

Grave goods:
1 **Hobnailed shoes**. Located outside the coffin, beside the right leg. These defined what appeared to be the outline of two shoes placed end-to-end. Represented by a minimum of 119 hobnails. SF 1638

Other finds: One sherd (5 g) of medieval pottery from the top of the backfill (643)

Inhumation Grave 660 (7896/0327, Fig. 3.77)

Grave cut 654
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.45 x 0.80 m, 0.70 m deep
Fill: Friable light brown chalky loam (656)

Skeleton 657
Posture: Uncertain due to poor preservation
Arm position: The arms did not survive
Sex: Female
Age: Adult
Fragmentation: Poor
Condition: Skull 3, arms 9, hands 9, torso 9, legs 9, feet 9
Pathology: Cribra orbitalia. Caries, calculus

Additional human remains: Fragments of an adult ?male (656, 657)

Coffin: Represented by an assemblage of 13 nails and an iron handle or decorative fitting *c* 105 mm long with a square shank driven into the wood and bent at a right angle and flattened into a sub-oval 'head' (SF 1721). L: 1.90 m. B: 0.43 m. (1956)

Grave goods:
1 **Coin**. Nummus of house of Constantine, ?Gloria Exercitus. AD 330-341. Located under the skull and may have originally been placed in the mouth. SF 1720
2 **Hobnailed shoes**. Represented by a minimum of 130 hobnails (including a minimum of seven recovered from soil sample <585>) and four boot plates that form the shape of one clear shoe and a second more disturbed shoe. Located inside the coffin, but uncertain whether they are associated with the feet or placed beyond them. SF 1722

Other finds: A minimum of 42 hobnails were recovered whose locations were not recorded, and a minimum of six (including one from soil sample <584>) were recovered from the backfill

Fig. 3.76 Inhumation Grave 650

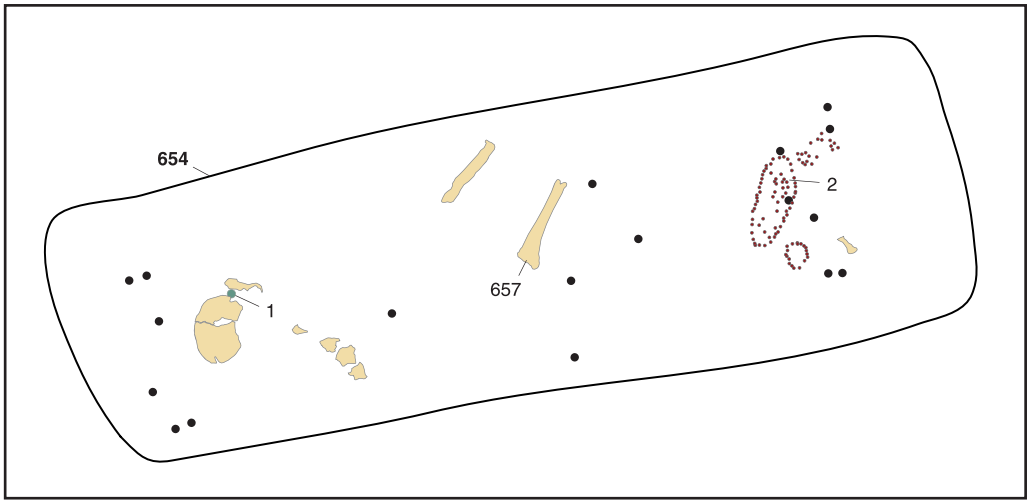


Fig. 3.77 Inhumation Grave 660

Two sherds (26 g) of prehistoric and 22 sherds (186 g) of Roman pottery. Fabrics TR, ADA, ZF, ZG, ZM, ZMA and SG, the latter including a 'cooking pot type' jar rim (656)

Date: Coin dated AD 330-341

Inhumation Grave 665 (7903/0322, Fig. 3.78)

Grave cut 658

Orientation: SSW-NNE
Shape: Sub-rectangular
Dimensions: 2.14 x 0.71 m, 0.40 m deep
Fill: Chalk rubble with 40% loose light creamy brown clay sand (659)
Relationships: Cut pit 794. Cut by Graves 655 and 790

Skeleton 661

Posture: Prone, legs extended and parallel
Arm position: Both arms semi-flexed with the hands beneath the pelvis
Sex: Female
Age: 36-45. Mature adult
Height: 152.9
Fragmentation: Fair
Condition: Skull 1, arms 1, hands 0, torso 1, legs 1, feet 1
Pathology: Spondylolysis. Healed fracture left mandible. Osteophytosis and intervertebral disc disease lumbar spine. Osteoarthritis left and right distal femoral condyles. AMTL os acromiale left scapula. Right hamate developmental absent 'hook'

Coffin: None

Grave goods:

1 **Hobnailed shoe**. Represented by a minimum of 26 hobnails and two boot plates, associated with the right foot. SF 1642
2 **Hobnailed shoe**. Represented by a minimum of 16 hobnails and two boot plates, associated with the left foot. SF 1643

Inhumation Grave 670 (7917/0321, Fig. 3.79)

Grave cut 538

Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.30 x 0.87 m, 0.93 m deep
Fill: Loose chalk with patches of brownish orange silt (542)

Skeleton 541

Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Sex: Undetermined

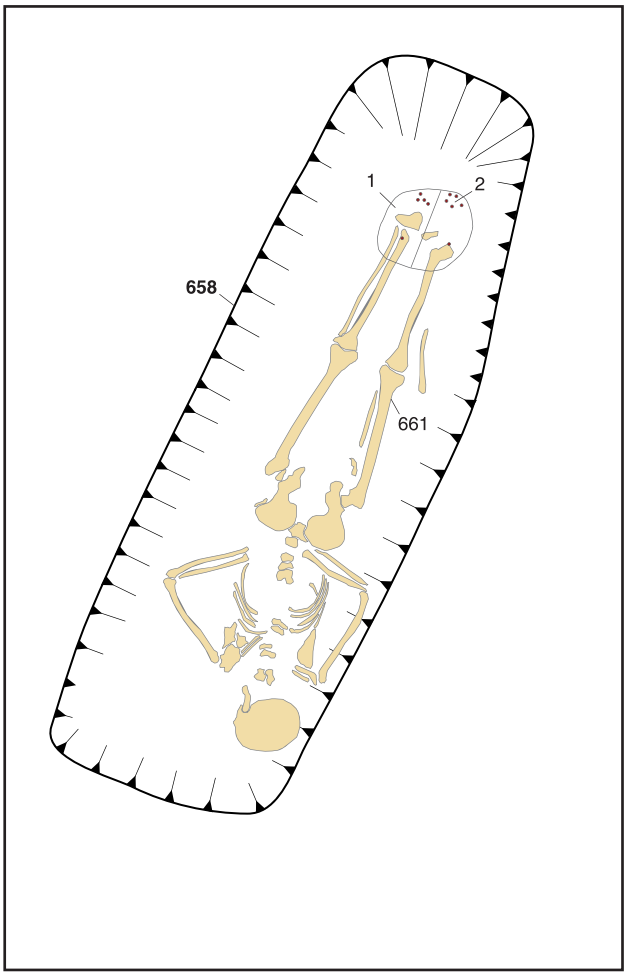


Fig. 3.78 Inhumation Grave 665

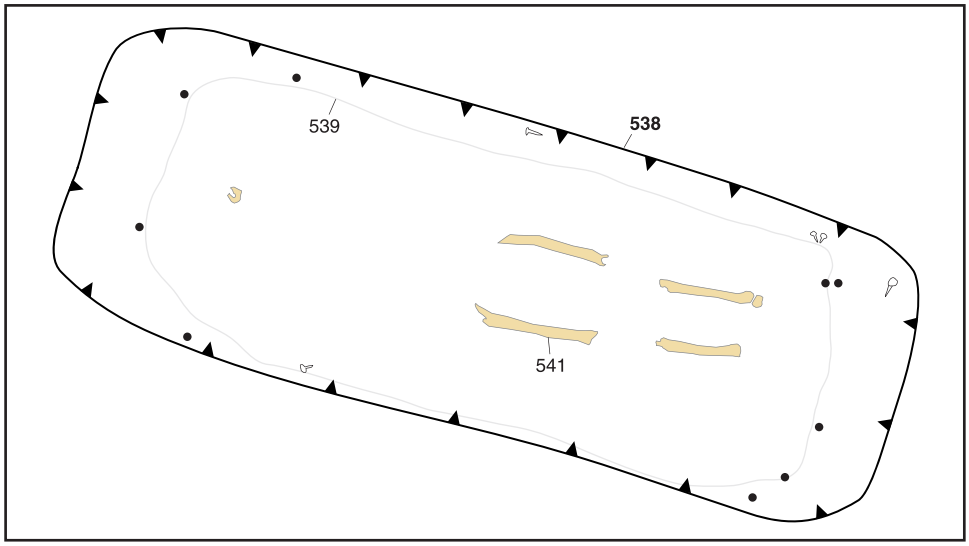


Fig. 3.79 Inhumation Grave 670

Age: Adult
Fragmentation: Good
Condition: Skull 5+, arms 9, hands 9, torso 9, legs 2, feet 1

Coffin: Represented by an assemblage of 14 nails and a coffin stain defining the outline. L: 1.84-1.91 m. B: 0.35-0.50 m. (539)

Inhumation Grave 675 (7893/0312, Fig. 3.80)

Grave cut 591
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 2.20 x 0.75 m, 1.20 m deep
Fill: Mottled brown and white chalk rubble (594)
Relationships: Cut Graves 770 and 800

Skeleton 593
Posture: Supine, legs extended with feet together
Arm position: Both arms extended beside body
Sex: ?Male
Age: 18-25. Young adult
Fragmentation: Good
Condition: Skull 1, arms 2, hands 2, torso 1, legs 2, feet 2
Pathology: Caries (x3). Bilateral os acromiale

Additional human remains: Fragments of an adult female skull associated with skeleton 593

Coffin: Represented by an assemblage of 15 nails, and a coffin stain defining the south-western end and part of the north-western side. L: 1.83-1.88 m. B: 0.47-0.49 m. (592)

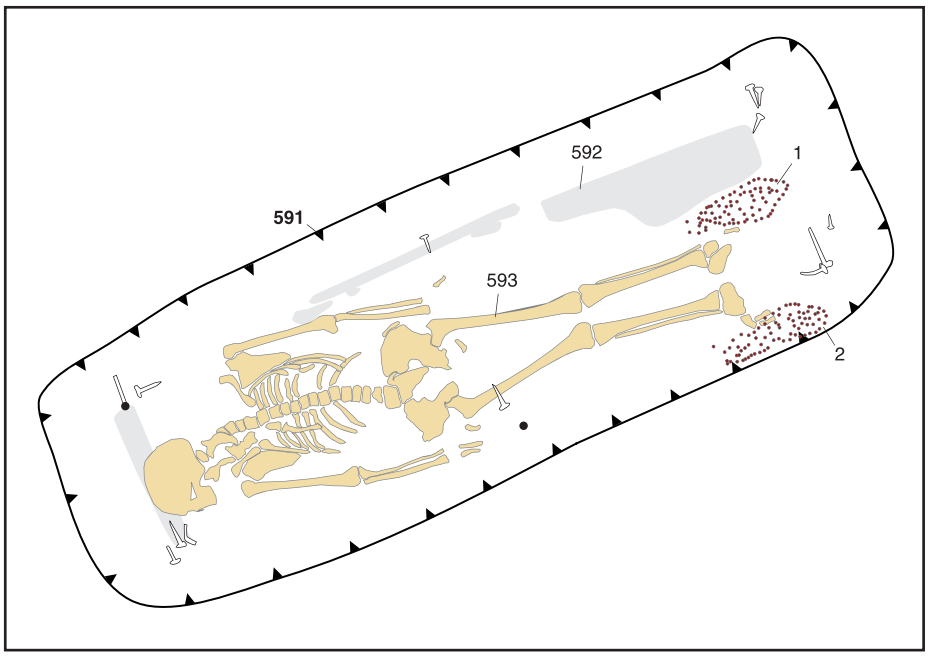


Fig. 3.80 Inhumation Grave 675

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 86 hobnails, located beside the left foot. SF 1801
2 **Hobnailed shoe**. Represented by a minimum of 91 hobnails, located beside the right foot. SF 1802

Other finds: A group of five hobnails (SF 1800) were recovered from the backfill

Inhumation Grave 680 (7916/0305, Fig. 3.81)

Grave cut 637
Orientation: W-E
Shape: Sub-rectangular with rounded ends
Dimensions: 2.30 x 0.70 m, 1.30 m deep
Fill: Friable brown clay silt with chalk pieces (638)
Relationships: Cut Grave 965

Skeleton 639
Posture: The posture was uncertain due to poor preservation
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Destroyed
Condition: Skull 9, arms 9, hands 9, torso 9, legs 5, feet 9

Coffin: Represented by an assemblage of 14 nails defining the corners. L: 1.90 m. B: *c* 0.40 m. (1957)

Grave goods:
1 **Vessel**. Fabric ZM, New Forest reduced coarse ware, but reddish-brown in colour with off-white slip on rim, neck, handle and shoulder. Jug of Fulford (1975a) grey ware type 20, more or less as type 20.4, but the decoration, a narrow band of burnished lattice, is slightly different.5, with groups of oblique burnished lines on the shoulder. *c* AD 270-350. Largely complete, but seems to have been deliberately damaged in the girth area in antiquity. Located beside the left foot, inside the coffin. (801)

Date: Pottery dated AD 270-350. Grave 965 contains vessels dated 270-400 and 300-350

Inhumation Grave 685 (7889/0318, Fig. 3.82)

Grave cut 548
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 1.60 x 0.50 m, 0.42 m deep
Fill: Friable light creamy brown clay silt with chalk pieces (549)

Skeleton 611
Posture: Supine. Legs extended with feet together
Arm position: Both arms extended beside body
Age: 6-7. young child
Fragmentation: Good
Condition: Skull 2, arms 2, hands 9, torso 1, legs 2, feet 9
Pathology: Cribra orbitalia

Additional human remains: Fragments of a younger child associated with skeleton 611

Coffin: Represented by an assemblage of 12 nails defining the corners. L: 1.34-1.35 m. B: 0.30 m. (1958)

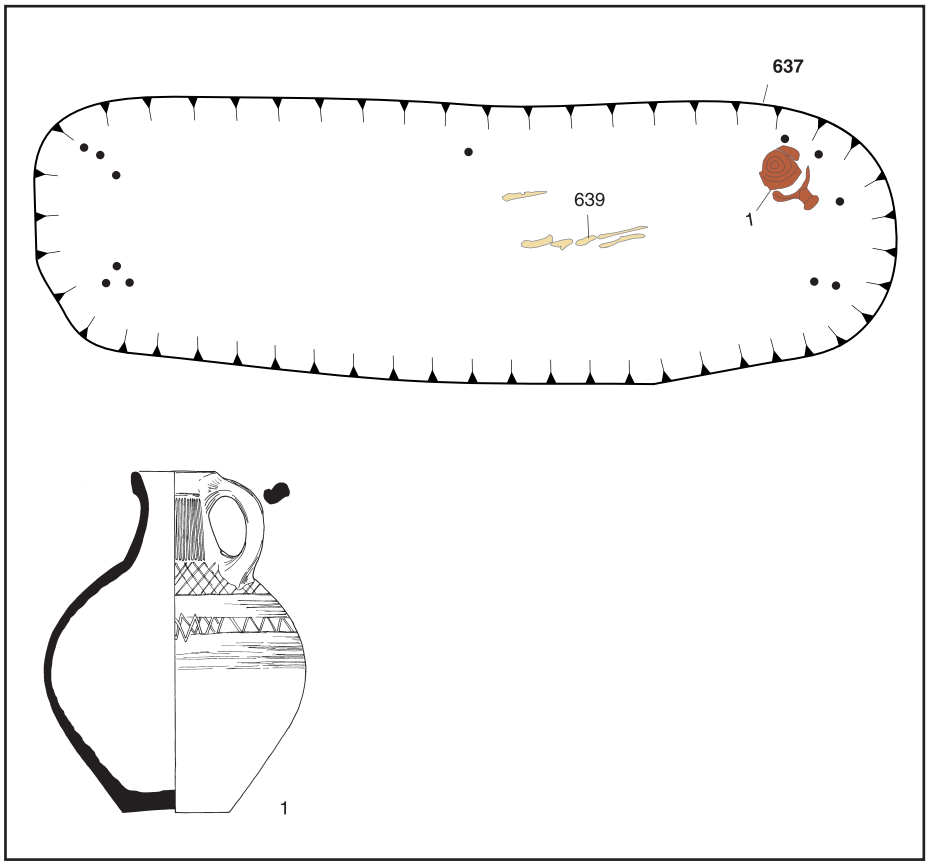


Fig. 3.81 Inhumation Grave 680

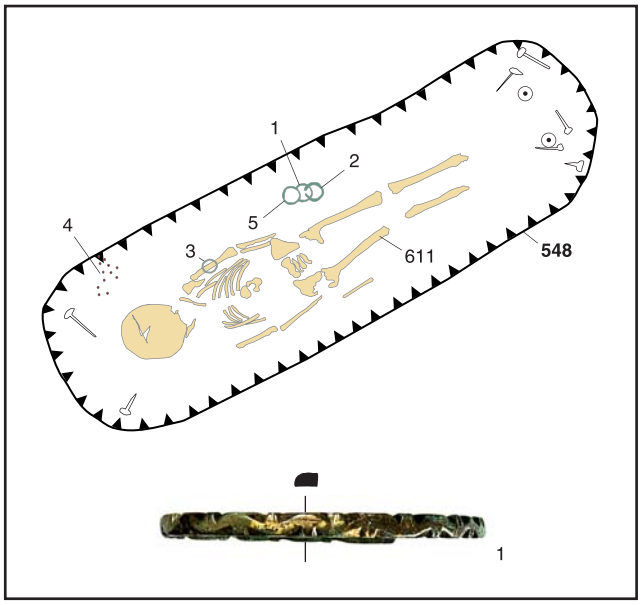


Fig. 3.82 Inhumation Grave 685

Grave goods:

1 **Copper alloy bracelet**; broken in three fragments but probably complete. Rectangular section, widest to wrist, probably a top/bottom overlap joint but these fragments detached. Upper face decorated by boxed zig-zag, boxes have V-notch. Diameter 46 mm, section 3 x 1.5 mm. (549) SF 1449

2 **Iron bracelet**, six fragments forming approximately one-half. Rectangular-sectioned, widest to wrist; no obvious decoration. Diameter *c* 50-60 mm, width 3 mm. (549) SF 1499 **(NI)**

3 **Iron bracelet**, five fragments forming approximately one-half. Rectangular-sectioned, widest to wrist; grooved across. Diameter *c* 50 mm, width 3 mm. (549) SF 1448 **(NI)**

4 **Hobnailed shoe(s)**. Represented by a minimum of 16 hobnails, located outside the coffin to the left of the skull. SF 1384

Date: The bracelets are not closely dated within the 4th century

Inhumation Grave 690 (7909/0325, Fig. 3.83)

Grave cut 596

Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.33 x 0.70 m, 0.45 m deep
Fill: Loose light whitish brown clay silt with frequent chalk pieces (597)

Skeleton 616

Posture: Supine, legs extended with feet together
Arm position: Left arm flexed across the stomach with the hand resting on the right forearm; right arm extended with the hand on the head of the right femur
Sex: Male
Age: 26-35. Prime adult
Height: 161.8
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Schmorl's nodes, Possible Scheuermann's disease. Calculus, DEH, AMTL, crowding upper left 2nd incisor

Coffin: Represented by an assemblage of 14 nails and a coffin stain defining the outline. L: 1.75 m. B: 0.35-0.45 m. Ht: 0.16 m. (599)

Grave goods:

1 **Hobnailed shoe(s)**. Represented by a minimum of 49 hobnails, located outside the coffin against the foot of the grave. SF 1608

Inhumation Grave 695 (7906/0306, not illustrated)

Grave cut 621

Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.28 x 0.60 m, 0.35 m deep
Fill: Friable chalk with some grey silt (622)

Skeleton 623

Posture: Supine, legs extended and parallel
Arm position: Position of left arm uncertain due to poor preservation; right arm semi-flexed
Sex: ?Female
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 2, arms 3, hands 3, torso 4, legs 3, feet 4

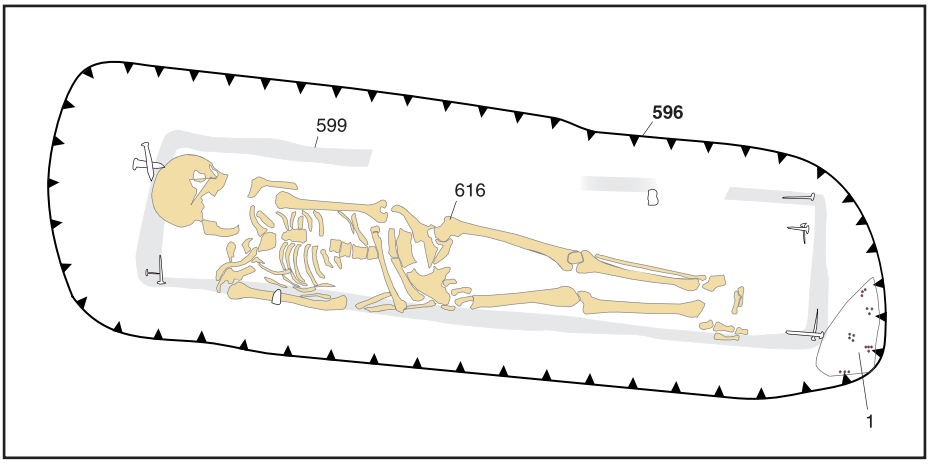


Fig. 3.83 Inhumation Grave 690

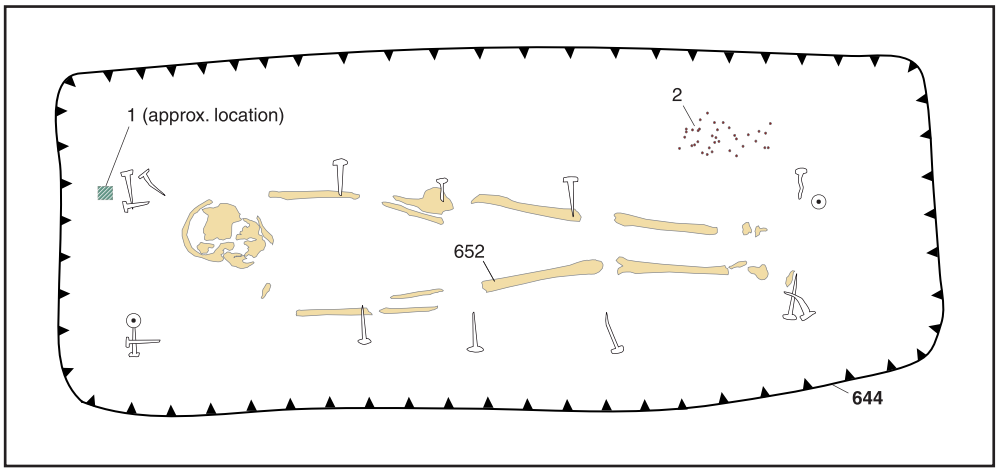


Fig. 3.84 Inhumation Grave 700

Pathology: Healed fracture 2 right ribs. Osteophytosis spine. Osteoarthritis right elbow joint, further joint degeneration. DEH, AMTL

Coffin: None

Inhumation Grave 700 (7912/0305, Fig. 3.84)

Grave cut 644
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.20 x 0.90 m, 1.00 m deep
Fill: Mid greyish brown chalk and clay silt (649)

Skeleton 652
Posture: Supine, legs extended with feet together
Arm position: Left arm semi-flexed; right arm extended beside body
Sex: Male
Age: 36-45. Mature adult
Fragmentation: Destroyed
Condition: Skull 3, arms 4, hands 9, torso 9, legs 3, feet 3
Pathology: DEH, caries (x2), periodontal disease

Coffin: Represented by an assemblage of 17 nails defining the ends and sides. L: 1.75 m. B: 0.40-0.41 m. (651)

Grave goods:
1 **Vessel fragments** (3); pale green glass, small bubbles. Very shallowly convex-curved side. (649) SF 1734 **(NI)**
2 **Hobnailed shoe(s)**. Represented by a minimum of 72 hobnails in the approximate shape of a shoe, located outside the coffin beside the left leg. SF 1607

Other finds: Three hobnails were recovered from soil sample <519>, taken from the area around the feet. Three sherds (17 g) of pottery, prehistoric and fabric ZM (649)

Comments: The glass fragments are possibly within the grave fill rather than a grave good

Inhumation Grave 705 (7918/0320, Fig. 3.85)

Grave cut 618
Orientation: NW-SE
Shape: Sub-rectangular
Dimensions: 2.40 x 0.80 m, 1.45 m deep
Fill: Loose chalk rubble with a small amount of former topsoil (619)

Skeleton 702
Posture: Supine, legs extended with knees and feet together
Arm position: Left arm extended with the hand resting on the left femur; right arm semi-flexed with the hand on the pelvis
Sex: Male
Age: 36-45. Mature adult
Height: 169.7
Fragmentation: Fair
Condition: Skull 2, arms 3, hands 3, torso 4, legs 3, feet 2
Pathology: Osteophytosis and Schmorl's nodes spine. DEH, periodontal disease calculus, AMTL, caries (x4). Ectocranial pitting

Coffin: Represented by an assemblage of 16 nails at the corners and spaced regularly along the sides, and an area of coffin fill. L: 1.90-2.00 m. B: 0.42 m. (703)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 11 hobnails and 10 boot plates, located at the foot of the coffin. SF 1651

Other finds: One sherd (3 g) of medieval pottery from the top of the backfill (619)

Inhumation Grave 710 (7916/0309, Fig. 3.86)

Grave cut 778
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.50 x 0.84 m, 1.35 m deep
Fill: Chalk and former topsoil (779)
Relationships: Cut Grave 810 and ditch 450

Skeleton 782
Posture: Supine, legs extended and parallel
Arm position: Both arms extended beside the body
Sex: Female
Age: 36-45. Mature adult
Fragmentation: Poor
Condition: Skull 5, arms 4, hands 9, torso 2, legs 3, feet 1
Pathology: Lumbar 5 osteophytosis and Schmorl's node. DEH, calculus. Hyperostosis frontalis interna

Coffin: Represented by an assemblage of 23 nails defining the ends. L: 1.70-1.80 m. B: 0.37-0.47 m. (781)

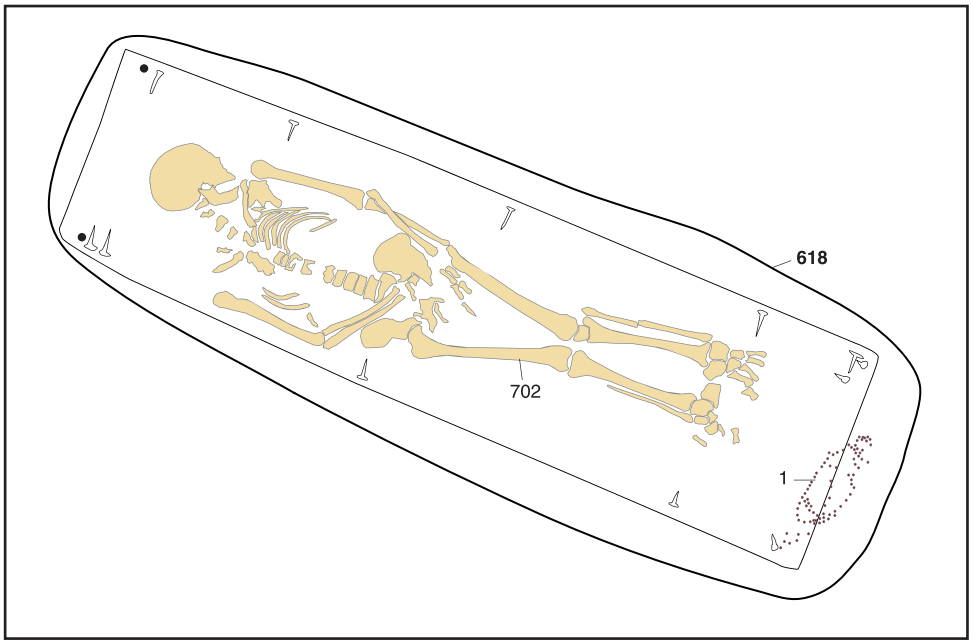


Fig. 3.85 Inhumation Grave 705

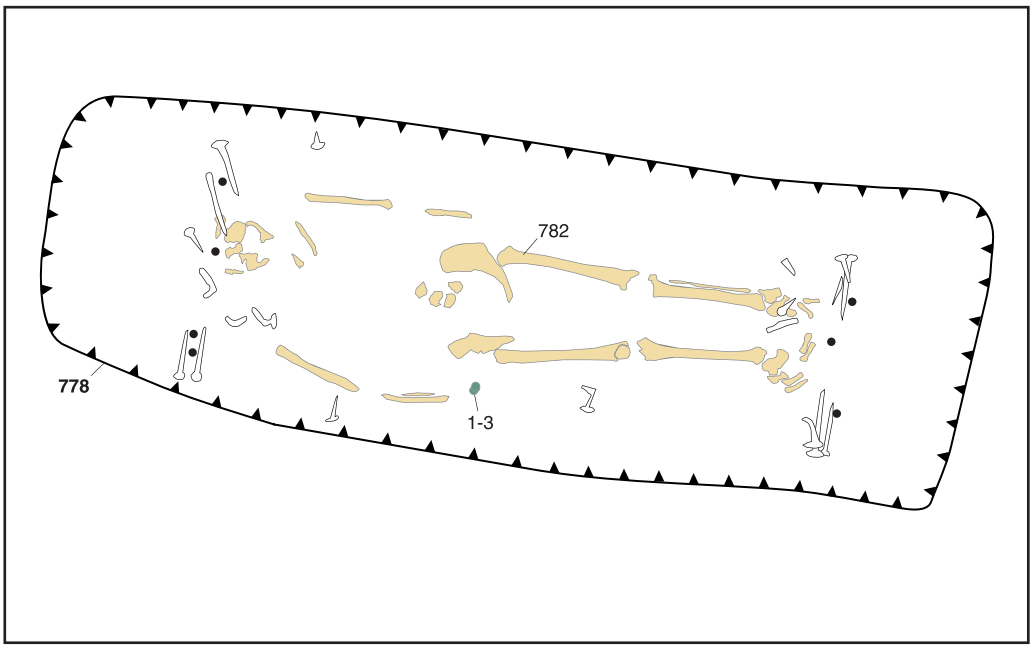


Fig. 3.86 Inhumation Grave 710

Grave goods:
1 **Coin**. Nummus of Gratian, Securitas Reipublicae, Lyons. AD 367-378.
Fused with SF 1962. SF 1961
2 **Coin**. Nummus of Gratian, Gloria Novi Saeculi, Arles. AD 367-375
Fused with SF 1961. SF 1962
3 **Coin**. Nummus of ?Valens, Gloria Romanorum. AD 364-378. SF 1963

Other finds:
A dog mandible was recovered from the backfill
Two sherds (61 g) of pottery; a dish and a 'cooking pot type' jar rim, both in fabric SG (779)

Date: Coins dated 367-378. Grave 810 contained a comb dated to the later 4th century

Comments: All three coins were located beside the right leg. Their location suggests that they may have been held in the right hand, but this was not certain as the hand bones did not survive

Inhumation Grave 715 (7914/0320, Fig. 3.87)

Grave cut 714
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.35 x 1.04 m, 1.00 m deep

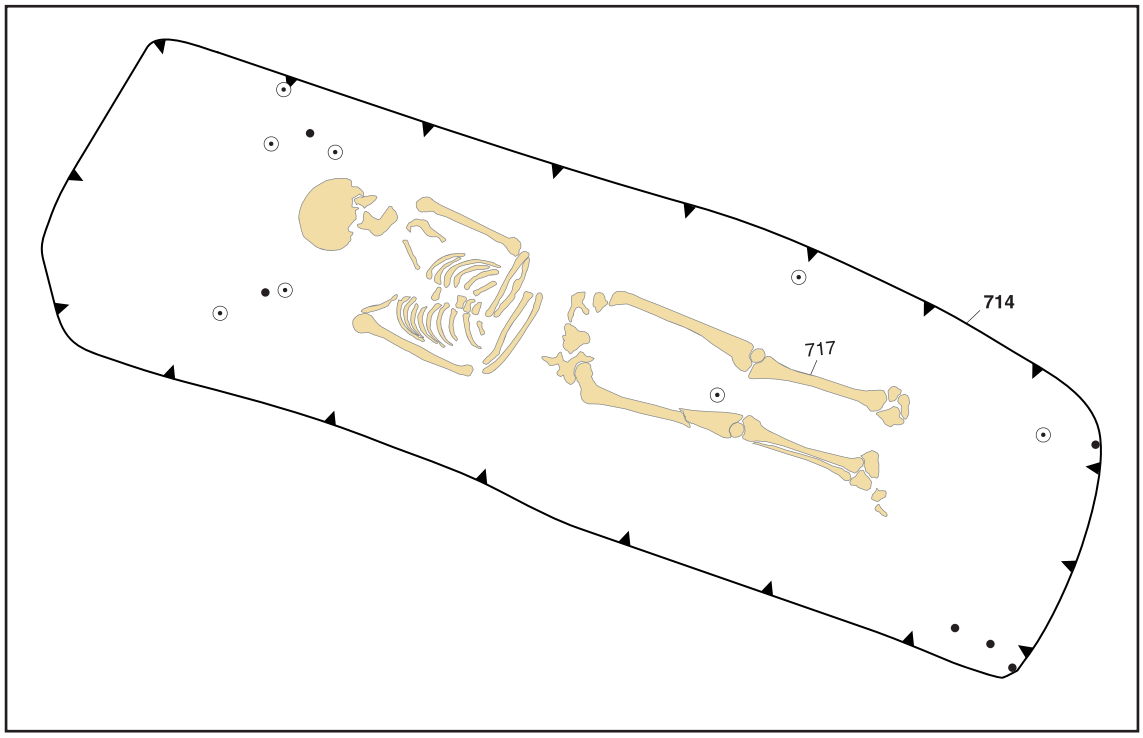


Fig. 3.87 Inhumation Grave 715

Fill: Compact chalk (716)
Relationships: Cut Grave 1085

Skeleton 717
Posture: Supine, legs extended and parallel
Arm position: Both arms flexed across the stomach
Sex: Male
Age: Adult
Fragmentation: Fair
Condition: Skull 2, arms 2, hands 1, torso 2, legs 2, feet 2
Pathology: DEH, calculus. Sinusitis

Additional human remains: Fragments of a second adult associated with skeleton 717

Coffin: Represented by an assemblage of 14 nails, located at the corners with a single nails halfway along each side. L: 2.03 m. B: 0.36-0.48 m. Ht: 0.31 m. (1959)

Inhumation Grave 720 (7910/0318, Fig. 3.88)

Grave cut 646
Orientation: W-E
Shape: Sub-rectangular

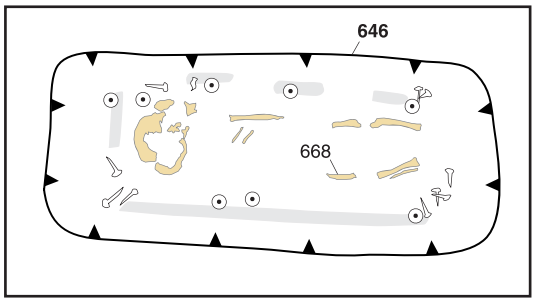


Fig. 3.88 Inhumation Grave 720

Dimensions: 1.20 x 0.52 m, 0.50 m deep
Fill: Friable mid brown silty soil with 40% chalk pieces (647)

Skeleton 668
Posture: Supine, legs extended and parallel
Arm position: Position of the arms uncertain due to poor preservation
Age: Child
Fragmentation: Fair
Condition: Skull 1, arms 2, hands 9, torso 9, legs 2, feet 2

Coffin: Represented by an assemblage of 24 nails and a coffin stain defining the western end and both sides. L: 0.85-0.88 m. B: 0.33 m. (648)

Other finds: Three sherds (34 g) of pottery, fabric ZG and a medieval fragment (4 g) (647)

Inhumation Grave 725 (7916/0310, Fig. 3.89)

Grave cut 688
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.45 x 0.80 m, 1.10 m deep
Fill: Mid brownish grey mixed chalk and former topsoil (689)

Skeleton 692
Posture: Supine, right leg extended, left leg bent at the knee
Arm position: The arms did not survive
Sex: ?Male
Age: Adult
Fragmentation: Poor
Condition: Skull 3, arms 9, hands 9, torso 9, legs 3, feet 2

Coffin: Represented by an assemblage of 16 nails defining the corners and sides. L: 1.81-1.82 m. B: 0.39 m. (691)

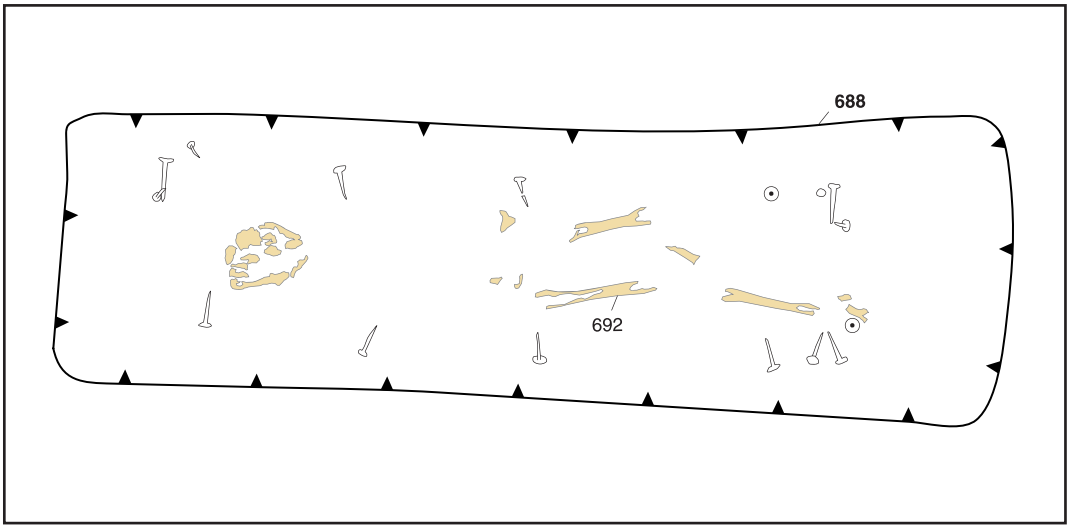


Fig. 3.89 Inhumation Grave 725

Inhumation Grave 730 (7887/0308, Fig. 3.90, 3.91)

Grave cut 697
Orientation: W-E
Shape: Sub-rectangular with rounded ends
Dimensions: 2.25 x 0.90 m, 0.65 m deep
Fill: Friable brown silty sand with 40% chalk pieces (699)

Skeleton 698
Posture: Posture was not certain due to poor preservation, but probably supine
Arm position: The arms did not survive
Sex: ?Male
Age: Adult
Fragmentation: Poor
Condition: Skull 3, arms 9, hands 9, torso 9, legs 3, feet 9
Pathology: Cribra orbitalia, shovelling incisors

Coffin: Represented by an assemblage of 16 nails. L: 1.82-1.84 m. B: 0.39 m. (1960)

Grave goods:
1 **Iron shears**, 'U'-shaped rectangular-sectioned handle tapering towards blades with straight edges and backs curving down to rounded points. In folds along one face of blades and on outer edge of loop, linen textile, extended tabby (basket weave), nine pairs/Z+Z x 7-8 pairs/Z+Z per cm (PWR). Length *c* 130 mm, handle section 9 x 4 mm, blade length 50 mm, blade width (max.) 23 mm. (699) SF 1711 (Fig. 3.91)

Inhumation Grave 735 (7890/0311, Fig. 3.92)

Grave cut 672
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.25 x 0.80 m, 0.50 m deep
Fill: Loose silty chalk (673)
Relationships: Cut Grave 880

Skeleton 686
Posture: Prone, legs extended with feet together
Arm position: Both arms were behind the back and flexed to the left
Sex: Female
Age: 26-35. Prime adult
Height: 157.3

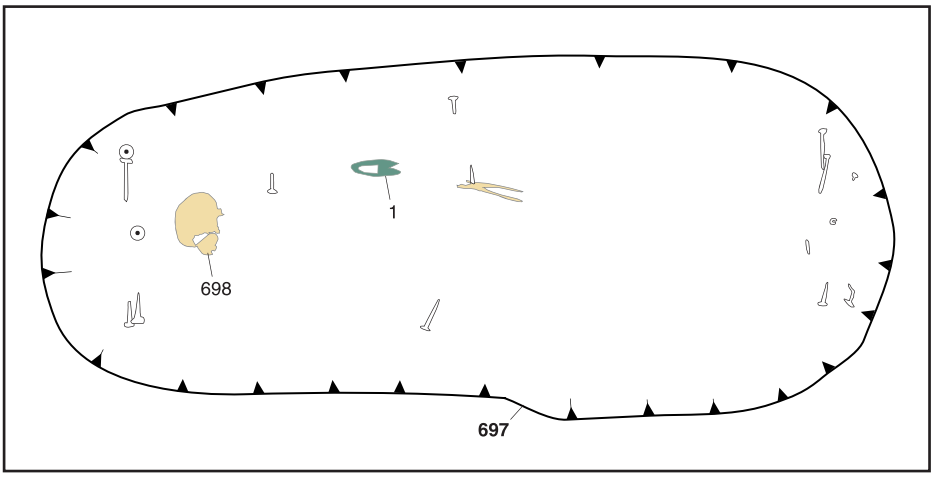


Fig. 3.90 Inhumation Grave 730

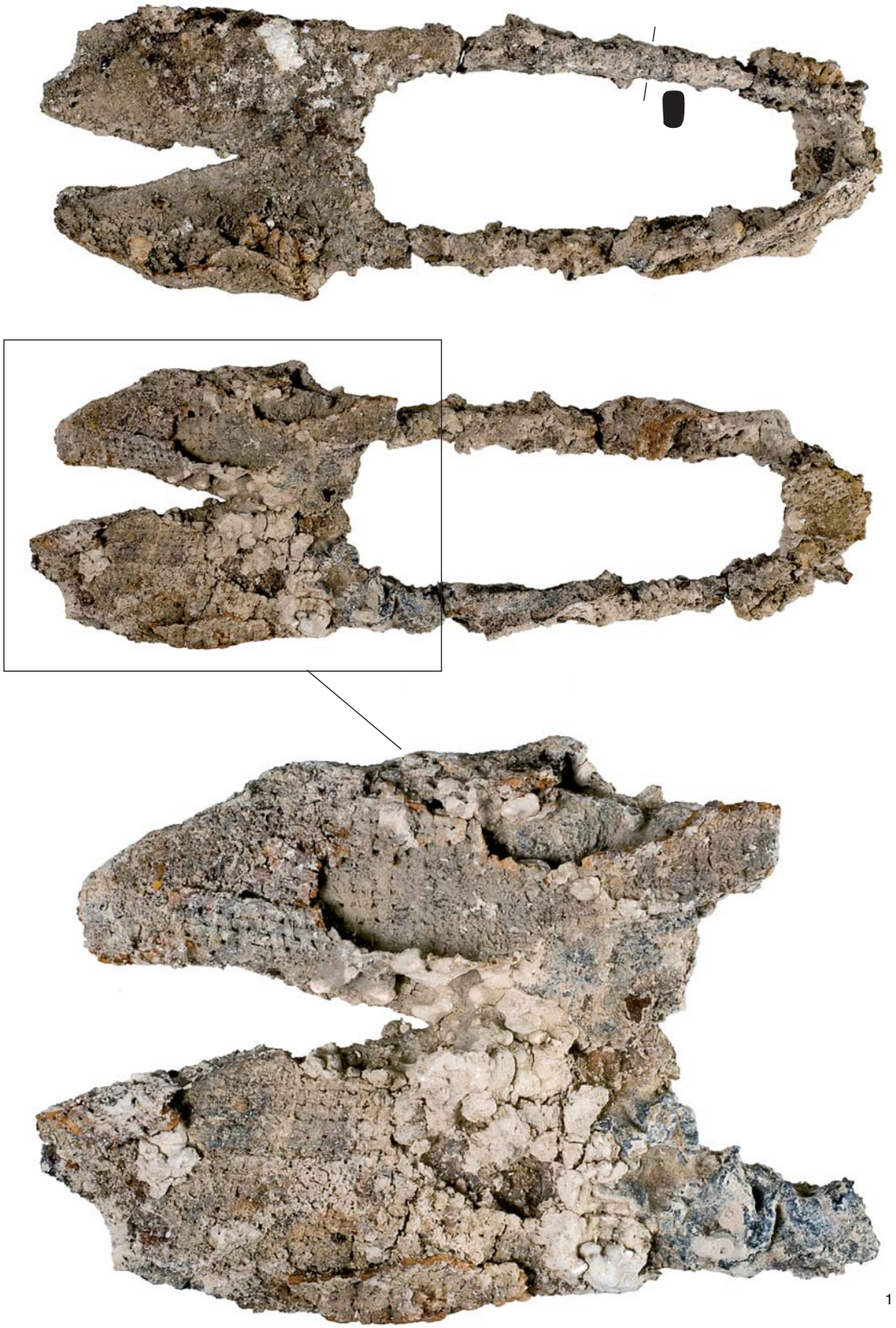


Fig. 3.91 Iron shears from Grave 730

Fragmentation: Fair
Condition: Skull 1, arms 2, hands 3, torso 3, legs 1, feet 2
Pathology: 3 vertebrae osteophytosis. Caries (x2), calculus, periodontal disease

Coffin: Represented by an assemblage of 24 nails defining the ends and evenly spaced along the sides. L: 1.80 m. B: 0.33-0.35 m. Ht: 0.17 m. (1961)

Other finds: One sherd (15 g) of medieval pottery (673)

Date: Grave 880 contained a pottery vessel dated AD 300-350

Comments: Occasional pieces of flint were recorded around the body, adjacent to the left shoulder and hip and near the feet, and may represent deliberately placed packing stones around the coffin. The stones by the feet presumably originated above the coffin rather than within it

Inhumation Grave 740 (7909/0320, Fig. 3.93)

Grave cut 707
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.36 x 0.77 m, 0.85 m deep
Fill: Loose chalk and former topsoil (708)

Skeleton 709
Posture: Supine, legs extended and close together
Arm position: Left arm semi-flexed; right arm extended with the hand on the top of the right femur
Sex: ?Female
Age: 36-45. Mature adult
Height: 170.9
Fragmentation: Fair
Condition: Skull 2, arms 3, hands 3, torso 4, legs 2, feet 1
Pathology: Button osteoma. Osteophytosis lumbar spine

Additional human remains: Fragments of an adult ?male (708)

Coffin: Represented by an assemblage of 13 nails defining the ends. L: 1.88-1.91 m. B: 0.32-0.42 m. Ht: 0.15 m. (711)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 144 hobnails (including 8 recovered from soil sample <579> and 10 from soil sample <580>), located in the area of the feet. SF 1837, SF 1838

Inhumation Grave 745 (7898/0324, Fig. 3.94)

Grave cut 693
Orientation: W-E
Shape: Rectangular
Dimensions: 2.28 x 0.90 m, 0.50 m deep

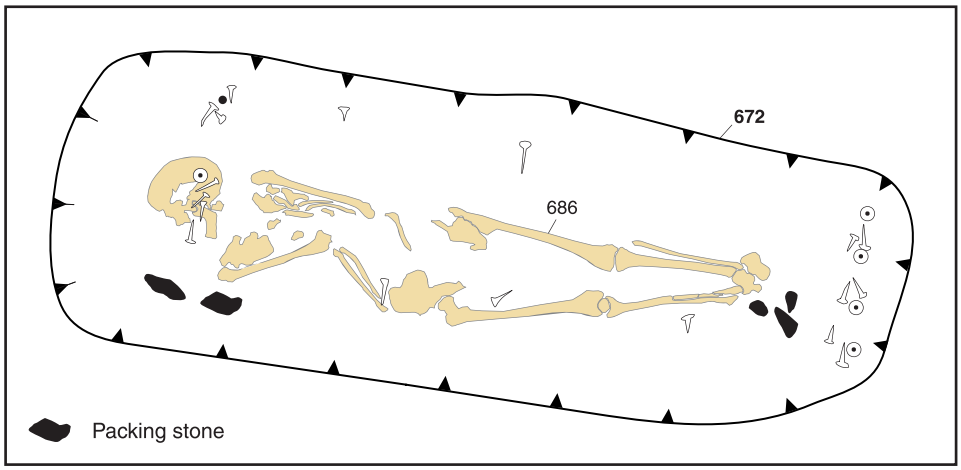


Fig. 3.92 Inhumation Grave 735

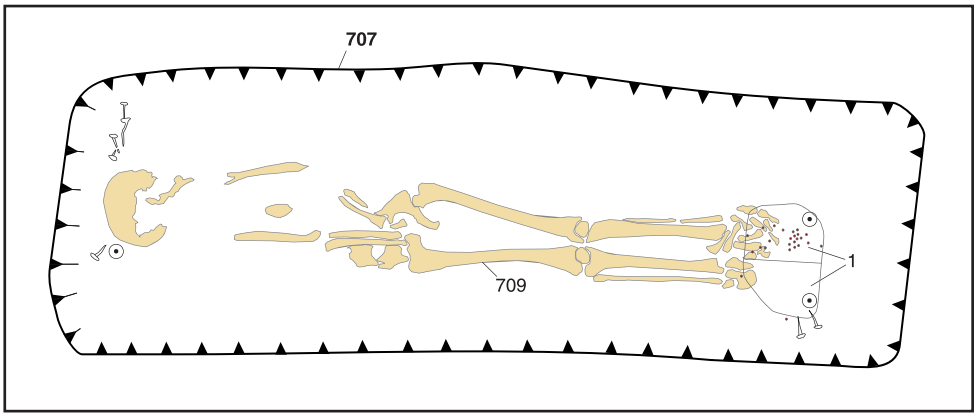


Fig. 3.93 Inhumation Grave 740

Fill: Loose greyish brown silty soil with 40% chalk pieces (694)

Skeleton 712

Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed
Sex: ?Male
Age: 13-17. Adolescent
Fragmentation: Fair
Condition: Skull 3, arms 3, hands 9, torso 3, legs 3, feet 5

Coffin: Represented by an assemblage of 10 nails and a coffin stain defining the eastern end and parts of the sides. L: 1.78 m. B: 0.50 m. (696)

Grave goods:

1 **Copper alloy crossbow brooch** (XRF results in table), crossbar and bow only. (694) SF 1710

Fig. 3.94 Inhumation Grave 745

Element	*Bow 1 (%)*	*Bow 2 (%)*	*Sheet 1 (%)*	*Sheet 2 (%)*	*Knob (%)*	*Bulk (%)*
Cu	58	74	71	37	74	49
Sn	17	8	1	35	3	14
Pb	12	4	7	17	3	20
Zn	10	12	19	9	13	8
Fe	1	1	1	1	5	6

Rectangular-sectioned (?) crossbar, back obscured by iron corrosion, with ridged collar at either end; solid spherical knobs with central projections, one broken. Central knob inserted with end flush with underside. Front of crossbar expands to either side of bow with vertical ribbing. Trapezoidal-sectioned curved bow with narrow flat panel on front; slightly diagonally ribbed collar at base of bow with short constriction below; broken at junction with foot. Casting of bow has many flaws and voids, sides cut back and sheet inlays were soldered on to cover this. A fragment of iron wire wrapped around the base of the central knob. Present length 45 mm, width of crossbar and knobs 53 mm, diameter of knob 13.5 mm, section of bow 9 x 9 mm. (694) SF 1710

2 **Copper alloy strap end** (XRF – heavily leaded bronze, traces of zinc). Solid amphora-shaped plate with biconical terminal knob; two perforations at neck with notched outer edges; triangular attachment loop. Outer edge bevelled on upper face. Punched ring forming a ring and dot pattern, six in three rows at base, one between lower part of perforations, another above perforations. Small notch above terminal might be casting flaw. Length 46.5 mm, section widest plate 18 x 2 mm. (694) SF 1745

3 **Copper alloy strap end** (XRF – heavily leaded bronze). Heart-shaped plate with solid rectangular attachment loop, outer edges of loop notched. Remains of mineral-preserved leather strap observed inside loop during conservation and confirmed by microscopy (PWR). Length 31 mm, maximum section of plate 21 x 1mm. (694) SF 1804

4 **Copper alloy ring**. Circular section. Diameter 21 mm, section 3 mm. (694) SF 1803

5 **Vessel**. Fabric ZM, New Forest reduced coarse ware with slip on shoulder. ?Flask/jug, perhaps similar to Fulford (1975a) grey ware type 20, but the neck and rim are completely missing. There is a notched cordon at the base of the neck and zones of burnishing on the shoulder and lower body. ?*c* AD 300-350. Located beside the left foot, inside the coffin. (713)

6 **Iron buckle**. D-shaped frame with part of curved pin. Width 30 mm, depth 22 mm. (694) SF 1744

Other finds: One sherd (3 g) of prehistoric pottery (708)

Date: Pottery dated AD 300-350, strap ends dated after AD 350

Comments: The grave measured 0.50 m deep at the eastern (foot) end, but was increasingly truncated to the west by the foundations of the School House, resulting in the removal of part of the skull and evidence for the western end

Inhumation Grave 750 (7908/0327, Fig. 3.95)

Grave cut 718
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >0.85 x 0.85 m, 0.38 m deep
Fill: Loose mid yellowish brown clay silt with frequent chalk pieces (719)

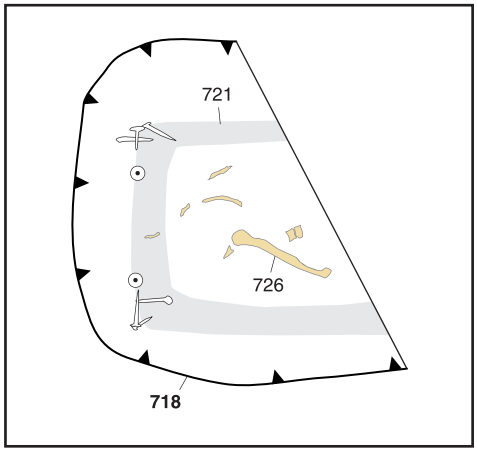


Fig. 3.95 Inhumation Grave 750

Skeleton 726
Posture: Supine
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Fair
Condition: Skull 5+, arms 3, hands 9, torso 2, legs 9, feet 9
Pathology: Osteophytosis cervical vertebrae

Coffin: Represented by an assemblage of 8 nails and a coffin stain defining the corners of the eastern end and part of the sides. B: 0.55 m. (721)

Comments: Most of the grave had been destroyed by the footings of the School House, leaving only the western (head) end intact, and some of the surviving bones had been displaced

Inhumation Grave 755 (7888/0320, Fig. 3.96)

Grave cut 674
Orientation: WNW-ESE
Shape: Rectangular
Dimensions: 2.45 x 0.80 m, 0.62 m deep
Fill: Chalk rubble with 40% loose, creamy brown clay sand (677)
Relationships: Cut Grave 760

Skeleton 676
Posture: Posture could not be established due to poor preservation
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Poor
Condition: Skull 5+, arms 9, hands 9, torso 9, legs 1, feet 9

Additional human remains: Skulls and postcranial elements of 2 older adult females (677, 678, 679 and skull of an adult ?male (681)

Coffin: Represented by an assemblage of 14 nails and a rectangular area of coffin fill. L: 1.99 m. B: 0.40-0.46 m. (1962)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of

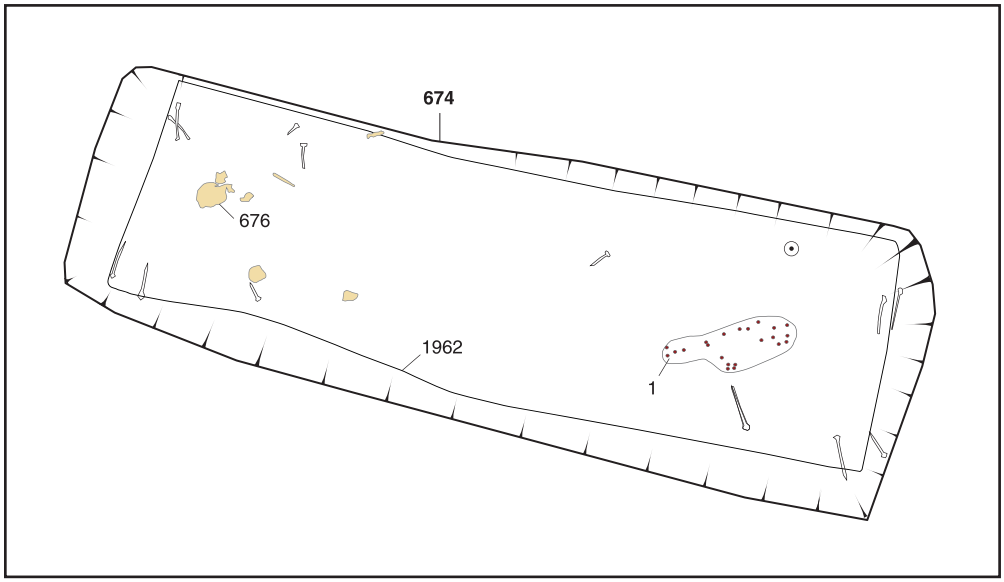


Fig. 3.96 Inhumation Grave 755

54 hobnails and two boot plates, located in the area of the feet. SF 1770

Other finds: One sherd (7 g) of pottery, fabric SG (677)

Inhumation Grave 760 (7889/0320, not illustrated)

Grave cut 682
Orientation: WSW-ENE
Shape: Sub-rectangular?
Dimensions: Length and width unknown, 0.40 m deep
Fill: Loose chalk and clay sand (684)
Relationships: Cut by Grave 755

Coffin: None

Comments: The grave was mostly destroyed by Grave 755, only the north-western corner surviving. No skeletal remains or evidence for a coffin survived

Inhumation Grave 765 (7907/0317, Fig. 3.97)

Grave cut 731
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.18 x 0.44 m, 0.26 m deep
Fill: Friable chalk with 5% silt (732)

Skeleton 733
Posture: Posture could not be established due to poor preservation

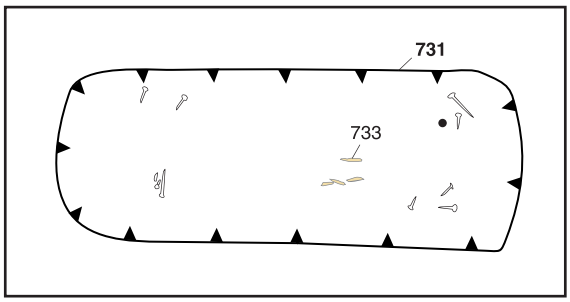


Fig. 3.97 Inhumation Grave 765

Arm position: The arms did not survive
Age: 1-2. Infant
Fragmentation: Destroyed
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 9

Coffin: Represented by an assemblage of 10 nails defining the ends. L:0.80 m. B: 0.20-0.30 m. (1963)

Inhumation Grave 770 (7894/0312, Fig. 3.98)

Grave cut 739
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.30 x 0.75 m, 0.60 m deep
Fill: Compact greyish brown chalk and silt (742)
Relationships: Cut by Graves 675 and 800

Skeleton 741
Posture: Supine with legs extended and parallel
Arm position: Left arm semi-flexed with the hand resting on the central part of the pelvis; right arm extended with the hand on the top of the right femur
Sex: Male
Age: 18-25. Young adult
Fragmentation: Fair
Condition: Skull 2, arms 4, hands 4, torso 3, legs 4, feet 3
Pathology: Cribra orbitalia. DEH, calculus

Coffin: Represented by an assemblage of 20 nails. L: 1.76 m. B: 0.32-0.40 m. (1964)

Comments: Grave 800 was dug directly into the backfill of this grave, apparently to insert a secondary burial

Inhumation Grave 780 (7891/0308, Fig. 3.99)

Grave cut 722
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.00 x 0.70 m, 0.50 m deep
Fill: Friable chalk rubble (723)

Skeleton 724
Posture: Supine, legs extended with feet together
Arm position: Left arm flexed, lying across the stomach; right arm extended beside body

Sex: Female
Age: Adult
Fragmentation: Fair
Condition: Skull 1, arms 2, hands 3, torso 5+, legs 2, feet 5
Pathology: Cribra orbitalia. Calculus, Periodontal disease, AMTL, lesion

Coffin: Represented by an assemblage of 11 nails defining the ends. L: 1.55-1.62 m. B: 0.30-0.43. (1965)

Grave goods:

1 **Penannular brooch**, copper alloy frame with iron pin. Circular-section hoop tapering towards terminals which are bent back along hoop, upper faced notched on either side. Two layers of wool textile, one pierced

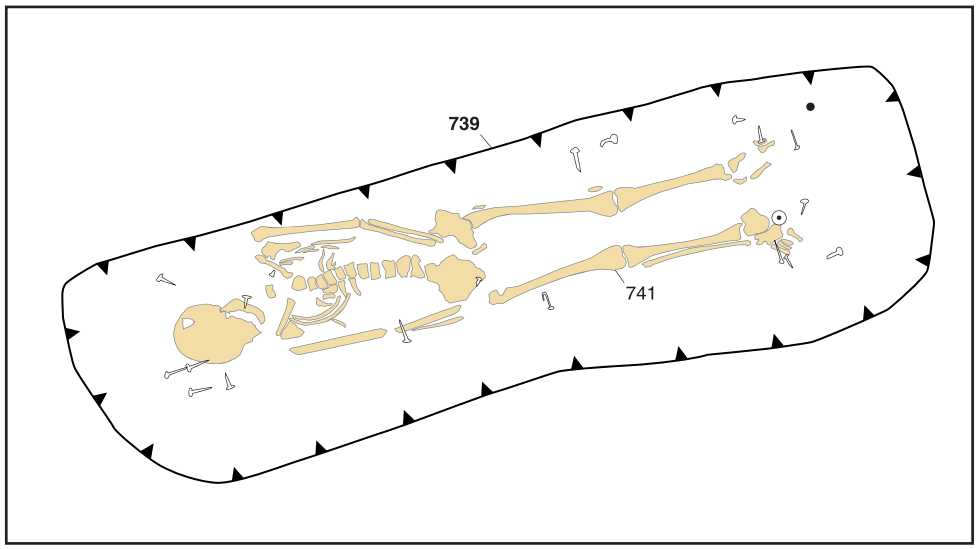


Fig. 3.98 Inhumation Grave 770

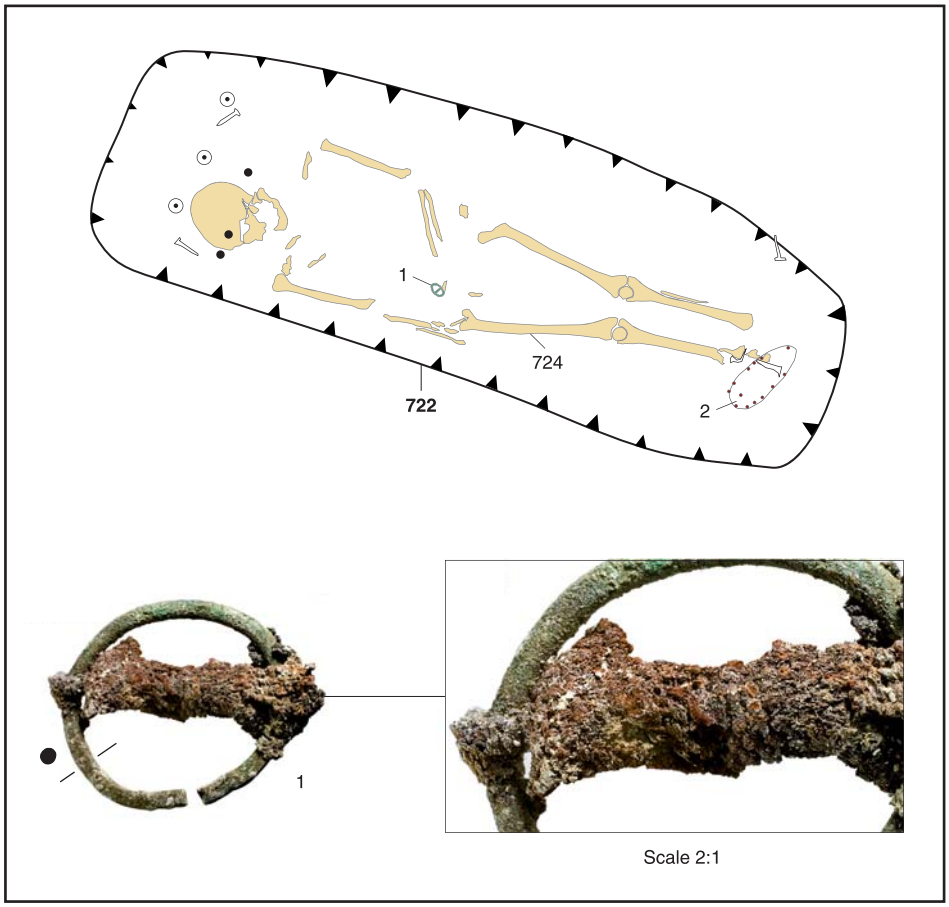


Fig. 3.99 Inhumation Grave 780

twice by pin: extended tabby (half-basket weave), 9/Z x *c* 10 pairs/Z+Z per cm (PWR). Diameter 30 x 26 mm, section 2.5 mm. (723) SF 1853
2 **Hobnailed shoe(s)**. Represented by a minimum of 128 hobnails (including one recovered from soil ample <597>), associated with the feet. SF 1806

Inhumation Grave 785 (7908/0308, Fig. 3.100)

Grave cut 753
Orientation: W-E
Shape: Sub-rectangular with a rounded eastern end
Dimensions: 2.25 x 0.63 m, 0.80 m deep
Fill: Loose chalk and former topsoil (754)

Skeleton 756
Posture: Supine
Arm position: The arms did not survive
Sex: Indeterminate
Age: 45+. Older adult
Fragmentation: Poor
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 9

Coffin: Represented by an assemblage of 15 nails and some desiccated wood that appeared to derive from the collapsed side. L: 1.79 m. B: 0.38 m. Ht: 0.20 m. (761)

Grave goods:
1 **Shale spindle whorl**. Complete. Hemispherical with raised flat field around cylindrical perforation; a concentric groove close to edge of raised field. Underside not finished smoothly. Diameter 34 mm, height 15.5 mm, diameter 8 mm. Weight 15 g. (754) SF 1923 **(NI)**
2 **Hobnail shoes**. Represented by a minimum of 73 hobnails (including a minimum of seven recovered from soil sample <642>), including two areas of particularly dense concentration indicating the presence of two shoes. Located inside the coffin in the area of the feet. SF 1996

Date: Spindle whorl dated after *c* AD 340

Inhumation Grave 790 (7902/0322, Fig. 3.101)

Grave cut 751
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.10 x 0.77 m, 0.76 m deep
Fill: Compact chalk and silty sand (752, 833)
Relationships: Cut Graves 665 and 1110 and pit 847. Cut by Grave 795

Skeleton 683
Posture: Supine, legs extended with feet together
Arm position: Both arm semi-flexed with the hands resting on the central part of the pelvis
Sex: Male
Age: 36-45. Mature adult
Height: 162.5
Fragmentation: Poor
Condition: Skull 1, arms 0, hands 0, torso 0, legs 0, feet 0
Pathology: Left distal radius healed fracture with secondary infection. Right radius healed fracture. Left and right ribs healed fracture. Left knee osteophytosis. Spinal Schmorl's nodes, osteophytosis and intervertebral disc disease. Periodontal disease, AMTL

Additional human remains: Fragments of a second adult (752)

Coffin: None

Grave goods:
1 **Coin**. Nummus, Vot X Mult XX in wreath. AD 383-388. Recovered from soil sample <664>, taken from the chest region of skeleton 683 (not located on plan)
2 **Hobnailed shoe**. Represented by a minimum of 33 hobnails, associated with the left foot. SF 2154
3 **Hobnailed shoe**. Represented by a minimum of 37 hobnails, associated with the right foot. SF 2155

Other finds: A minimum of 16 hobnails were recovered from soil sample <667>, taken from the area around the feet, but could not be attributed to a specific shoe. A minimum of 11 hobnails were recovered from the backfill, including a minimum of one from soil sample <663>, taken from the area of the skull, and one from soil sample <665>, taken from the abdomen.
Sixty sherds (870 g) of pottery in fabrics TF, TR, WM, ZF, ZM and SG, including rims from at least 8 vessels; 3 beakers in fabric TR (1 type NFF 27), 2 bowls (NFF type 59) in fabric TF, a jar in fabric ZF and two 'cooking pot type' jars in fabric SG. Some of these sherds are redeposited from the fill of pit 847 (see Fig. 4.2, No. 9) (752, 833)
One sherd (6 g) medieval pottery (752)

Date: Coin dated AD 383-388

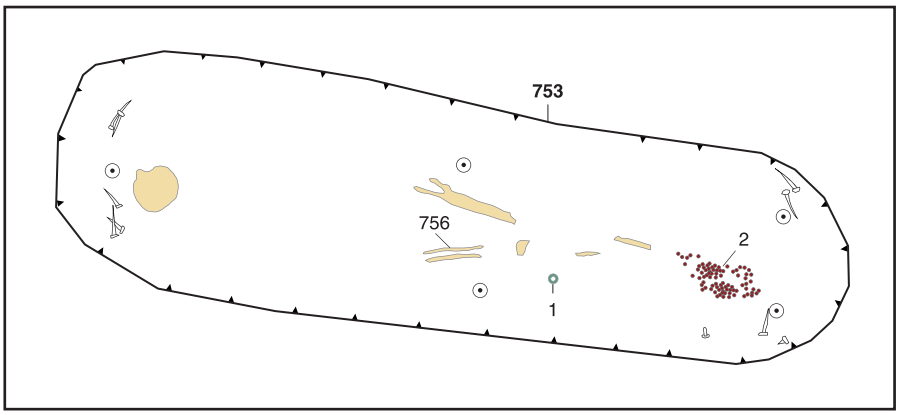


Fig. 3.100 Inhumation Grave 785

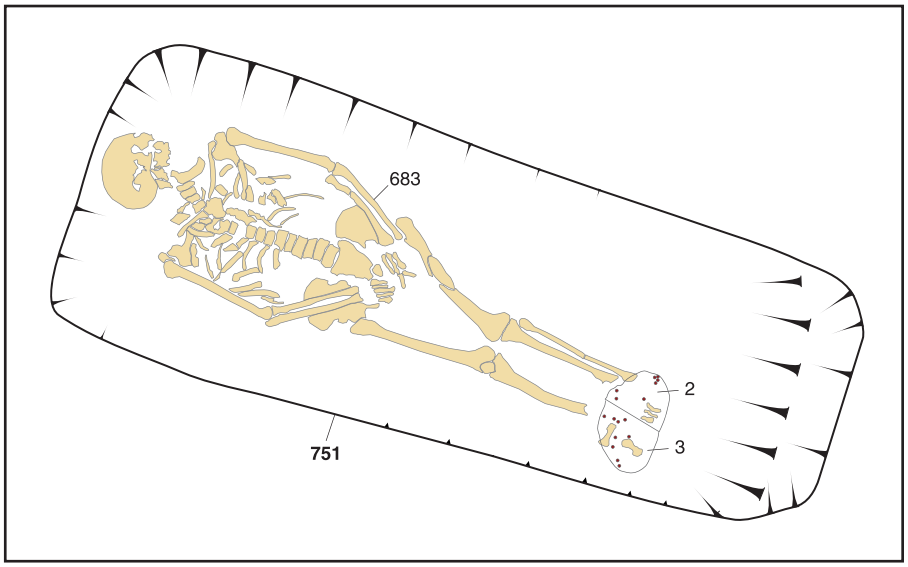


Fig. 3.101 Inhumation Grave 790

Inhumation Grave 795 (7902/0322, not illustrated)

Grave cut 748
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 0.89 x 0.47 m, 0.50 m deep
Fill: Loose dark brownish black silty sand with frequent chalk pieces (749)
Relationships: Cut Grave 790 and pit 847

Additional human remains: Fragment of an adult femur (749)

Coffin: None

Other finds: Fifteen sherds (140 g) of pottery, fabrics TF, TR, WM and SG, the last include two jar rims (749)

Date: Grave 790 contained a coin dated AD 383-388

Comments: No skeletal remains survived *in situ*. The one extant fragment was in the grave backfill

Inhumation Grave 800 (7894/0312, not illustrated)

Grave cut 768
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 1.80 x 0.80 m, 0.20 m deep
Fill: Compact white chalk rubble with brown silty soil (769)
Relationships: Cut Grave 770. Cut by Grave 675

Coffin: None

Comments: No skeletal material or evidence for a coffin was recovered. This grave was dug directly into the backfill of Grave 770, apparently to insert a secondary burial that has not survived

Inhumation Grave 805 (7892/0322, Fig. 3.102)

Grave cut 773
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.51 x 0.97 m, 0.96 m deep
Fill: Friable chalk rubble with 10% silt (774)
Relationships: Relationship with Grave 600 uncertain as the features only intersected slightly

Skeleton 776
Posture: Supine, legs extended and parallel
Arm position: Left arm did not survive; right arm flexed lying across the stomach
Sex: ?Male
Age: Adult
Fragmentation: fair
Condition: Skull 2, arms 2, hands 9, torso 9, legs 2, feet 2
Pathology: AMTL, caries (x3), calculus, periodontal disease

Coffin: Represented by an assemblage of 13 nails defining the ends. L: 1.98 m. B: 0.35-0.50 m. (1966)

Inhumation Grave 810 (7918/0309, Fig. 3.103)

Grave cut 783
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.30 x 0.75 m, 1.30 m deep
Fill: Mixed chalk rubble and former topsoil (784)
Relationships: Cut hedgeline 460. Cut by Grave 710

Skeleton 787
Posture: Supine, legs extended with feet together
Arm position: Arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Good
Condition: Skull 9, arms 9, hands 9, torso 9, legs 3, feet 1

Coffin: Represented by an assemblage of 15 nails. L: 1.75 m. B: 0.23-0.45 m. (876)

Grave goods:
1 **Double-sided composite comb**, antler? Two joining fragments of endplate (incomplete); two fragments of central connecting plate; five fragments of tooth plates with small additional fragments of tooth plates. Three iron rivets. Extant end plate scalloped with four notches centrally. Flat connecting bar with raised central zone; edges notches from tooth cutting. width connecting plate 15 mm, thickness connecting plate

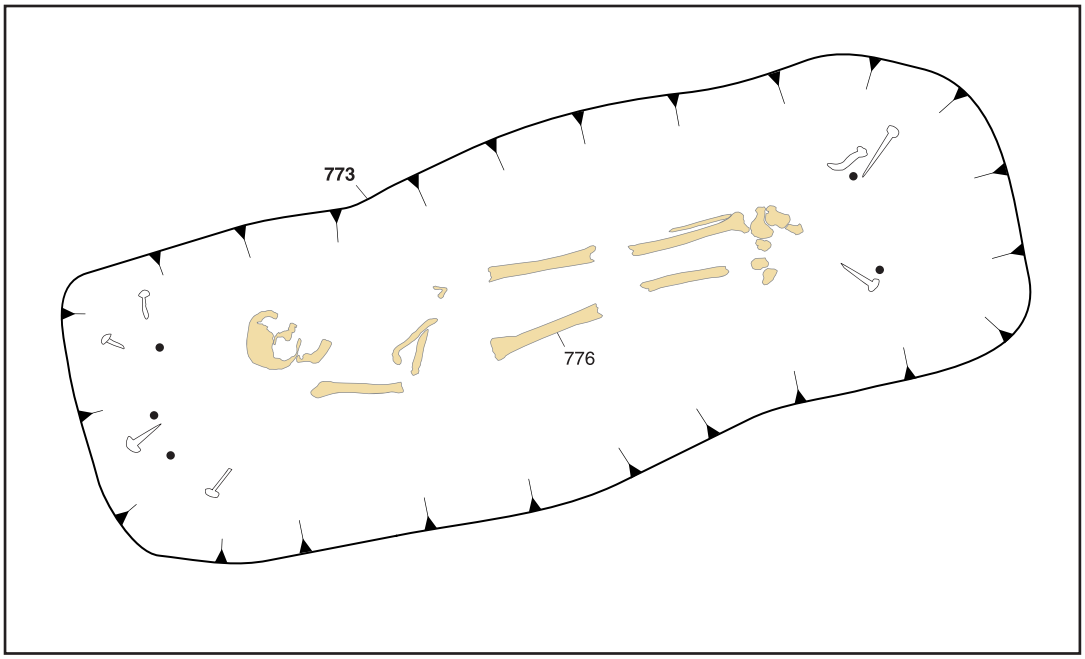


Fig. 3.102 Inhumation Grave 805

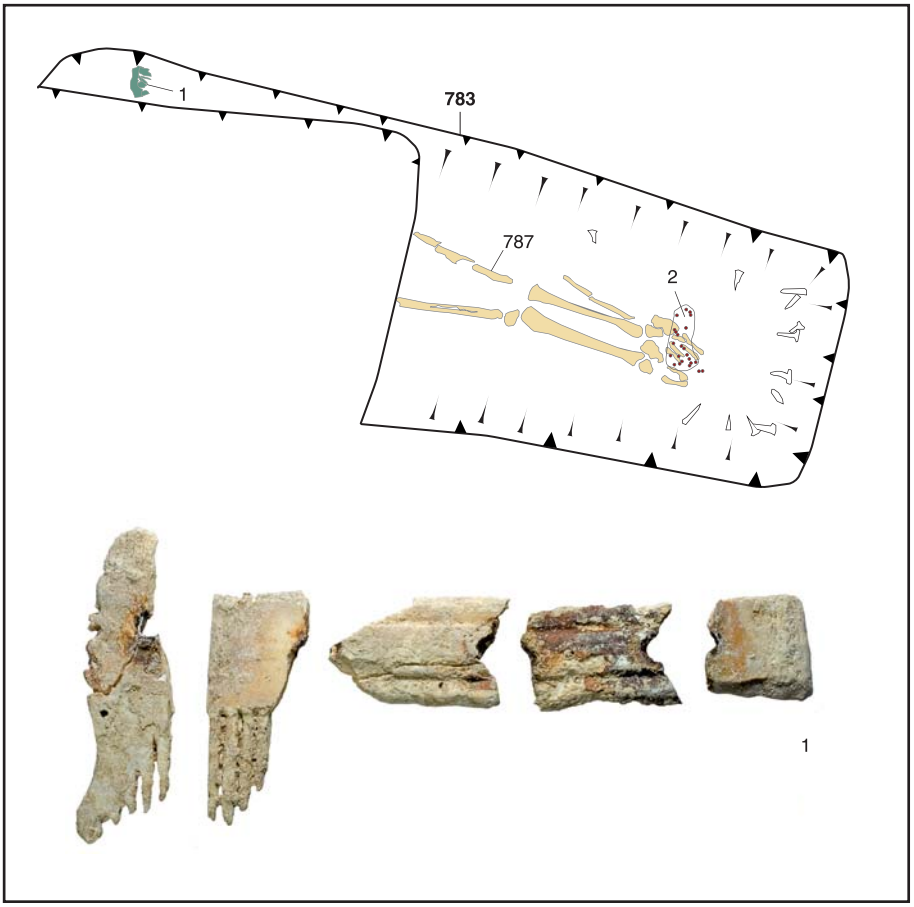


Fig. 3.103 Inhumation Grave 810

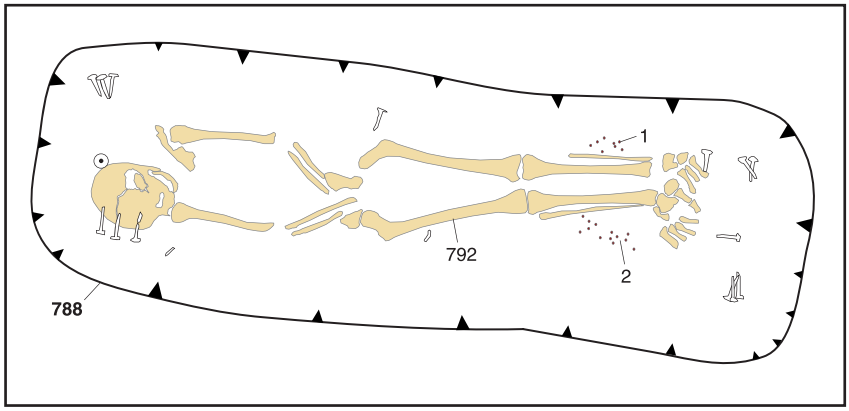


Fig. 3.104 Inhumation Grave 815

3.5 mm. (784) SF 1973
2 **Hobnailed shoe(s)**. Represented by a minimum of 18 hobnails and a boot plate, located around the feet. These could not be resolved into separate shoes because the feet were too close together. SF 1972, SF 2007

Date: Comb dated to the later 4th century

Comments: The western half of the grave has been destroyed by Grave 710, with the exception of the north-western corner, removing the upper part of the skeleton from the pelvis upward

Inhumation Grave 815 (7917/0308, Fig. 3.104)

Grave cut 788
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.20 x 0.60 m, 0.90 m deep
Fill: Mixed chalk rubble and former topsoil (789)
Relationships: Cut hedgerow 460

Skeleton 792
Posture: Supine, legs extended with feet together
Arm position: Both arms are semi-flexed with the wrists crossing over the central part of the pelvis
Sex: Female
Age: Adult
Fragmentation: Poor
Condition: Skull 5, arms 4, hands 9, torso 2, legs 3, feet 1
Pathology: Caries, Calculus, Sinusitis

Coffin: Represented by an assemblage of 17 nails, mostly located at the corners. L: 1.78-1.87 m. B: 0.33 m. (791)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 50 hobnails, located under the lower part of the left leg. SF 2152
2 **Hobnailed shoe**. Represented by a minimum of 33 hobnails, located under the lower part of the right leg. SF 2151

Inhumation Grave 820 (7908/0314, not illustrated)

Grave cut 624
Orientation: W-E
Shape: Sub-rectangular?
Dimensions: 0.53 m deep
Fill: Loose chalk rubble (437)
Relationships: Cut by Grave 610

Comments: This grave had been largely destroyed by Grave 610, only the northern edge surviving. No skeletal remains or evidence for a coffin were observed

Inhumation Grave 835 (7906/0319, Fig. 3.105)

Grave cut 757
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.50 x 0.58 m, 0.45 m deep
Fill: Friable light brownish white silty clay with frequent chalk pieces (758)

Skeleton 767
Posture: Supine, legs extended and close together
Arm position: Both arms extended beside body
Age: Child
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Periodontal disease

Additional human remains: Fragments of an adult (759)

Coffin: Represented by an assemblage of 16 nails and an area of coffin fill. L: 1.16 m. B: 0.33-0.41 m. (759)

Inhumation Grave 840 (7905/0324, Fig. 3.106)

Grave cut 664
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.44 x 0.73 m, 0.64 m deep

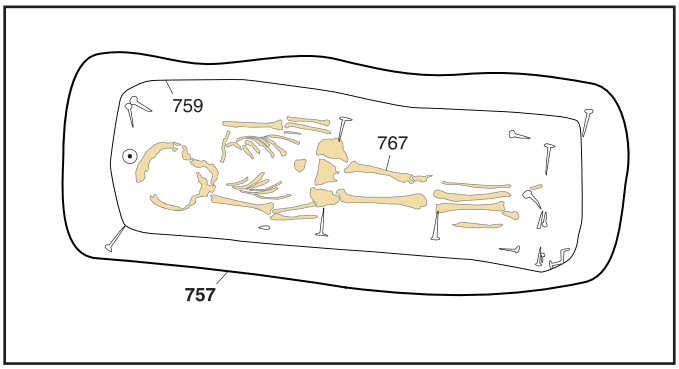


Fig. 3.105 Inhumation Grave 835

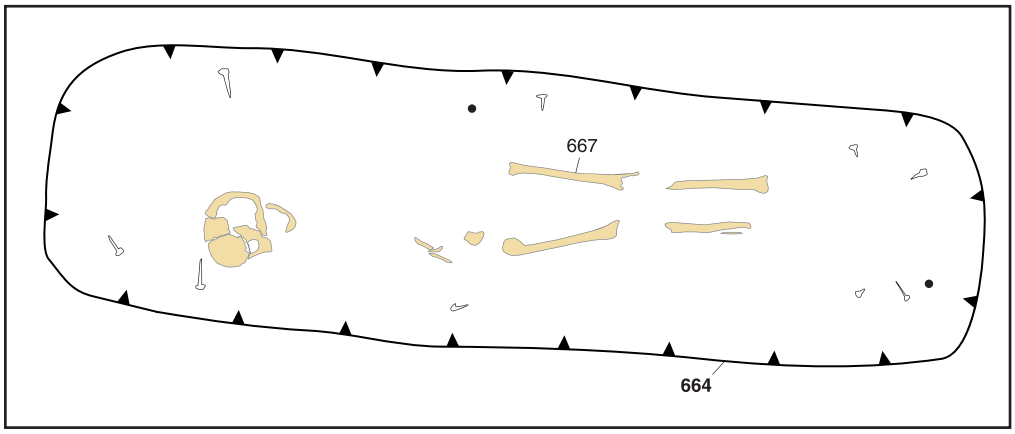


Fig. 3.106 Inhumation Grave 840

Fill: Friable mid greyish brown chalk rubble with 15% silty clay (666)

Skeleton 667
Posture: Supine, legs extended with feet together
Arm position: The arms did not survive
Age: 13-17. Adolescent
Fragmentation: Fair
Condition: Skull 3, arms 9, hands 9, torso 9, legs 3, feet 3
Pathology: Cribra orbitalia

Coffin: Represented by an assemblage of 11 nails. L: 1.80-1.88 m. B: 0.31-0.34 m. (1967)

Inhumation Grave 850 (7901/0316, not illustrated)

Grave cut 803
Orientation: ENE-WSW
Shape: Rectangular
Dimensions: 2.00 x 0.60 m, 0.50 m deep
Fill: Loose chalk rubble (804)
Relationships: Cut Grave 1090

Skeleton 806
Posture: Supine, legs extended and close together
Arm position: Both arms are extended beside the body
Sex: Female
Age: 60+. Much older adult
Height: 153.6
Fragmentation: Poor
Condition: Skull 1, arms 0, hands 0, torso 1, legs 1, feet 1
Pathology: Healed fracture right distal radius. DEH, periodontal disease, calculus

Coffin: None

Comments: This grave was dug directly into the backfill of Grave 1090, apparently to insert skeleton 806 as a secondary burial

Inhumation Grave 855 (7886/0311, Fig. 3.107)

Grave cut 809
Orientation: WNW-ESE
Shape: Sub-rectangular

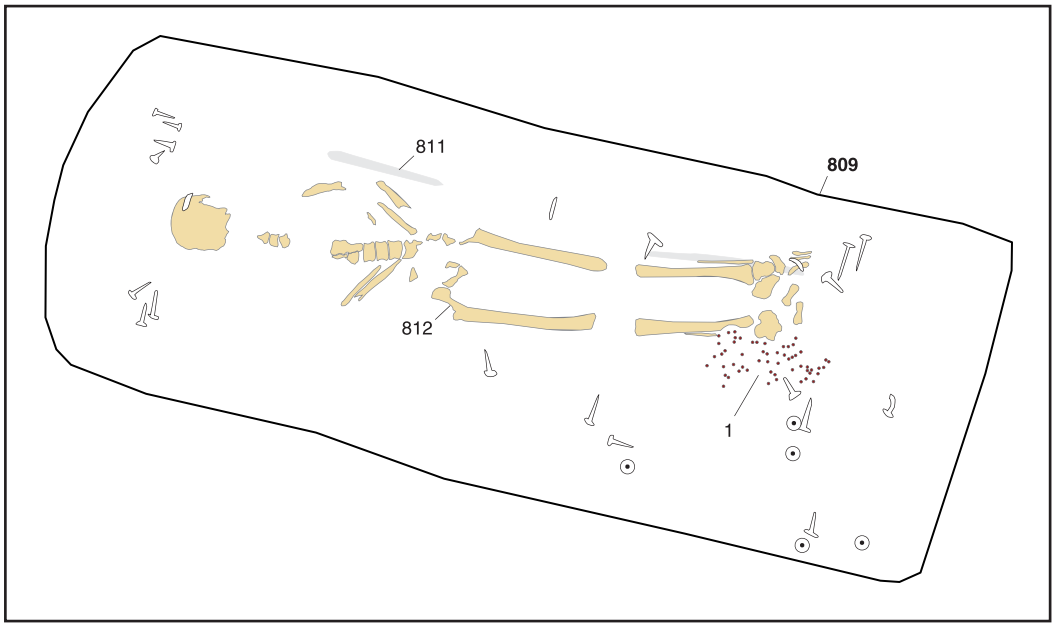


Fig. 3.107 Inhumation Grave 855

Dimensions: 2.40 x 0.94 m, 0.50 m deep
Fill: Friable grey chalk rubble and silt (813)
Relationships: Cut Grave 880

Skeleton 812
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed
Sex: ?Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 4, arms 3, hands 2, torso 2, legs 3, feet 2
Pathology: DISH ankylosis of T12-1, L1-2. Spinal osteophytosis. Right acetabulum osteophytic growth

Additional human remains: Fragments of a child (813)

Coffin: Represented by an assemblage of 27 nails and a coffin stain defining parts of the north-eastern side. L: 1.91-2.03 m. B: 0.52-0.59 m. Ht: 0.24 m. (811)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 207 hobnails, located inside the coffin beside the right foot. SF 2153

Other finds: A short biconical translucent deep blue glass bead was recovered from soil sample <677>. Diameter 4 mm, length 2.5 mm, perforation diameter 1 mm.
A single hobnail was recovered from soil sample <680>, taken from around the hands.
Charnel and bracelet SF 1990 recovered from the backfill may have derived from Grave 900, cut by Grave 880, which itself was cut by this grave.

Date: Grave 880 contained a pottery vessel dated AD 300-350

Inhumation Grave 860 (7892/0319, Fig. 3.108)

Grave cut 814
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 2.15 x 0.80 m, 0.72 m deep
Fill: Loose mid greyish brown silty sand and chalk (816)

Skeleton 821
Posture: Unknown due to poor preservation
Arm position: The arms did not survive

Coffin: Represented by an assemblage of 18 nails. L: 1.74 m. B: 0.37-0.46 m. (1968)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of seven hobnails, located in the approximate position of the feet. SF 2078

Other finds: A single hobnail was recovered from soil sample <646>, taken from the skull area

Comments: Fragmentary skeletal remains were observed on site but did not survive in a condition to be lifted

Inhumation Grave 865 (7907/0325, not illustrated)

Grave cut 822
Orientation: Uncertain
Shape: Sub-rectangular?
Fill: Loose chalk rubble (823)

Additional human remains: Fragments of child femora (823)

Comments: The grave had been almost completely destroyed by the foundations of the School House, only the eastern end surviving. The extant human remains are most probably from the backfill rather than the original burial in this grave

Inhumation Grave 870 (7905/0331, Fig. 3.109)

Grave cut 737
Orientation: W-E
Shape: Rectangular
Dimensions: 2.90 x 1.26 m, 1.60 m deep
Fill: Mid brown Chalk rubble and silt (738)
Relationships: Cut by pit 734

Skeleton 802
Posture: Supine, legs extended with feet together
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Good
Condition: Skull 9, arms 9, hands 9, torso 9, legs 2, feet 1

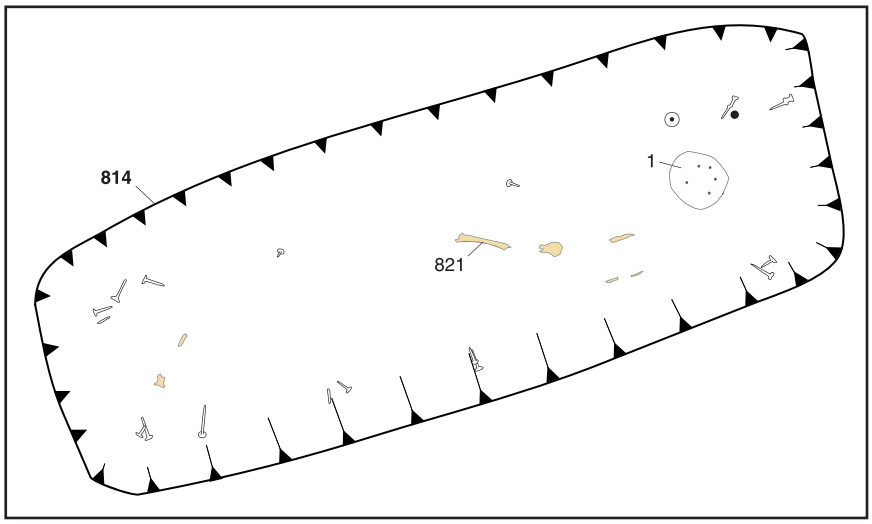


Fig. 3.108 Inhumation Grave 860

Coffin: Represented by an assemblage of 12 very large nails and a coffin stain that defined the sides and western end (793)

Grave goods:
1 **Coin**. Nummus of house of Constantine, Gloria Exercitus (1 standard). Trier. AD 335-341. Located within the coffin at the western, head end of the grave. SF 2018
2 **Domestic fowl skeleton**, lacking skull, feet and wing tips, located at the western, head end of the grave, outside the coffin **(NI)**

Date: Coin dated AD 335-341

Comments: A small circular pit (734) had been dug into the backfill. The non-survival of the upper part of the skeleton may be associated with contamination from a pipe trench that cut the upper part of the fill at this end of the feature

Inhumation Grave 875 (7919/0316, Fig. 3.110)

Grave cut 912
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.40 x 0.75 m, 1.10 m deep
Fill: 50% chalk rubble, 50% friable mid yellowish brown clay silt (913)
Relationships: Relationship with Grave 1015 uncertain as the features only intersected slightly

Skeleton 914
Posture: Supine, legs extended and crossed at the ankles
Arm position: Left arm extended with the hand resting on the top of the left femur; right arm extended with the hand under the right femur
Sex: ?Female
Age: 45+. Older adult

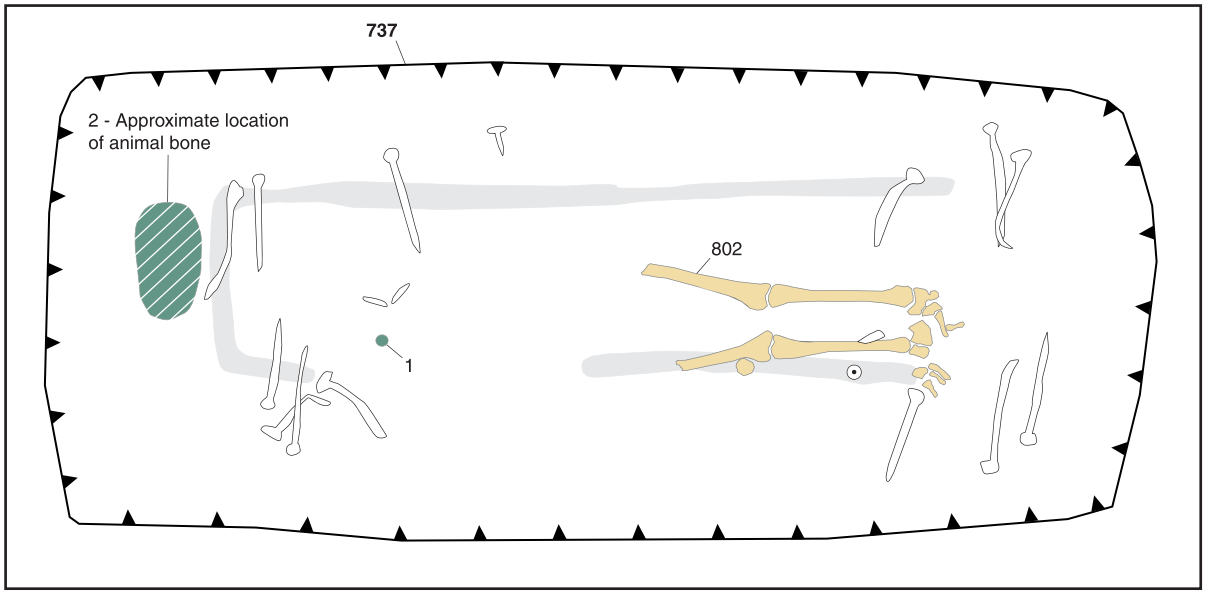


Fig. 3.109 Inhumation Grave 870

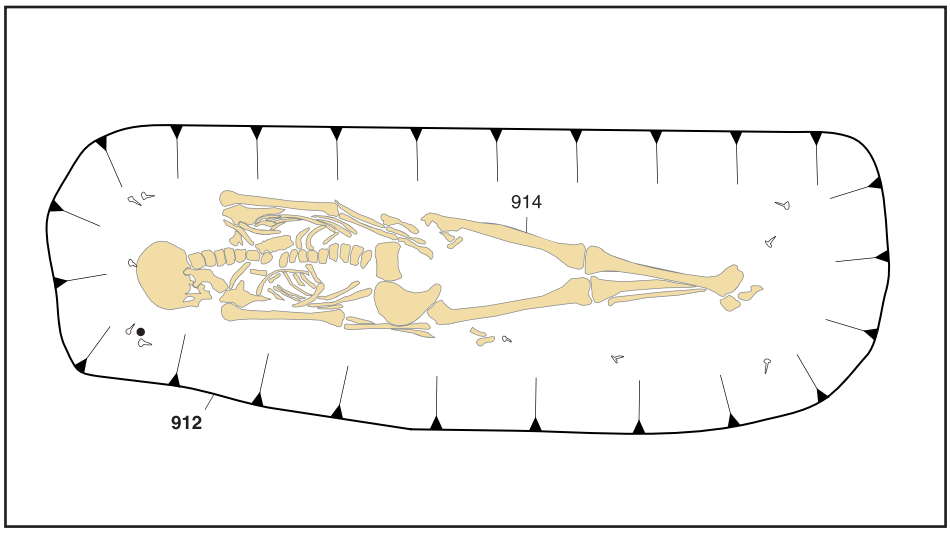


Fig. 3.110 Inhumation Grave 875

Height: 156.6
Fragmentation: Fair
Condition: Skull 2, arms 2, hands 9, torso 3, legs 2, feet 2
Pathology: Spinal lumbar osteophytosis. Right shoulder osteophytosis. Cribra orbitalia. Cleft L6. Calculus, DEH, caries (x3). Sinusitis. Left scapula os acromiale

Additional human remains: Fragments of a second adult (913)

Coffin: Represented by an assemblage of 11 nails (1969)

Other finds: Three sherds (61 g) of pottery, fabrics TF, TR and ZG (913)

Inhumation Grave 880 (7888/0310, Fig. 3.111)

Grave cut 824
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.65 x 1.10 m, 1.00 m deep
Fill: Loose chalk rubble (827)
Relationships: Cut Grave 900. Cut by Graves 735 and 855

Skeleton 826
Posture: Supine, legs extended and parallel
Arm position: Left arm did not survive; right arm flexed, lying across stomach
Sex: Male
Age: Adult
Fragmentation: Good
Condition: Skull 1, arms 3, hands 9, torso 2, legs 1, feet 1
Pathology: Button osteoma. Right humerus probable healed fracture. Calculus

Coffin: Represented by an assemblage of 18 nails. L: 1.90 m. B: 0.50 m. Ht: 0.19 m. (1970)

Grave goods:
1 **Vessel**. Fabric TR, New Forest colour-coated ware with red-brown slip. Flagon of Fulford (1975a) fine ware type 11. *c* AD 300-350. Complete. Located between the feet. (828)
2 **Hobnailed shoe**. Represented by a minimum of 131 hobnails (including a minimum of 31 recovered from soil sample <673>), worn on the left foot. SF 2156
3 **Hobnailed shoe**. Represented by a minimum of 79 hobnails, worn on the right foot. SF 2157

Date: Pottery dated AD 300-350

Comments: The north-western quarter of the grave had been destroyed by Grave 855

Inhumation Grave 885 (7918/0323, Fig. 3.112)

Grave cut 834
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.50 x 0.75 m, 0.80 m deep
Fill: Friable light yellowish brown clay silt with 50% chalk pieces (836)

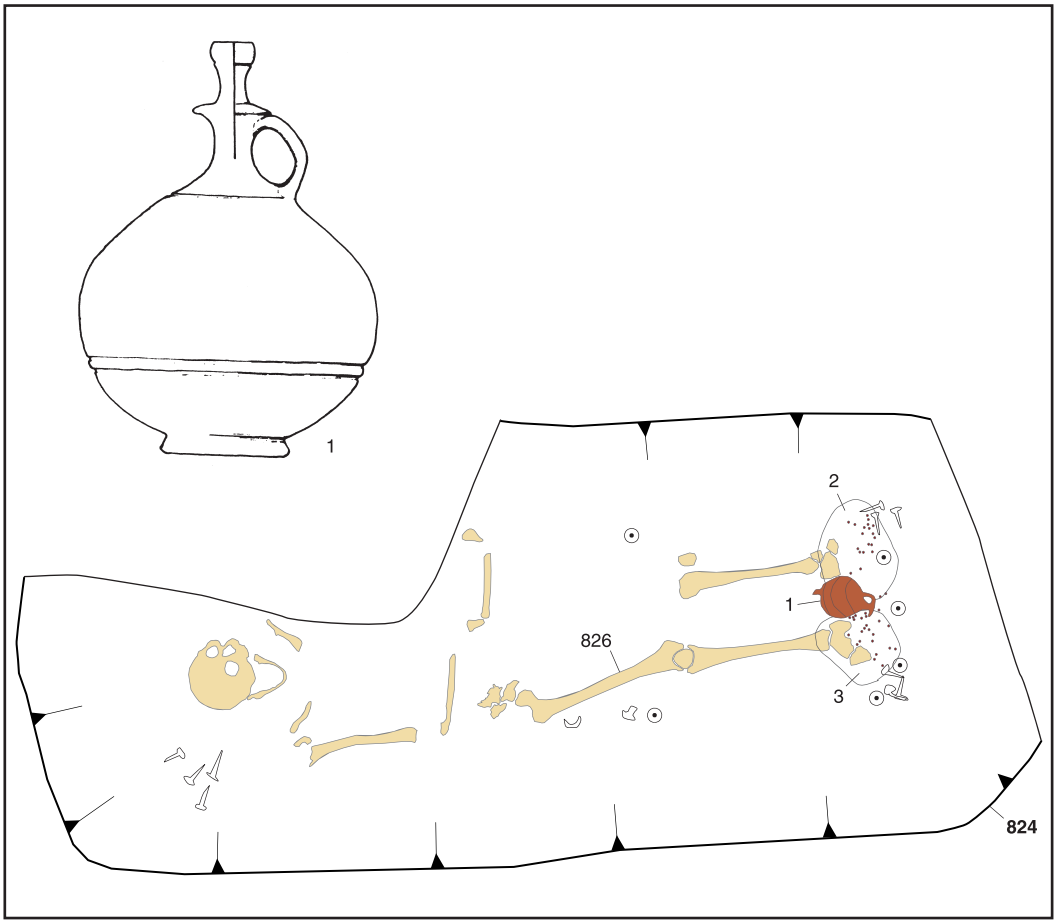


Fig. 3.111 Inhumation Grave 880

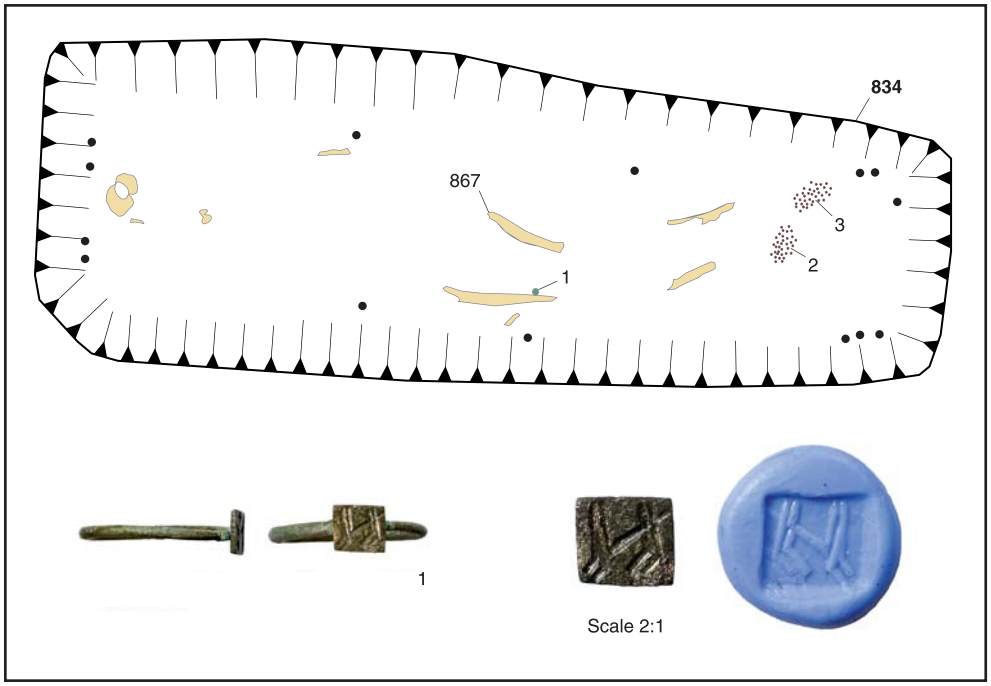


Fig. 3.112 Inhumation Grave 885

Skeleton 867
Posture: Unknown. The legs were poorly preserved but appeared to have been turned slightly to the left and slightly bent
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Destroyed
Condition: Skull 5+, arms 5+, hands 9, torso 5+, legs 5+, feet 9
Pathology: Calculus

Coffin: Represented by an assemblage of 16 nails. L: 2.10 m. B: 0.35-0.45 m. Ht: 0.18 m. (1971)

Grave goods:
1 **Copper alloy finger ring**, complete. Circular-sectioned penannular hoop with butt-jointed terminals, now corroded (XRF – Tinned leaded bronze or high tin bronze). Small square bezel plate originally soldered to terminals – intaglio design two pairs of slightly sloping grooves with angled strokes at one end, diagonal stroke across these (XRF – leaded bronze). Diameter 21 x 20 mm, bezel plate dimensions 6.5 x 6 mm, thickness 1 mm, hoops section 1.5 mm. (836) SF 2266
2 **Hobnailed shoe**. Represented by a minimum of 81 hobnails and a possible boot plate, located in the approximate position of the left foot. SF 2203
3 **Hobnailed shoe**. Represented by a minimum of 72 hobnails, located in the approximate position of the right foot. SF 2191

Other finds: One sherd (13 g) of pottery, fabric SG

Date: Ring SF 2266 probably dates to the late 4th century

Comments: It was not possible to be certain whether ring SF 2266 was worn at the time of burial as the hand bones did not survive

Inhumation Grave 890 (7909/0306, Fig. 3.113)

Grave cut 817
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.60 x 0.65 m, 0.75 m deep
Fill: Loose whitish brown clay silt with frequent chalk pieces (818)

Skeleton 829
Posture: Supine, legs extended and close together
Arm position: Arms extended, held slightly away from the body
Age: Child
Fragmentation: Fair
Condition: Skull 1, arms 2, hands 9, torso 1, legs 2, feet 1
Pathology: Cribra orbitalia. Scurvy. Sinusitis

Coffin: Represented by an assemblage of 53 nails and an area of coffin fill. L: 1.32-1.38 m. B: 0.33-0.38 m. (819)

Grave goods:
1 **Vessel**. Fabric ZM, New Forest reduced coarse ware with black slip on rim, neck, handles and shoulder. Jug cf Fulford (1975a) grey ware type 20 but rather squat and with two handles and a slight cordon on the shoulder. Vertical burnished lines on the neck. *c* AD 270-350. Complete. Located to the left of the skull, outside the coffin. (831)
2 **Vessel**. Fabric TF, New Forest colour-coated ware with red slip. Flagon as Fulford (1975a) fine ware type 11, but undecorated except for a single 'chattered' line on the upper body. *c* AD 300-350. Complete except for a segment broken off the flange in antiquity. Located to the left of the skull, outside the coffin. (832)
3 **Hobnailed shoe(s)**. Represented by a minimum of 24 hobnails, located inside the foot of the coffin. SF 2244

Other finds: Two hobnails were recovered from the backfill

Date: Pottery dated AD 300-350

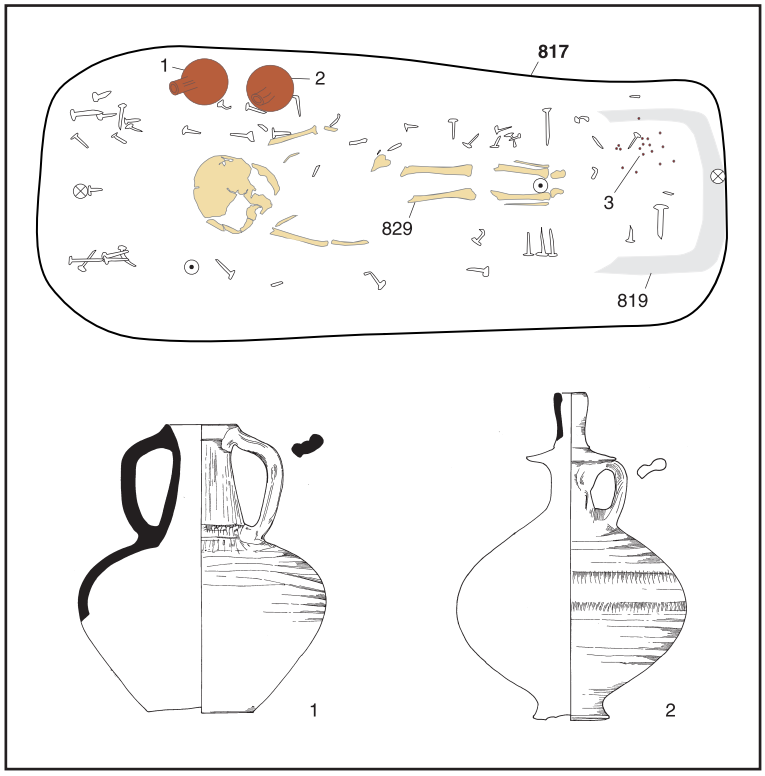


Fig. 3.113 Inhumation Grave 890

Inhumation Grave 900 (7887/0311, not illustrated)

Grave cut 844
Orientation: Uncertain
Shape: Sub-rectangular?
Dimensions: 0.20 m deep
Fill: Loose chalk rubble and silty soil (846)
Relationships: Cut by Graves 855 and 880

Skeleton 2065
Posture: unknown
Arm position: unknown
Sex: Undetermined
Age: Adult
Fragmentation: Excellent
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 0

Comments: The grave has been almost completely destroyed by later Graves 855 and 880, only the north-eastern corner surviving. No skeletal remains survived *in situ*, but the articulated foot 2065, and a small shale bracelet (SF 1990) within the backfill of Grave 855, may derive from this grave

Inhumation Grave 905 (7916/0307, Fig. 3.114)

Grave cut 858
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.00 x 0.75 m, 0.60 m deep
Fill: Mixed chalk rubble and former topsoil (859)
Relationships: Cut Grave 925

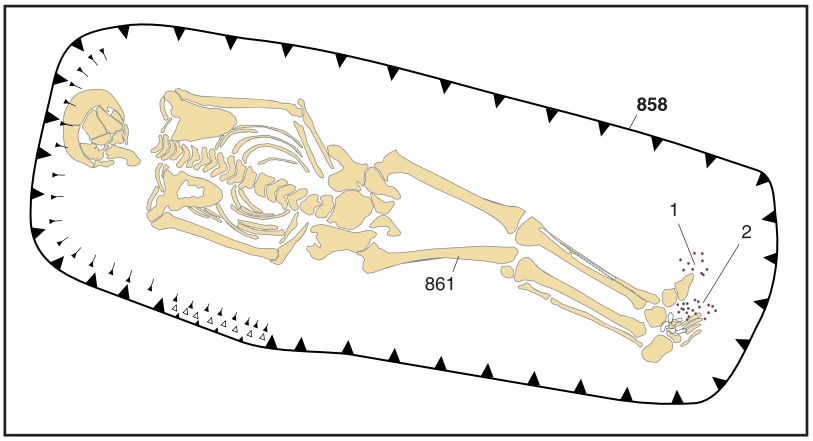


Fig. 3.114 Inhumation Grave 905

Skeleton 861
Posture: Prone, legs extended and close together
Arm position: Both arms semi-flexed with the hands beneath the central part of the pelvis
Sex: Male
Age: 60+. Much older adult
Fragmentation: Poor
Condition: Skull 1, arms 0, hands 0, torso 0, legs 0, feet 0
Pathology: Spinal osteophytosis, Schmorl's nodes and eburnation. Ankylosis c6-7, c2-3. Spondylolysis. Right hip osteoarthritis. Right elbow ankylosis secondary to fracture. Amputation loss of of 5th metacarpal head. Calculus, periodontal disease, AMTL

Additional human remains: Fragments of a second adult (859)

Coffin: None

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 35 hobnails and two boot plates, associated with the left foot. SF 2245
2 **Hobnailed shoe**. Represented by a minimum of 26 hobnails and six boot plates, associated with the right foot. SF 2246

Other finds: Copper alloy disc. Oval. Dimensions 6 x 5 mm, thickness 1 mm. SF 2247

Inhumation Grave 920 (7894/0321, Figs 3.115 and 3.116)

Grave cut 873
Orientation: WSW-ENE
Shape: Sub-rectangular with a rounded north-eastern end
Dimensions: 1.60 x 0.60 m, 0.60 m deep
Fill: Loose chalk rubble (876)

Skeleton 874
Posture: Supine, legs extended. The right leg was straight but the only surviving bone of the left leg was the tibia, which appeared to have been disturbed
Arm position: The arms did not survive
Age: 6-11. young child
Fragmentation: Poor
Condition: Skull 5, arms 9, hands 9, torso 9, legs 5, feet 9

Coffin: Represented by an assemblage of 17 nails. L: 1.39-1.51 m. B: 0.25-0.28 m. (1972)

Grave goods:
1 **Copper alloy bracelet**, complete. Rectangular-section, widest to wrist. One end tapering to form hook, other end perforated to form eye, broken across perforation. Upper face decorated by edge nicks paired across, punched ring on each block formed by nicks. Diameter 53 mm, section 4.5 x 1.5 mm. (899) SF 2306
2 **Copper alloy bracelet**, complete. Description as SF 2306 but blocks punched with ring and dots and eye complete. Diameter 57 x 55 mm, section 4.5 x 1.5 mm. (899) SF 2305
3 **Copper alloy bracelet**, (high tin bronze, XRF – *c* 14% Sn, 1% Pb with trace Zn). complete. Rectangular-section, widest to wrist, terminals as SF 2305-6 but eye plate formed into triangle. Upper face decorated by row of shallow C-shaped stamps, some very faint. Diameter 55 mm, section 4.5 x 1.5 mm. (899) SF 2304
4 **Copper alloy bracelet** (XRF – leaded tinned bronze; complete, hoop snapped across. Circular-sectioned wire hoop tapering slightly to expanding joint of seven and four turns. Diameter 48 x 45 mm, section 1 mm. (899) SF 2307 **(NI)**
5 **Copper alloy bracelet**, complete. Description as SF 2307. Joints of seven and five turns. Diameter 47 x 46 mm, section 1.5 mm. (899) SF 2309 **(NI)**
6 **Copper alloy bracelet**, complete. Description as SF 2307. Joints of seven and six turns. Diameter 51 x 43 mm, section 1.5 mm. (899) SF 2303
7 **Copper alloy bracelet** (XRF – brass, no tin), complete. Circular-sectioned wire with expanding joint with one and a half turns, one end snapped before joint and wrapped loosely around the other part of the hoop twice between the joints. Diameter 49 x 46 mm, section 2 x 1.5 mm. (899) SF 2308 **(NI)**
8 **Bone bracelet**, now in 5 joining pieces. Rounded rectangular section tapering to ends; junction obscured by iron corrosion, possibly a straight butt joint; a third of the circumference (opposite the junction) stained green. Diameter originally *c* 55 mm. section 4.5 x 2 mm. (899) SF 2290, 2293, 2297, 2298, 2300
9 **Bone bracelet**, now in four joining pieces; lacking part of circumference. Rounded D-section tapering slightly; one end retains iron corrosion products and is possibly part of broken terminal; circumference stained green at intervals. Present length 138 mm, section 3.5 x 2 mm. (899) SF 2291, 2294, 2295, 2299 **(NI)**
10 **Bone bracelet**, two fragments held together by iron sheath with small rivet through each end; sheath now entirely corroded and retains traces of copper alloy corrosion which has stained the terminal area green. Rounded rectangular-section. Present length 83 mm, section 5 x 3 mm. (899) SF 2292 **(NI)**
11 **Bone bracelet**; fragment with both ends broken. Rounded rectangular-section tapering in one direction. Encrusted surfaces with traces of green staining. (899) SF 2296 **(NI)**
12 **Shale bracelet**; complete in four fragments. D-section hoop with flat side of D at an angle. Diameter 62 mm, section 7 x 6 mm. (899) SF 2310
13 **Copper alloy bracele**t?; terminal only, probably reused as a pendant. Shallow D-section, widest to wrist. Very small perforation at one end, one side scalloped, end broken. Length 14.5 mm, section 3 x 1mm. (899) SF 2355 (centre of bead spread)
14 **Iron ring**; fragment (approximately one-third extant). Diameter *c* 20-25 mm, section *c* 2.5 mm. (899) SF 2354 (on outer edge of bead spread) **(NI)**
15 **Bead string**. Consists of *c* 31 beads. The planned beads have the long ones SF 2351, 2339 and the bracelet terminal 2355 (long beads 2301-2 not planned). It is possible that colours were blocked together. The segmented beads 2340-41 were together 2342 was at the other end of the coral. The possible amber beads (now dust see .15y below) were primarily in two groups
15a Bead, short biconical, deep translucent blue glass. Diameter 5 mm, length 3 mm, perforation diameter 2.5 mm. (899) SF 2328 **(NI)**
15b Bead, short biconical, deep translucent blue glass. Diameter 5.5 mm, length 3 mm, perforation diameter 2 mm. (899) SF 2330 **(NI)**
15c Bead, short biconical, translucent deep blue glass. Diameter 5 mm, length 2 mm, perforation diameter 1 mm. (899) SF 2331 **(NI)**
15d Bead, short biconical, translucent deep blue glass.

Diameter 4 mm, length 3 mm, perforation diameter 1 mm. (899) SF 2343 **(NI)**
15e Bead, short biconical, translucent deep blue glass. Diameter 4 mm, length 3 mm, perforation diameter 1 mm. (899) SF 2326 **(NI)**
15f Bead, short biconical, translucent deep blue glass. Diameter 5 mm, length 3 mm, perforation diameter 1.5 mm. (899) SF 2325
15g Bead, short biconical, translucent deep blue glass. Diameter 5 mm, length 2.5 mm, perforation diameter 1 mm. (899) SF 2334 **(NI)**
15h Bead, small annular, translucent deep blue glass. Diameter 5 mm, length 3 mm, perforation diameter 2 mm. (899) SF 2333 **(NI)**
15i Bead, small annular, deep translucent blue glass. Diameter 5 mm, length 2 mm, perforation diameter 2 mm. (899) SF 2329 **(NI)**
15j Bead, small annular, translucent deep blue glass. Diameter 4 mm, length 2 mm, perforation diameter 1 mm. (899) SF 2332 **(NI)**
15k Bead, small annular, translucent deep blue glass. Diameter 5 mm, length 2 mm, perforation diameter 2 mm. (899) SF 2338 **(NI)**
15l Bead, small annular, translucent deep blue glass. Diameter 4.5 x 4 mm, length 2 mm, perforation diameter 1.5 mm. (899) SF 2335 **(NI)**

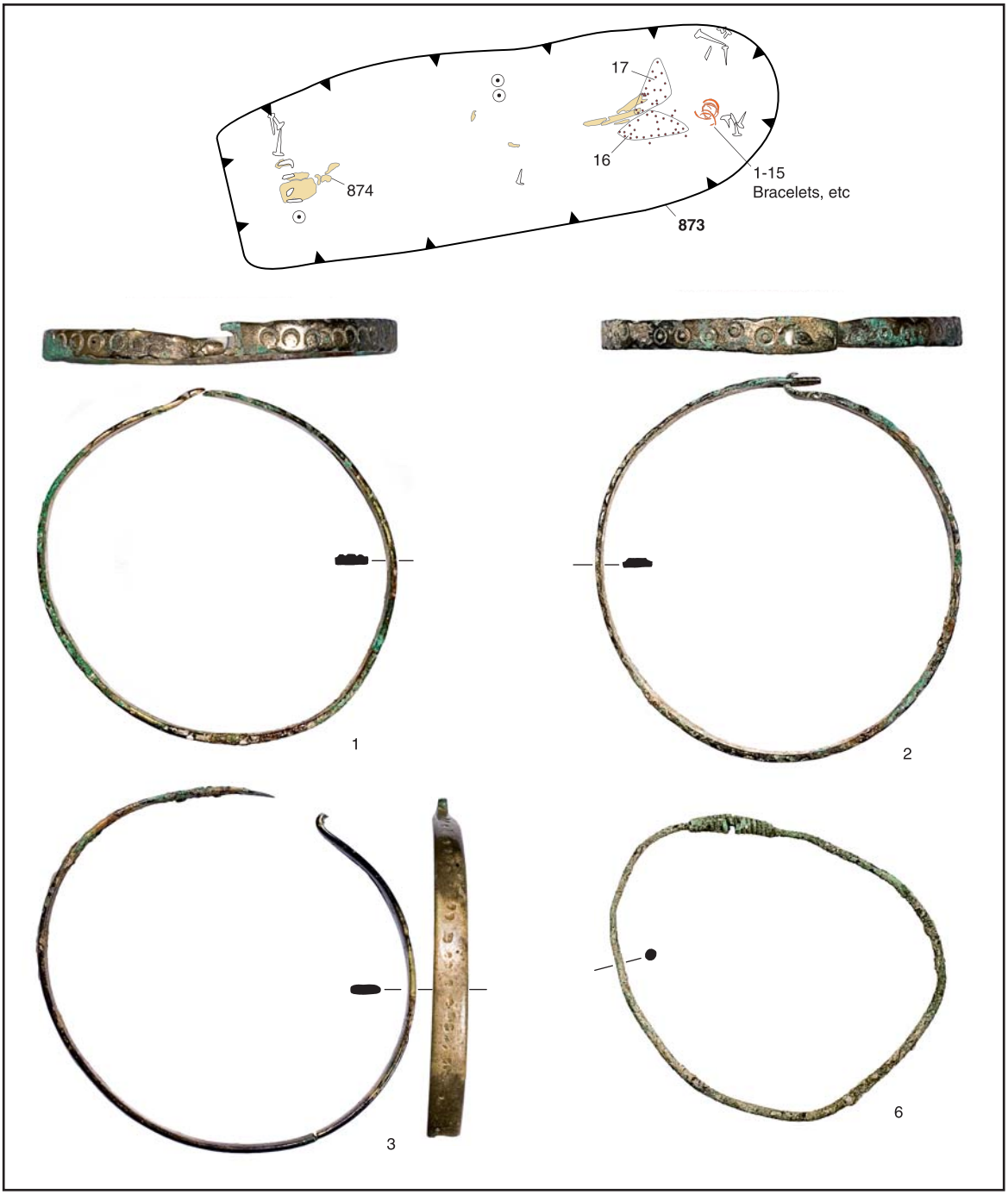


Fig. 3.115 Inhumation Grave 920

15m Bead, uneven spherical, translucent deep blue glass. Diameter 4.5 mm, length 3 mm, perforation diameter 1.5 mm. (899) SF 2336 **(NI)**
15n Bead, short biconical; translucent light yellow/brown glass. Diameter 4 mm, length 2 mm, perforation diameter 1 mm. (899) SF 2337 **(NI)**
15o Bead, short biconical, translucent light yellow/green glass. Diameter 4 mm, length 2 mm, perforation diameter 2 mm. (899) SF 2327
15p Bead, wound segmented (2 segments) translucent green/blue glass. Diameter (maximum) 5x4 mm, length 9 mm, perforation diameter 2 mm. (899) SF 2341
15q Bead, wound segmented (2 segments), translucent green/blue glass. Diameter 4 mm, length 7.5 mm, perforation diameter 1.5 mm. (899) SF 2340
15r Bead, wound segmented (2 segments), translucent green/blue glass. Diameter (maximum) 5 mm, length 9 mm, perforation diameter 2 mm. (899) SF 2342
15s Bead, cubic with irregularly faceted surfaces and rectangular section; opaque light terracotta red glass. Length 5 mm, diameter 5 x 4 mm, perforation diameter 1 mm. (899) SF 2352
15t Bead, small cylindrical, opaque light terracotta stone (?) with green streak. Diameter 2.5 mm, length 5 mm, perforation diameter 1 mm. (899) SF 2353
15u Bead, square-sectioned, long rectangular, translucent peacock. Diameter 4 mm, length 15 mm, perforation diameter 1 mm. (899) SF 2339
15v Bead, square-sectioned, long rectangular, translucent peacock. Diameter 4 mm, length 16 mm, perforation diameter 1.5 mm. (899) SF 2301
15w Bead, long cylindrical, creamy pink opaque stone. Diameter 6.5 x 6 mm, length 18 mm, perforation diameter 1 mm. (899) SF 2302
15x Bead, long curved cylindrical. Opaque purplish pink, very probably coral. Length 18 mm, section 5 x 3.5 mm, perforation diameter 1.5 mm. (899) SF 2351
15y SF s 2345, 2346, 2347, 2350 were originally planned as discrete beads, SF 2344, 2348 and 2349 are planned in such a way as to suggest they had already decayed. All of these small finds now exist only as small specks and tiny chips appearing opaque yellow. They do not appear to be glass and so the original identification as

Fig. 3.116 Grave goods nos 7, 8, 12, 13 and 15 from Grave 920

amber in the field might be correct **(NI)**
16 **Hobnailed shoe**. Represented by a minimum of 25 hobnails, located beside the lower part of the left leg. SF 2387
17 **Hobnailed shoe**. Represented by a minimum of 16 hobnails, located beside the lower part of the right leg. SF 2388

Date: Bracelets and beads suggest a late 4th-century date

Inhumation Grave 925 (7917/0307, Fig. 3.117)

Grave cut 946
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.50 x 0.74 m, 1.00 m deep
Fill: Mixed chalk rubble and former topsoil (947)
Relationships: Cut hedgerow 460. Cut by Grave 905
Relationship with Grave 958 uncertain as the features only intersected slightly

Skeleton 949
Posture: Supine, legs extended and parallel
Arm position: Both arms flexed, lying across the stomach
Sex: Female
Age: Adult
Fragmentation: Fair
Condition: Skull 5, arms 5, hands 5+, torso 9, legs 2, feet 1
Pathology: Caries (x3)

Coffin: Represented by an assemblage of 10 nails defining the corners. L: 1.89 m. B: 0.29-0.46 m. (948)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 10 hobnails, associated with the left foot. SF 2579
2 **Hobnailed shoe**. Represented by a minimum of 13 hobnails, associated with the right foot. SF 2580

Other finds: Iron fitting. Asymmetrical oval plate with pointed end with tang bent through 90°. Length 65 mm, maximum width 30 mm. (947) SF 2533
One sherd (9 g) of pottery, fabric ZM lid rim (947)

Inhumation Grave 930 (7890/0328, Fig. 3.118)

Grave cut 798
Orientation: W-E
Shape: Sub-rectangular
Dimensions: Sub-rectangular
Fill: Friable mid brownish grey clay loam with chalk pieces (799)
Relationships: Cut cremation burial 945 and Grave 950

Skeleton 862
Posture: Supine, legs extended and crossed at the ankles
Arm position: The arms did not survive
Sex: ?Male
Age: 36-45. Mature adult
Fragmentation: Fair
Condition: Skull 5+, arms 9, hands 9, torso 9, legs 2, feet 4

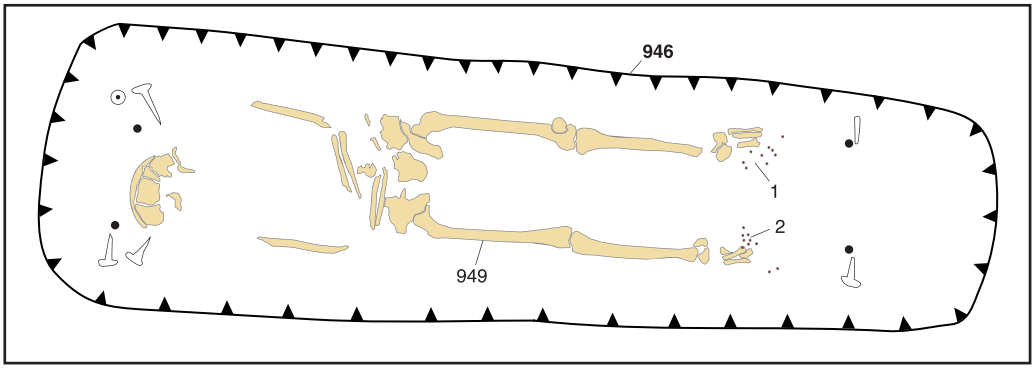


Fig. 3.117 Inhumation Grave 925

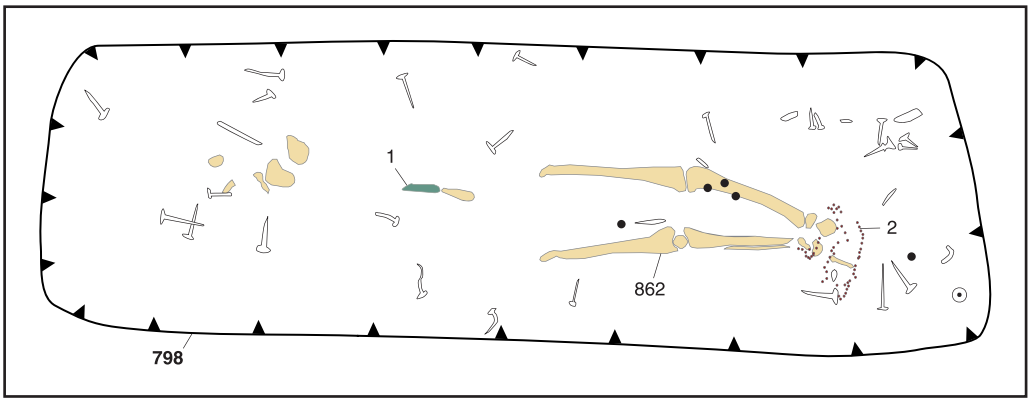


Fig. 3.118 Inhumation Grave 930

Pathology: Healed fracture left tibia. Periostitis left fibula. Left proximal tibia and distal femur articular surface eburnation with striations, osteoarthritis, associated with fracture.

Coffin: Represented by an assemblage of 33 nails. L: 1.89 m. B: 0.40 m. (1973)

Grave goods:

1 **Iron knife blade**; fragment (not illustrated). Straight back sloping down at end to blade tip. Length 80 mm, max width 17 mm. (799) SF 2272 **(NI)**

2 **Hobnailed shoe(s)**. Represented by a minimum of 95 hobnails (including a minimum of one from soil sample <692>), located around the feet. They appeared to define the outline of two shoes, placed laterally to the orientation of the body. SF 2202, 2062, 2228

Other finds: **Copper alloy bracelet**, half extant; both ends broken. Rounded D-section, tapering in one direction. Diameter *c* 52 mm, section 7 x 4.5 mm. (799) SF 2198 **(NI)**

Lead rod**.** Oval section, bent into L-shape. Length 38 mm, section 5 x 2.5 mm. Weight 3 g. SF 2032

Pottery (144 sherds, 1613 g) in fabrics TF, TR, ZF, ZM, ZMA and SG. Rim sherds indicate a minumum of 13 vessels, 1 beaker each in TF and TR, 3 jars and a bowl in ZF, 2 jars in ZM (see Fig. 4.2, No. 3) and 4 jars and a bowl in SG. Much of the material may derive from cremation burial 945 (799)

Date: Sherds in 945 and the redeposited material in the backfill of this grave are dated to the 4th century but not more closely

Inhumation Grave 935 (7905/0322, Fig. 3.119)

Grave cut 845

Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.15 x 0.72 m, 0.88 m deep
Fill: Loose chalk rubble and former topsoil (851)

Skeleton 852

Posture: Supine, extended
Arm position: Right and left arm at side, hands over pelvis
Sex: ?Male
Age: 60+. Much older adult
Height: 156.8
Fragmentation: Good
Condition: Skull 4, arms 2, hands 9, torso 2, legs 1, feet 2
Pathology: Spinal Schmorl's nodes and osteophytosis. Osteoarthritis right distal humerus. Healed fracture right distal fibula. Right scapula os acromiale

Coffin: Represented by an assemblage of 10 nails defining the corners. L: 1.77-1.81 m. B: 0.33-0.34 m. (1974)

Grave goods:

1 **Hobnailed shoe(s)**. Represented by a minimum of 143 hobnails (including a minimum of two from soil sample <704>), located inside the foot of the coffin. SF 2253

Inhumation Grave 940 (7912/0326 Fig. 3.120)

Grave cut 863

Orientation: W-E
Shape: Rectangular
Dimensions: >2.10 x 0.90 m, 0.33 m deep
Fill: Loose chalk rubble (864)

Skeleton 866

Posture: Supine, legs extended and parallel
Arm position: Disturbance had displaced the bones of the left arm and completely removed the right arm
Sex: Female
Age: 60+. Much older adult
Fragmentation: Fair
Condition: Skull 9, arms 2, hands 9, torso 9, legs 1, feet 4

Coffin: The remains of the eastern end were represented by an assemblage of 7 nails. (1975)

Comments: The western half of the grave was truncated by the foundations of the School House, removing the upper part of the skeleton

Inhumation Grave 950 (7892/0328, Fig. 3.121)

Grave cut 894

Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.90 x 0.65 m, 1.00 m deep
Fill: Friable light yellowish brown chalky clay loam (896)

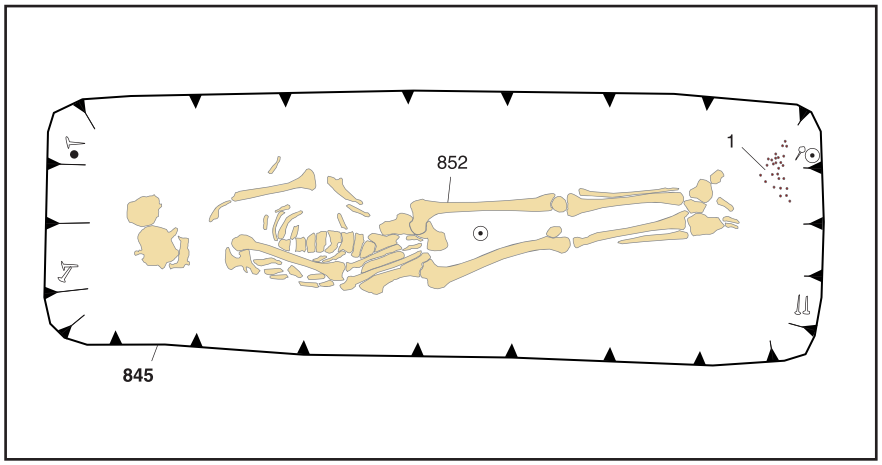


Fig. 3.119 Inhumation Grave 935

Relationships: Cut by cremation burial 945 and Grave 930

Skeleton 897
Posture: Supine, legs extended with feet together
Arm position: Both arms semi-flexed with the hands resting on the central part of the pelvis
Sex: Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 9, arms 4, hands 5, torso 9, legs 3, feet 3
Pathology: Periostitis right distal tibia. Healed fracture right distal ulna. Right hip osteoarthritis

Coffin: Represented by an assemblage of 9 nails and a coffin stain defining the eastern end and part of the sides. (916)

Other finds:
A sheep/goat mandible was recovered from the backfill
One sherd (8 g) of pottery, a jar rim in fabric ZM (896)

Comments: The western half of the grave had been truncated by Grave 930, removing the upper part of the skeleton from just above the pelvis

Inhumation Grave 955 (7916/0306, not illustrated)

Grave cut 901
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.30 x 0.70 m, 0.70 m deep
Fill: Mixed chalk rubble and former topsoil (902)
Relationships: Cut Grave 965. Relationship with Grave 925 uncertain as the features only intersected slightly

Skeleton 903
Posture: Supine, legs extended and close together
Arm position: The arms did not survive
Sex: ?Female
Age: Adult
Fragmentation: Good
Condition: Skull 9, arms 9, hands 9, torso 9, legs 1, feet 1
Pathology: Erosive lesions of the metatarsals

Coffin: None

Date: Pottery vessels in Grave 965 were dated *c* AD 270-400 and 300-350

Inhumation Grave 960 (7905/0311, Fig. 3.122)

Grave cut 904
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.08 x 0.84 m, 0.80 m deep
Fill: Loose mid brownish white silty clay with frequent chalk pieces (906)

Skeleton 908
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body; right arm semi-flexed with the hand resting on the central part of the pelvis

Fig. 3.120 Inhumation Grave 940

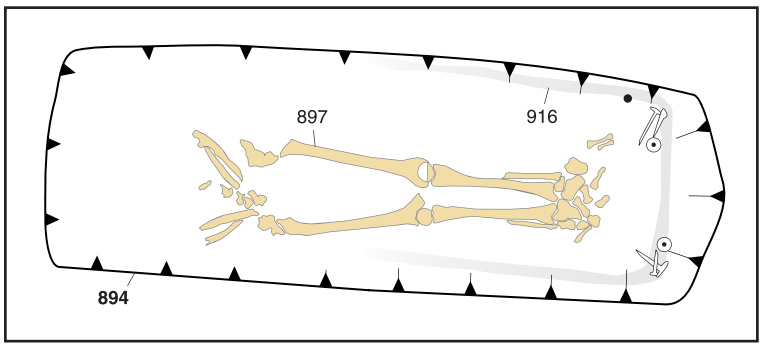


Fig. 3.121 Inhumation Grave 950

Sex: Female
Age: 26-35. Prime adult
Height: 159.3
Fragmentation: Good to fair
Condition: Skull 2, arms 1, hands 1, torso 4, legs 2, feet 3
Pathology: Cribra orbitalia. Caries (x9), DEH, calculus, periodontal disease

Coffin: Represented by an assemblage of 14 nails and an area of coffin fill. L: 1.79 m. B: 0.35 m. (907)

Grave goods:
1 **Hobnailed shoes**. Represented by a minimum of 103 hobnails defining the shapes of two shoes, located outside the coffin to the left of the feet. SF 2318

Other finds: One sherd (26 g) of pottery, fabric ZG

Inhumation Grave 965 (7917/0306, Fig. 3.123)

Grave cut 928
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.70 x 1.10 m, 1.00 m deep
Fill: Mixed chalk rubble and former topsoil (929)
Relationships: Cut hedgerow 460. Cut by Graves 680 and 955

Skeleton 932
Posture: Supine, legs extended and close together
Arm position: Left arm extended with the hand beneath the head of the left femur; right arm semi-flexed with the hand on the left side of the pelvis
Sex: Male
Age: 18-25. Young adult
Height: 173.2

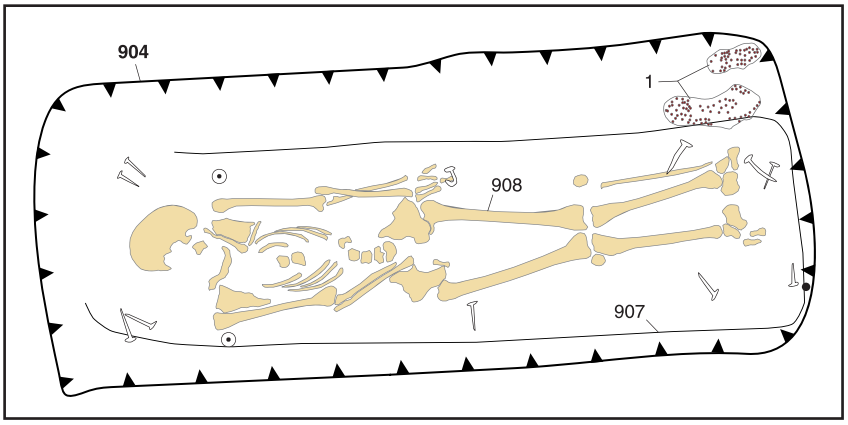


Fig. 3.122 Inhumation Grave 960

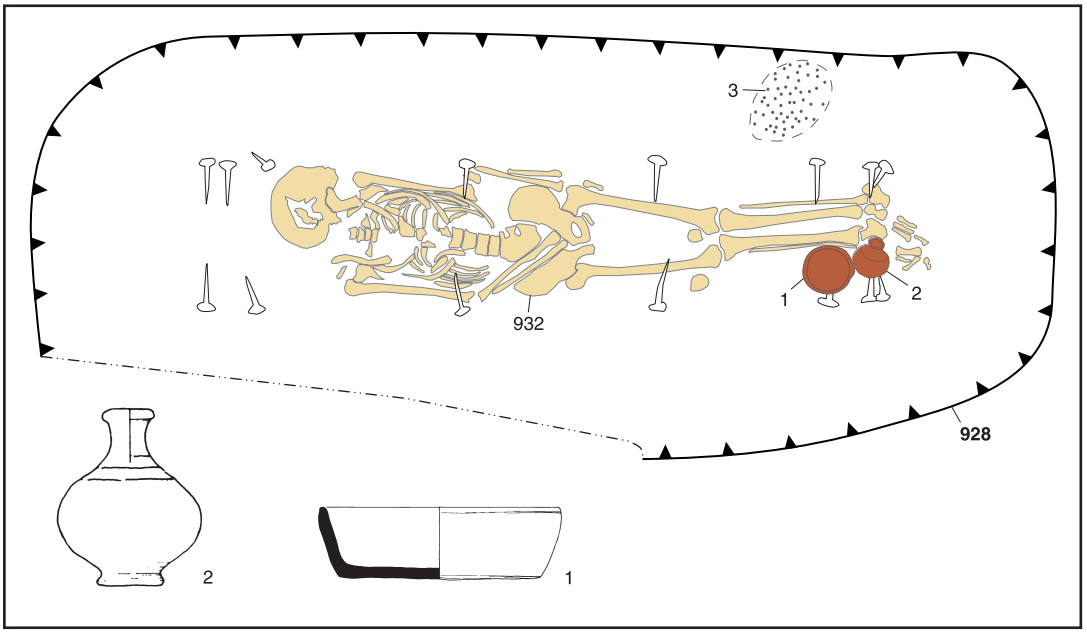


Fig. 3.123 Inhumation Grave 965

Fragmentation: Good
Condition: Skull 3, arms 2, hands 2, torso 2, legs 2, feet 1
Pathology: Schmorl's nodes. Periodontal disease, calculus

Coffin: Represented by an assemblage of 15 nails defining the corners and sides. L: 1.75-1.77 m. B: 0.44-0.45 m. (931)

Grave goods:
1 **Vessel**. Fabric ZMA, black-burnished ware. Straight sided dish, burnished internally. *c* AD 270-400. Complete?, but now in many fragments. Located beside the right foot, inside the coffin. (936)
2 **Vessel**. Fabric TR, New Forest colour-coated ware. Small flask of Fulford (1975a) fine ware type 1. *c* AD 300-350. Complete. Located beside the right foot, inside the coffin and toppled slightly onto the foot. (937)
3 **Hobnailed shoe(s)**. Represented by a minimum of 133 hobnails, located outside the coffin beside the left foot. SF 2511

Other finds: A single hobnail was recovered from soil sample <750>, taken from around the left foot. One sherd (24 g) of prehistoric pottery (929)

Date: Pottery date range AD 300-350 and possibly later

Inhumation Grave 970 (7901/0322, Fig. 3.124)

Grave cut 884
Orientation: ESE-WNW
Shape: Sub-rectangular
Dimensions: 2.20 x 1.00 m, 0.90 m deep
Fill: Loose mid brown silty sand with chalk pieces (886)
Relationships: Cut pit 794. Cut by cremation burials 1060 and 1065 and Graves 790, 1010 and 1110

Skeleton 919
Posture: Prone, legs extended and parallel
Arm position: Both arms beneath chest
Sex: Female
Age: 36-45. Mature adult
Fragmentation: Poor
Condition: Skull 9, arms 2, hands 3, torso 2, legs 2, feet 1
Pathology: Calculus, caries (x5)

Coffin: Represented by an assemblage of 14 nails and part of a coffin stain defining the western end. (918)

Grave goods:
1 **Hobnailed shoes**. Represented by a minimum of 129 hobnails (including a minimum of 13 recovered from soil sample <755>), located around the feet. SF 2414, 2413

Comments: The south-eastern part of the grave had been destroyed by Grave 1010, removing the right shoulder and much of the skull of skeleton 919

Inhumation Grave 975 (7896/0322, Fig. 3.125)

Grave cut 921
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.00 x 0.70 m, 0.60 m deep
Fill: Friable brown silty soil with 30% chalk pieces (923)

Skeleton 922
Posture: Supine, legs extended and parallel
Arm position: Both arms extended beside body, the left hand slightly under the left side of the pelvis
Sex: Female
Age: 18-25. Young adult
Height: 151.6
Fragmentation: Fair
Condition: Skull 1, arms 3, hands 3, torso 3, legs 1, feet 1
Pathology: Cribra orbitalia

Additional human remains: Fragments of a second adult (923)

Coffin: Represented by an assemblage of 17 nails. L: 1.86-1.90 m. B: 0.41-0.43 m. Ht: 0.19 . (1976)

Inhumation Grave 980 (7917/0304, Fig. 3.126)

Grave cut 973
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.34 x 0.62 m, 0.70 m deep
Fill: Mixed chalk rubble and former topsoil (974)
Relationships: The relationship with Grave 1075 was uncertain as the features only intersected slightly

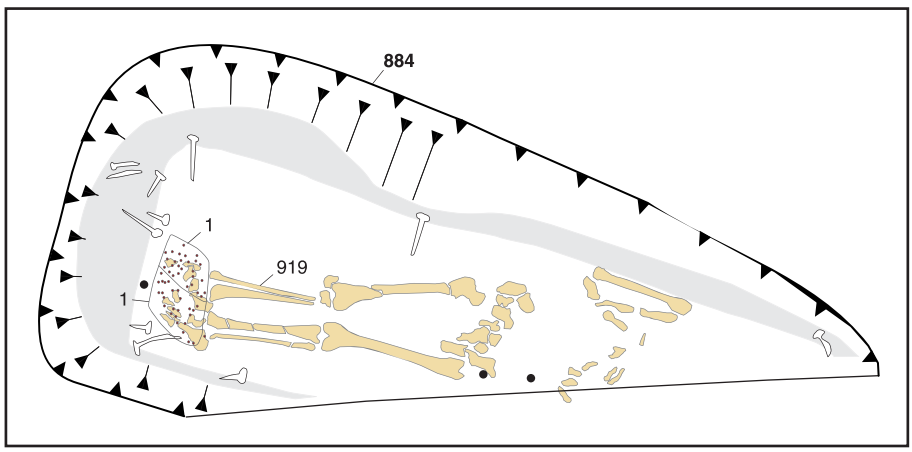


Fig. 3.124 Inhumation Grave 970

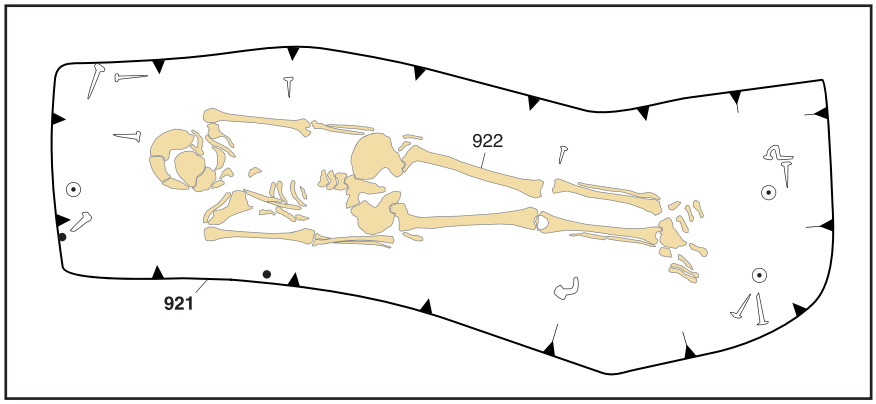


Fig. 3.125 Inhumation Grave 975

Skeleton 977
Posture: Posture could not be established due to poor preservation
Age: 1 month-2 years. Infant
Fragmentation: Fair
Condition: Skull 2, arms 2, hands 9, torso 2, legs 2, feet 9
Pathology: Cribra orbitalia. Profuse widening of the cortex. Scurvy/vitamin D deficiency

Additional human remains: Adult metacarpal

Coffin: Represented by an assemblage of 16 nails defining the corners of the grave. L: 0.77-0.80 m. B: 0.30-0.37 m. (976)

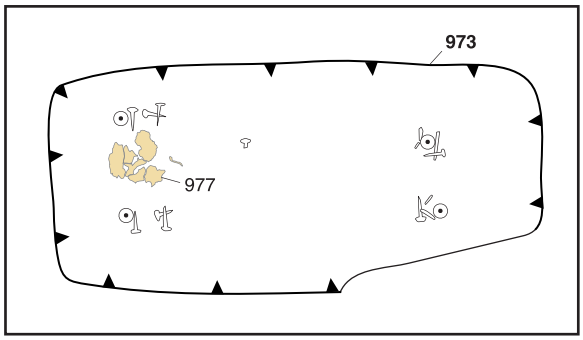


Fig. 3.126 Inhumation Grave 980

Inhumation Grave 985 (7900/0327, Figs 3.127-3.129)

Grave cut 924
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.80 x 0.70 m, 0.15 m deep
Fill: Loose chalk rubble and silty clay (927)
Relationships: Cut Grave 1045

Skeleton 926
Posture: Supine, legs extended and close together
Arm position: Left arm semi-flexed with the hand resting on the central part of the pelvis; right arm extended beside body with the hand beneath the upper part of the right femur
Sex: ?Female
Age: 13-17. Adolescent
Fragmentation: Good
Condition: Skull 3, arms 3, hands 1, torso 1, legs 1, feet 1
Pathology: DEH

Coffin: Represented by an assemblage of 14 nails. L: 1.57 m. B: 0.33-0.37 m. Ht: 0.13 m. (1977)

Grave goods:
1 **Copper alloy bracelet**, complete. Rectangular-section widest to wrist, terminals a simple overlap joint. Upper face decorated by V-shaped nicks on alternate sides producing a blocked zig-zag pattern. Diameter 61 x 59 mm, section 3 x 1.5 mm. (927) SF 2474. (low level in pile)
2 **Copper alloy bracelet**, complete but snapped across hoop. D-sectioned hoop tapering to hook and eye terminals, eye terminal an expanded perforated plate; group of five vertical grooves behind each terminal. Diameter 60 mm, section 3.5 x 2 mm. (927) SF 2476. (low in pile directly beneath 985.3 below)
3 **Copper alloy bracelet**, complete. Circular-section hoop tapering to expanding joint of three and one and a half turns. Diameter 59 mm, section 2.5 mm. (927) SF 2475. (Shown as lying just inside 985.2 above)
4 **Copper alloy bracelet**, ((leaded) brass – XRF Cu 70%, Zn 13%, Pb 7%, Sn 6%), complete. Rectangular-sectioned hoop, widest to wrist, top bottom butt/joint. Upper face decorated by opposed (occasionally slightly staggered) wedge-shapes leaving a central spine between them; the blocks between these units are decorated by three triangular edge nicks forming a short zig-zag. Diameter 60 x 58 mm, section 2.5 x 1.5 mm. (927) SF 2463. (in middle of pile below shale bracelet 985.17)
5 **Copper alloy bracelet**, lacking terminals. Square-sectioned with rounded top; tapering to terminals one of which has low block behind broken eye plate, other terminal broken, Two ends now side by side. Diameter 50 x 47 mm, section 4.5 x 4 mm. (927) SF 2464. (in centre of pile possibly inside 985.4 above)
6 **Copper alloy bracelet**, complete but snapped across hoop. Rectangular-sectioned hoop torc-twisted with right hand twist tapering to hook and eye terminal, eye is flattened lozenge plate. Diameter 64 x 60 mm, section 3 x 2 mm. (927) SF 2482. (lower level below shale bracelet 985.17, most easterly of copper alloy bracelets in pile)
7 **Copper alloy bracelet**; complete. Rectangular-sectioned hoop, widest to wrist, tapering slight to upward hook at one end, other end expands to flat oval perforated disc forming eye of terminal. Outer face has flat units alternating with rounded units, flat units decorated by 4 to 6 vertical grooves. Diameter 62

x 57 mm, section 3.5 x 3 mm. (927) SF 2461. (top of pile)
8 **Bone bracelet**. Large fragment retaining terminal. Rounded rectangular section with horizontal butt joint retaining two perforations with iron rivets, traces of copper alloy corrosion around interior (SF 2466), Detached fragment (SF 2472) has one end possibly broken across edge of perforation; rounded rectangular section. Lengths 120 mm and 48 mm, section 5 x 2.5 mm (probably lowest one in pile). (927) SF 2466, 2472 **(NI)**
9 **Bone bracelet**. Large fragment with flat-ended terminal with rivet hole, terminal green stained and there is a detached fragment of sheet. Rounded rectangular section. Also detached fragment with two broken ends. Lengths 125 and 48 mm, section 4 x 3 mm (927) SF 2470. (low in pile near 985.8) **(NI)**
10 **Bone bracelet**. Three large joining fragments lacking *c* 15% circumference including one side of terminal. Terminal encased in ribbed copper alloy sheet sheath with two perforated rivets. rounded rectangular section. Present diameter *c* 55 mm, section 4.5 x3 mm. (927) SF 2471, 2483. (most easterly of pile) **(NI)**
11 **Bone bracelet**. Two fragments joining at terminal area, approximately two thirds extant. Terminal encased in ribbed copper alloy sheet sheath, no traces of rivets. Rectangular-sectioned with sharp edges. Present diameter *c* 55 mm, section 4 x 2 mm. (927) SF 2465. (Probably originally centrally in pile)
12 **Bone bracelet**. Large fragment with terminal. Terminal encased in ribbed copper alloy sheet sheath, no traces of rivets. Approximately square-section with rounded upper edges. Length 118 mm, section 4.5 mm (927) SF 2478. also one fragment from SF 2483 that may well be part of this bracelet. (At low level in pile to south)
13 **Bone bracelet**. Large fragment with terminal. Terminal encased in ribbed copper alloy sheet sheath, no traces of rivets. Rounded rectangular section. Present length 55 mm, section 4 x 3 mm. (927) SF 2478. Also two fragments with rounded rectangular section found adjacent and probably part of same bracelet, all show cancellous tissue on inner face. Lengths 62 and 56 mm (927) SF 2477. (At low level in pile to south) **(NI)**

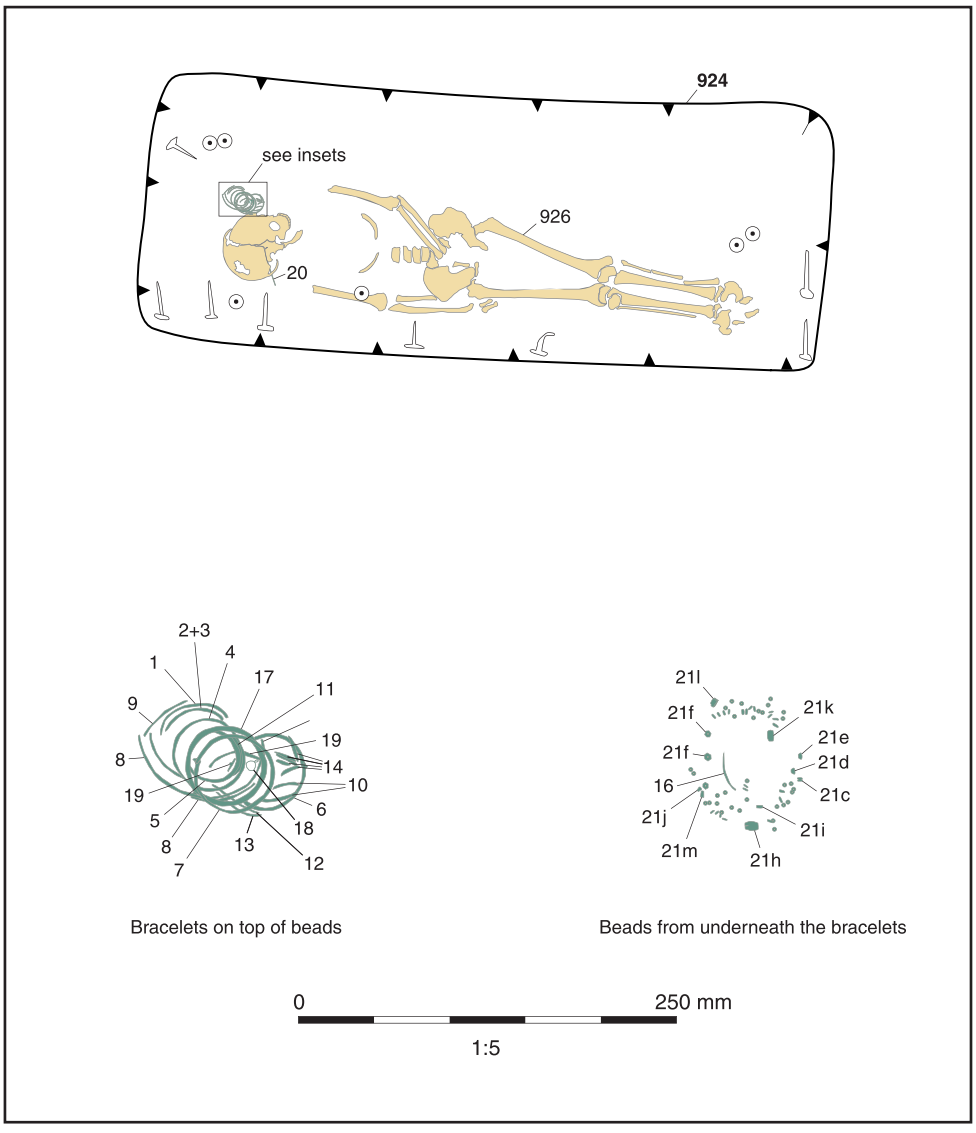


Fig. 3.127 Inhumation Grave 985

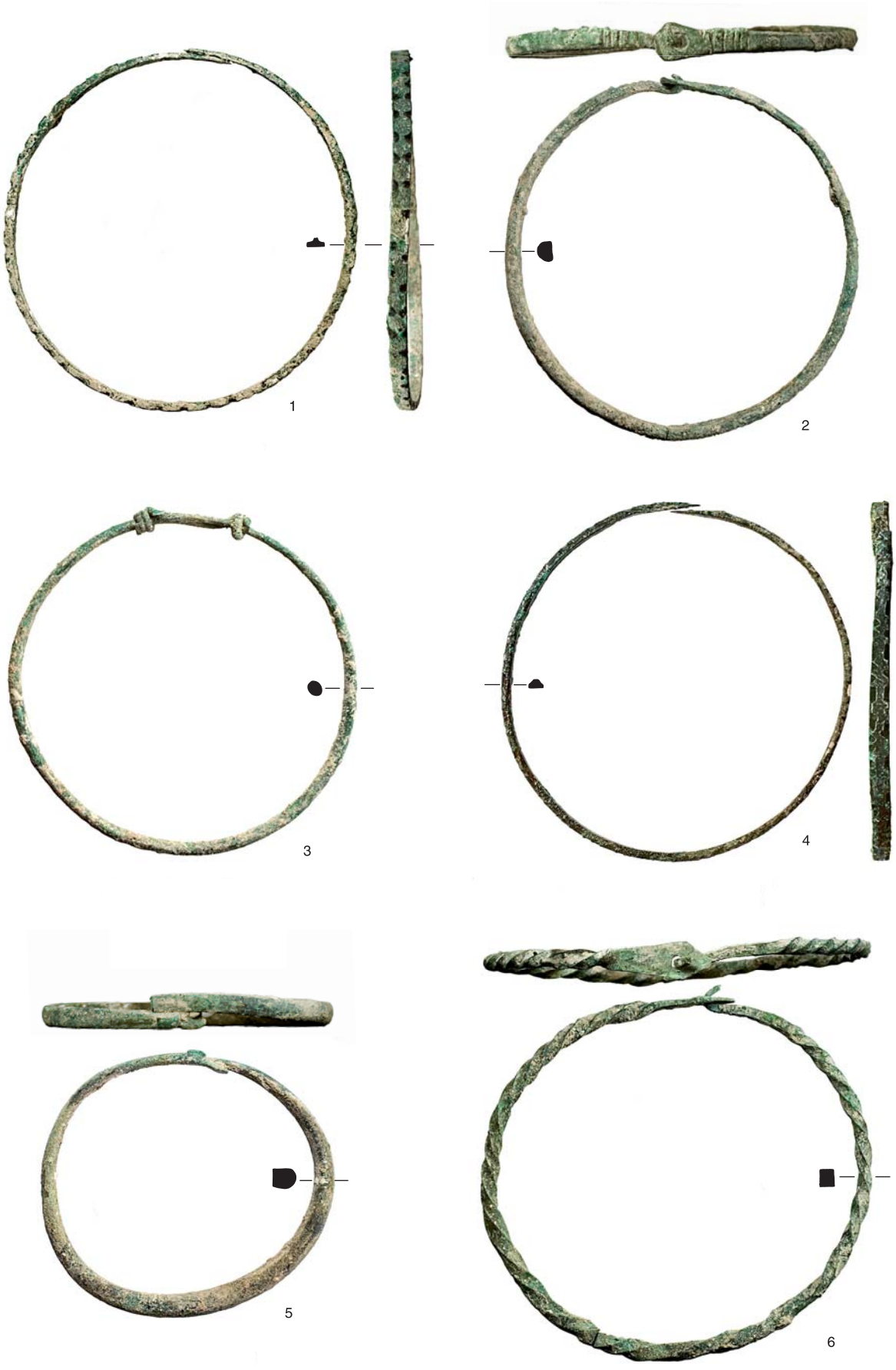


Fig. 3.128 Bracelets nos 1-6 from Grave 985

Fig. 3.129 Jewellery nos 7, 11, 12, 17-19 and 21 from Grave 985

14 **Bone bracelet**. four fragments found at eastern extremities of pile, much eroded. (927) SF 2471 **(NI)**
15 **Bone bracelet fragments** (7), position unknown. Including one terminal probably horizontally jointed with small double perforated sheet fastening now obscured by iron corrosion. Also including small fragment of straight ended terminal stained green and retaining iron rivet. (927) SF 2483 **(NI)**
16 **Bone bracelet fragment**, below main pile of bracelets. Much eroded. (927) SF 2529 **(NI)**
17 **Shale bracelet**; in three fragments. D-sectioned. Diameter 64 x 62 mm, section 6 x 4 mm. (927) SF 2462. (in centre of pile)
18 **Copper alloy finger ring**; in two fragment, each with one end tapering possibly to missing tip. Square-sectioned with grooves forming three small blocks at widest point. Diameter 18.5 mm, section at blocks 2 mm. (927) SF 2480 (positioned centrally in pile of bracelets)
19 **Copper alloy finger ring**, complete. Rounded square-sectioned hoop with small oval plate at either terminal, terminal overlap one on top of other. Diameter 17 x 16 mm, section 1.5 mm. (927) SF 2479 (positioned centrally in pile of bracelets)
20 **Copper alloy hair pin?** Circular-section shank tapering to point; other end broken, possibly with notch below broken edge. Present length 70 mm, section 2 mm. (927) SF 2578 **(NI)**
21 **Bead string** laid out in a circle of approximate 80 mm diameter. total length of beads *c* 140 mm. The layout suggests that the varisite (i – SF 2522) and colourless glass (h – SF 2523) beads formed one block with blocks of blue beads on either side, then a block formed by the brown chalcedony (j – SF 2527) the long decayed bead (m – SF 2526) and the hexagonal-sectioned beads in shades of green and turquoise (q – SF 2528, f – SF 2517-8, l – SF 2520), then a block of blue beads. The large barrel-shaped bead of an identified stone (k – SF 2521) was probably a terminal bead
21a Beads (49), small spherical/annular, translucent deep blue glass. Diameter 3-5 mm, length 1.5-2 mm, perforation diameter 2-1 mm. (927) SF 2530
21b Beads (4), small spherical/annular, translucent mid green glass. Diameter 4 mm, length 2.5 mm. perforation diameter 1.5 mm. (927) SF 2530
21c Bead, segmented (2 segments) translucent deep blue glass. Diameter 4 mm, length 5 mm, perforation 2 mm. (927) SF 2525
21d Bead, short biconical, translucent deep blue glass. Diameter 5.5 mm, length 4 mm, perforation diameter 1.5 mm. (927) SF 2524
21e Bead, short biconical translucent deep blue glass. Diameter 5 mm, length 3 mm, perforation diameter 1.5 mm. (927) SF 2519
21f Bead, 2 fragments hexagonal, possibly a long bead broken in two but fragments not joining (fragments found lying next to each other). Opaque turquoise glass. Diameter 4.5 mm, length *c* 5 mm, perforation diameter 2 mm. (927) SF 2517-8
21g Bead, short hexagonal with broken end, opaque mid green glass. Diameter 4 mm, length 4 mm, perforation diameter 2 mm. (927) SF 2528
21h Bead, oval with lentoid cross-section, colourless glass. Pointed oval perforation. Diameter 7 x 4.5 mm, length 9 mm, perforation diameter 3 x 2 mm. (927) SF 2523
21i Bead, rectangular, diamond and triangular faceted. Opaque mid green stone, possibly varisite. Length 6 mm, diameter 4 mm, perforation diameter 1 mm. (927) SF 2522
21j Bead, rectangular-sectioned, diamond and triangular faceted. Dark brown stone appearing opaque, possibly brown chalcedony. Diameter 4 x 3 mm, length 5 mm, perforation diameter 1 mm. (927) SF 2527
21k Bead, barrel-shaped, opaque cream-coloured stone, small fragment copper alloy corroded to it. Diameter 6 mm, length 6.5 mm, perforation diameter 1 mm. (927) SF 2521
21l Bead, chips from a probably hexagonal sectioned bead. Now appearing very dark ?green glass. (927) SF 2520
21m Bead, much decayed fibrous fragments of long bead. (927) SF 2526

Date: The bracelets indicate a date after AD 350 at least and may be late 4th century

Inhumation Grave 990 (7895/0324, Fig. 3.130)

Grave cut 933
Orientation: WNW-ESE
Shape: Uncertain

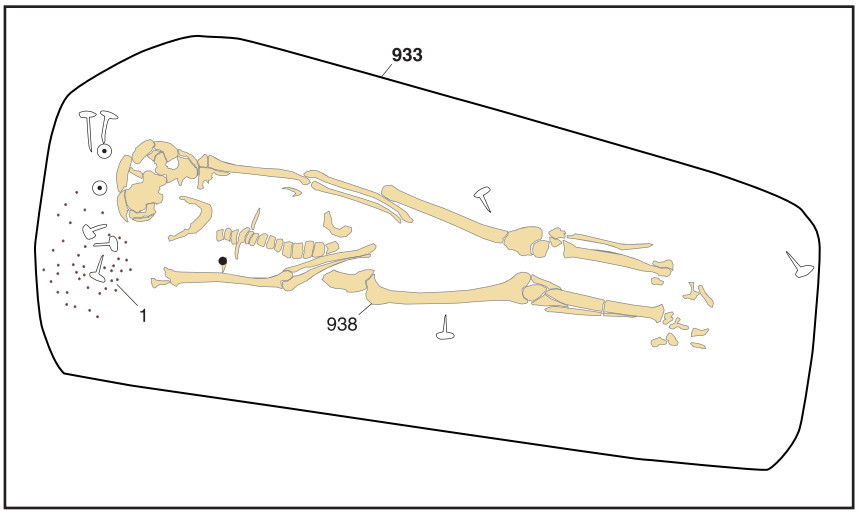


Fig. 3.130 Inhumation Grave 990

Fill: Mixed chalk rubble and former topsoil (934)
Relationships: Cut Grave 995. Cut by cremation burials 510, 895, 910 and 915

Skeleton 938
Posture: Supine, legs extended and close together
Arm position: Left arm extended with the hand on the left femur; right arm semi-flexed with the hand over the central part of the pelvis
Sex: Male
Age: 36-45. Mature adult
Fragmentation: Fair
Condition: Skull 2, arms 2, hands 2, torso 2, legs 2, feet 2
Pathology: AMTL, DEH, periodontal disease, caries (x5). Sinusitis

Additional human remains: Fragments of a second adult (934)

Coffin: Represented by an assemblage of 15 nails. L: 1.80 m. B: 0.65 m. (1978)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 84 hobnails (including a minimum of 13 recovered from soil samples <765> and <766>), located ?inside the coffin to the right of the skull. SF 2469

Comments: This grave was dug directly into the backfill of Grave 995, apparently to insert skeleton 938 as a secondary burial

Inhumation Grave 995 (7895/0324, Fig. 3.131)

Grave cut 941
Orientation: WNW-ESE
Shape: Irregular
Dimensions: 2.60 x 1.34 m, 0.95 m deep
Fill: Loose chalk rubble and former topsoil (942)
Relationships: Cut by Grave 990

Skeleton 939
Posture: Prone, legs extended with feet together
Arm position: Both arms semi-flexed with the hands under the pelvis
Sex: Male
Age: 45+. Older adult
Fragmentation: Poor
Condition: Skull 2, arms 2, hands 2, torso 2, legs 2, feet 1
Pathology: Healed fracture ribs. AMTL

Additional human remains: Fragments of a second adult (942)

Coffin: Represented by an assemblage of 12 nails. L: 1.75-1.95 m. B: 0.31-0.39 m. (1979)

Grave goods:
1 **Hobnailed shoes**. Represented by a minimum of 119 hobnails (including a minimum of 28 from soil sample <813>) and nine boot plates (SF), worn on the feet. The hobnails could only be collected as a single group as the feet were too close together to separate. SF 2622, 2672, 2670-2, 2674-8

Comments: Grave 990 was dug directly into this grave, apparently to insert a secondary burial

Inhumation Grave 1000 (7900/0317, Fig. 3.132)

Grave cut 943
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.21 x 0.90 m, 1.08 m deep
Fill: Chalk rubble (944)

Skeleton 1002
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body; right arm semi-flexed
Sex: Female
Age: 45+. Older adult
Height: 161.6
Fragmentation: Poor
Condition: Skull 2, arms 3, hands 9, torso 9, legs 1, feet 0
Pathology: Calculus

Coffin: Represented by an assemblage of 12 nails defining the corners. L: 1.91-1.97 m. B: 0.39-0.41 m. (1001)

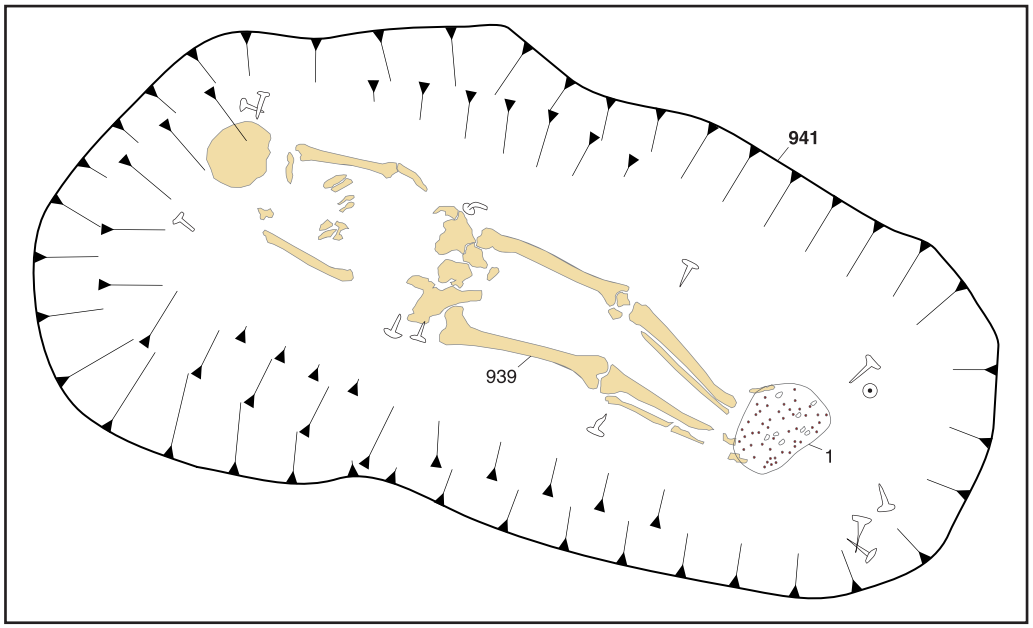


Fig. 3.131 Inhumation Grave 995

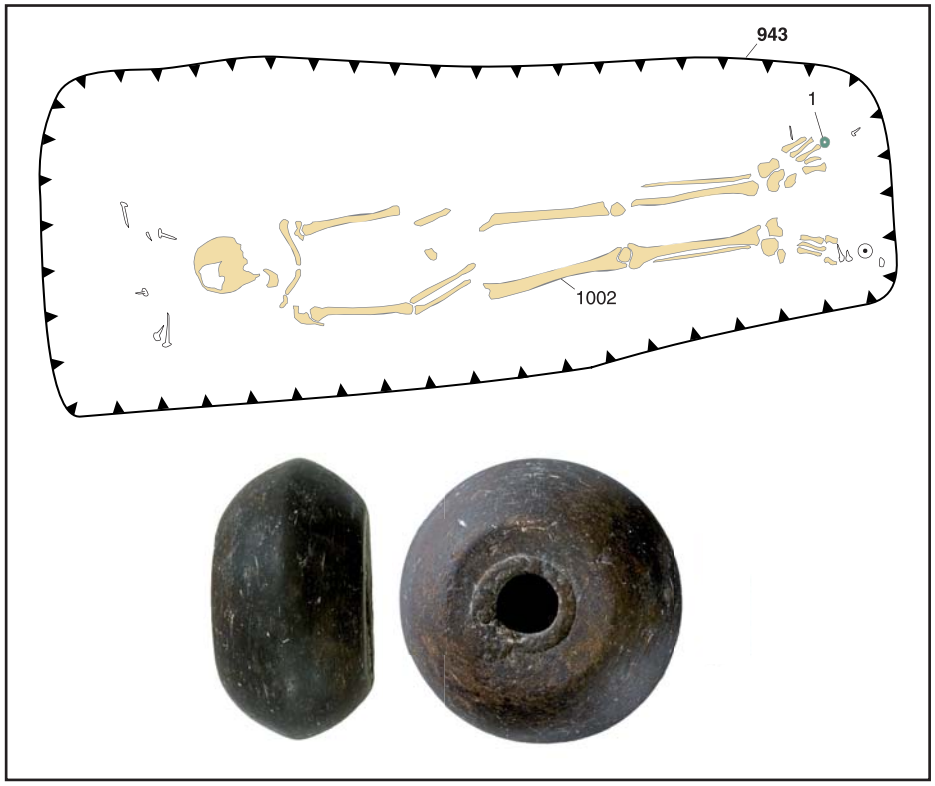


Fig. 3.132 Inhumation Grave 1000

Grave goods:
1 **Shale spindle whorl**, complete. Squashed biconical with flat faces around cylindrical perforation. One of faces has been left very slightly raised during the turning. Diameter 39 mm, thickness 12 mm, perforation diameter 8 mm, weight 13 g. (1001) SF 2648

Other finds: Coin SF 2512. Irregular nummus, falling horseman. AD 350-364, in grave fill

Date: Coin dated AD 350-364

Inhumation Grave 1005 (7894/0323, Fig. 3.133)

Grave cut 951
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >0.92 x 0.60 m, 0.40 m deep
Fill: Loose greyish brown silt with 40% chalk pieces (954)
Relationships: Cut by Grave 1020

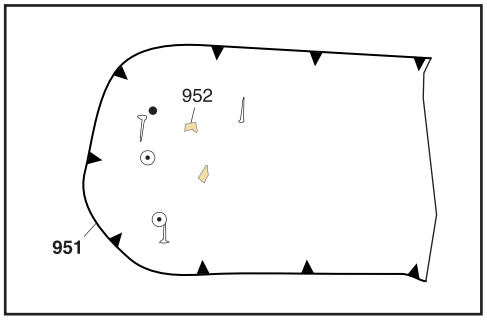


Fig. 3.133 Inhumation Grave 1005

Skeleton 952
Posture: Unknown due to poor preservation

Coffin: Represented by an assemblage of 6 nails defining the western end and a small area of coffin fill. (953)

Comments: The eastern half of the grave was truncated by Grave 1020. Fragmentary skeletal remains were observed on site but did not survive in a condition to be lifted

Inhumation Grave 1010 (7901/0322, Fig. 3.134)

Grave cut 837
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.57 x 1.10 m, 1.40 m deep
Fill: Loose mid brown silt sand with 15-20% chalk pieces (838)
Relationships: Cut pit 1065 and Graves 970 and 1070. Cut by Graves 790 and 1110

Skeleton 956
Posture: Posture was not certain due to poor preservation. Either on left side or supine with the legs turned to the left
Sex: ?Male
Age: 45+. Older adult
Height: 172.1
Fragmentation: Poor
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 9
Pathology: Sinusitis. AMTL

Additional human remains: Fragments of a second adult and a subadult (838)

Coffin: Represented by an assemblage of 8 nails and a coffin stain defining the western end and parts of the sides. L: 1.92-1.98 m. B: 0.32-0.40 m. (957)

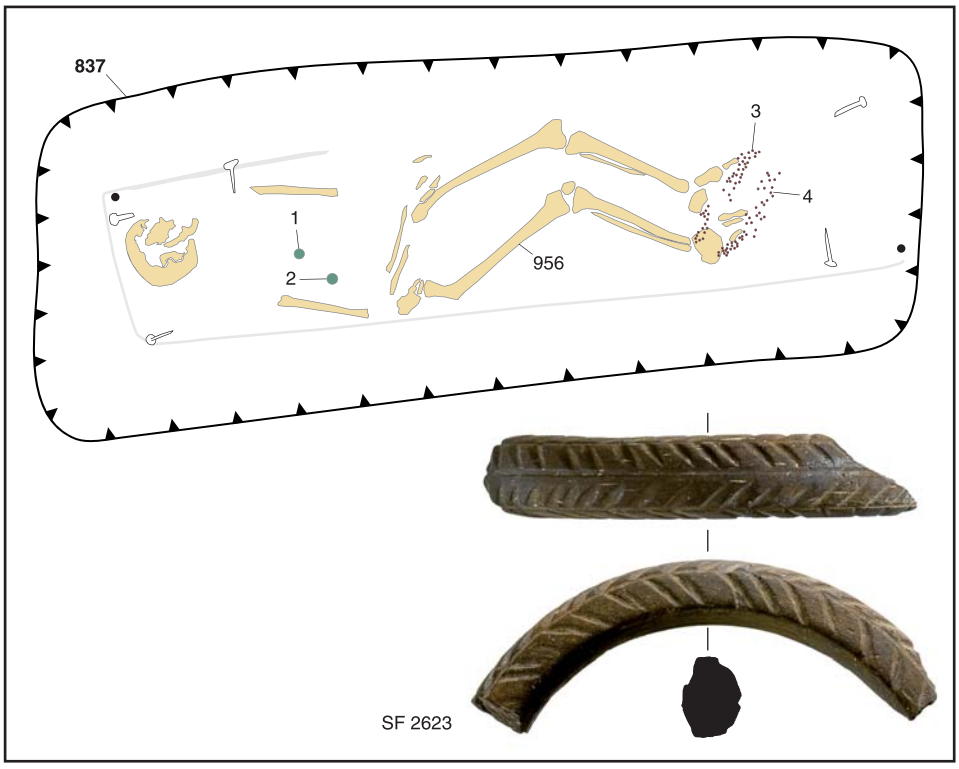


Fig. 3.134 Inhumation Grave 1010

Grave goods:
1 **Coin**. Nummus of Constantius II, Fel Temp Reparatio (falling horseman 4?). ?AD 352-354. SF 2538
2 **Coin**. Antoninianus, barbarous, reverse uncertain. *c* AD 260-295. SF 2539
3 **Hobnailed shoe**. Represented by a minimum of 64 hobnails, worn on the left foot. SF 2540
4 **Hobnailed shoe**. Represented by a minimum of 68 hobnails, worn on the right foot. SF 2541

Other finds: Shale bracelet fragment. 'D'-sectioned. Inner face has central ridge and small transverse nicks, probably from lathe-turning. Outer field has three grooves dividing it into four fields, each has horizontal grooves arranged so that the fields form a herringbone pattern. Diameter *c* 70 mm, approximately 35% extant, diameter 11 x 8 mm. (838) SF 2623
A minimum of 20 hobnails were recovered from soil sample <787>, taken from around the feet
Nineteen sherds (242 g) of pottery, fabrics TF, TR, YM, ZF, ZM and SG, jar rims in YM and SG (838)
Date: Coin dated AD 352-4

Comments: Grave 1110 was dug directly into the backfill of this grave, apparently as a secondary burial

Inhumation Grave 1015 (7918/0315, Fig. 3.135)

Grave cut 962
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.40 x 0.95 m, 1.20 m deep
Fill: Friable mottled brown and orange clay silt and chalk rubble (964)
Relationships: Cut hedgeline 460. Relationship with Grave 875 uncertain as the features only intersected slightly

Skeleton 963
Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed with the hand resting on the central part of the pelvis; right arm tightly flexed with the hand on the central part of the chest
Sex: ?Female
Age: Adult
Fragmentation: Fair
Condition: Skull 2, arms 3, hands 9, torso 9, legs 2, feet 3
Pathology: Cribra orbitalia. Caries (x3), calculus

Additional human remains: Fragments of a child (964)

Coffin: Represented by an assemblage of 18 nails. L: 1.83-1.92 m. B: 0.39-0.42 m. Ht: 0.22 m. (1980)

Grave goods:
1 **Loom weight**. Chalk. Slightly irregular disc with cylindrical perforation. surfaces irregular. Diameter 60 x 57 mm, thickness 23 mm, perforation diameter 17 mm. Weight 71 g. (964) SF 2690
2 **Hobnailed shoe**. Represented by a minimum of 20 hobnails (including a minimum of one from soil sample <872>), associated with the left foot. SF 2705
3 **Hobnailed shoe**. Represented by a minimum of 33 hobnails (including a minimum of three from soil sample <873>), associated with the right foot. SF 2706
4 **Hobnailed shoe(s)**. Represented by a minimum of 43 hobnails, located inside the coffin beside the right leg. SF 2704

Other finds: A single loose hobnail (SF 2581)was recovered from the backfill
Fifteen sherds (276 g) of pottery, fabrics TF, ZG and SG,the latter including a large sherd from a dish, with internal burnished scribble decoration

Date: Fabric SG dish in backfill may date after *c* AD 350

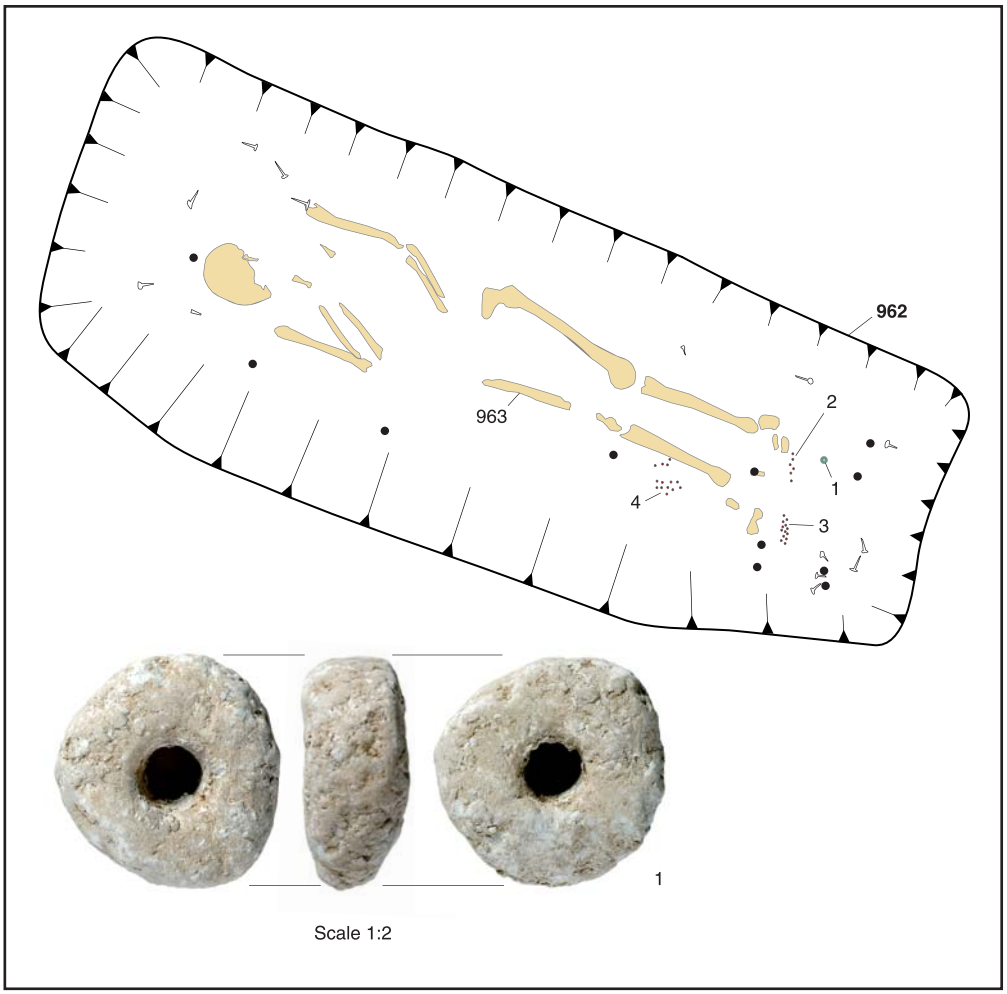


Fig. 3.135 Inhumation Grave 1015

Inhumation Grave 1020 (7895/0323, Fig. 3.136)

Grave cut 966
Orientation: W-E
Shape: Sub-rectangular with an irregular east end
Dimensions: 2.30 x 0.70 m, 1.00 m deep
Fill: Compact light brown silt with 40% chalk pieces (968)
Relationships: Cut Grave 1005

Skeleton 967
Posture: Supine, legs extended and close together
Arm position: Left arm extended beside body with the hand on the head of the left femur; right arm tightly flexed with the hand on the left side of the chest
Sex: Female
Age: 36-45. Mature adult
Height: 163
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Spinal Schmorl's nodes. 5th sacral vertebra healed with active infection fracture. Calculus, periodontal disease, caries (x3). Sinusitis

Additional human remains: Fragments of a second adult (968)

Coffin: Represented by an assemblage of 20 nails defining the corners and a coffin stain defining the outline. L: 1.75-1.77 m. B: 0.46-0.50 m. Ht: 0.43 m. (1004)

Grave goods:
1 **Coin**. Nummus of Valens, Securitas Reipublicae. AD 364-378. Located in the mouth of skeleton 967. SF 2688

Other finds: Five sherds (59 g) pottery, fabrics TR and WCA

Date: Coin dated AD 364-378

Inhumation Grave 1025 (7889/0331, Fig. 3.137)

Grave cut 969
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.15 x 0.70 m, 0.50 m deep
Fill: Friable light greyish brown chalky loam and chalk rubble (972)

Skeleton 971
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body with the hand resting on the head of the left femur; right arm semi-flexed with the hand on the central part of the pelvis
Sex: Male

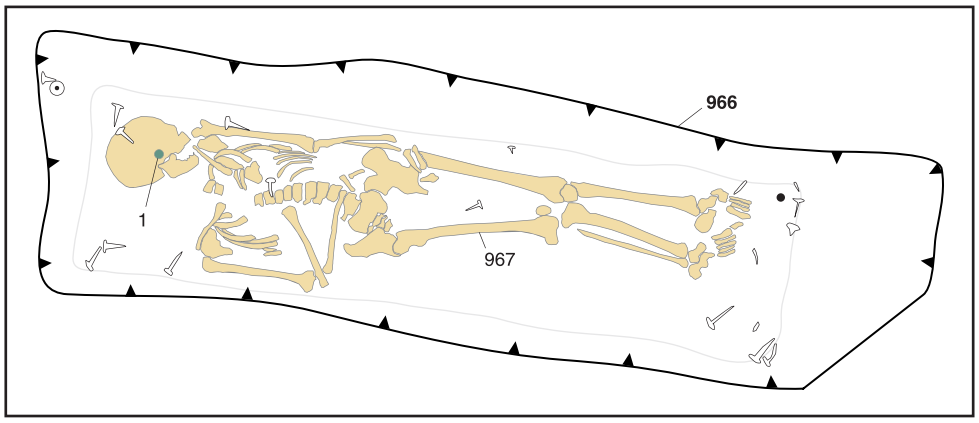


Fig. 3.136 Inhumation Grave 1020

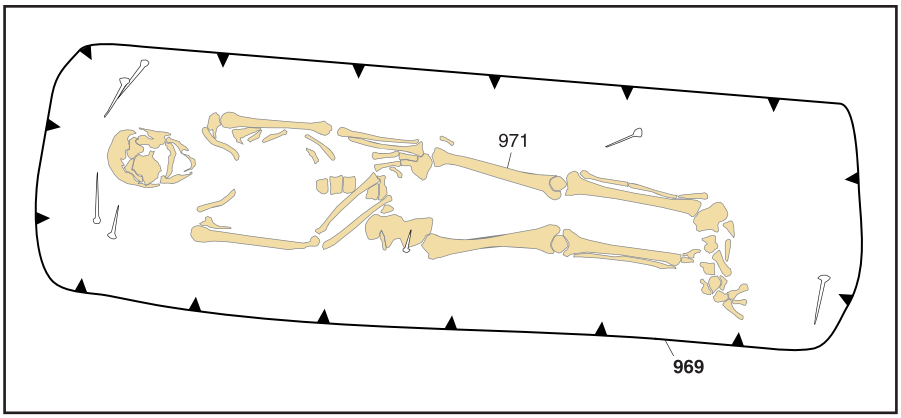


Fig. 3.137 Inhumation Grave 1025

Age: 26-35. Prime adult
Fragmentation: Fair
Condition: Skull 2, arms 2, hands 1, torso 2, legs 2, feet 1
Pathology: L5 intervertebral disc disease. AMTL

Coffin: Represented by an assemblage of 7 nails defining the corners. L: 2.05 m. B: 0.35 m. (1981)

Inhumation Grave 1030 (7906/0314, Fig. 3.138)

Grave cut 959
Orientation: W-E

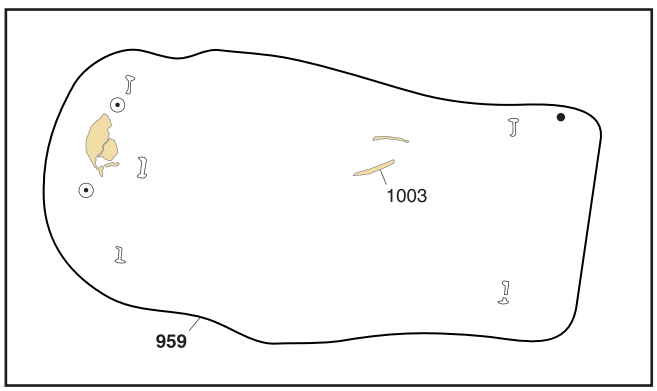


Fig. 3.138 Inhumation Grave 1030

Shape: Sub-rectangular with rounded western end
Dimensions: 1.52 x 0.75 m, 0.53 m deep
Fill: Light brown silt with chalk pieces (961)

Skeleton 1003
Posture: Posture could not be established due to poor preservation, although it appeared to be extended
Age: Child
Fragmentation: Fair
Condition: Skull 3, arms 9, hands 9, torso 9, legs 5, feet 9

Coffin: Represented by an assemblage of 8 nails defining the corners. L: 1.11 m. B: 0.23 m. (1982)
Other finds: One sherd (8 g) of pottery, fabric ZF (same as a vessel in Grave 1295) (961)

Inhumation Grave 1035 (7895/0330, Fig. 3.139)

Grave cut 839
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.50 x 0.94 m, 0.44 m deep
Fill: Loose mid brown silty sand with chalk pieces (841)

Skeleton 917
Posture: Supine, legs extended and parallel
Arm position: Both arms extended beside body. The radius and ulna of the left arm had been displaced, and the right arm was angled slightly away from the torso, resting against the side
Sex: Female

Age: 26-35. Prime adult
Height: 157.8
Fragmentation: Fair
Condition: Skull 1, arms 2, hands 1, torso 1, legs 1, feet 1
Pathology: Cribra orbitalia. Spinal Schmorl's nodes. Sacralisation. AMTL, DEH, periodontal disease, lesion, caries (x7). Calculus

Additional human remains: Fragments of a second adult (841)

Coffin: Represented by an assemblage of 18 nails. L: 1.86-1.93 m. B: 0.55-0.57 m. (1983)

Grave goods:
1 **Hobnailed shoes**. Represented by a minimum of 60 hobnails (including a minimum of one from soil sample <798>), located around the feet. SF 2587, 2588

Other finds: A minimum of eight hobnails were recovered from soil sample <799>, taken from around the head, and a single boot plate was recovered from the backfill

Inhumation Grave 1040 (7908/0308, not illustrated)

Grave cut 1019
Orientation: WSW-ENE?
Shape: Sub-rectangular?
Dimensions: Length uncertain. 0.65 m wide, 0.30 m deep
Fill: Mid brownish yellow silty clay with frequent chalk pieces (1021)
Relationships: Cut by Grave 785

Coffin: None

Comments: The grave was mostly destroyed by Grave 785, leaving only the western end intact. No skeletal remains or evidence for a coffin survived

Inhumation Grave 1045 (7902/0327, Fig. 3.140)

Grave cut 978
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >1.66 x 0.72 m, 0.17 m deep
Fill: Mixed chalk rubble and silty clay (979)
Relationships: Cut by Grave 985

Skeleton 981
Posture: Supine, legs extended with feet together
Arm position: Uncertain
Sex: Male
Age: 45+. Older adult
Height: 170.8
Fragmentation: Poor
Condition: Skull 9, arms 2, hands 2, torso 3, legs 2, feet 4
Pathology: Lumbar vertebrae osteophytosis

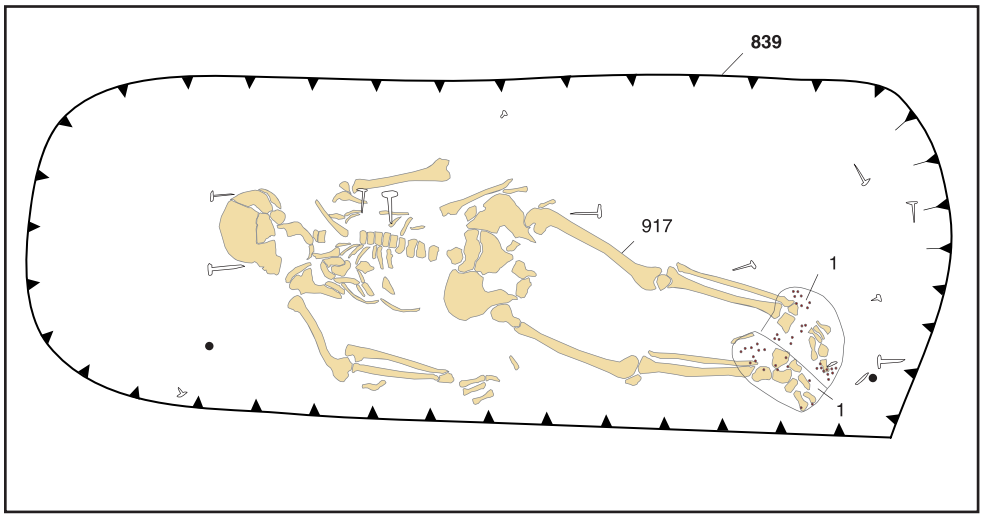


Fig. 3.139 Inhumation Grave 1035

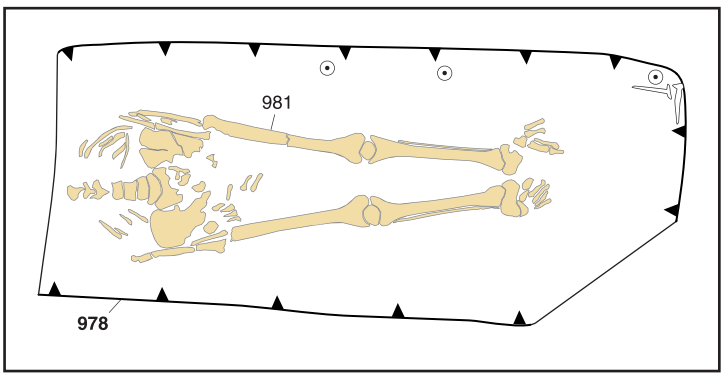


Fig. 3.140 Inhumation Grave 1045

Additional human remains: Fragments of a second adult (979)

Coffin: Represented by an assemblage of 5 nails defining the north-eastern corner and part of the northern side. (1984)

Comments: The western half of the grave had been destroyed by Grave 985, removing the upper part of skeleton 981. The grave had also been truncated by the construction of a modern pond and survived to a depth of only 0.17 m

Inhumation Grave 1050 (7919/0317, Fig. 3.141)

Grave cut 984
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.23 x 0.93 m, 0.95 m deep
Fill: Chalk rubble with mid brown silty clay matrix (987)

Skeleton 986
Posture: Supine, legs extended and parallel
Arm position: Both arms flexed, lying across the stomach
Sex: ?Male
Age: Adult
Fragmentation: Fair
Condition: Skull 3, arms 4, hands 9, torso 9, legs 3, feet 3
Pathology: Hyperostosis frontalis interna

Coffin: Represented by an assemblage of 16 nails and a coffin stain defining an outline. L: 1.95 m. B: 0.44-0.53 m. Ht: 0.21 m. (988)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 73 hobnails, associated with left foot. SF 2780
2 **Hobnailed shoe**. Represented by a minimum of 130 hobnails, associated with the right foot. SF 2779

Other finds: A minimum of two hobnails were recovered from soil sample <879>, taken from around the feet

Inhumation Grave 1070 (7902/0322 (see Fig. 3.1 inset), Fig. 3.142)

Grave cut 1024
Orientation: S-N
Shape: Sub-rectangular? The southern end is rather rounded
Dimensions: 0.50 m wide, 0.58 m deep
Fill: Loose mid brown silty sand with 20% chalk pieces (1027)
Relationships: Cut pit 794. Cut by Graves 655, 1010 and 1110. Relationship with Grave 970 uncertain as it had been dug away by the later graves

Skeleton 1026
Posture: Prone
Arm position: Left arm flexed to the left of the skull; right arm did not survive
Age: Child
Fragmentation: Fair
Condition: Skull 0, arms 1, hands 0, torso 1, legs 9, feet 9
Pathology: Cribra orbitalia. Scaphocephaly. Sinusitis

Coffin: None

Grave goods:
1 **Copper alloy bracelet**; complete. Three strand cable bracelet with right-hand twist. At one end, one strand forms closed downward facing eye, one strand tucks into side and third forms a cuff of one turn, other end has one strand forming a sideway hook with other two strands forming a cuff of one turn. Diameter 50 x 47 mm, section 2 mm. (1027) SF 2729
2 **Shale bracelet**; complete. Annular 'D'-sectioned. Inner face has central groove and small transverse nicks, probably from lathe-turning. Outer field has three grooves dividing it into four fields, each has horizontal grooves arranged so that the fields form a herringbone pattern. Diameter 73 mm, section 12.5 x 9 mm. (1027) SF 2728
3 **Silver finger ring** (XRF – Ag>Cu>Sn>Zn>Pb), complete but lacking setting. Octagonal box setting; scalloped shoulders; D-shaped hoop expanding to

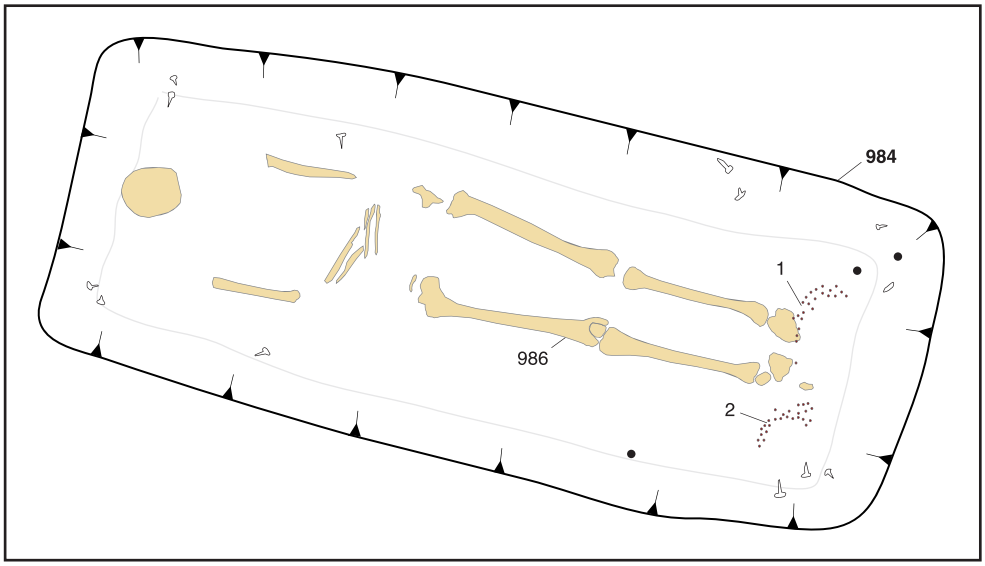


Fig. 3.141 Inhumation Grave 1050

shoulders. Diameter 23 x 22 mm, box bezel 12 x 11 mm, hoop section 1.5 mm. (1027) SF 2730

Date: The bracelets are likely to be of the 4th century but are not closely datable

Comments: Only the southern, head end of the grave had survived destruction by later burials

Inhumation Grave 1075 (7919/0305, Fig. 3.143)

Grave cut 1028
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.40 x 0.90 m, 1.60 m deep
Fill: Mixed chalk rubble and former topsoil (1029)
Relationships: Cut hedgerow 460. Relationship with Grave 980 uncertain as the features only intersected slightly

Skeleton 1032
Posture: Supine. Legs extended and parallel
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Poor
Condition: Skull 5+, arms 9, hands 9, torso 9, legs 5+,

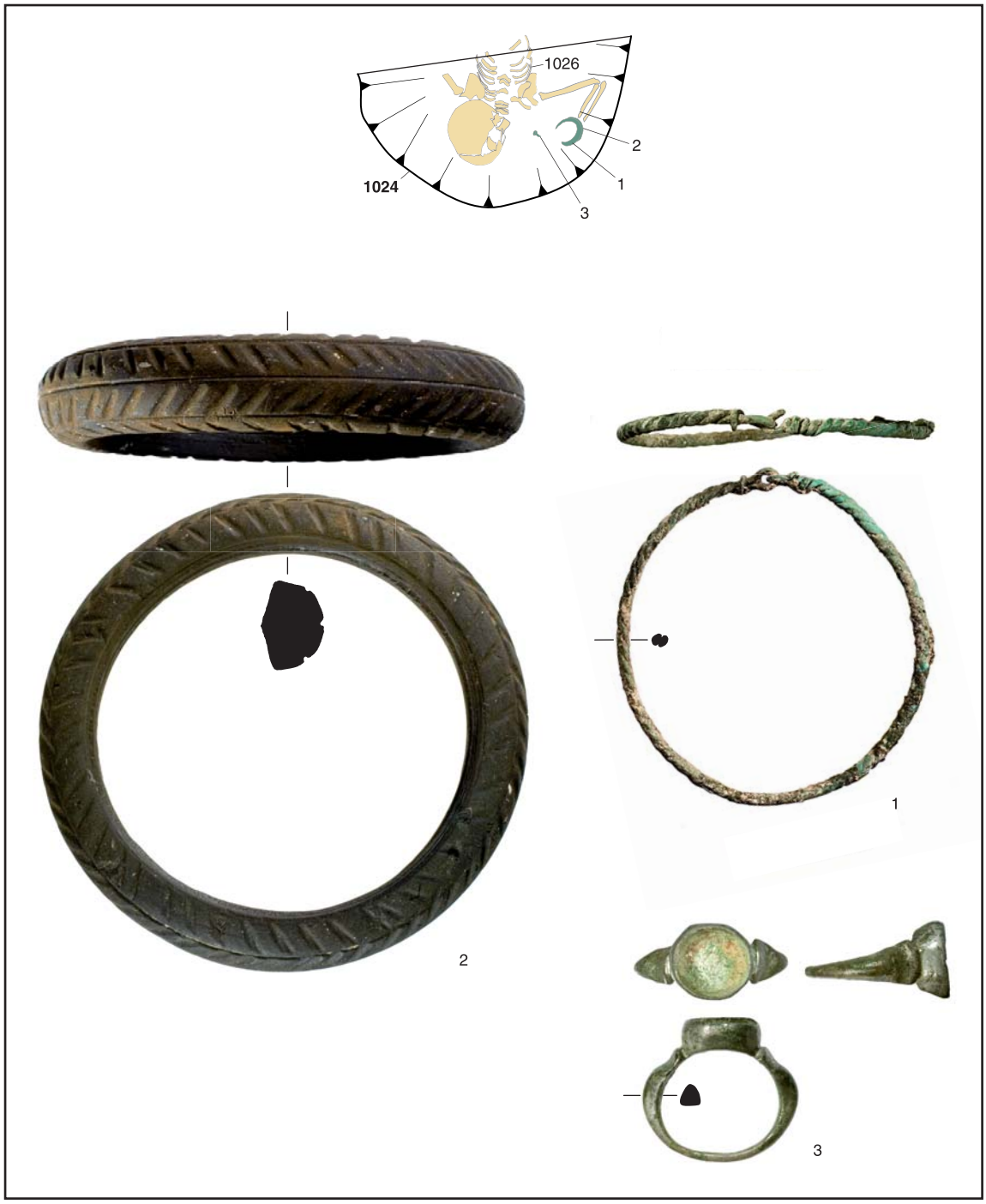


Fig. 3.142 Inhumation Grave 1070

feet 5+
Pathology: DEH

Coffin: Represented by an assemblage of 12 nails defining the corners. L: 1.81-1.87 m. B: 0.38-0.40 m. Ht: 0.24 m. (1031)

Grave goods:

1 **Copper alloy crossbow brooch** (XRF – bulk analysis – tinned or high tinned gunmetal; front side Cu 55%, Pb 28%, Zn 14%, Sn 2%; pin – heavily leaded gunmetal), complete, repaired. Rectangular-sectioned

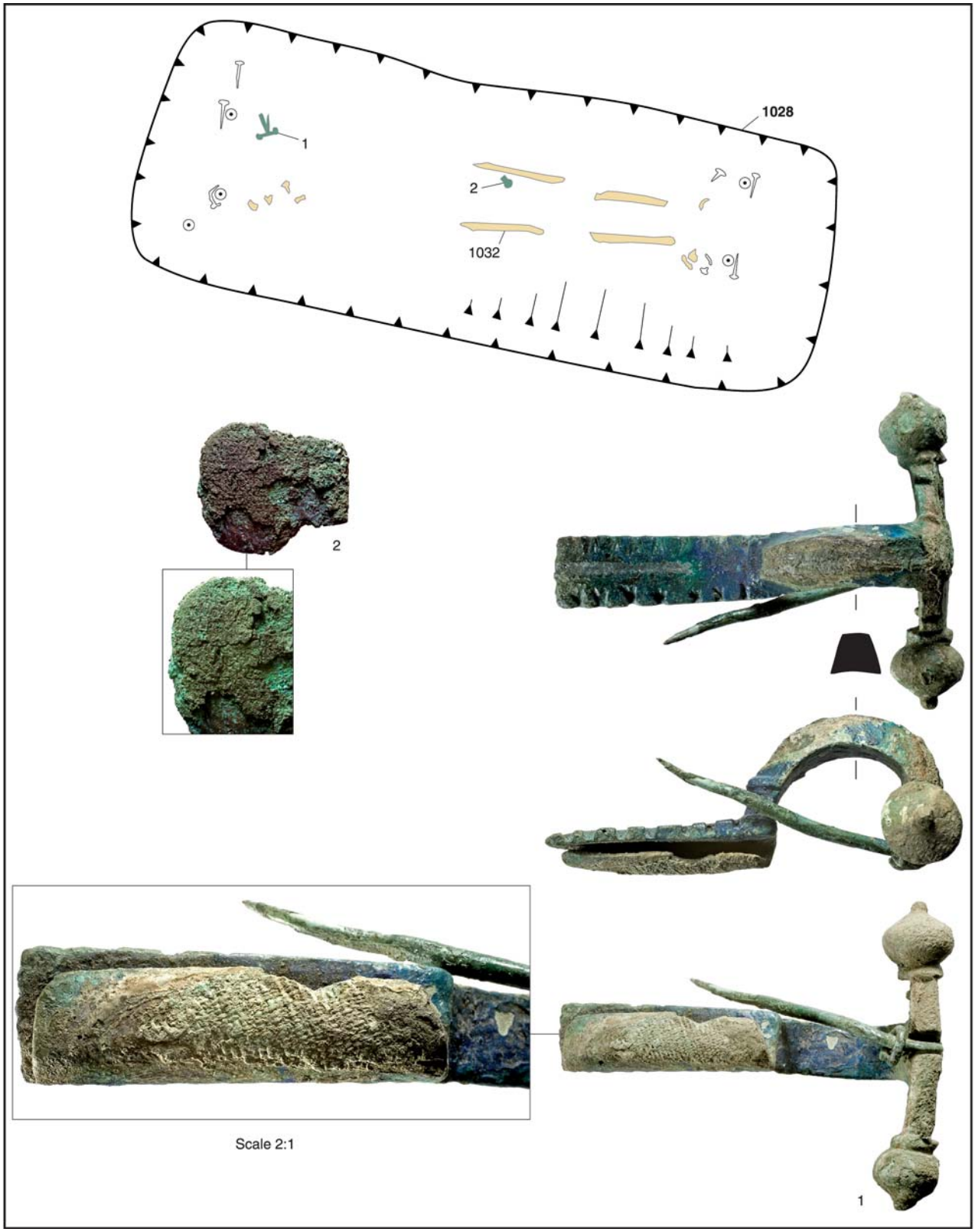


Fig. 3.143 Inhumation Grave 1075

crossbar with collar at either end; onion-shaped knobs, one projection broken showing it is hollow; top of bow has circular perforation for separate (missing) knob; front of crossbar expands to either side of bow with vertical rib at either edge. Trapezoidal-sectioned curved bow of approximately same width as, but slightly shorter than the foot; flat panel on front of bow has transverse ribs; collar at base of bow with constriction below before foot. Flat foot with notched grooves down each side producing triangular fields between; vertical channel down centre transversely ribbed; flange bent around to form catch plate. A circular perforation in the top of the back of the foot. Pin replaced by pointed wire bent around copper alloy bar within crossbar. Linen textile on back of catch plate, on back and over top of crossbar, and over top of perforation on top of bow: tabby repp, 13/Z x 26-28/Z per cm (PWR). Length 64 mm, width of crossbar and knobs 52 mm, section of knob 11 mm, section of bow 9 x 6 mm. Weight 45 g. (1029) SF 2744

2 **Copper alloy strap end** (XRF – leaded bronze with some zinc). Oval plate with rectangular split attachment plate, central rivet. Poorly preserved remains of textile on both faces: look different, but in fact probably the same: ?tabby repp *c* 12/Z x *c* 20/Z per cm; fibre not identified, but probably the same linen as on crossbow brooch (PWR). Where cleaned to reveal mineralisation one face seems coated with white metal coating. Width 23 mm, length 25 mm. (1029) SF 2743

Other finds: Two sherds (12 g) of pottery, fabrics TCA and SG

Date: The brooch is dated after *c* AD 330 and may be of the later 4th century

Inhumation Grave 1080 (7912/0330, Fig. 3.144)

Grave cut 1231

Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 1.80 x 0.56 m, 0.09 m deep
Fill: Loose mid-dark brown silt (1233)
Relationships: Cut ditch 1420. Relationship with Grave 1755 uncertain as the features only intersected slightly

Skeleton 1232

Posture: Supine, legs extended and close together
Arm position: Both arms semi-flexed, the wrists crossing over the central part of the pelvis
Sex: Male
Age: 45+. Older adult
Height: 169.7
Fragmentation: Good
Condition: Skull 2, arms 2, hands 1, torso 3, legs 1, feet 1
Pathology: Spondylolysis. Osteoarthritis left and right knee. Osteophytosis of left and right hip. Left tibia periostitis. Healed fracture right fibula. DEH, periodontal disease. Osteochondritis dissecans bilateral femora anterior surface.

Coffin: None

Grave goods:

1 **Coin**. Eroded Nummus. 4th century. Located in the mouth. SF 3350

2 **Hobnailed shoe(s)**. Represented by a minimum of 50 hobnails (including a minimum of five from soil sample <1075>) and three boot plates, located around the feet. SF 3351, 3365, 3366

Date: 4th-century coin

Inhumation Grave 1085 (7914/0320, not illustrated)

Grave cut 771

Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.64 x >0.42 m, 0.40 m deep
Fill: Loose mid-dark brown silt (772)
Relationships: Cut by Grave 715

Comments: The northern side of the grave had been destroyed by Grave 715. No skeletal material or evidence for a coffin was recovered

Inhumation Grave 1090 (7900/0316, Fig. 3.145)

Grave cut 877

Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.45 x 0.90 m, 0.90 m deep
Fill: Loose chalk rubble (878)
Relationships: Cut by Grave 850

Skeleton 879

Posture: Supine, legs extended and close together
Arm position: Both arms semi-flexed with the hands crossing over the central part of the pelvis
Sex: Female
Age: 26-35. Prime adult
Fragmentation: Fair

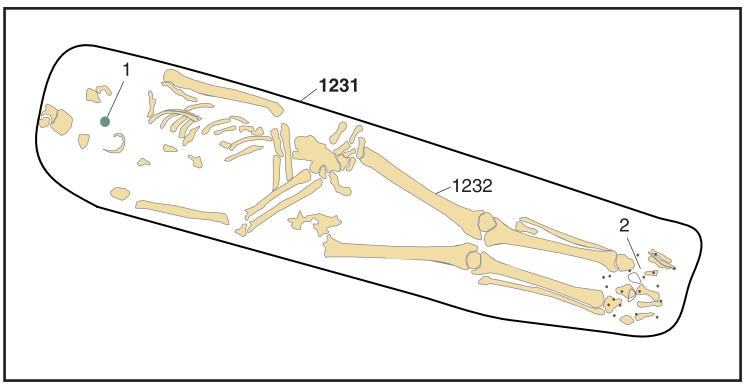


Fig. 3.144 Inhumation Grave 1080

Condition: Skull 3, arms 2, hands 2, torso 3, legs 2, feet 2
Pathology: Lumbar spine intervertebral disc disease. DEH, AMTL, caries (x3), calculus. Right calcaneus small area of eburnation, increased vascularity in both ankles

Coffin: Represented by an assemblage of 13 nails. L: 1.99-2.00 m. B: 0.35-0.40 m. Ht: 0.29 m. (883)

Comments: Grave 850 was dug entirely within the backfill of this grave, apparently to insert a secondary burial

Inhumation Grave 1095 (7898/0322, Fig. 3.146)

Grave cut 1047
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 2.00 x 0.95 m, 0.70 m deep
Fill: Compact orange brown silt with 30% chalk pieces (1049)
Relationships: Cut Grave 1100

Skeleton 1048
Posture: Supine, legs extended and parallel
Arm position: left arm semi-flexed; right arm did not survive
Sex: ?Male
Age: 45+. Older adult
Fragmentation: Destroyed
Condition: Skull 3, arms 2, hands 9, torso 4, legs 5, feet 9
Pathology: AMTL

Additional human remains: Fragments of a second adult and a neonate (1049)

Coffin: Represented by an assemblage of 8 nails defining the corners. L: 1.74-1.77 m. B: 0.25-0.47 m. (1985)

Other finds: One sherd (5 g) of pottery, fabric SG

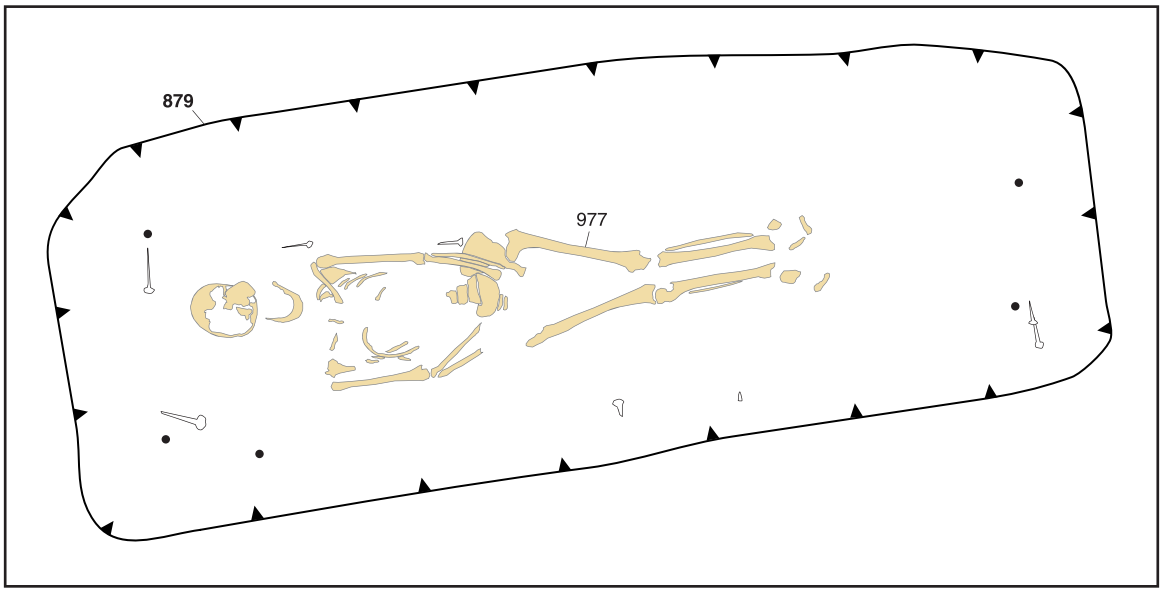


Fig. 3.145 Inhumation Grave 1090

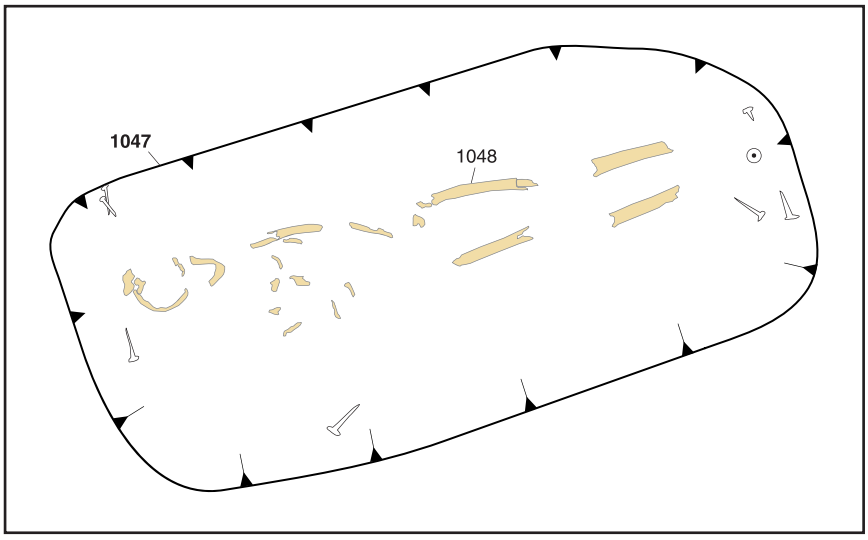


Fig. 3.146 Inhumation Grave 1095

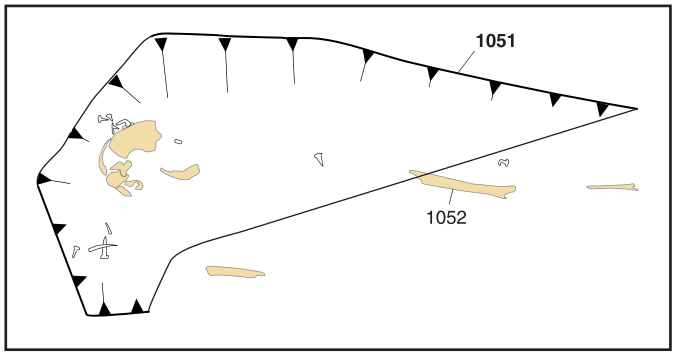


Fig. 3.147 Inhumation Grave 1100

Inhumation Grave 1100 (7897/0322, Fig. 3.147)

Grave cut 1051
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.00 x 0.70 m, 0.60 m deep
Fill: Loose chalk rubble (1053)
Relationships: Cut by Grave 1095

Skeleton 1052
Posture: Supine. Left leg extended, right leg did not survive
Arm position: The arms did not survive
Sex: ?Male
Age: 45+. Older adult
Fragmentation: Poor
Condition: Skull 2, arms 5, hands 9, torso 9, legs 5, feet 9
Pathology: AMTL

Coffin: Represented by an assemblage of 15 nails. (1986)

Comments: The southern side and eastern end of the grave had been destroyed by Grave 1095, resulting in the loss of some of the right side of skeleton 1052

Inhumation Grave 1105 (7899/0319, Fig. 3.148)

Grave cut 1042
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.00 x 0.90 m, 1.05 m deep
Fill: Loose chalk rubble (1043)

Skeleton 1046
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed with the hand over the central part of the pelvis
Sex: Male
Age: 36-45. Mature adult
Fragmentation: Good
Condition: Skull 1, arms 2, hands 1, torso 3, legs 2, feet 1
Pathology: Cribra orbitalia. Intervertebral disc disease L5 S1. Calculus

Coffin: Represented by an assemblage of 12 nails. A coffin stain representing the lid was recorded above the skeleton. L: 1.80-1.90 m. B: 0.50 m. (1044)

Inhumation Grave 1110 (7901/0322, not illustrated)

Grave cut 881
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >1.90 x 0.75 m, 0.68 m deep
Fill: Loose dark brown sand (882)
Relationships: Cut Graves 970, 1010 and 1070. Cut by pit 847 and Grave 790

Additional human remains: Fragments of an adult and a subadult (882)

Other finds: Eight sherds (115 g) of pottery, fabrics TF, TR, WC and SG (882)

Date: Grave 1010 contained a coin dated AD 352-4

Comments: No *in situ* skeletal material or evidence for a coffin was recorded. This grave was dug directly into the backfill of Grave 1010, apparently as a secondary burial in that grave, the backfill of which also contained disarticulated adult and subadult remains

Inhumation Grave 1120 (7918/0311, Fig. 3.149)

Grave cut 1078
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.30 x 0.70 m, 1.00 m deep

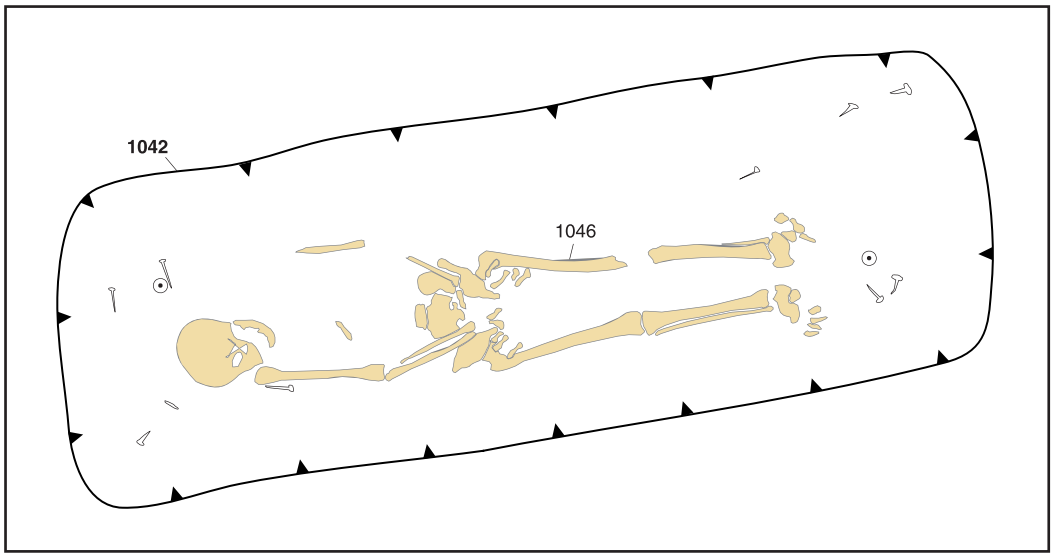


Fig. 3.148 Inhumation Grave 1105

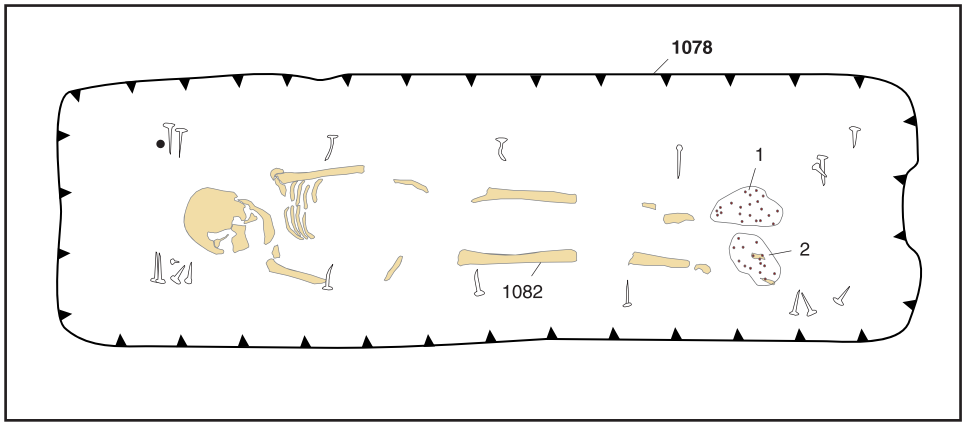


Fig. 3.149 Inhumation Grave 1120

Fill: Chalk rubble and former topsoil (1079)
Relationships: Cut hedgerow 460. Cut by Grave 1130

Skeleton 1082
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body; right arm semi-flexed
Sex: Female
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 2, arms 3, hands 9, torso 5+, legs 3, feet 4
Pathology: AMTL

Coffin: Represented by an assemblage of 20 nails. L: 1.75-1.78 m. B: 0.36-0.44 m. Ht: 0.15 m. (1081)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 48 hobnails, associated with left foot. SF 2848
2 **Hobnailed shoe**. Represented by a minimum of 41 hobnails, associated with right foot. SF 2847

Other finds: A minimum of 16 hobnails were recovered from soil sample <882>, taken from around the feet, and a single loose hobnail (SF 2846) was recovered from the backfill

Inhumation Grave 1125 (7904/0315, Fig. 3.150)

Grave cut 1033
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.10 x 0.60 m, 0.47 m deep
Fill: Compact mid greyish white silty clay and chalk (1036)
Relationships: Cut by Grave 1250

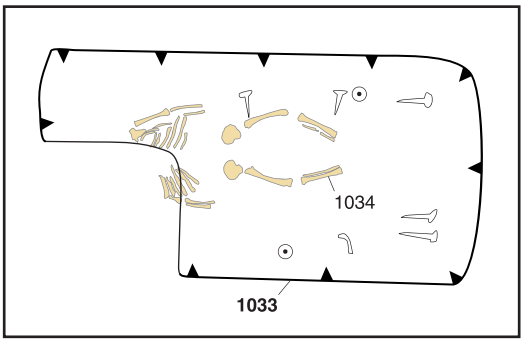


Fig. 3.150 Inhumation Grave 1125

Skeleton 1034
Posture: Supine, both legs bent
Arm position: Both arms extended beside body
Age: Infant
Fragmentation: Good
Condition: Skull 9, arms 0, hands 1, torso 1, legs 1, feet 1
Pathology: rickets

Coffin: Represented by an assemblage of 8 nails defining the eastern half. L: 0.95 m. B: 0.30 m. (1987)

Comments: The western half of the grave had been destroyed by Grave 1250, removing the skull

Inhumation Grave 1130 (7919/0311, not illustrated)

Grave cut 1096
Orientation: W-E
Shape: Sub-rectangular with rounded ends
Dimensions: 0.97 x 0.35 m, 0.30 m deep
Fill: Mixed chalk rubble and former topsoil (1097)
Relationships: Cut hedgerow 460 and Grave 1120

Skeleton 1098
Posture: Posture unknown due to poor preservation
Age: Infant
Fragmentation: Fair
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 9

Coffin: None

Other finds: One sherd (3 g) of pottery, fabric TR

Inhumation Grave 1135 (7901/0315, Fig. 3.151)

Grave cut 1088
Orientation: WSW-ENE
Shape: Rectangular
Dimensions: 2.05 x 0.63 m, 0.22 m deep
Fill: Loose silty chalk (1089)

Skeleton 1091
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed
Sex: Female
Age: 18-25. Young adult
Fragmentation: Fair
Condition: Skull 2, arms 4, hands 9, torso 9, legs 3, feet 2

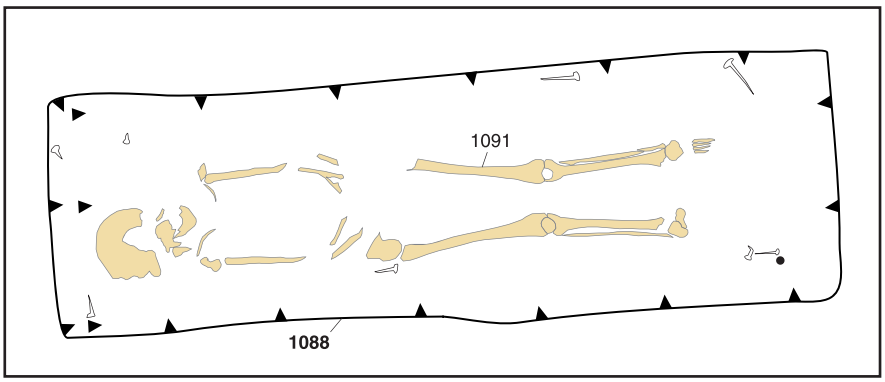


Fig. 3.151 Inhumation Grave 1135

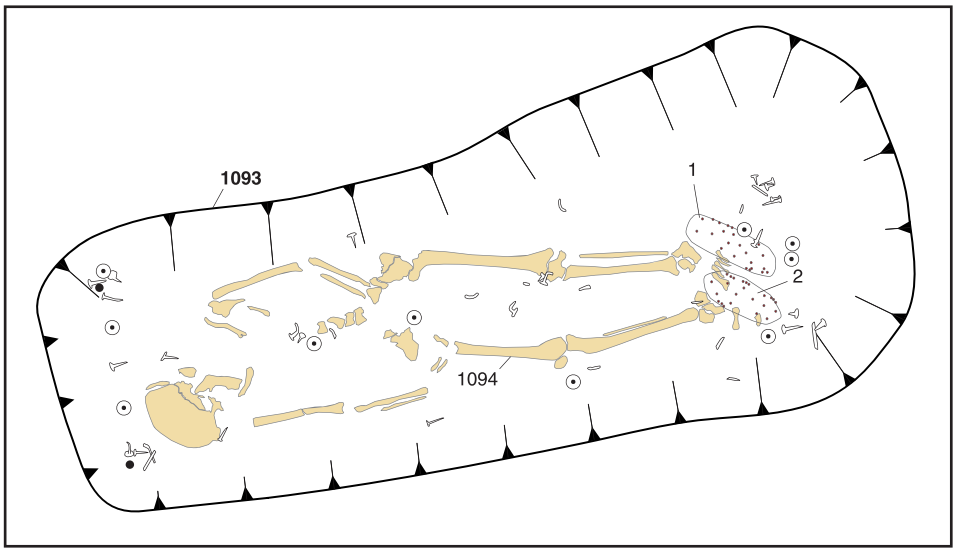


Fig. 3.152 Inhumation Grave 1140

Pathology: DEH, periodontal disease, AMTL, caries (x3)

Coffin: Represented by an assemblage of 9 nails. L: 1.77-1.87 m. B: 0.30-0.50 m. Ht: 0.16 m. (1988)

Inhumation Grave 1140 (7896/0320, Fig. 3.152)

Grave cut 1093
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.30 x 0.80 m, 0.50 m deep
Fill: Friable brown silt (1092)

Skeleton 1094
Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed with the hand resting on the central part of the pelvis; right arm extended beside body
Sex: Female
Age: Adult
Fragmentation: Fair
Condition: Skull 4, arms 5, hands 4, torso 4, legs 4, feet 1
Pathology: Cribra orbitalia. Hyperostosis frontalis interna. Caries (x2)

Coffin: Represented by an assemblage of 55 nails. L: 1.85-1.94 m. B: 0.45-0.52 m. Ht: 0.26 m. (1989)

Grave goods:

1 **Hobnailed shoe**. Represented by a minimum of 55 hobnails (including a minimum of six recovered from soil sample <918>) and five boot plates, worn on the left foot. SF 2955, 2981
2 **Hobnailed shoe**. Represented by a minimum of 42 hobnails (including a minimum of eight recovered from soil sample <917>) and five boot plates, worn on the right foot. SF 2954, 2980

Other finds: One sherd (4 g) of pottery, fabric ZG

Inhumation Grave 1145 (7910/0317, Fig. 3.153)

Grave cut 958
Orientation: WNW-ESE
Shape: Rectangular
Dimensions: 2.54 x 0.78 m, 1.20 m deep
Fill: Loose chalk rubble (1023)

Skeleton 1022
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body with the hand beneath the left side of the pelvis; right arm tightly flexed with the hand on the left side of the chest
Sex: Male
Age: 45+. Older adult
Height: 161.6
Fragmentation: Good

Condition: Skull 0, arms 2, hands 1, torso 1, legs 0, feet 0
Pathology: Spinal Schmorl's nodes. Left and right tibia periostitis. Right scapula os acromiale. Lesions (x2), periodontal disease, caries (x2). Sinusitis

Coffin: Represented by an assemblage of 12 nails. L: 1.80-1.86 m. B: 0.33-0.51 m. (1990)

Inhumation Grave 1150 (7924/0327, Fig. 3.154)

Grave cut 1011
Orientation: NW-SE
Shape: Sub-rectangular
Dimensions: 2.30 x 1.00 m, 1.50 m deep
Fill: Friable chalk rubble with 25% chalky loam (1013)

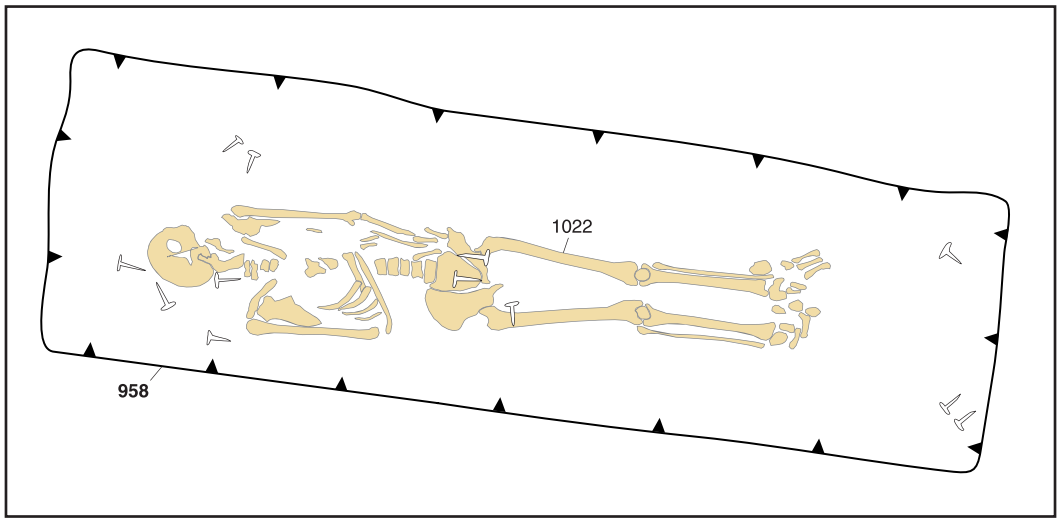


Fig. 3.153 Inhumation Grave 1145

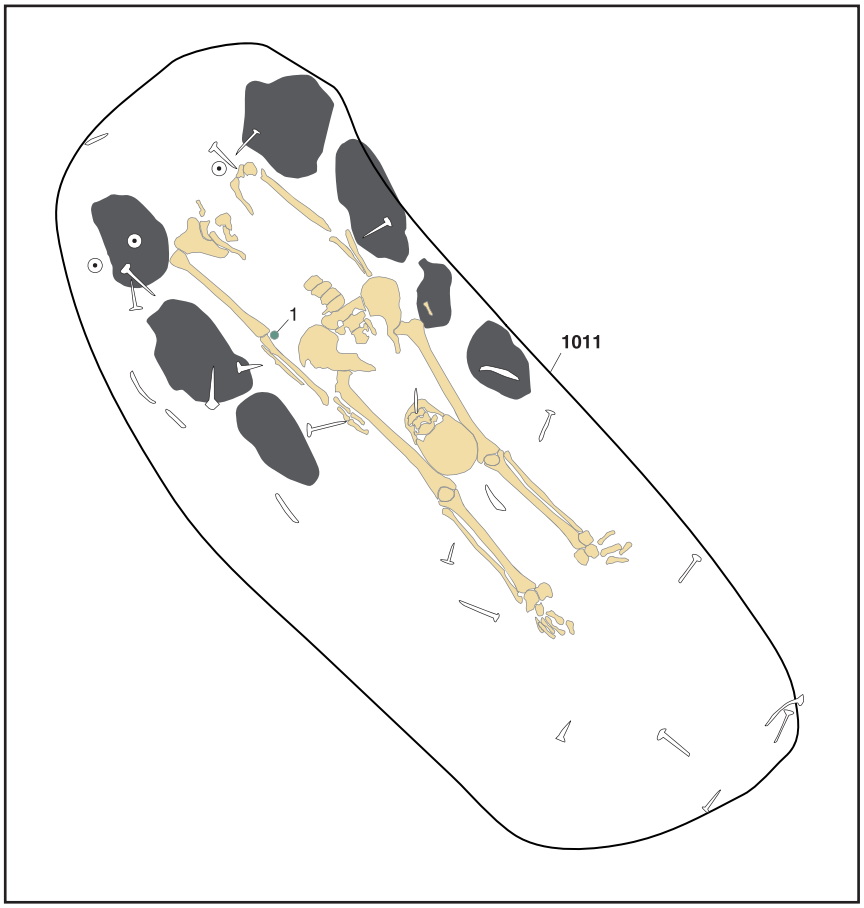


Fig. 3.154 Inhumation Grave 1150

Skeleton 1084
Posture: Supine, legs extended and parallel. The head had been cut off and placed on the knees, face-down
Arm position: Both arms extended beside body
Sex: Female
Age: 26-35. Prime adult
Fragmentation: Good
Condition: Skull 1, arms 3, hands 2, torso 3, legs 2, feet 1
Pathology: Right parietal depressed cranial fracture. Knees osteophytic growth. AMTL, Calculus, periodontal disease, lesion, caries (X3), rotation upper and lower incisors. Cut marks on cervical vertebrae

Additional human remains: Fragments of an adult (1013)

Coffin: Represented by an assemblage of 24 nails. L: 1.88-1.94 m. B: 0.40-0.47 m. Ht: 0.43 m. (1991)

Grave goods:
1 **Coin**. Irregular nummus, Fel Temp Reparatio (falling horseman). AD 350-364. Located in the chest region. SF 2892

Other finds: One sherd (3 g) of pottery, fabric TF (1013)

Date: Coin dated AD 350-364

Comments: Flint packing stones had been placed along both sides of the north-western half of the coffin

Inhumation Grave 1155 (7917/0318, Fig. 3.155)

Grave cut 1102
Orientation: WNW-ESE
Shape: Sub-rectagular
Dimensions: 2.50 x 0.90 m, 1.25 m deep
Fill: Friable mid orange brown clay silt with 50% chalk pieces (1104)
Relationships: Cut Grave 1225 and hedgerow 460

Skeleton 1103
Posture: Supine, legs extended with feet together
Arm position: Left arm semi-flexed with the hand resting on the central part of the pelvis; right arm flexed, lying across the stomach
Sex: Female
Age: 45+. Older adult
Height: 150.6
Fragmentation: Good
Condition: Skull 2, arms 2, hands 1, torso 1, legs 2, feet 1
Pathology: left rib healed fracture. Calculus, periodontal disease, caries. sinusitis

Coffin: Represented by an assemblage of 16 nails. L: 1.78-1.81 m. B: 0.32-0.38 m. Ht: 0.20 m. (1992)

Date: Grave 1225 contains pottery vessels dated AD 270-350 and 270-400

Inhumation Grave 1165 (7913/0317, not illustrated)

Grave cut 1108
Orientation: NW-SE
Shape: Sub-rectangular
Dimensions: >0.80 x 0.43 m, 0.14 m deep
Fill: Friable mid brownish grey chalky sand (1111)

Skeleton 1109
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Age: Infant
Fragmentation: Good
Condition: Skull 9, arms 9, hands 9, torso 9, legs 2, feet 9

Coffin: None

Comments: The north-western half of the grave had been destroyed by the foundations of the School House, leaving only the legs of skeleton 1109 intact

Inhumation Grave 1170 (7889/0329, Fig. 3.156)

Grave cut 1112
Orientation: W-E
Shape: Sub-rectangular

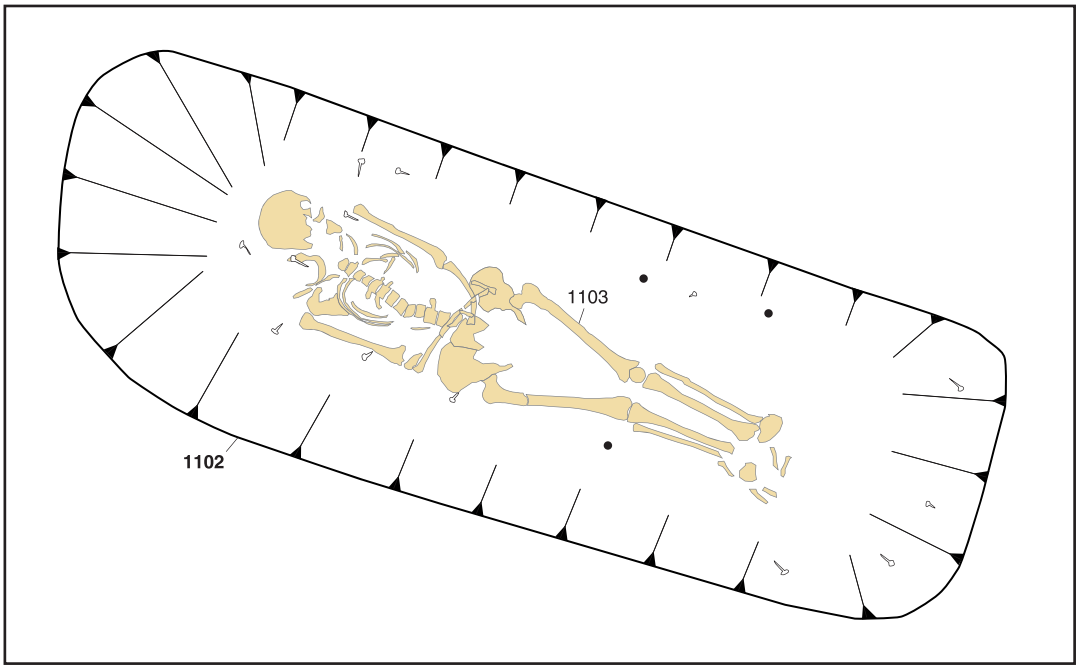


Fig. 3.155 Inhumation Grave 1155

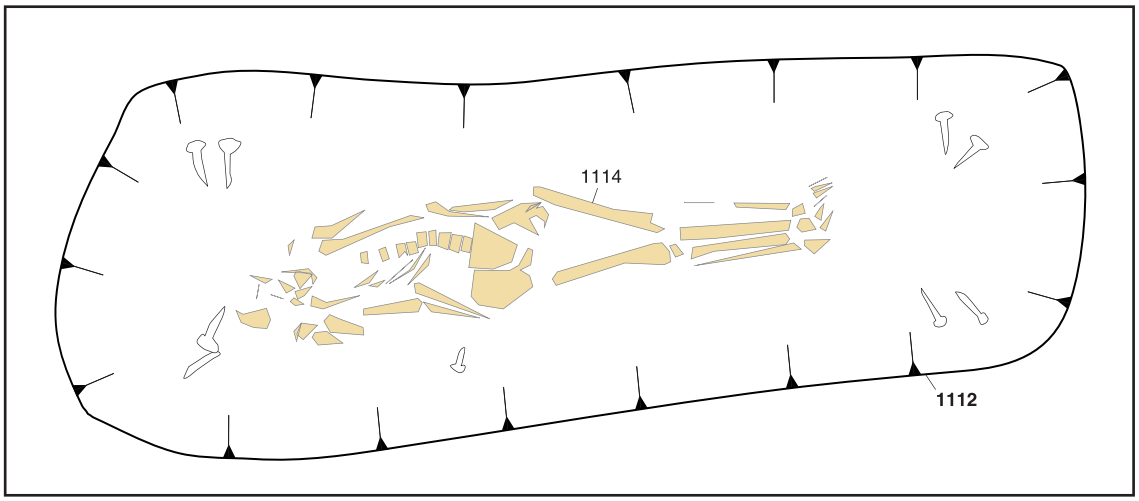


Fig. 3.156 Inhumation Grave 1170

Dimensions: 2.45 x 0.90 m, 0.54 m deep
Fill: Loose chalk, silt and flint (1113)
Relationships: Cut Grave 1185

Skeleton 1114
Posture: Supine, legs extended and close together
Arm position: Both arms extended beside body
Sex: Female
Age: 26-35. Prime adult
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Spinal Schmorl's nodes. Lytic lesion on right humerus. Calculus, periodontal disease. Bilateral cribra femora.

Additional human remains: Fragments of an adult (1113)

Coffin: Represented by an assemblage of 8 nails. L: 1.81-1.99 m. B: 0.32-0.45 m. Ht: 0.15 m. (1993)

Other finds: Twenty-nine sherds (461 g) of pottery, fabrics TR (1 beaker rim), ZM, ZMA and SG, mostly SG, including the rim of a 'cooking pot type' jar (1113)

Inhumation Grave 1175 (7921/0309, Fig. 3.157)

Grave cut 1116
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.30 x 0.80 m, 1.20 m deep
Fill: Mixed chalk rubble and former topsoil (1117)
Relationships: Cut pit 1671 and ditch 450

Skeleton 1119
Posture: Supine, legs extended and crossed at the ankles
Arm position: Left arm tightly flexed with the hand on he right side of the chest; right arm semi-flexed with the hand resting on the central part of the pelvis
Sex: Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 0, arms 3, hands 2, torso 1, legs 0, feet 0
Pathology: Osteophytosis spine, Schmorl's nodes and osteoarthritis cervical. Right and left hip osteoarthritis. AMTL, DEH, periodontal disease, calculus, caries

Coffin: Represented by an assemblage of 8 nails defining the corners. L: 1.92-1.98 . B: 0.42-0.46 m. Ht: 0.23 m. (1118)

Grave goods:
1 **Copper alloy belt buckle and plate** (leaded brass with some tin). Flat D-sectioned buckle frame with outward facing horse's heads. Rectangular buckle plate bent around crossbar with cut out for rectangular-sectioned pin bent around crossbar. Frame has diagonal rows of small pellets dividing horse's heads from rest of frame, manes shown by row punched dots, eyes shown by punched ring and dot, grooved mouth; punched transverse lines (confronted triangles) across rest of front of the frame. Plate has groove parallel to each long edge, row of similar punched triangle lines down each edge and across end; centrally two motifs consisting of 2 concentric grooves with transverse fine grooving between, three small ring and dots centrally; centrally a running scroll between them formed by punched ring and dot with diagonal grooves between. Plate fastened by conical headed rivet centrally at end. Texture in corrosion on back of belt plate suggests textile (PWR). Preserved organic centrally in plate (not investigated). Total length 75 mm, buckle frame – width 21 mm, length 19 mm; plate – width 14 mm, length 60 mm, gap between plates 2 mm. (1117) SF 2968
2 **Iron knife**. Square-sectioned tang set centrally to blade; stepped expansion before blade then additionally stepped shoulder and choil. Slightly convex-curved edge curving up to tip now missing through corrosion; back has weak reversed S-shaped curve. Top of shank retains pointed oval finial plate. The choil retains a curved outline possibly from a rivet used to fasten the handle. Present length *c* 215 mm, present length of blade 123 mm, maximum blade width 35 mm, finial plate 32 x 14 mm. (1117) SF 2969
3 **Coin**. Nummus of Theodosius I, victory (uncertain type). AD 388-395. Located beside the neck vertebrae but originally placed in the mouth, as some of the teeth and the adjacent part of the left side of the maxilla had been stained green. SF 2967

Other finds: Four sherds (16 g) of pottery, fabrics TF, ZM and SG (1117)

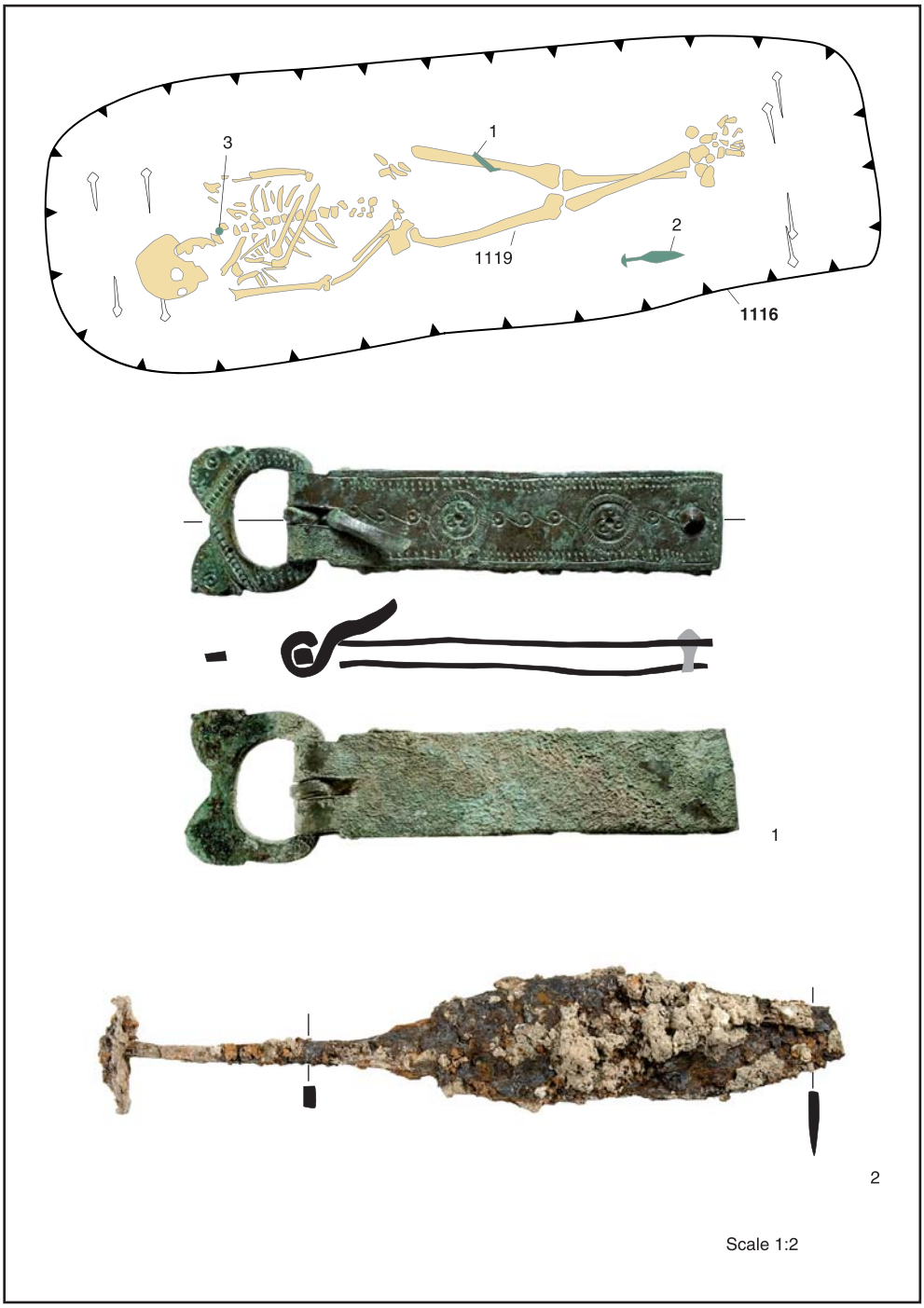


Fig. 3.157 Inhumation Grave 1175

Date: Coin dated AD 388-395. Calibrated radiocarbon date (2σ) AD 237-400

Inhumation Grave 1185 (7891/0329, Fig. 3.158)

Grave cut 1129
Orientation: W-E
Shape:
Dimensions: x 0.62 m, 0.87 m deep
Fill: Loose chalk rubble (1131)
Relationships: Cut by Graves 1170 and 1230

Skeleton 1132
Posture: Supine, legs extended and close together
Arm position: Position of arms uncertain due to truncation
Sex: Undetermined
Age: Adult
Fragmentation: Good
Condition: Skull 9, arms 5, hands 9, torso 9, legs 3, feet 9

Coffin: Represented by an assemblage of 6 nails. L: 1.56-1.65 m. B: 0.44 m. (1994)

Other finds: One sherd (10 g) of pottery, fabric SG (1131)

Comments: The western end of the grave had been destroyed by Grave 1170 and the eastern end by

Grave 1230, removing the upper part of the skeleton and the lower parts of the legs

Inhumation Grave 1190 (7923/0325, not illustrated)

Grave cut 669
Orientation: NW-SE
Shape: Sub-rectangular with rounded ends
Dimensions: 2.40 x 0.60 m, 0.80 m deep
Fill: Friable chalky silt with chalk lumps (671)
Relationships: Cut Grave 1260

Skeleton 1134
Posture: Supine, legs extended and close together
Arm position: Both arms semi-flexed with the hands on the central part of the pelvis
Sex: Female
Age: 36-45. Mature adult
Height: 155.3
Fragmentation: Good
Condition: Skull 2, arms 1, hands 1, torso 0, legs 0, feet 0
Pathology: Possible porotic hyperostosis. Caries, periodontal disease

Coffin: None
Other finds: Thirty-seven sherds (220 g) of pottery, fabrics ZC, ZF and ZM (671)

Inhumation Grave 1200 (7904/0317, Fig. 3.159)

Grave cut 1128
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.70 x 0.80 m, 1.20 m deep

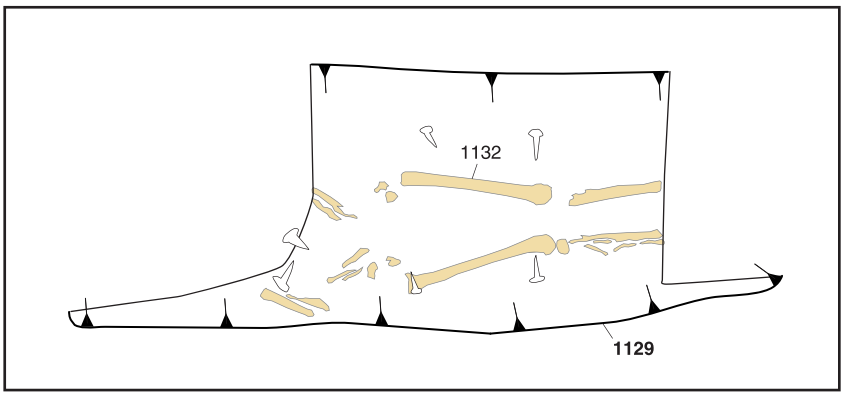


Fig. 3.158 Inhumation Grave 1185

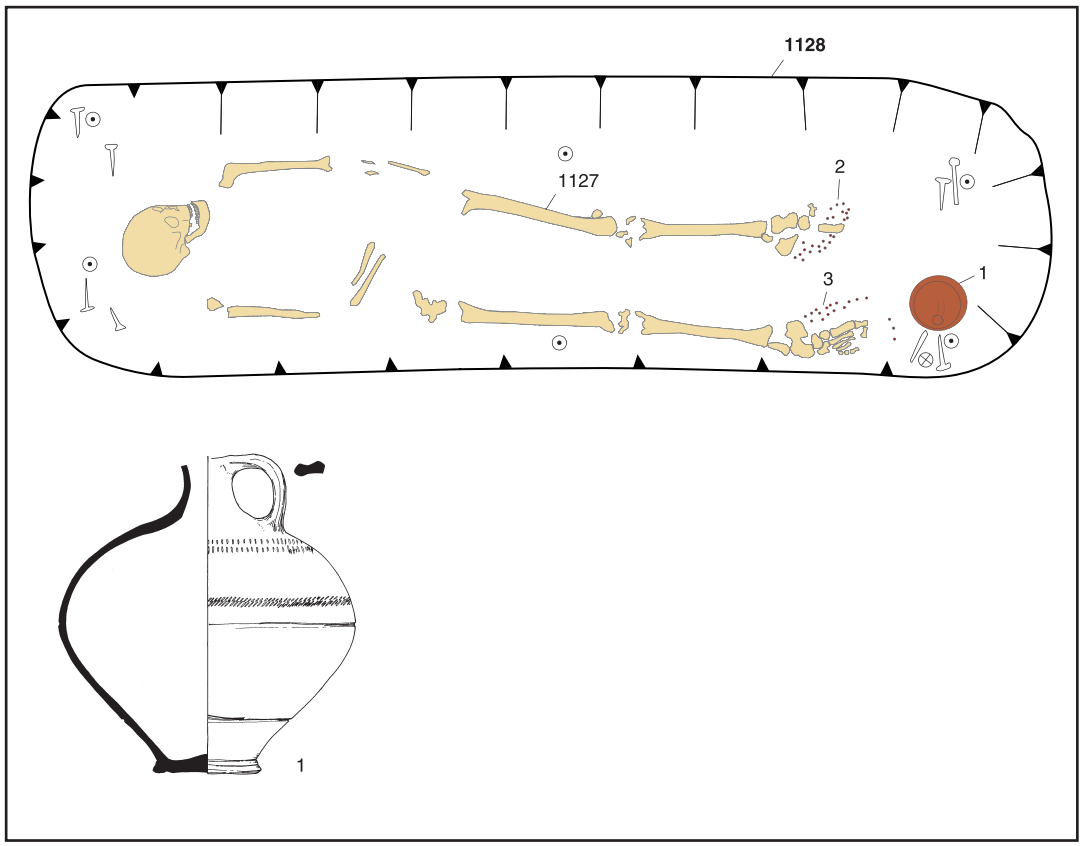


Fig. 3.159 Inhumation Grave 1200

Fill: Loose chalk rubble with 25% mid brown clay silt (1126)

Skeleton 1127
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body; right arm semi-flexed with the hand resting on the left side of the pelvis
Sex: Male
Age: 36-45. Mature adult
Fragmentation: Fair
Condition: Skull 2, arms 5, hands 9, torso 5+, legs 3, feet 1
Pathology: Cribra orbitalia. Periostitis right tibia and fibula, left tibia and 4th and 5th right metatarsal. AMTL, calculus

Coffin: Represented by an assemblage of 15 nails defining the corners. L: 2.15-2.16 m. B: 0.45-0.49 m. Ht: 0.28 m. (1995)

Grave goods:
1 **Vessel**. Fabric ?TF, ?New Forest colour-coated ware with red slip. Possibly but less likely an Oxford product. Flagon of Fulford (1975a) fine ware type 11, but undecorated except for a single 'chattered' line on the upper body. *c* AD 300-350. Complete except for the upper part of the rim, probably broken off in antiquity. Located at the eastern, foot, end of the grave, outside the coffin. (1151) SF 3034
2 **Hobnailed shoe**. Represented by a minimum of 87 hobnails, worn on the left foot. SF 3033
3 **Hobnailed shoe**. Represented by a minimum of 83 hobnails and a boot plate, worn on the right foot. SF 3032

Other finds: A minimum of 18 hobnails were recovered from soil sample <951>, taken from around the vertebrae

Date: Pottery dated AD 300-350

Inhumation Grave 1205 (7914/0307, Fig. 3.160)

Grave cut 1139
Orientation: W-E
Shape: Sub-rectangular

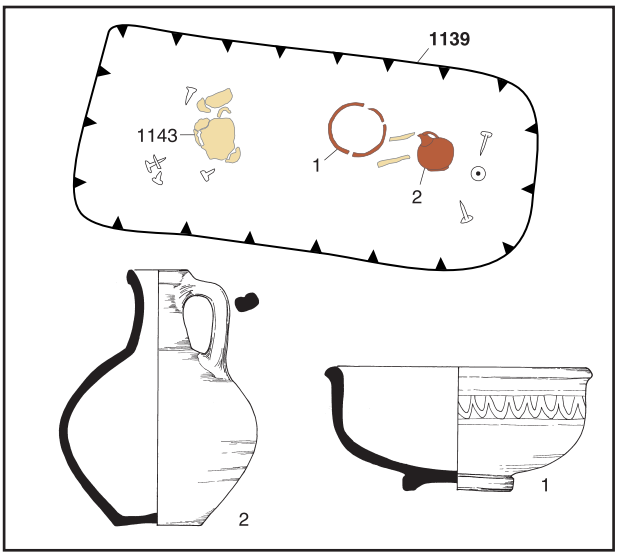


Fig. 3.160 Inhumation Grave 1205

Dimensions: 1.20 x 0.50 m, 0.42 m deep
Fill: Mixed chalk rubble and former topsoil (1141)

Skeleton 1143
Posture: The posture is uncertain due to poor preservation, but the position of the surviving leg bones in relation to pots 1144 and 1146 suggests that the body may have lain on its right side with the legs bent
Arm position: The arms did not survive
Age: Infant
Fragmentation: Fair
Condition: Skull 2, arms 9, hands 9, torso 9, legs 5, feet 9

Coffin: Represented by an assemblage of 7 nails. L: 0.70 m. B: 0.16-0.17 m. (1142)

Grave goods:
1 **Vessel**. Fabric TF, New Forest colour coated ware with red slip. Bowl of Fulford (1975a) fine ware type 71. White painted inverted arcade between horizontal lines. *c* AD 325-380. Complete. Possibly located behind the legs, within the coffin. (1144)
2 **Vessel**. Fabric ZM, New Forest reduced coarse ware. Jug of Fulford (1975a) grey ware type 20.4, burnished overall. *c* AD 270-350. Complete?, but now quite eroded. Possibly originally located in front of the legs or beyond the feet, but toppled onto the right leg. (1146)

Date: Earliest pottery date *c* AD 325

Inhumation Grave 1210 (7893/0313, Fig. 3.161)

Grave cut 1136
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 2.30 x 0.80 m, 1.80 m deep
Fill: Compact chalk rubble and silty soil (1138)
Relationships: Cut layer 1629 and pits 1678, 1680 and 2062

Skeleton 1137
Posture: Supine, legs extended and parallel
Arm position: Left arms semi-flexed with the hand resting on the central part of the pelvis; right arm extended beside body with the hand beneath the right side of the pelvis
Sex: ?Male
Age: 26-35. Prime adult
Height: 168.7
Fragmentation: Good
Condition: Skull 1, arms 2, hands 3, torso 2, legs 2, feet 1
Pathology: Right metatarsal 1 lesion. 4 right ribs with osteophytosis. Right tibia soft tissue trauma. Ankylosis T10-11, spinal osteophytosis, osteoarthritis , Schmorl's nodes. Cribra orbitalia. DEH, periodontal disease, calculus. Sinusitis

Coffin: Represented by an assemblage of 24 nails. L: 1.90-2.02 m. B: 0.51-0.55 m. Ht: 0.19 m. (1996)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 81 hobnails located inside the coffin beside the right leg. SF 3113
2 **Hobnailed shoe**. Represented by a minimum of 92 hobnails located inside the coffin beside the right leg. SF 3114

Other finds: One sherd (5 g) of pottery, fabric ZM (1138)

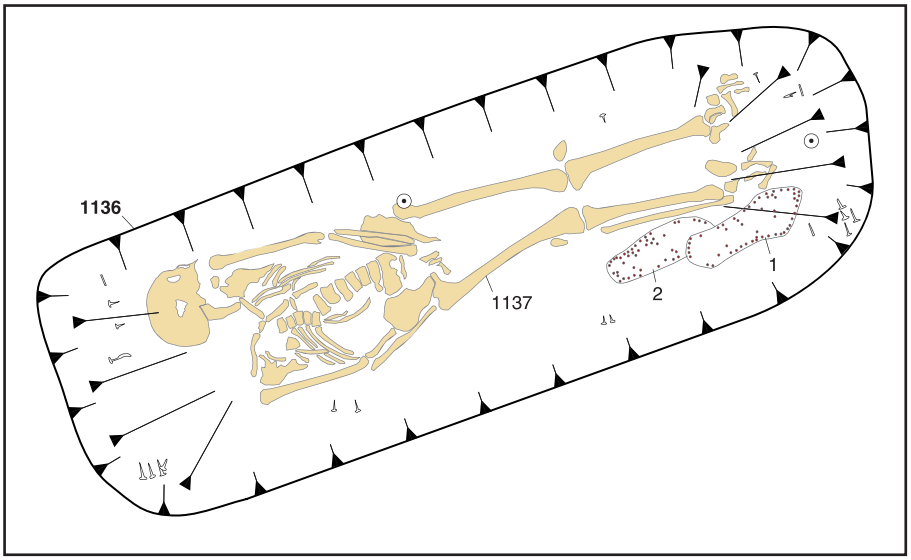


Fig. 3.161 Inhumation Grave 1210

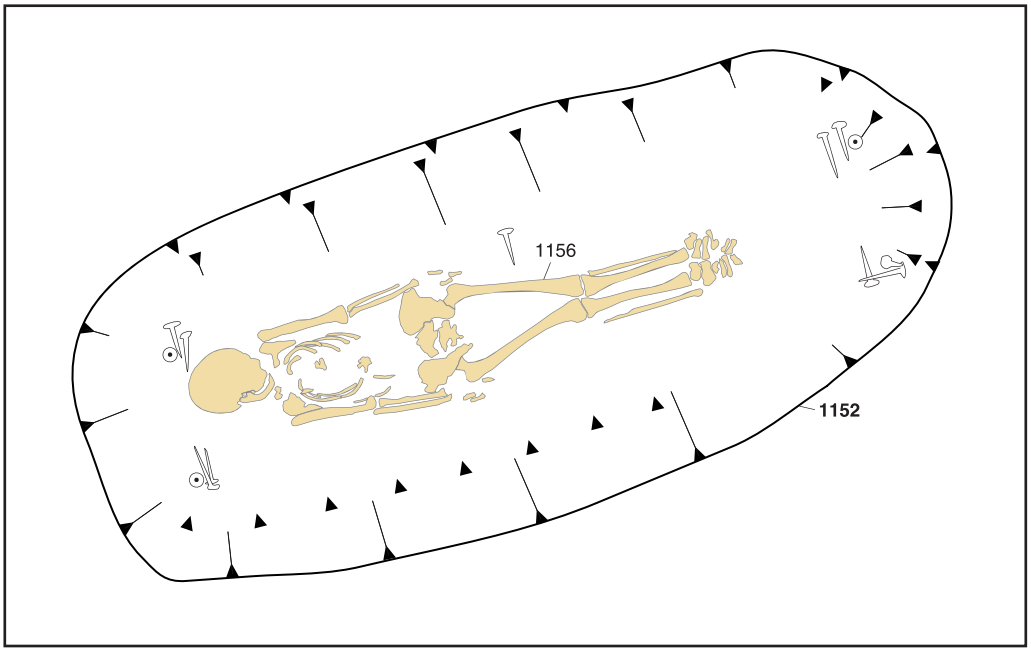


Fig. 3.162 Inhumation Grave 1220

Inhumation Grave 1220 (7896/0314, Fig. 3.162)

Grave cut 1152
Orientation: SW-NE
Shape: Sub-rectangular with a rounded north-eastern end
Dimensions: 2.38 x 1.08 m, 0.70 m deep
Fill: Loose chalk rubble and former topsoil (1153)
Relationships: Cut pit 1623

Skeleton 1156
Posture: Supine, legs extended and close together
Arm position: Both arms extended beside body
Sex: Female
Age: 45+. Older adult
Height: 149.1
Fragmentation: Good
Condition: Skull 2, arms 2, hands 3, torso 2, legs 2, feet 2
Pathology: Cribra orbitalia. Periostitis left and right tibia. Cervical osteophytosis, intervertebral disc disease and eburnation. DEH, AMTL, caries, calculus, periodontal disease. Sinusitis. Right scapula os acromiale. Bilateral hamate absent 'hook' non-metric trait

Additional human remains: Fragments of an adult (1153)

Coffin: Represented by an assemblage of 13 nails defining the corners. L: 1.87-1.92 m. B: 0.37-0.50 m. Ht: 0.16 m. (1154)

Other finds: Four sherds (27 g) of pottery, fabrics YC, ZC, ZF and ZM (1153)

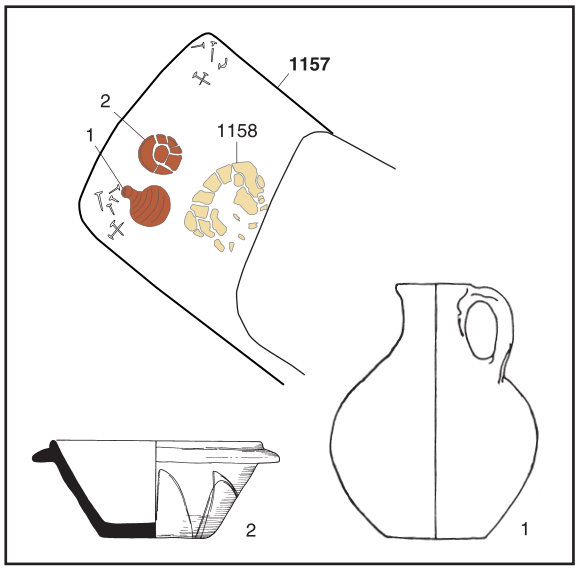


Fig. 3.163 Inhumation Grave 1225

Inhumation Grave 1225 (7916/0318, Fig. 3.163)

Grave cut 1157
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.40 x 1.10 m, 1.15 m deep
Fill: Friable orange brown clay silt with frequent chalk pieces (1159)
Relationships: Cut hedgeline 460. Cut by Grave 1155

Skeleton 1158
Posture: Uncertain
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Destroyed
Condition: Skull 5+, arms 9, hands 9, torso 9, legs 9, feet 9
Pathology: DEH

Coffin: Represented by an assemblage of 17 nails. L: 1.96 m. B: 0.50 m. (1997)

Grave goods:
1 **Vessel**. Fabric ZM, New Forest reduced coarse ware. Jug of Fulford (1975a) grey ware type 20. *c* AD 270-350. Complete. Located within the western, head end of the coffin. (1179)
2 **Vessel**. Fabric ZM, New Forest reduced coarse ware. Bead and flanged bowl of Fulford (1975a) grey ware type 6. Burnished on top of rim and with rather irregular arcs on exterior. *c* AD 270-400. Complete, but interior eroded. Located within the western, head end of the coffin. (1181)

Other finds: Two sherds (13 g) of pottery, fabric ZG (1159)

Date: Pottery date range AD 270-400, but both vessels could be in range AD 270-350

Comments: Most of the grave had been destroyed by Grave 1155, leaving only the western end, containing the skull

Inhumation Grave 1230 (7892/0330, Fig. 3.164)

Grave cut 1161
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.44 x 0.78 m, 0.73 m deep
Fill: Loose yellowish brown chalk, silt and flint (1163)
Relationships: Cut Grave 1185

Skeleton 1162
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Sex: Female
Age: Adult
Fragmentation: Poor
Condition: Skull 1, arms 5+, hands 5+, torso 9, legs 3, feet 1

Coffin: Represented by an assemblage of 13 nails. L: 1.90 m. B: 0.50 m. Ht: 0.21 m. (1998)

Other finds: Fifteen sherds (104 g) of pottery, fabrics ZF and SG, the latter including 2 jar rims (1163)

Inhumation Grave 1235 (7916/0324, Fig. 3.165)

Grave cut 1164
Orientation: W-E
Shape: Rectangular
Dimensions: 2.50 x 0.75 m, 0.90 m deep
Fill: Loose dark brown silt with large flint pieces (1166)
Relationships: Cut by Grave 35

Skeleton 1167
Posture: Supine, legs extended and parallel

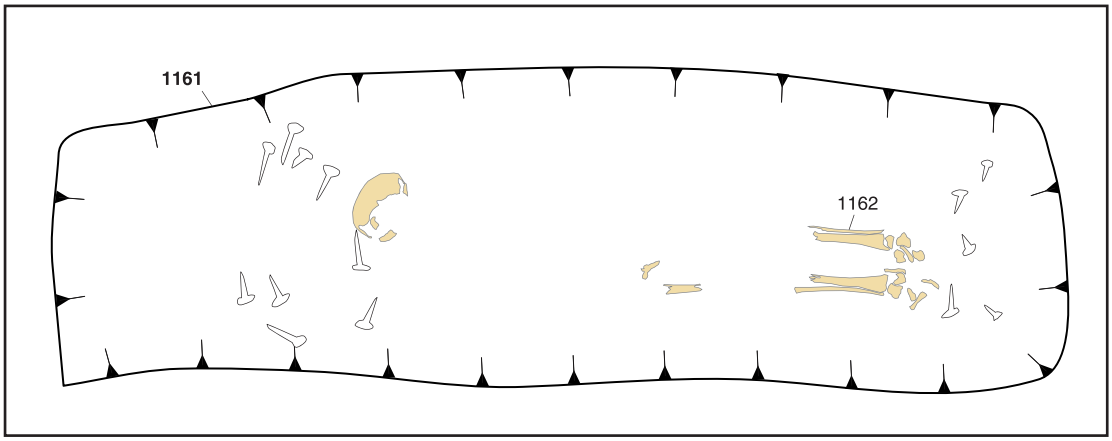


Fig. 3.164 Inhumation Grave 1230

Arm position: Left arm tightly flexed with the hand resting on the right side of the chest; right arm flexed, lying across the stomach
Sex: Male
Age: 26-35. Prime adult
Height: 173.9
Fragmentation: Fair
Condition: Skull 5+, arms 4, hands 3, torso 3, legs 9, feet 9
Pathology: Right tibia left fibula periostitis

Coffin: Represented by an assemblage of 13 nails. L: 2.00 m. B: 0.50-0.60 m. (1168)

Grave goods:
1 **Bead**, spherical, translucent deep blue glass. Length 4 mm, diameter 4 mm, perforation diameter 2 mm. (1166) SF 3065 **(NI)**

Inhumation Grave 1240 (7896/0326, Fig. 3.166)

Grave cut 1174
Orientation: W-E
Shape: Sub-rectangular with a slightly rounded western end
Dimensions: 2.35 x 1.00 m, 0.25 m deep
Fill: Loose chalk rubble with 25% reddish brown clay silt (1172)

Skeleton 1173
Posture: Supine, legs extended and parallel
Arm position: Both arms extended beside body
Sex: Female
Age: 60+. Much older adult
Height: 158.3
Fragmentation: Poor
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Spinal osteophytosis, cervical eburnation. Possible porotic hyperostosis. Hyperostosis frontalis interna. Left and right hip and knee osteoarthritis, left and right 1st metacarpals and proximal phalanges osteoarthritis. Periodontal disease, AMTL

Coffin: Represented by an assemblage of 16 nails. L: 1.87 m. B: 0.35-0.47 m. (1999)

Grave goods:
1 **Coin**. Nummus of Constantius II, Fel Temp Reparatio (falling horseman), Lyons. AD 353-360 (LRBC2, 253 or 256). Located under the ribs on the right side of the body. SF 3150

Other finds: Two loose hobnails (SF 3127, 3128) were

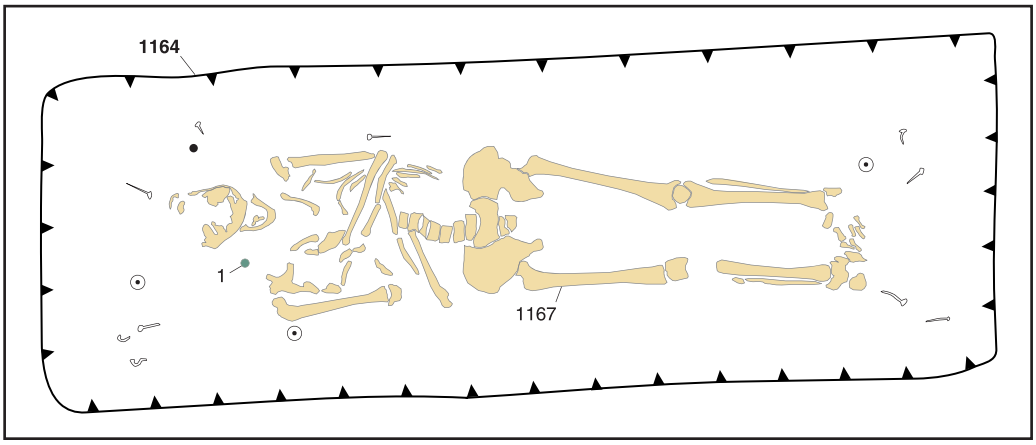


Fig. 3.165 Inhumation Grave 1235

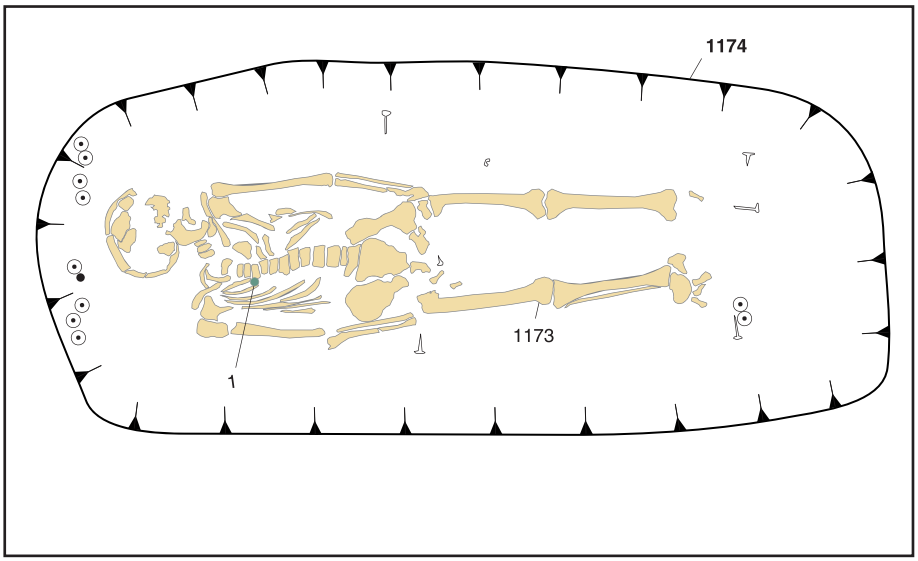


Fig. 3.166 Inhumation Grave 1240

recovered from the backfill
One sherd (20 g) of pottery, fabric SG (1172)

Date: Coin dated AD 353-360

Inhumation Grave 1245 (7900/0322, not illustrated)

Grave cut 1176
Orientation: WSW-ENE
Shape: Sub-rectangular with a rounded western end
Dimensions: 0.90 x 0.42 m, 0.33 m deep
Fill: Loose mid brown silty sand with frequent chalk pieces (1177)

Coffin: None

Comments: No skeletal material was recovered

Inhumation Grave 1250 (7903/0314, Fig. 3.167)

Grave cut 1037
Orientation: WSW-ENE
Shape: Rectangular
Dimensions: 2.24 x 0.80 m, 1.26 m deep
Fill: Compact greyish white silty clay and chalk rubble (1039)
Relationships: Cut Grave 1125

Skeleton 1038
Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed; right arm extended beside body
Sex: Female
Age: Adult
Fragmentation: Fair

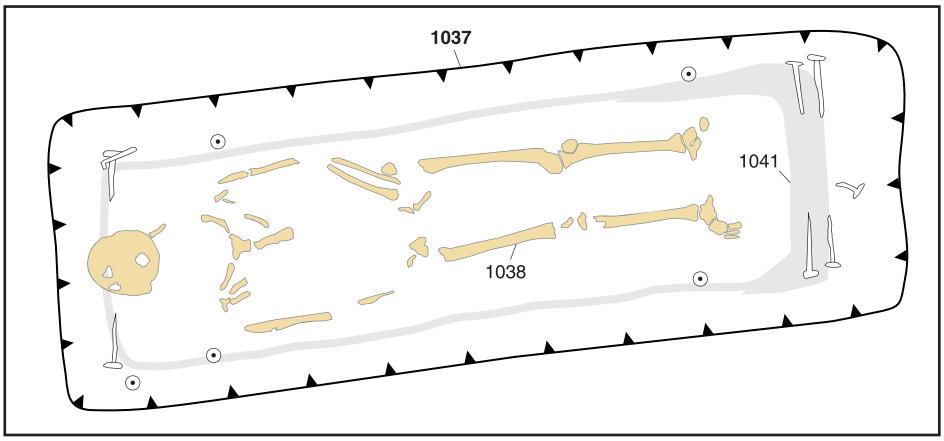


Fig. 3.167 Inhumation Grave 1250

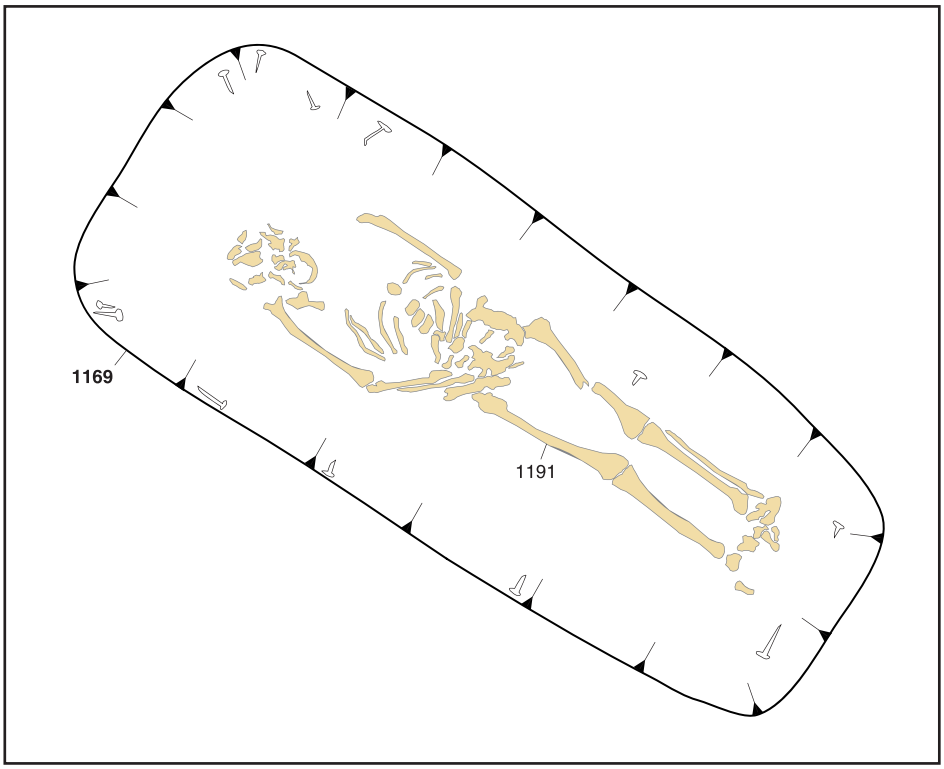


Fig. 3.168 Inhumation Grave 1260

Condition: Skull 2, arms 3, hands 1, torso 2, legs 1, feet 1
Pathology: Periostitis left and right femora and tibia, ?systemic disease. AMTL, caries, tooth rotation upper left 2nd incisor, periodontal disease, calculus, lesion

Coffin: Represented by an assemblage of 11 nails and a coffin stain defining the outline. L: 1.90-1.96 m. B: 0.50-0.51 m. Ht: 0.26 m. (1041)

Inhumation Grave 1260 (7923/0326, Fig. 3.168)

Grave cut 1169
Orientation: NW-SE
Shape: Sub-rectangular
Dimensions: 2.30 x 0.95 m, 1.30 m deep
Fill: Chalk rubble with 30% greyish brown chalky clay (1171)
Relationships: Cut by Grave 1190

Skeleton 1191
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed, the wrists crossing over the central part of the pelvis
Sex: Male
Age: 18-25. Young adult
Height: 166.8
Fragmentation: Fair
Condition: Skull 2, arms 3, hands 2, torso 2, legs 1, feet 1
Pathology: Lumbar Schmorl's nodes. DEH, calculus

Additional human remains: Mandible of a young adult ?female (1221) found adjacent to the left knee of skeleton 1991

Coffin: Represented by an assemblage of 13 nails. L: 1.75 m. B: 0.40 m. (2000)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 83 hobnails. Not located, although a minimum of 12 hobnails were recovered from soil sample <1014>, taken from around the feet, so the shoes were probably located here

Other finds: A single loose hobnail was recovered from soil sample <1015>, taken from around the hands

Inhumation Grave 1265 (7897/0323, not illustrated)

Grave cut 1192
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 0.90 x 0.47 m, 0.11 m deep
Fill: Loose light brown silty sand with 30-40% chalk pieces (1194)

Skeleton 1193
Posture: Not established due to poor preservation
Arm position: The arms did not survive

Coffin: None

Comments: Fragmentary skeletal remains were observed on site but did not survive in a condition to be lifted

Inhumation Grave 1270 (7901/0325, Fig. 3.169)

Grave cut 1196
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.00 x 0.70 m, 0.38 m deep
Fill: Compact chalk rubble with some light brown sand (1198)
Relationships: Cut by Grave 625

Skeleton 1197
Posture: Supine, legs extended and parallel
Arm position: Both arms extended beside body
Sex: Female
Age: 60+. Much older adult

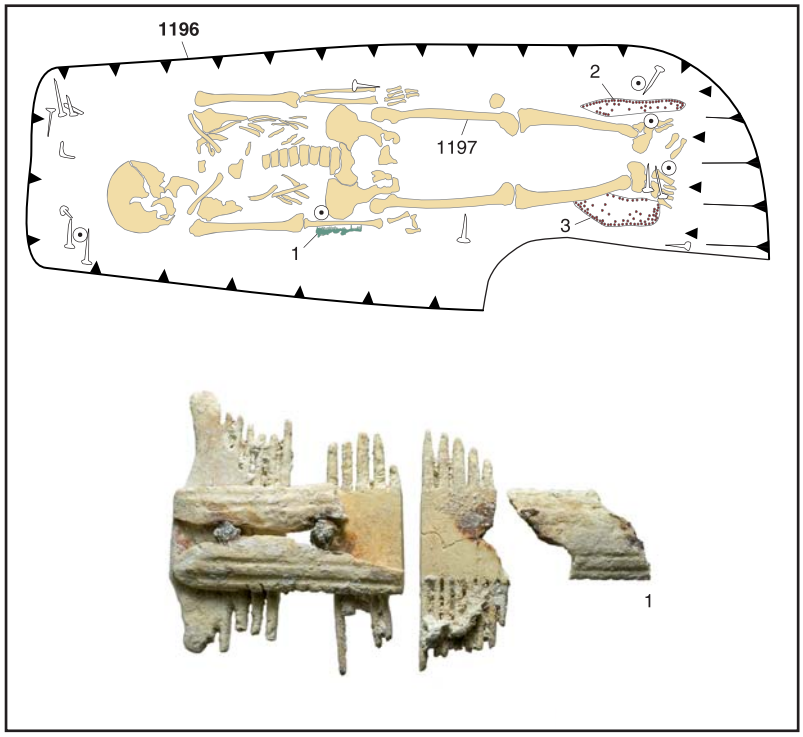


Fig. 3.169 Inhumation Grave 1270

Height: 147.9
Fragmentation: Good
Condition: Skull 4, arms 0, hands 1, torso 1, legs 1, feet 1
Pathology: Left and right sacroiliac joints fused. L4 & L5 intervertebral disc disease. AMTL, caries (x3). Sinusitis

Additional human remains: Fragments of a second adult (1198)

Coffin: Represented by an assemblage of 21 nails. L: 1.63-1.64 m. B: 0.42 m. (2001)

Grave goods:
1 **Double-sided composite comb**, antler? Two fragments of endplates; one fragment consisting of central connecting plate on either side with tooth plates held between by a pair of close-spaced iron rivets, numerous small fragments of tooth plates and connecting plate. Majority of comb not now extant. End plate scalloped and close to teeth. Shallow D-section connecting plate pair of grooves parallel to each edge; connecting plates have notches on each edge from cutting teeth. Teeth on one side narrower than other, seven teeth to one side, five teeth to other. Present width comb (incomplete) *c* 35 mm, width connecting plate 12 mm, thickness connecting plate 3 mm. (3190) SF 3190
2 **Hobnailed shoe**. Represented by a minimum of 48 hobnails, located under the lower part of the left leg and foot. SF 3226
3 **Hobnailed shoe**. Represented by a minimum of 50 hobnails, located under the lower part of the leg and foot. SF 3227

Date: Comb dated after *c* AD 370

Comments: The south-eastern corner of the grave had been truncated by Grave 625

Inhumation Grave 1275 (7882/0324, Fig. 3.170)

Grave cut 1202
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.35 x 0.85 m, 1.00 m deep
Fill: Loose chalk rubble with reddish brown clay silt matrix (1199)

Skeleton 1201
Posture: Supine, legs extended and parallel
Arm position: Arm position could not be established due to poor preservation
Sex: ?Male
Age: 45+. Older adult
Height: 167.5
Fragmentation: Poor
Condition: Skull 3, arms 5+, hands 9, torso 5+, legs 3, feet 5+
Pathology: Button osteoma. DEH. Osteochondritis dissecans bilateral distal femora lateral

Coffin: Represented by an assemblage of 16 nails, mostly located at the corners. L: 1.87 m. B: 0.50 m. Ht: 0.19 m. (2002)

Other finds: Two sherds (17 g) of pottery, fabric TR (1199)

Inhumation Grave 1280 (7921/0311, Fig. 3.171)

Grave cut 1203
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.40 x 1.00 m, 1.60 m deep
Fill: Mixed chalk rubble and former topsoil (1204)
Relationships: Cut pit 1823 and ditch 450

Skeleton 1207
Posture: Supine, legs extended with feet together
Arm position: Both arms semi-flexed
Sex: ?Female
Age: Adult
Fragmentation: Poor
Condition: Skull 5+, arms 5+, hands 5+, torso 9, legs 4, feet 2

Additional human remains: Fragments of a neonate (1204)

Coffin: Represented by an assemblage of 12 nails defining the corners. L: 1.82-1.84 m. B: 0.35-0.45 m. (1206)

Grave goods:
1 **Double-sided composite comb**. All that remains is central parts of tooth plates each retaining either an iron or a copper alloy rivet and stained by corrosion products. Copper alloy rivets made from sheet rolled into tube. One fragment retains much decayed parts of connecting plate. Rivets closely spaced (8-9 mm

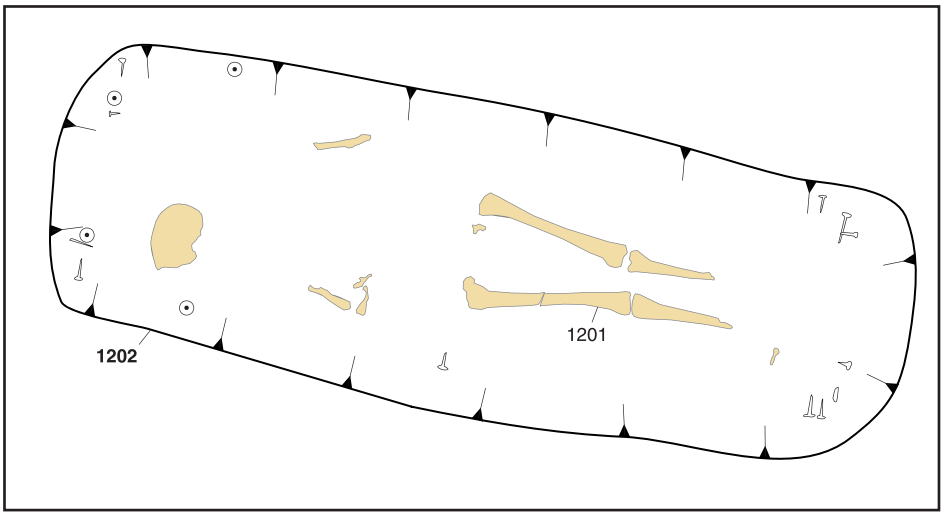


Fig. 3.170 Inhumation Grave 1275

centre to centre) and alternate iron and copper alloy. Four extant iron and six copper alloy rivets. Original width of connecting bar *c* 9 mm, copper alloy rivets length 10 mm, diameter 3 mm. (1204) SF 3207 **(NI)**

Other finds: One sherd (3 g) of pottery, fabric SG (1204)

Date: Comb dated after *c* AD 370

Inhumation Grave 1285 (7890/0312, Fig. 3.172)

Grave cut 1208
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 2.40 x 1.45 m, 1.20 m deep
Fill: Compact chalk rubble and silty soil (1212)
Relationships: Cut pits 1261 and 1680

Skeleton 1209
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body; right arm semi-flexed with the hand resting on the central part of the pelvis
Sex: Male
Age: 36-45. Mature adult
Height: 157.5
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Spinal osteophytosis, Schmorl's nodes, eburnation in cervical. Button osteoma. Left rib healed fractures. Left clavicle ossified soft tissue trauma. Osteoarthritis right distal phalanx. Caries (x6), AMTL, DEH

Coffin: Represented by an assemblage of 14 nails and a coffin stain defining parts of the ends and sides. L: 1.89-1.90 m. B: 0.43-0.50 m. Ht: 0.33. (1211)

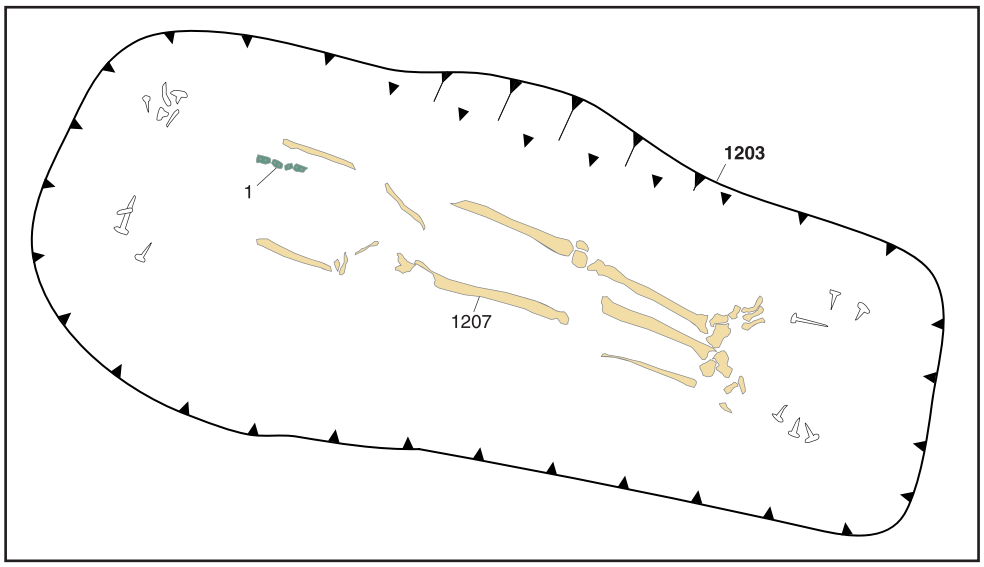


Fig. 3.171 Inhumation Grave 1280

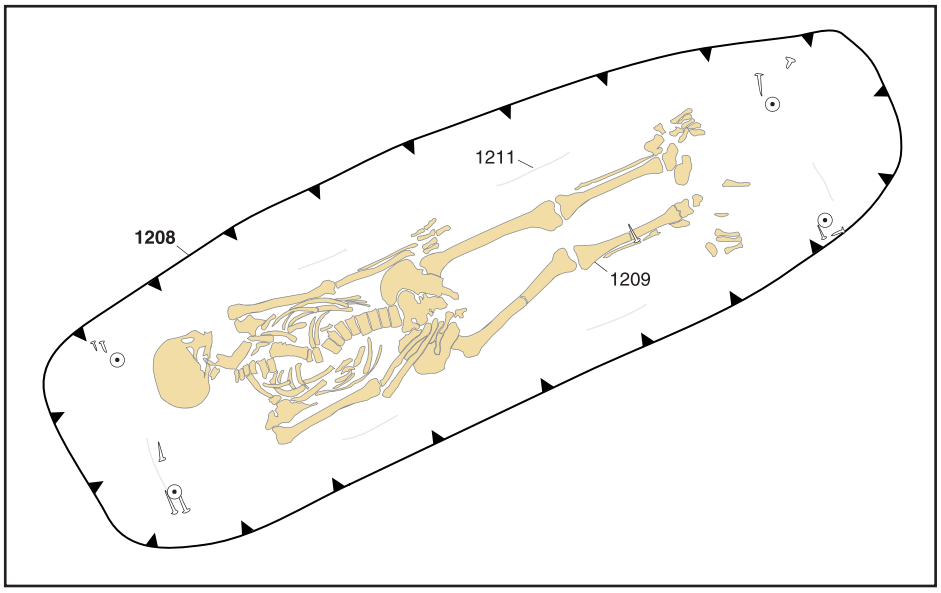


Fig. 3.172 Inhumation Grave 1285

Inhumation Grave 1290 (7895/0329, Fig. 3.173)

Grave cut 1213
Orientation: W-E
Shape: Sub-rectangular with rounded ends
Dimensions: 2.47 x 0.62 m, 0.23 m deep
Fill: Compact silty clay and chalk (1216)

Skeleton 1214
Posture: Supine, leg extended and parallel
Arm position: Left arm semi-flexed with the hand resting on the central part of the pelvis; right arm flexed, lying across the stomach with the hand beneath the left arm
Sex: Female
Age: 36-45. Mature adult
Fragmentation: poor
Condition: Skull 2, arms 2, hands 2, torso 4, legs 2, feet 4
Pathology: Periodontal disease, calculus. Sinusitis.

Coffin: The remains of a coffin were represented by an assemblage of 5 nails defining the corners. L: 1.82 m. B: 0.30-0.33 m. (2003)

Inhumation Grave 1295 (7896/0317, Fig. 3.174)

Grave cut 1217
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.41 x 0.86 m, 1.61 m deep
Fill: Loose chalk and former topsoil (1218)
Relationships: Cut layer 1629 and pits 1623 and 1645

Skeleton 1219
Posture: Supine, legs extended and parallel
Arm position: Both arms flexed across the stomach
Sex: Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 2, arms 2, hands 2, torso 2, legs 2, feet 2
Pathology: Sacralisation. AMTL, DEH, calculus, periodontal disease. Sinusitis. Bilateral navicular additional facet

Additional human remains: Fragments of a second adult, mostly from the right foot (1218)

Coffin: Represented by an assemblage of 15 nails. L: 1.98-2.07 m. B: 0.37-0.38 m. Ht: 0.15 m. (2004)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 44 hobnails (including soil sample <1055>), associated with the left foot. SF 3338
2 **Hobnailed shoe**. Represented by a minimum of 47 hobnails (including soil sample <1054>), associated with the right foot. SF 3337

Other finds: A boot plate (SF 3320) was recovered from near the left shoulder
Twenty-six sherds (249 g) of pottery, fabrics WM, ZM

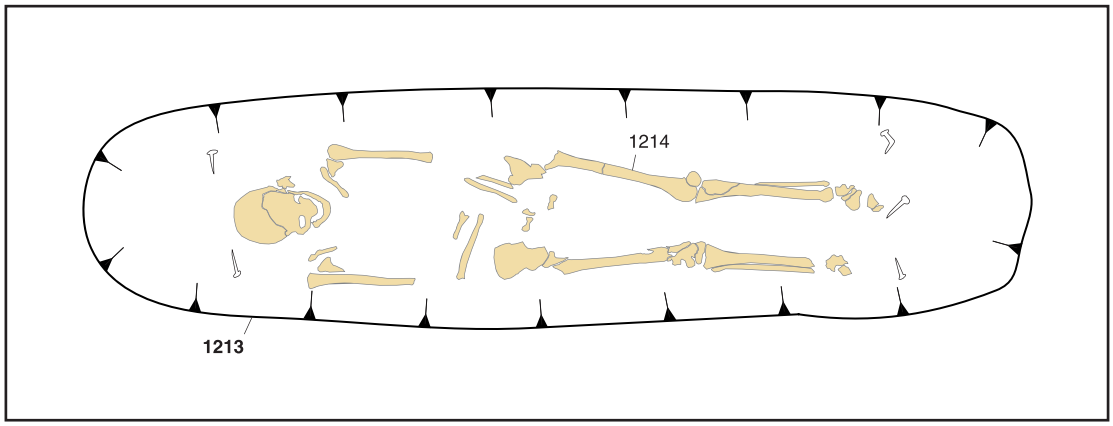


Fig. 3.173 Inhumation Grave 1290

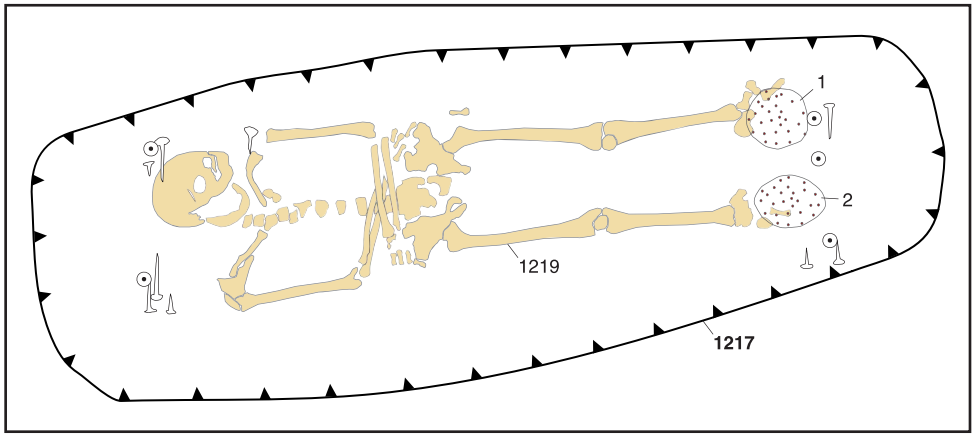


Fig. 3.174 Inhumation Grave 1295

and SG. Rims in fabric ZM are of an uncertain form, a jar/bowl and a jug, a sherd of the last also occurring in the fill of Grave 1030 (1218)

Inhumation Grave 1300 (7917/0331, Fig. 3.175)

Grave cut 1222
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.25 x 0.90 m, 1.20 m deep
Fill: Friable chalk and clay silt (1224)
Relationships: Cut ditches 1352 and 1420

Skeleton 1223
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body; right arm flexed, lying across stomach
Sex: ?Male
Age: 36-45. Mature adult
Height: 164.9
Fragmentation: Good
Condition: Skull 2, arms 1, hands 2, torso 1, legs 1, feet 2
Pathology: Spondylolysis. Caries (x2). Ectocranial porosity. Right os acromiale

Coffin: Represented by an assemblage of 16 nails. L: 1.68-1.70 m. B: 0.43-0.47 m. Ht: 0.19 m. (2005)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 138 hobnails, located outside the coffin, to the right of the legs. SF 3334

Other finds: One sherd (17 g) of pottery, fabric ZM (1224)

Inhumation Grave 1301 (7896/0319, Fig. 3.176)

Grave cut 1296
Orientation: SW-NE
Shape: Sub-rectangular

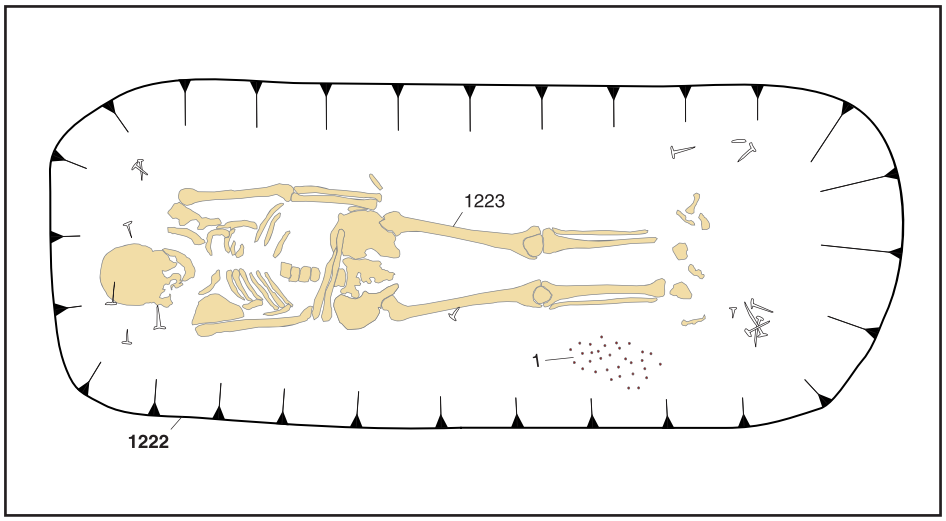


Fig. 3.175 Inhumation Grave 1300

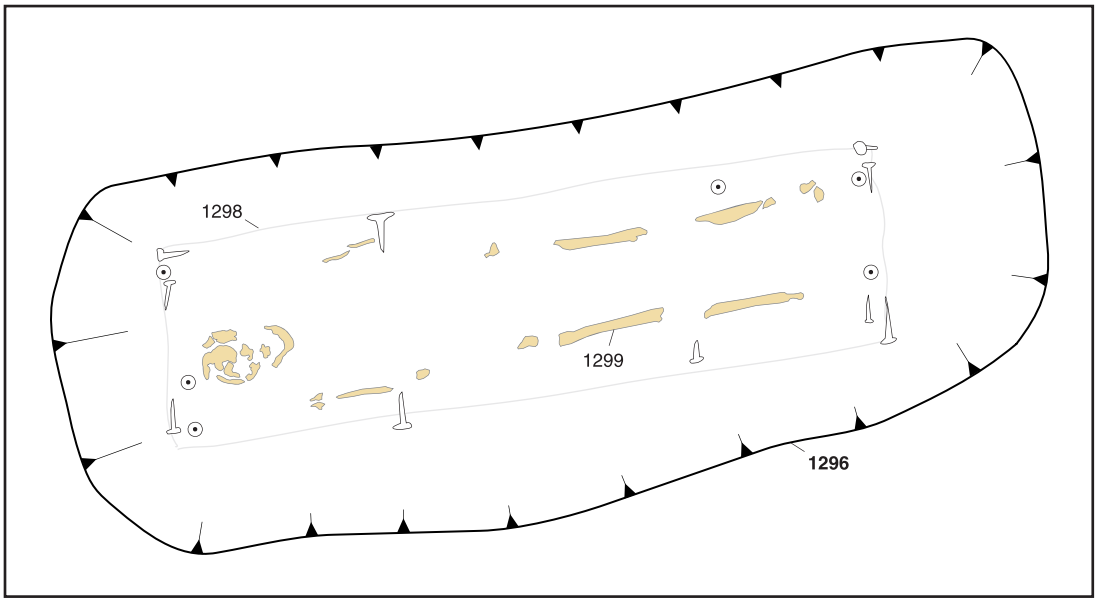


Fig. 3.176 Inhumation Grave 1301

Dimensions: 2.66 x 1.05 m, 1.54 m deep
Fill: Loose chalk and former topsoil (1297)

Skeleton 1299
Posture: Supine, legs extended and parallel
Arm position: The position of the arms could not be established due to poor preservation
Sex: ?Male
Age: Adult
Fragmentation: Destroyed
Condition: Skull 5+, arms 5+, hands 9, torso 9, legs 5+, feet 9

Coffin: Represented by an assemblage of 16 nails, and the mineralised remains of the east end, which had collapsed inward due to the weight of overlying soil. L: 1.84-1.85 m. B: 0.39-0.48 m. Ht: 0.12 m. (1301)

Other finds: Three sherds (26 g) of pottery, fabrics YF and ZM (1297)

Inhumation Grave 1302 (7920/0331, Fig. 3.177)

Grave cut 1303
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.05 x 0.76 m, 1.14 m deep
Fill: Loose light brown silty sand with 30% chalk pieces (1306)
Relationships: Cut Grave 1324 and ditches 1352 and 1420. Relationship with Grave 1375 could not be established as the features only intersected slightly

Skeleton 1304
Posture: Supine, legs extended and close together
Arm position: Both arms extended beside body
Sex: Female
Age: 60+. Much older adult
Fragmentation: Fair
Condition: Skull 2, arms 0, hands 1, torso 1, legs 1, feet 1
Pathology: Left shoulder and right elbow osteoarthritis. Caries (x7), periodontal disease

Additional human remains: Fragments of a second adult (1306), probably from skeleton 1327 in Grave 1324

Coffin: Represented by an assemblage of 15 nails. L: 1.90-1.91 m. B: 0.39-0.44 m. (2006)

Other finds: Thirteen sherds (78 g) of pottery, fabrics ZF, ZM and SG (1306)

Inhumation Grave 1305 (7922/0313, not illustrated)

Grave cut 1234
Orientation: W-E
Shape: Rectangular
Dimensions: 0.85 x 0.50 m, 0.60 m deep
Fill: Mixed chalk and former topsoil (1236)
Relationships: Cut Graves 1310 and 1323 and ditch 450

Skeleton 1237
Posture: Supine, legs extended
Arm position: Position of arms could not be established due to poor preservation
Age: Neonate/infant
Fragmentation: Fair
Condition: Skull 4, arms 4, hands 3, torso 5+, legs 4, feet 4

Coffin: None

Inhumation Grave 1310 (7922/0313, Fig. 3.178)

Grave cut 1267
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.60 x 0.60 m, 1.00 m deep
Fill: Mixed chalk and former topsoil (1268)
Relationships: Cut Graves 1323 and 1340, and ditch 450. Cut by Grave 1305

Skeleton 1271
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed
Sex: Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 3, arms 5, hands 4, torso 3, legs 3, feet 2
Pathology: DISH. Ankylosis C2-3. Caries, calculus. Enamel pearl upper 3rd molars

Additional human remains: Fragments of a second adult and a subadult (1268)

Coffin: Represented by an assemblage of 12 nails. Some mineralised wood was also present along the southern side. L: 1.89-1.90 m. B: 0.37-0.38 m. Ht: 0.13 m. (1269)

Grave goods:
1 **Iron knife with antler handle**. Square-sectioned tang set centrally to blade. Angled shoulder and choil. Straight blade and edge sloping to tip. Handle formed

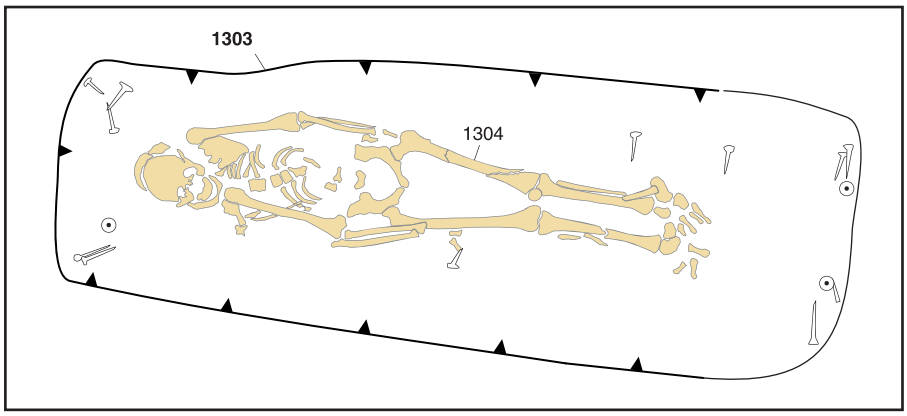


Fig. 3.177 Inhumation Grave 1302

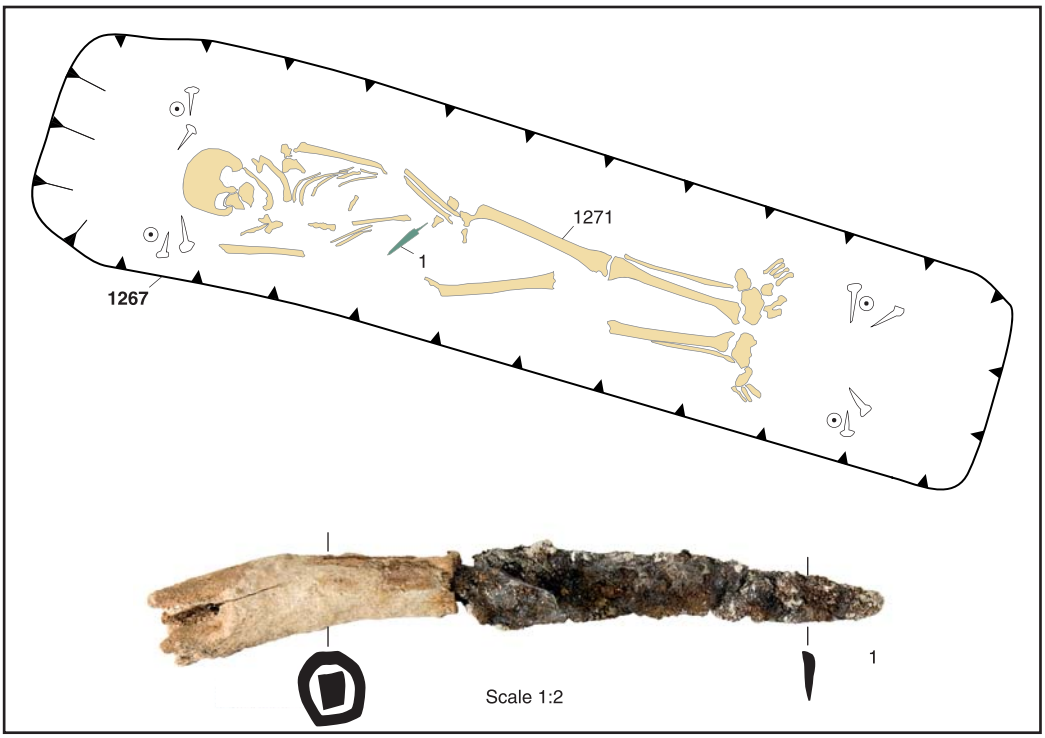


Fig. 3.178 Inhumation Grave 1310

from hollowed segment of antler tine; outer surface unmodified. Total length 185 mm, length blade 115 mm, maximum width blade 20 mm. (1268) SF 3364

Date: The knife is likely to date after AD 350

Inhumation Grave 1315 (7898/0331, not illustrated)

Grave cut 1241
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 1.68 x 0.50 m, 0.06 m deep
Fill: Loose mid brown sandy silt with 30-40% chalk pieces (1243)

Skeleton 1242
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Age: 6-12. Older child
Fragmentation: Poor
Condition: Skull 1, arms 5+, hands 5+, torso 9, legs 3, feet 1

Coffin: No evidence for a coffin was recorded

Comments: The grave had been severely truncated by the foundations of the School House, destroying the western half of the grave and leaving only the lower part of the skeleton intact

Inhumation Grave 1317 (7891/0314, not illustrated)

Grave cut 1313
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 1.10 x 0.60 m, 0.50 m deep
Fill: Loose light brown silty soil with 20% chalk pieces (1316)
Relationships: Cut Grave 1329

Skeleton 1314
Posture: Supine, legs extended
Arm position: Left arm tightly flexed; right arm flexed, lying across stomach
Age: Neonate
Fragmentation: Fair
Condition: Skull 1, arms 0, hands 0, torso 0, legs 0, feet 0

Additional human remains: Fragments of a neonate (1316)

Coffin: None

Inhumation Grave 1323 (7922/0313, not illustrated)

Grave cut 1321
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 0.44 m deep
Fill: Mixed chalk and re-deposited ditch fill (1322)
Relationships: Cut ditch 450. Cut by Graves 1305, 1310 and 1340

Additional human remains: Fragments of an adult (1322)

Comments: The grave had been largely destroyed by the digging of later graves, only the south-eastern corner and part of the southern edge surviving. No *in situ* skeletal remains or evidence for a coffin survived; the extant bone is almost certainly from the backfill of this grave

Inhumation Grave 1324 (7921/0331, Fig. 3.179)

Grave cut 1326
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >1.40 x 0.85 m, 1.05 m deep
Fill: Loose light brown silty sand with 30% chalk pieces (1328)

Relationships: Cut ditches 1352 and 1420. Cut by Grave 1302. Relationship with Grave 1375 uncertain as the features only intersected slightly and the relationship had been largely removed by Grave 1302

Skeleton 1327
Posture: Supine, legs extended with legs parallel
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Excellent
Condition: Skull 0, arms 9, hands 9, torso 9, legs 1, feet 1
Pathology: Healed fracture to left tibia fibula and talus. Periostitis left tibia and fibula

Coffin: Represented by an assemblage of 7 nails. (2007)

Grave goods:
1 **Hobnailed shoes**. Represented by a minimum of 72 hobnails (including a minimum of nine recovered from soil sample <1149>), located around the feet. SF 3424

Comments: The western half of the grave had been destroyed by Grave 1302, leaving only the lower parts of the legs and the eastern end

Inhumation Grave 1325 (7880/0322, not illustrated)

Grave cut 1248
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >0.75 x 0.60 m, 0.47 m deep
Fill: Loose reddish brown silty clay with chalk pieces (1246)
Relationships: Cut by Graves 1335 and 1350

Skeleton 1247
Posture: Supine
Arm position: Only left upper arm survives
Sex: Male
Age: 36-45. Mature adult
Fragmentation: Good
Condition: Skull 1, arms 0, hands 9, torso 0, legs 9, feet 9
Pathology: Cervical intervertebral disc disease. Left shoulder osteophytes and pitting. AMTL, caries

Coffin: None

Comments: All but the western end of the grave had been destroyed by Graves 1335 and 1350

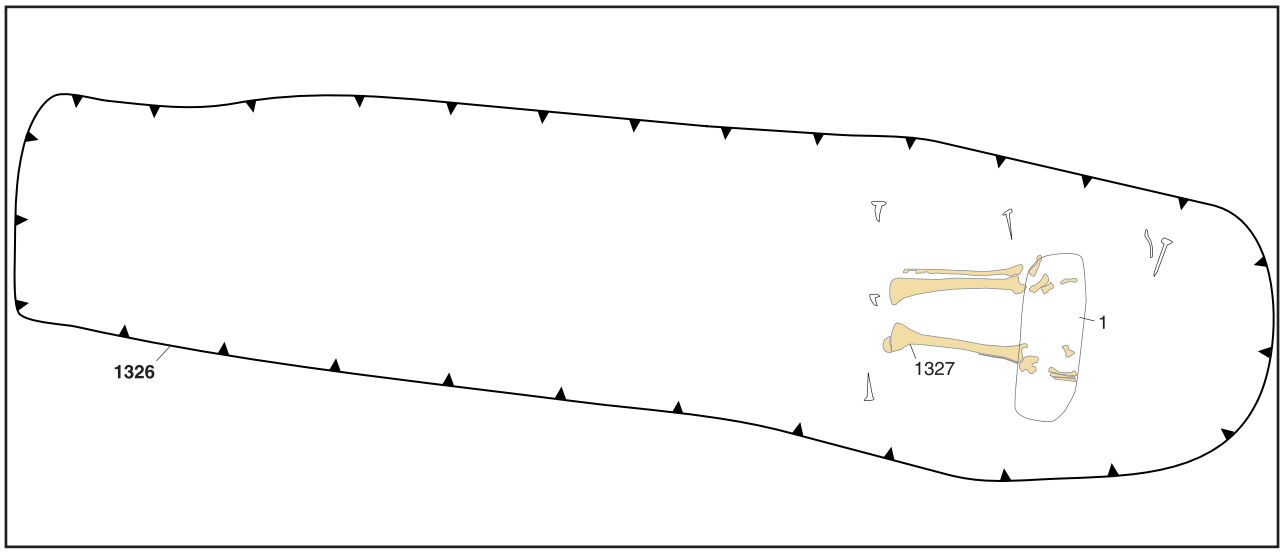


Fig. 3.179 Inhumation Grave 1324

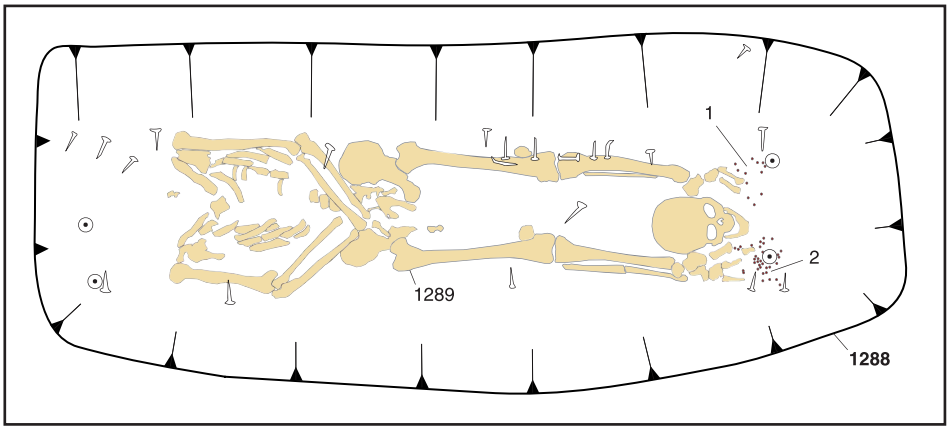


Fig. 3.180 Inhumation Grave 1329

Inhumation Grave 1329 (7891/0313, Fig. 3.180)

Grave cut 1288
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.30 x 0.90 m, 1.00 m deep
Fill: Loose light brown silt with 40% chalk pieces (1291)
Relationships: Cut layer 1629. Cut by Grave 1317

Skeleton 1289
Posture: Supine, legs extended and parallel. The head had been cut off and placed between the feet, facing the foot end of the grave
Arm position: Both arms semi-flexed, the wrists crossing over the central part of the pelvis
Sex: Male
Age: 36-45. Mature adult
Height: 166.6
Fragmentation: Fair
Condition: Skull 0, arms 0, hands 0, torso 0, legs 0, feet 0
Pathology: Cribra orbitalia. Right humerus healed epiphyseal fracture, resulting in shortening of limb. Healed fracture of left nasal bone. Possible porotic hyperostosis. AMTL, calculus, lesion (x3), periodontal disease. Shovelling upper first incisors

Coffin: Represented by an assemblage of 25 nails. L: 1.85-1.84 m. B: 0.38-0.47 m. Ht: 0.29 m. (2008)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 92 hobnails (including a minimum of six recovered from soil sample <1147>), worn on the left foot. SF 3540
2 **Hobnailed shoe**. Represented by a minimum of 80 hobnails (including a minimum of one recovered from soil sample <1148>), worn on the right foot. SF 3541

Other finds: A single loose hobnail was recovered from soil sample <1142>, taken from around the skull

Inhumation Grave 1330 (7881/1323, Fig. 3.181)

Grave cut 1254
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.20 x 0.45 m, 0.80 m deep
Fill: Loose silty clay and chalk (1252)
Relationships: Cut Grave 1335

Coffin: Represented by an assemblage of 10 nails. L: 0.83-0.86 m. B: 0.26-0.31 m. (2009)

Comments: No skeletal material was recovered

Inhumation Grave 1334 (7886/0324, Fig. 3.182)

Grave cut 1333
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 1.40 x 0.80 m, 1.10 m deep
Fill: Loose clay silt and chalk (1331)
Relationships: Cut Grave 1400. Cut by Grave 1373. Relationship with Grave 1545 could not be established as the features only intersected slightly

Coffin: Represented by an assemblage of 13 nails, defining the eastern end. L: 1.20 m. B: 0.32 m. (2010)

Date: Grave 1400 contained a pottery vessel dated AD 340-400

Comments: Most of the western end had been destroyed by Grave 1373. No skeletal remains survived

Inhumation Grave 1335 (7881/0322, Fig. 3.183)

Grave cut 1259
Orientation: ENE-WSW
Shape: Sub-rectangular
Dimensions: 1.90 x 0.90 m, 0.45 m deep
Fill: Loose reddish brown silty clay and chalk (1257)
Relationships: Cut Grave 1325. Cut by Graves 1350, 1330

Skeleton 1258
Posture: On left side
Arm position: Arms extended outward in front of body
Sex: Male
Age: 60+. Much older adult
Height: 168.9
Fragmentation: Poor
Condition: Skull 0, arms 1, hands 1, torso 1, legs 1, feet 9
Pathology: Spinal osteophytosis. Osteoarthritis of 1st metacarpal and interphalangeal joints. AMTL, caries (x4), DEH, calculus, periodontal disease. Sinusitis

Coffin: None

Comments: Much of the western half of the grave had been destroyed by Grave 1350. Large flint nodules had been placed as packing around the skull and along the northern edge of the grave pit, behind the spine of the skeleton

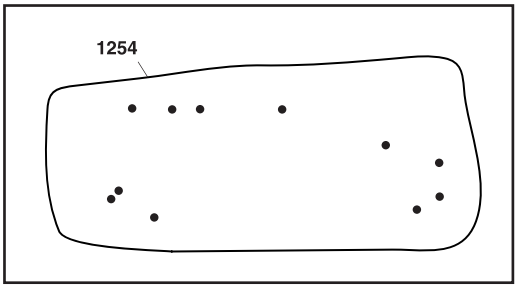


Fig. 3.181 Inhumation Grave 1330

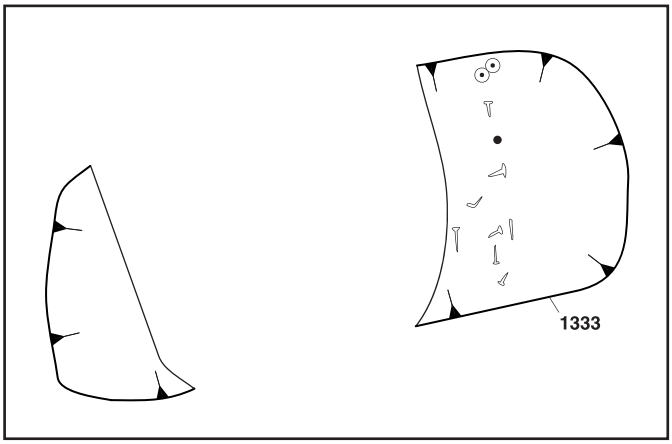


Fig. 3.182 Inhumation Grave 1334

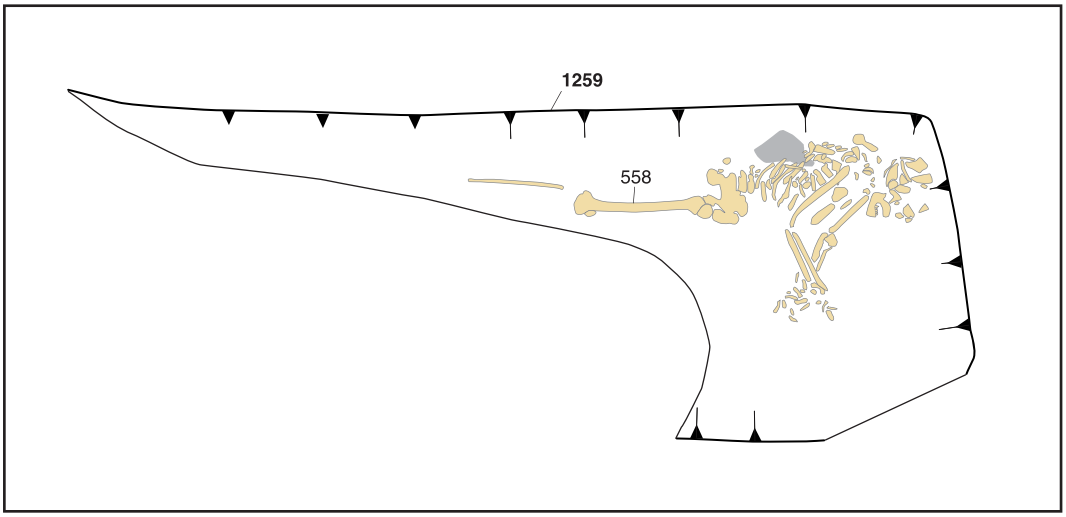


Fig. 3.183 Inhumation Grave 1335

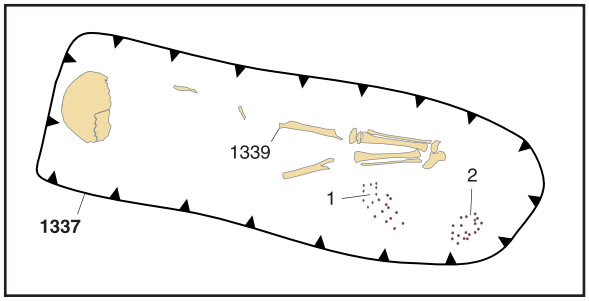


Fig. 3.184 Inhumation Grave 1336

Inhumation Grave 1336 (7920/0315, Fig. 3.184)

Grave cut 1337
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 1.35 x 0.44 m, 0.40 m deep
Fill: Mixed chalk and former topsoil (1338)
Relationships: Cut Grave 1464. Cut by Grave 1015

Skeleton 1339
Posture: Supine, legs extended with feet together
Arm position: The positions of the arms could not be established due to poor preservation
Age: Child
Fragmentation: Fair
Condition: Skull 3, arms 5+, hands 9, torso 9, legs 3, feet 9

Additional human remains: Fragments of a neonate (1338)

Coffin: None

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 13 hobnails, located beside the right leg. SF 3432
2 **Hobnailed shoe**. Represented by a minimum of 16 hobnails, located beside the right leg. SF 3433

Other finds: One sherd (13 g) of pottery, fabric ZM (1338)

Inhumation Grave 1340 (7921/0313, not illustrated)

Grave cut 1272
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >0.70 x 0.60 m, 0.80 m deep
Fill: Mixed chalk and re-deposited ditch fill (1273)
Relationships: Cut Grave 1412 and ditch 450. Cut by Grave 1310

Skeleton 1274
Posture: Supine
Arm position: Left arm tightly flexed with the hand on the left side of the chest; right arm did not survive
Sex: Male
Age: 45+. Older adult
Fragmentation: Poor
Condition: Skull 0, arms 0, hands 0, torso 0, legs 9, feet 9
Pathology: Spinal osteophytosis. Nasal bones healed fractures. Osteoarthritis left and right thumb, carpal-metacarpal joint. AMTL, periodontal disease, lesion (x2), caries (x3)

Coffin: None

Comments: The grave had been largely destroyed by Grave 1310, leaving only the western end

Inhumation Grave 1345 (7907/0328, Fig. 3.185)

Grave cut 1276
Orientation: E-W
Shape: Sub-rectangular
Dimensions: >1.77 x 0.83 m, 0.31 m deep
Fill: Loose dark grey silt and chalk (1278)
Relationships: Cut by Grave 1347

Skeleton 1277
Posture: Prone, legs extended with feet together
Arm position: The arms were behind the back
Sex: Male
Age: 36-45. Mature adult
Fragmentation: Fair
Condition: Skull 5, arms 5, hands 9, torso 4, legs 3, feet 2
Pathology: Ankylosis of the right sacroiliac joint. Erosive lesions on the tarsals. Unidentified seronegative arthropathy

Coffin: Represented by an assemblage of 5 nails. B: 0.42 m. (2011)

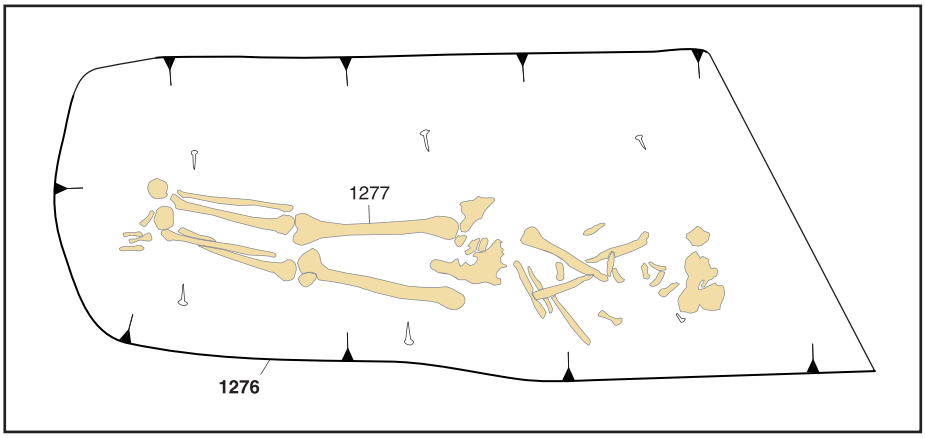


Fig. 3.185 Inhumation Grave 1345

Other finds: A minimum of five hobnails were recovered from soil samples.

Comments: The eastern end of the grave had been destroyed by the foundations of the School House, removing part of the skull

Inhumation Grave 1347 (7905/0329, Fig. 3.186)

Grave cut 1343
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >0.96 x 0.81 m, 0.78 m deep
Fill: Loose dark greyish brown silt and chalk (1346)
Relationships: Cut Grave 1345

Skeleton 1344
Posture: Supine, legs extended and crossed at the ankles
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Good
Condition: Skull 9, arms 9, hands 9, torso 9, legs 3, feet 1

Coffin: Represented by an assemblage of 6 nails. B: 0.39 m. (2012)

Comments: Most of the grave had been destroyed by a modern soakaway, leaving only the eastern end and the lower parts of the legs

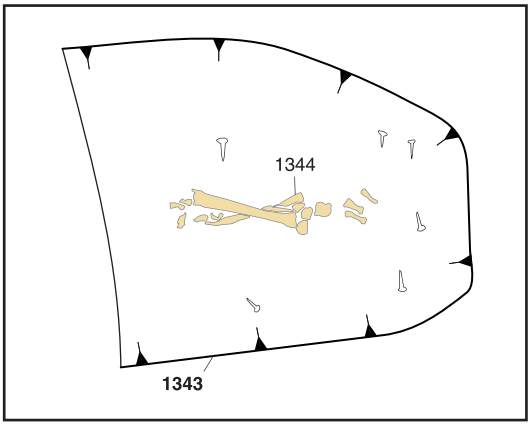


Fig. 3.186 Inhumation Grave 1347

Inhumation Grave 1349 (7916/0313, Fig. 3.187)

Grave cut 1226
Orientation: WNW-ESE
Shape: Rectangular with a stepped profile
Dimensions: 2.30 x 1.18 m, 1.43 m deep, with a step *c* 0.20 m wide along each of the long sides at a depth of 0.60 m
Fill: Light brown silty clay and chalk (1229)
Relationships: Cut Grave 1351 and hedgeline 460. Relationship with Grave 620 could not be established as the features only intersected slightly

Skeleton 1227
Posture: Supine, legs extended and parallel
Arm position: Left arm extended with the hand resting on the head of the left femur; right arm angled away from the body, the forearm resting against the side of the coffin
Sex: Female
Age: 36-45. Mature adult
Height: 158.3
Fragmentation: Good
Condition: Skull 1, arms 2, hands 0, torso 0, legs 0, feet 0
Pathology: Spinal Schmorl's nodes and osteophytosis. Caries (x4), AMTL, lesion, calculus

Coffin: Represented by an assemblage of 14 nails, and a rectangular area of coffin fill. L: 1.81-1.86 m. B: 0.58-0.60 m. Ht: 0.21 m. (1228)

Grave goods:
1 **Vessel**. Fabric ZM, New Forest reduced coarse ware. Jug of Fulford (1975a) grey ware type 20.1, but with burnished zig-zag on shoulder as type 20.5, and vertical burnishing on neck. *c* AD 270-350. Complete. Located beside the left foot, inside the coffin. (1256)
2 **Hobnailed shoe(s)**. Represented by a minimum of 70 hobnails, located inside the coffin beside the left foot. SF 3347

Other finds: Iron object, part of a ring (?) Square-sectioned, both ends broken. Tapering towards one end. Diameter *c* 50 mm, section (max.) 9 mm. SF 3275

Date: Pottery dated AD 270-350, but Grave 1351 contained a vessel dated AD 320-400, so after AD 320 at the earliest

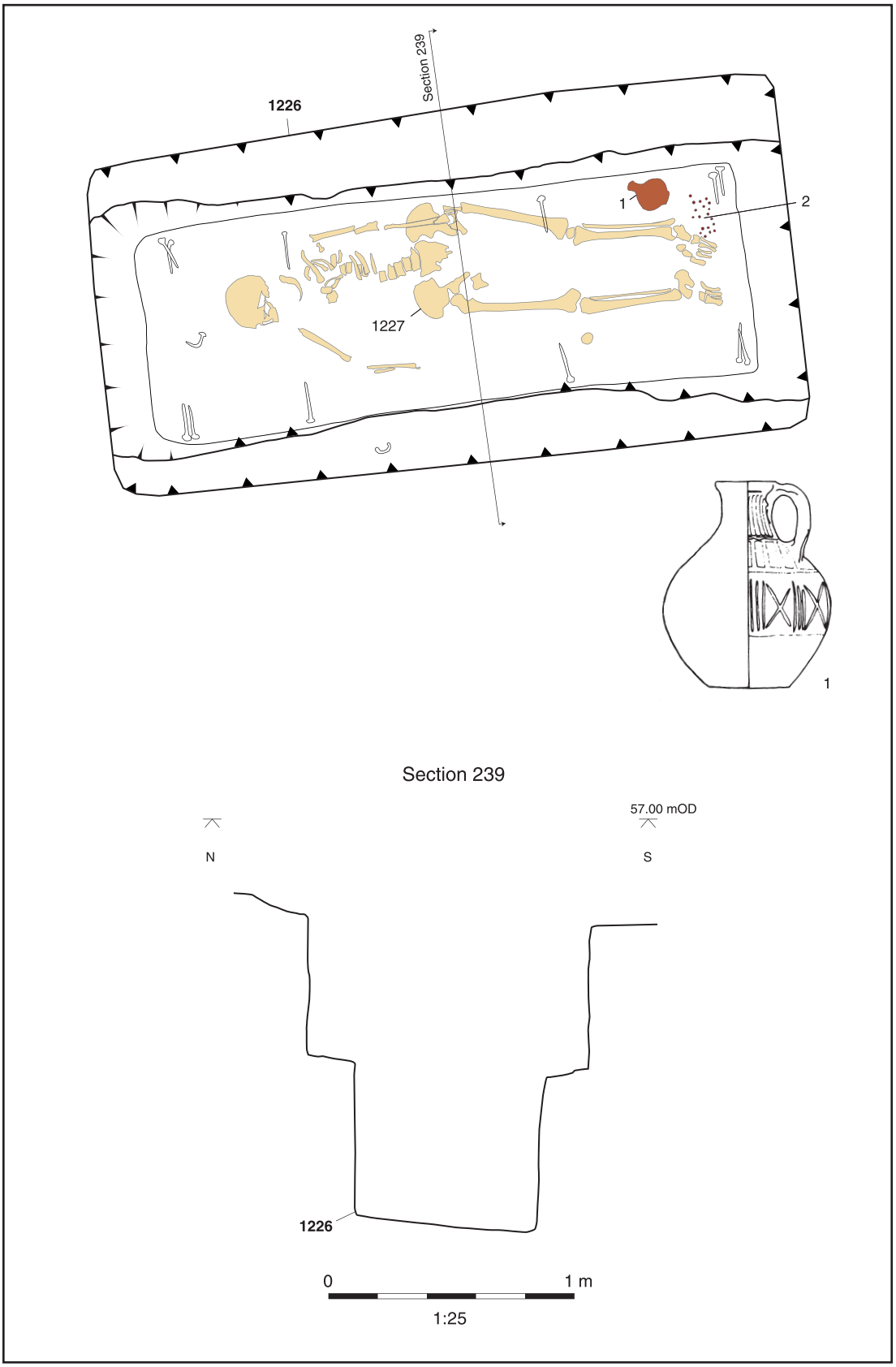


Fig. 3.187 Inhumation Grave 1349

Inhumation Grave 1350 (7881/0322, Fig. 3.188)

Grave cut 1282
Orientation: WSW-ENE
Shape: Sub-rectangular with rounded ends
Dimensions: 2.00 x 0.80 m, 0.85 m deep
Fill: Loose reddish brown clay silt and chalk (1279)
Relationships: Cut Graves 1325 and 1335

Skeleton 1281
Posture: Prone, legs extended
Arm position: Both arms under the body, with the hands together beneath the left side of the pelvis
Sex: Female
Age: 26-35. Prime adult
Height: 155.8
Fragmentation: Excellent
Condition: Skull 0, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Spinal Schmorl's nodes. Thin pubic symphyses and exaggerated curve of sacrum congenital/metabolic? DEH, calculus, caries (x4)

Additional human remains: Numerous fragments from two adult ?males (1279), probably derived principally from skeleton 1258 in Grave 1335

Coffin: None

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 96 hobnails (including a minimum of 20 recovered from soil sample <1109> and seven recovered from soil sample <1110>), located around the feet. SF 3395

Inhumation Grave 1351 (7915/0314, Fig. 3.189)

Grave cut 1292
Orientation: WNW-ESE
Shape: Sub-rectangular

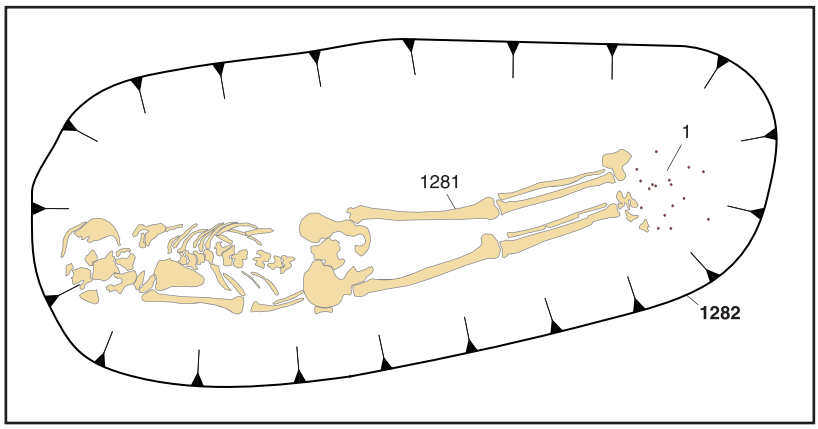


Fig. 3.188 Inhumation Grave 1350

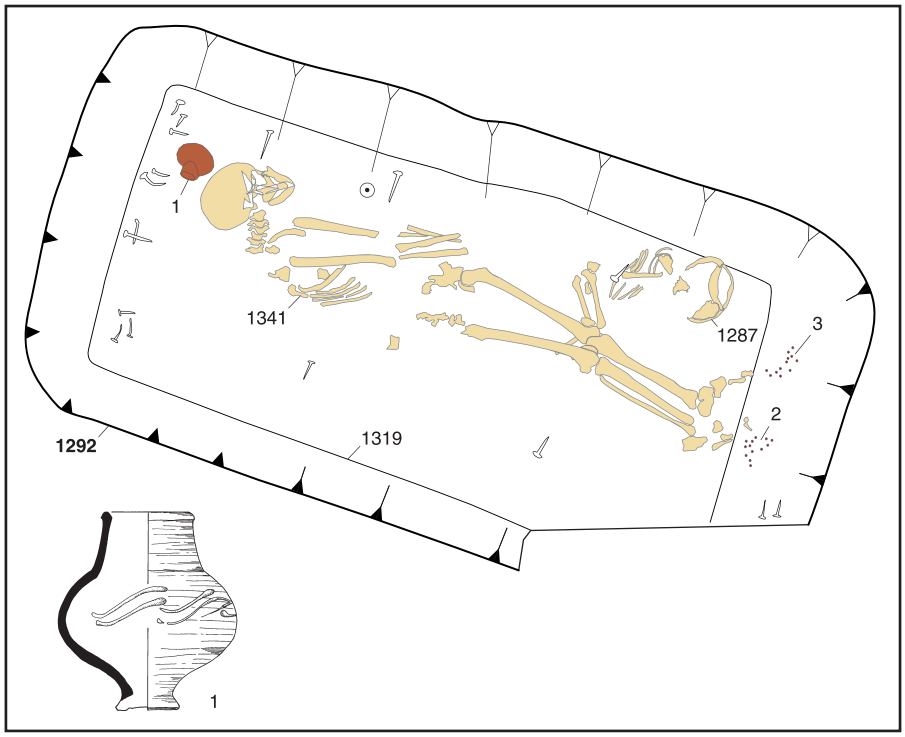


Fig. 3.189 Inhumation Grave 1351

Dimensions: 2.16 x 1.10 m, 0.80 m deep
Fill: Loose re-deposited chalk (1294)
Relationships: Cut by grave 1349

Skeleton 1287
Posture: On left side, legs flexed, oriented E-W
Arm position: Both arms in front of body
Age: Infant
Fragmentation: Good
Condition: Skull 1, arms 1, hands 2, torso 0, legs 2, feet 9

Skeleton 1341
Posture: On left side, legs extended, oriented WNW-ESE
Arm position: Both arms extended in front of the body
Sex: Female
Age: 36-45. Mature adult
Fragmentation: Good
Condition: Skull 1, arms 4, hands 5+, torso 5+, legs 3, feet 1
Pathology: Cervical spine osteophytosis and pitting. Ankylosis of C2-3. AMTL, calculus, caries

Coffin: Represented by an assemblage of 19 nails, and an area of coffin fill. L: 1.88 m. B: 0.43 m. (1319)

Grave goods:
1 **Vessel**. Fabric TR, New Forest colour-coated ware with red-brown slip. Beaker of Fulford (1975a) fine ware type 41.8 with barbotine decoration. ?*c* AD 320-400. Complete. Located to the left of the skull, inside the coffin. (1342) **(NI)**
2 **Hobnailed shoe**. Represented by a minimum of 40 hobnails (including soil sample <1175>), worn on the left foot SF 3472
3 **Hobnailed shoe**. Represented by a minimum of 24 hobnails (soil sample <1176>), worn on the right foot. SF 3473

Date: Pottery dated AD 320-400

Comments: Infant skeleton 1287 was located 0.40 m above skeleton 1341, to the north of the latter's left leg, outside the coffin

Inhumation Grave 1355 (7905/0313, Fig. 3.190)

Grave cut 1073
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.50 x 0.60 m, 0.80 m deep
Fill: Loose light yellowish brown clay silt with frequent chalk pieces (1074)
Relationships: Cut Grave 1360

Skeleton 1133
Posture: Supine, legs extended and parallel
Arm position: The positions of the arms could not be established due to poor preservation
Age: Child
Fragmentation: Fair
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 9
Pathology: shovelling upper first incisors

Coffin: Represented by an assemblage of 13 nails and a rectangular area of coffin fill. L: 1.22-1.26 m. B: 0.30-0.32 m. Ht: 0.19 m. (1076)

Grave goods:
1 **Double-sided composite comb**, antler? Two endplates each retaining a fragment of a connecting plate; three fragments of central connecting plate with

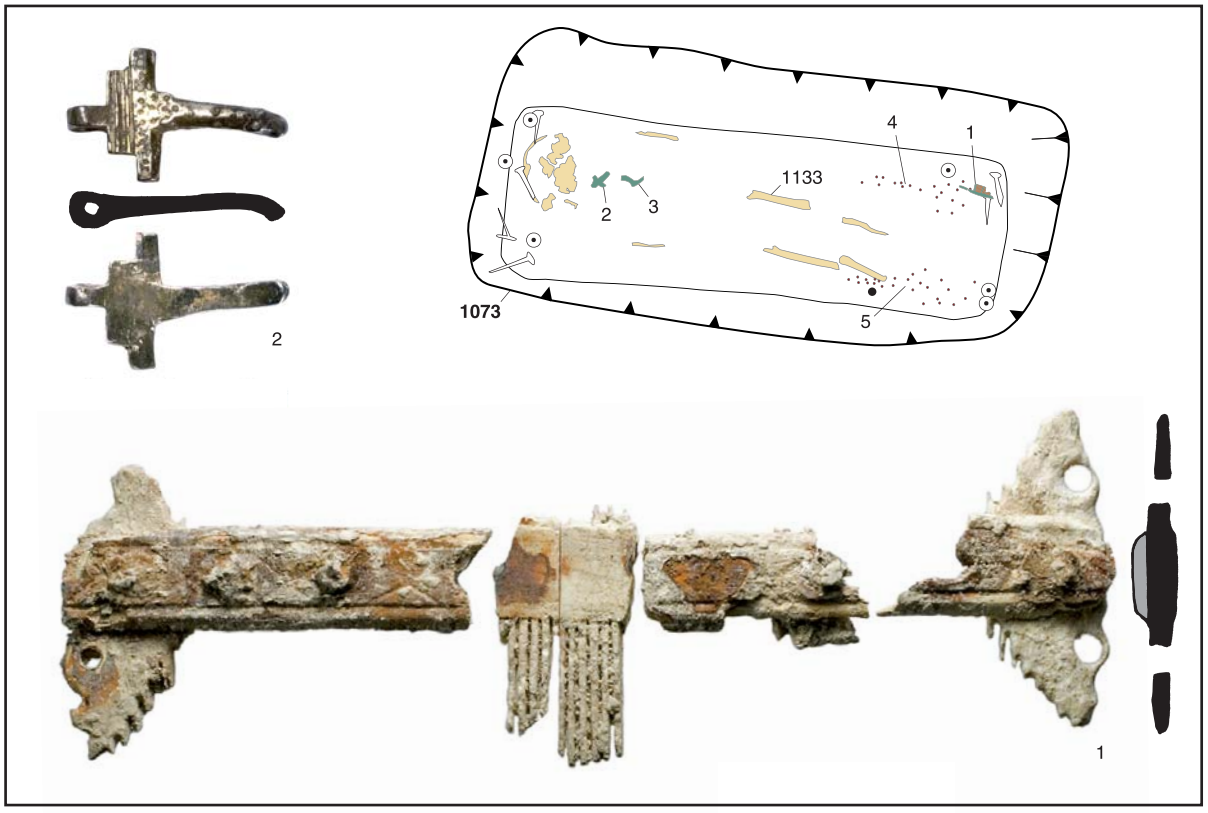


Fig. 3.190 Inhumation Grave 1355

tooth plates attached by iron rivets, three fragments connecting plates, and numerous small fragments of tooth plates. End plate slightly scalloped with circular perforation on either side of connecting bar which extends to edge of endplate. Connecting plate very shallowly 'D' shaped with groove parallel to each long edge. Groove parallel to each long edge. Present width comb (complete) 43 mm, width connecting plate 13 mm, thickness connecting plate 3 mm. (1074) SF 3142

2 **Silver buckle pin**. Central loop with stepped crossbar and D-shaped curved pin with slightly facetted sides. Groove across bar close to loop, punched dots across rest of bar extending in triangular shape to top of pin; tip of pin has scalloped end. Length 29 mm, width 18 mm. (1074) SF 3031

3 **Iron pin**, fragmented. Length *c* 55 mm, section *c* 2 mm. (1074) SF 3007 **(NI)**

4 **Hobnailed shoe**. Represented by a minimum of 28 hobnails, located inside the coffin beside the left foot. SF 3163

5 **Hobnailed shoe**. Represented by a minimum of 26 hobnails, located inside the coffin beside the right foot. SF 3162

Other finds: A minimum of eight hobnails were recovered from soil sample <999>, taken from around the feet.

Date: Comb dated after *c* AD 370. Among the objects in Grave 1360 bead strings such as 1360.10 are dated to the late 4th century

Inhumation Grave 1360 (7904/0313, Figs 3.191 and 3.192)

Grave cut 1069

Orientation: W-E
Shape: Sub
-rectangular
Dimensions: 1.80 x 0.80 m, 0.80 m deep
Fill: Loose light yellowish brown clay silt with frequent chalk (1071)
Relationships: Cut by Grave 1355

Skeleton 1244

Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed; right arm extended beside body
Sex: ?Female
Age: 13-17. Adolescent
Fragmentation: Fair
Condition: Skull 5, arms 4, hands 9, torso 2, legs 4, feet 3
Pathology: Cribra orbitalia. DEH

Coffin: Represented by an assemblage of 8 nails and a rectangular area of coffin fill. L: 1.57 m. B: 0.44 m. Ht: 0.19 m. (1072)

Grave goods:

1 **Copper alloy bracelet**, complete. Circular-sectioned wire tapering to terminals with longitudinal striations from manufacture. One end forms a sideways hook, the other forms a vertical eye with end wrapping around hoop once. Diameter 62 x 61 mm, section 2 mm. (1071) SF 3238

2 **Copper alloy bracelet** (leaded gunmetal, XRF Cu 74%, Sn 10%, Pb 7%, Zn 5%), complete but with a break across the hoop. Circular-sectioned wire with terminals formed as above. Hoop retains parts of an iron bracelet of square-section corroded to it. Fly pupae preserved by mineralisation. Diameter 64 mm, section 1.5 mm. Section of iron bracelet *c* 2 mm. (1071) SF 3246 **(NI)**

3 **Copper alloy bracelet** (leaded gunmetal XRF), complete but with break across hoop. Rectangular-section, widest to wrist, tapering to hook and eye terminals formed as above. Outer face decorated by paired vertical grooves with units between having wedge shaped depression on alternating sides. Diameter 63 mm, section 2.5 x 1.5 mm. (1071) SF 3239

4 **Copper alloy bracelet**, complete but with a break across the hoop. Rectangular-section section, widest to wrist, tapering to hook and eye terminals formed as above. Outer face decorated by pairs of vertical grooves with a diagonal cross in some of the alternate blocks formed by the grooves surfaces obscured by iron corrosion. Diameter 67 x 54 mm, section 2 x 1.5 mm. (1071) SF 3248

5 **Copper alloy bracelet**, complete but with a break across the hoop. Rectangular-section section, widest to wrist, tapering to hook and eye terminals formed as above. Outer face decorated by vertical grooves, surfaces obscured by iron corrosion. Diameter 57 x 53 mm, section 3 x 1.5 mm. (1071) SF 3242 **(NI)**

6 **Bone bracelet** now in 3 joining pieces; lacking part of circumference Rounded rectangular section tapering slightly to terminals; one fragment is terminal joined by highly corroded copper alloy sheet sheath held in place by iron rivet through each end. Present length 138 mm, section 6 x 3 mm. (1071) SF 3240, 3241, 3296 **(NI)**

7 **Bone bracelet** in two joining fragments, outer ends broken. Rounded rectangular section. these fragments retain corroded length of second bracelet made of iron, also one other iron fragment probably from this. Present length 115 mm, section 4.5 x 2.5 mm. (1071) SF 3247, 3296 **(NI)**

8 **Iron bracelet**. There may have been one or more iron bracelets. SF 3298 is described as 'iron bracelets' but is now just corrosion products. Also note the small blue beads held together by iron corrosion (see 1360.13) **(NI)**

9 Not assigned

10a **Bead string**, now in 12 fragments. Translucent dark blue short beads with diamond-shaped cross-section. Beads threaded onto links made of fine copper alloy wire bent to form loop at each end closed by wrapping the free end around link. A total of 19 links retaining beads (in joined groups of 4, 4, 3, 2, 2, 1, 1, 1, 1) and three separate beads without links. Total extant length *c* 250 mm, length of link *c* 15 mm, section of wire *c* 0.3 mm, typical bead dimension – length 5 mm, section 6.5 x 4.5 mm, perforation diameter *c* 1 mm. (1071) SF 3254

10b **Beads**, three separate examples, each threaded onto a similar link. One blue bead similar to 10a – SF 3254. Two translucent light yellow/brown beads with diamond-shaped cross-section. Blue bead dimension – length 3.5 mm, section 5 x 3 mm, perforation diameter 1 mm; Yellow/brown beads – length 3.5 mm, section 5 x 3.5 mm, perforation diameter 1 mm. (1071) SF 3257

10c The following two beads are very similar to the beads catalogued as (b) above and may come from the same string. Copper alloy link fragments were recovered from the same sample that the beads came from (see 12b below)

Beads (2), short biconical, light yellow/brown glass. Diameter 4 mm, length 2.5 mm, perforation diameter

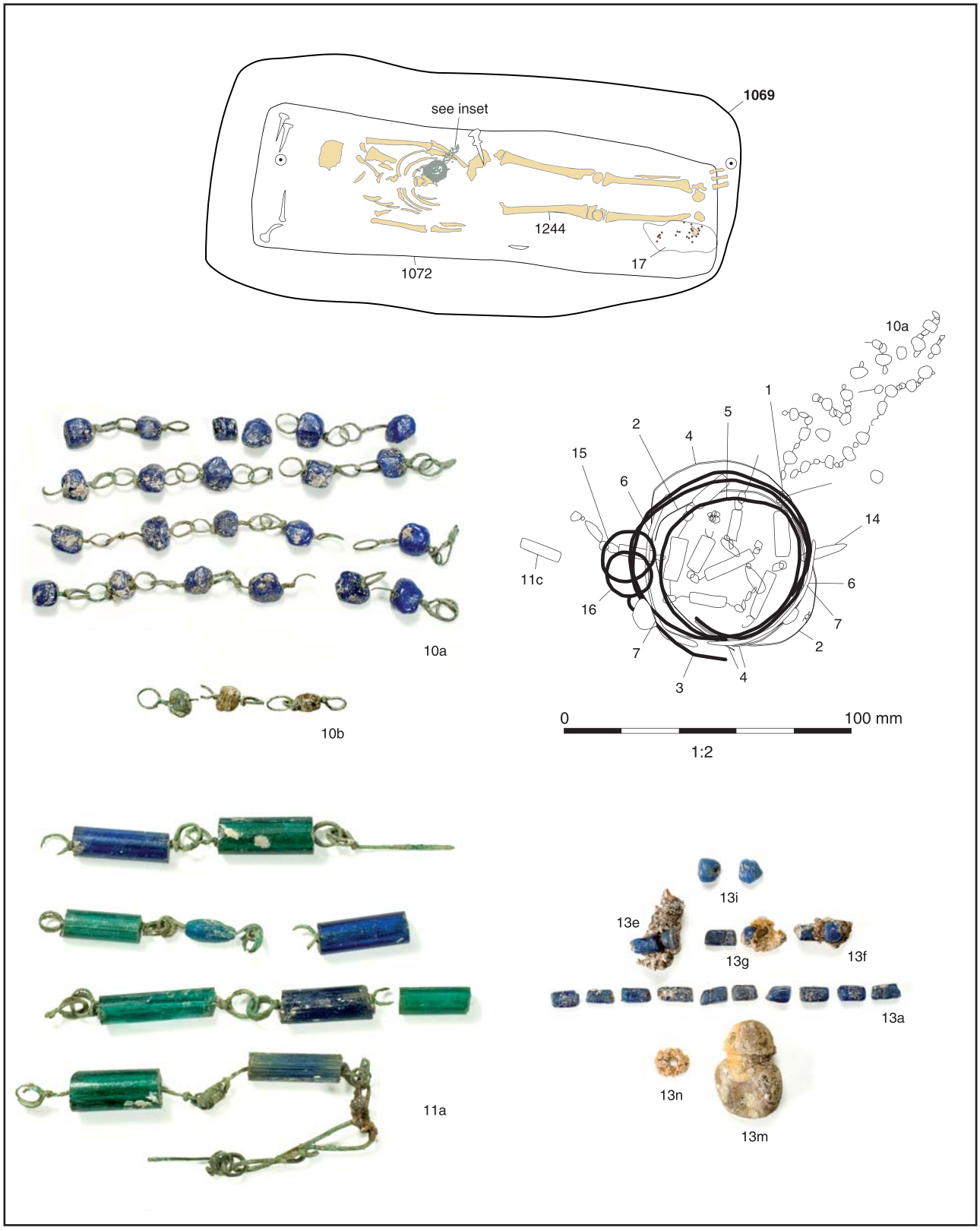


Fig. 3.191 Inhumation Grave 1360

1 mm. (1071) <1061>. **(NI)**
11 **Bead string**. Consists of long blue and peacock beads threaded onto copper alloy links Extant length *c* 400 mm
11a Bead string. Long drawn glass cylinder segments of translucent deep blue (4) and translucent peacock (5), copper alloy wire links, each end bends into loop of two turns and twisted close. Articulated links show that blue and peacock beads alternated. One peacock bead articulated with translucent long ovoid turquoise bead. One pair of articulated beads retain a figure of eight fastener with scrolled ends linked to it by a twist of iron wire. Total length 260 mm; translucent blue beads lengths 15-16 mm, diameter 6-5 mm, peacock beads lengths 11-18 mm, diameter 7-5 mm, perforation diameters 1-2 mm; ovoid bead length 8 mm, section 4 mm. Wire diameter 0.5mm. (1071) SF 3255
11b Bead, long cylindrical, translucent peacock similar to 11a – SF 3255 threaded with copper alloy wire. Diameter 5 mm, length 16 mm. (1071) SF 3295 **(NI)**
11c Bead, long cylindrical, translucent deep blue glass similar to 11a -SF 3255. Diameter 5 mm, length 14.5 mm, perforation diameter 2 mm. (1071) SF 3229 **(NI)**
12 The following three items might have come from either of the two previous bead strings
12a Copper alloy link fragment. Outer edge of loop. (1071) SF 3297 **(NI)**
12b Copper alloy link fragments (3). (1071) <1061> **(NI)**
12c Copper alloy fastener? Wire bent into a loop with ends twisted together, loop and other end broken. Present length 14 mm **(NI)**
13 The following beads retain no evidence of copper alloy wire and it is likely that this would have been preserved by the pairs encased in iron corrosion (e – g) had it been present. It is likely therefore that this was a third string of small blue beads threaded onto an organic string. The ones encased in the iron corrosion suggest that in some places at least the rectangular and conical beads alternated. The amber bead (m) would have functioned as a pendant if it

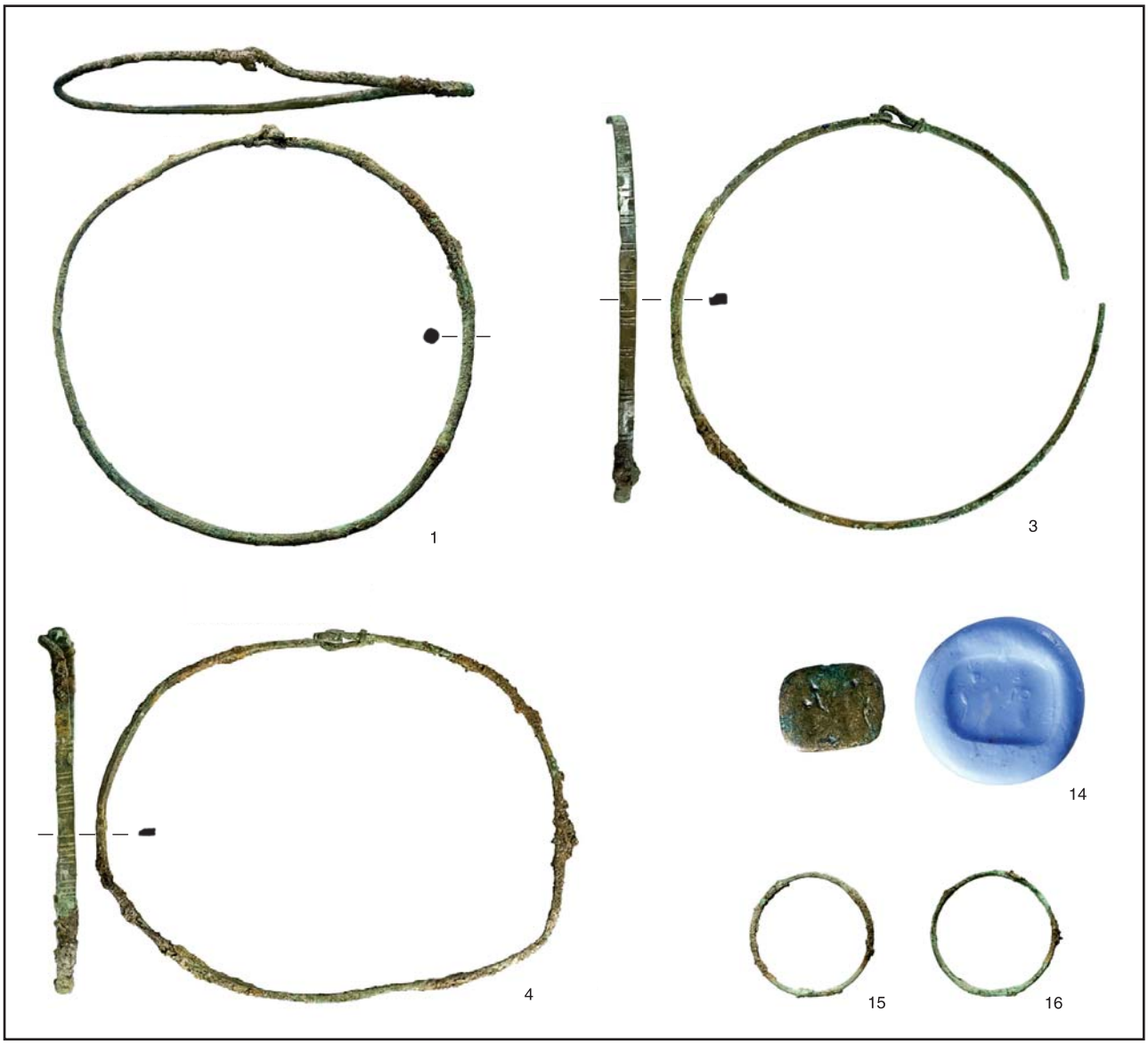


Fig. 3.192 Jewellery nos 1, 3, 4 and 14-16 from Grave 1360

belonged to this string. Extant length *c* 120 mm
13a Beads (10), square-sectioned rectangular, translucent deep blue glass. Lengths 4-6 mm, diameter 3 mm, perforation diameter 1 mm. (1071) SF 3284
13b Beads (2), segmented small sub-spherical conical elements, translucent deep blue glass, one broken. Diameter 3 mm, length 6 mm, perforation diameter 1 mm. (1071) SF 3289 **(NI)**
13c Beads (2), small sub-spherical conical, translucent deep blue glass. Diameter 3.5 mm, length 3 mm, perforation diameter 1 mm. (1071) SF 3287 **(NI)**
13d Beads (2), small sub-spherical conical, translucent deep blue glass. Diameter 3 mm, length 3 mm, perforation diameter 1 mm. (1071) <1061> **(NI)**
13e Beads (2), (1) square-sectioned rectangular, translucent deep blue glass. Length 5 mm, diameter 2.5 mm, perforation diameter 1 mm. (2) small sub-spherical conical, translucent deep blue glass. Diameter 3 mm, length 3 mm, perforation diameter 1 mm (originally encased in iron corrosion products which show they were originally strung together. (1071) SF 3292
13f Beads, Descriptions as 1360.13e, also encased in iron corrosion product showing they had been strung together. (1071) SF 3299
13g Beads, Descriptions as 1360.13e, also encased in iron corrosion product showing they had been strung together. (1071) SF 3293
13h Bead, annular translucent deep blue glass, probably end of segmented bead. Diameter 4 x 3.5 mm, length 2.5 mm, perforation 1.5 mm. (1071) <1061> **(NI)**
13i Beads (2), small sub-spherical conical, opaque mid blue glass. Diameter 4 mm, length 4 mm, perforation diameter 1.5 mm. (1071) SF 3288
13j Bead, cubic, opaque mid blue glass. Diameter 4 mm, length 4 mm, perforation diameter 1 mm. (1071) SF 3285 **(NI)**
13k Bead, cubic, translucent dark blue glass. Diameter 3 mm, length 2.5 mm, perforation diameter 1 mm. (1071) SF 3286 **(NI)**
13m Bead, asymmetric dumb-bell shaped; amber. Perforation though smaller part. Maximum diameter 12 x 8 mm, length 17 mm, perforation diameter 2 mm. (1071) SF 3294
13n Bead, small annular, amber. Diameter 6 mm, thickness 2.5 mm, perforation diameter 2 mm. (1071) SF 3291
14 **Copper alloy finger ring**, complete but separated into three constituent parts. D-Sectioned wire forming a penannular hoop with terminals widening and flattening slightly (XRF – leaded gunmetal) (SF 3245). An oval plate with notched ends retaining groove on underside into which the hoop terminals fit, differential corrosion on upper face (SF 3296 – bagged with one of the bone bracelets). A rectangular plate with punched marks fitting onto top of shield, an impression of the plate shows two figures in profile facing each other (XRF shows heavily leaded high tin gunmetal which may reflect a gunmetal plate and lead/tin solder SF 3256). Diameter 22 mm, top plate dimensions 8 x 6.5 mm hoop section 1.5 x 1 mm. (1071)
15 **Copper alloy ring**. Annular, rectangular section. Diameter 18 mm, section 1.5 x 1 mm. (1071) SF 3244
16 **Copper alloy ring**. Annular, square section.

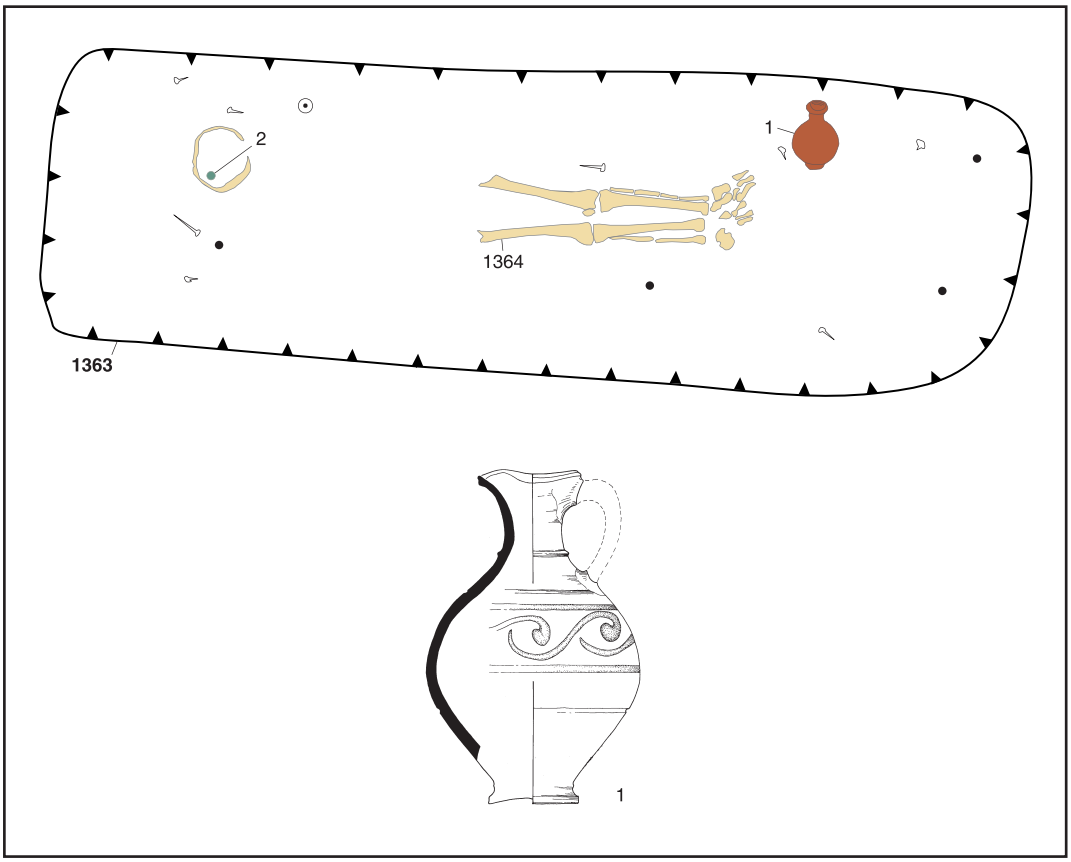


Fig. 3.193 Inhumation Grave 1362

Diameter 18 mm, section 1 mm. (1071) SF 3243
17 **Hobnailed shoe(s)**. Represented by a minimum of 73 hobnails, located inside the coffin beside the right foot. SF 3372

Date: Bead strings such as 1360.10 indicate a late 4th-century date

Inhumation Grave 1362 (7916/0327, Fig. 3.193)

Grave cut 1363
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.55 x 0.80 m, 1.00 m deep
Fill: Brownish white silty chalk (1366)

Skeleton 1364
Posture: Supine, legs extended with feet together
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Fair
Condition: Skull 3, arms 5+, hands 9, torso 9, legs 3, feet 1
Pathology: Calculus

Coffin: Represented by an assemblage of 14 nails. L: 1.97-1.99 m. B: 0.30-0.42 m. Ht: 0.21 m. (1367)

Grave goods:
1 **Vessel**. Fabric TR, New Forest colour-coated ware. Jug of Fulford (1975a) fine ware type 18.2 with cordon at base of neck and grooves on shoulder and lower body. White painted horizontal and wavy line decoration. ?*c* AD 320-370. Complete except for handle which is entirely missing. Located beside the left foot, inside the coffin (1384)
2 **Coin**. Nummus of Constantine I, Gloria Exercitus (2 standards), Arles. AD 333-334 (RIC VII, Arles 370 or 375). Located under skull. Likely to have originally been placed in the mouth. SF 3536

Date: Coin dated AD 333-334 and pottery *c* AD 320-370

Inhumation Grave 1365 (7906/0302, Fig. 3.194)

Grave cut 1062
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.90 x 0.64 m, 0.50 m deep
Fill: Loose light yellowish brown clay silt with frequent chalk pieces (1063)
Relationships: Cut by Grave 1370

Skeleton 1077
Posture: The posture could not be established due to poor preservation
Sex: Undetermined
Age: Adult
Fragmentation: Poor
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 2

Coffin: Represented by an assemblage of 12 nails and an area of coffin fill. L: 1.49 m. B: 0.39 m. Ht: 0.14 m. (1064)

Comments: The north-western part of the grave had been destroyed by Grave 1370

Inhumation Grave 1370 (7905/0302, Fig. 3.195)

Grave cut 1056
Orientation: WNW-ESE
Shape: Sub-rectangular with a slightly rounded south-eastern end
Dimensions: 1.60 x 0.60 m, 0.65 m deep
Fill: Loose light yellowish brown clay silt with frequent chalk pieces (1066)
Relationships: Cut Grave 1365

Skeleton 1083
Posture: Not established due to poor preservation
Age: 6-12. Older child
Fragmentation: Fair
Condition: Skull 3, arms 9, hands 9, torso 9, legs 9, feet 9
Pathology: Scurvy

Coffin: Represented by an assemblage of 14 nails, coffin fittings SF 2880-3 and 2927, and a rectangular area of coffin fill. L: 1.17-1.21 m. B: 0.43-0.44 m. Ht: 0.20 m. (1057)

Grave goods:
1 **Copper alloy bracelet**, complete. Square-sectioned hoop torc-twisted with right-hand twist; one end forms hook, other flattened with rounded end and perforated to form an eye. Diameter 46 x 45 mm, section 1.5 mm. (1066) SF 2870
2 **Copper alloy bracelet**, complete but broken across hoop. Rectangular-sectioned hoop, widest to wrist; surfaces corroded and eroded in places and decoration not ascertainable. One end tapering to hook, other end perforated to form eye. Diameter 45 x 40 mm, section 3.5 x 1.5 mm. (1066) SF 2871 **(NI)**
3 All of the following fragments could be from the

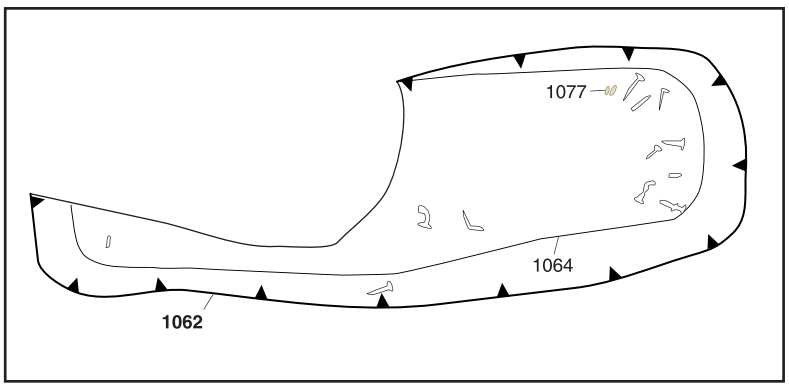


Fig. 3.194 Inhumation Grave 1365

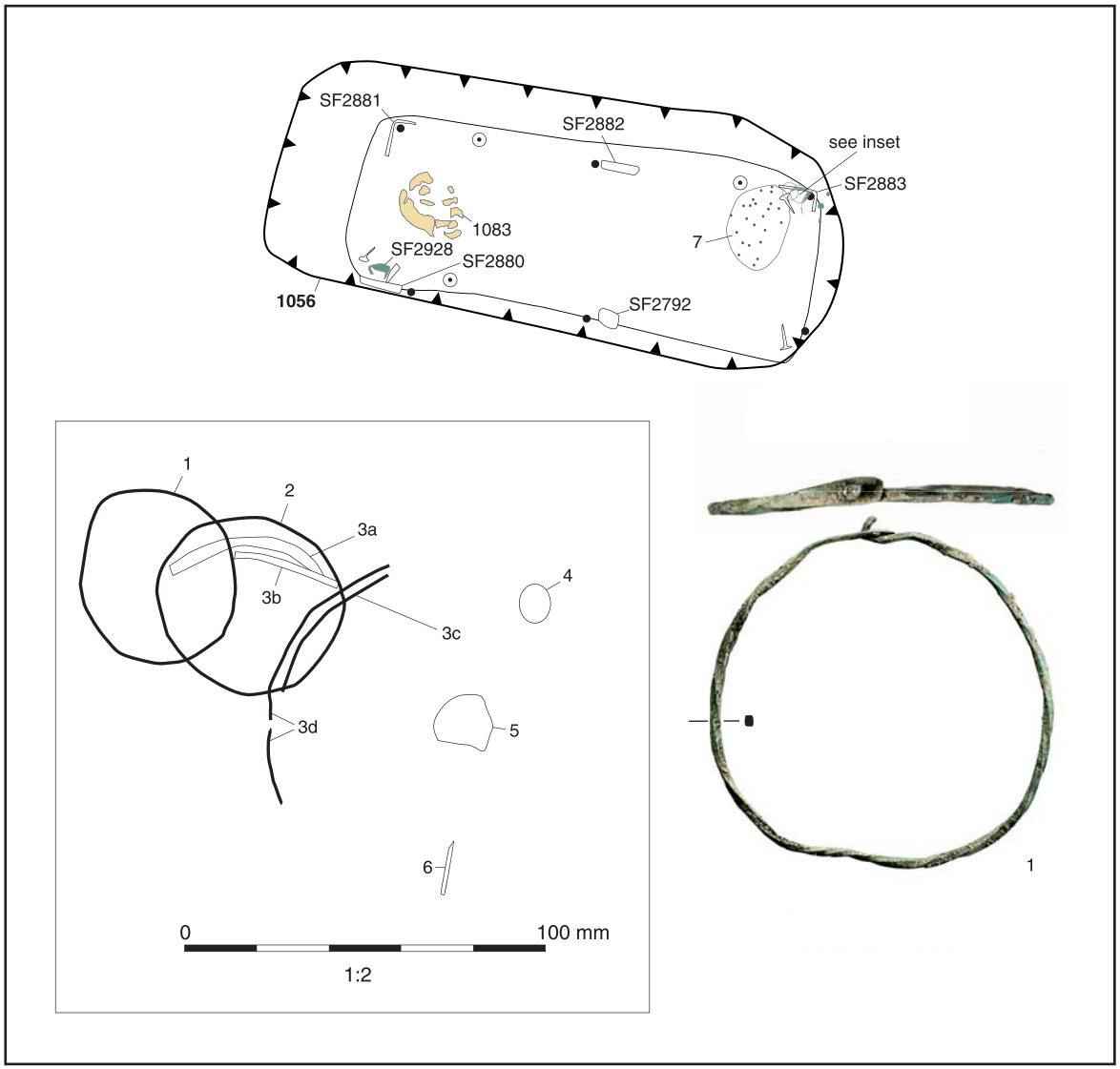


Fig. 3.195 Inhumation Grave 1370

same bracelet but the surfaces are so eroded there can be no certainty. It would be a slightly long total length but not impossible. (not illustrated)
3a **Bone bracelet**; fragment. Rectangular section, both ends broken. Present length 24 mm, section 5 x 2.5 mm. (1066) SF 2872 **(NI)**
3b **Bone bracelet**; fragment. Rectangular section, both ends broken, edges and sides eroded. Present length 29 mm, section 5.5 x 2.5 mm. (1066) SF 2811 **(NI)**
3c **Bone bracelet**; two fragments, all ends broken and eroded. Rectangular section. Present lengths 45 and 25 mm, section 4 x 2 mm. (1066) SF 2874 **(NI)**
3d **Bone bracelet**; three fragments, two joining, all other ends broken and eroded. Rectangular section. Present lengths 61 mm and 14 mm, section (maximum) 5 x 1.5 mm. (1066) SF 2873 **(NI)**
4 **Coin**. Nummus of Theodora, Pietas Romana, Trier. AD 337-341 (cf LRBC1, 120). SF 2867
5 **Coin**. Nummus, Constantinopolis, victory on prow, Trier. AD 330-331 (RIC VII, Trier 530). SF 2868
6 **Coin**. Nummus, Urbs Roma, wolf and twins, Trier. AD 330-331 (RIC VII, Trier 529). SF 2869
7 **Hobnailed shoe(s)**. Represented by a minimum of 16 hobnails, located inside the coffin, possibly associated with the feet. SF 2897

Other finds: A boot plate (SF 2927) was recovered from the backfill

Date: The latest coin is dated AD 337-341. Bracelet 1370.1 dates to the 4th century

Inhumation Grave 1373 (7885/0325, Fig. 3.196)

Grave cut 1372
Orientation: NNW-SSE
Shape: Sub-rectangular
Dimensions: 2.60 x 0.80 m, 1.10 m deep
Fill: Loose reddish brown clay silt and chalk (1369)
Relationships: Cut Graves 1334, 1515, 1535

Skeleton 1371
Posture: Not established due to poor preservation
Sex: Undetermined
Age: Adult
Fragmentation: Poor

Condition: Skull 5+, arms 9, hands 9, torso 9, legs 5+, feet 5+
Pathology: DEH

Additional human remains: Numerous fragments of an older adult ?male (1369)

Coffin: None

Grave goods:

1 **Conical beaker**; 12 joining fragment, large part of one side missing. Light green glass with many small bubbles. Out-turned rim, edge fire-rounded; straight side sloping into narrow concave base with traces of pontil scar. Height 96 mm, rim diameter 68 mm, base diameter 22 mm, wall thickness 1 mm. (1376) SF 3486
2 **Vessel**. Fabric TR, New Forest colour-coated ware. Jug of Fulford (1975a) fine ware type 17. *c* AD 350-400. Complete. Located to the left of the skull. (1374)
3 **Coin**. Nummus of ?Constantius II, Fel Temp Reparatio (falling horseman). ?AD 348-350. Damaged, ?regular. SF 3501
4 **Coin**. Nummus, ?Spes Reipublice. *c* AD 355-360. SF 3502
5 **Coin**. Nummus of Arcadius, Victoria Auggg. AD 388-402. SF 3503
6 **Coin**. Nummus, Salus Reipublicae. AD 388-402. SF 3504
7 **Coin**. Sestertius of ?Antoninus Pius, standing figure. ?AD 138-161. SF 3505
8 **Coin**. Nummus, Salus Reipublicae. AD 388-402. SF 3506
9 **Coin**. Nummus, uncertain. ?AD 388-402. General character and small, cracked flan suggest date. SF 3507

Other finds: One sherd (2 g) of pottery, fabric SG (1369)

Date: Coins dated AD 388-402

Comments: The coins were surrounded by a small patch of dark, organic silt, possibly the decayed remains of an organic container

Inhumation Grave 1375 (7920/0331Fig. 3.197)

Grave cut 1283
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.40 x 0.70 m, 1.11 m deep
Fill: Loose mid brown silty sand with 30-35% chalk fragments (1286)

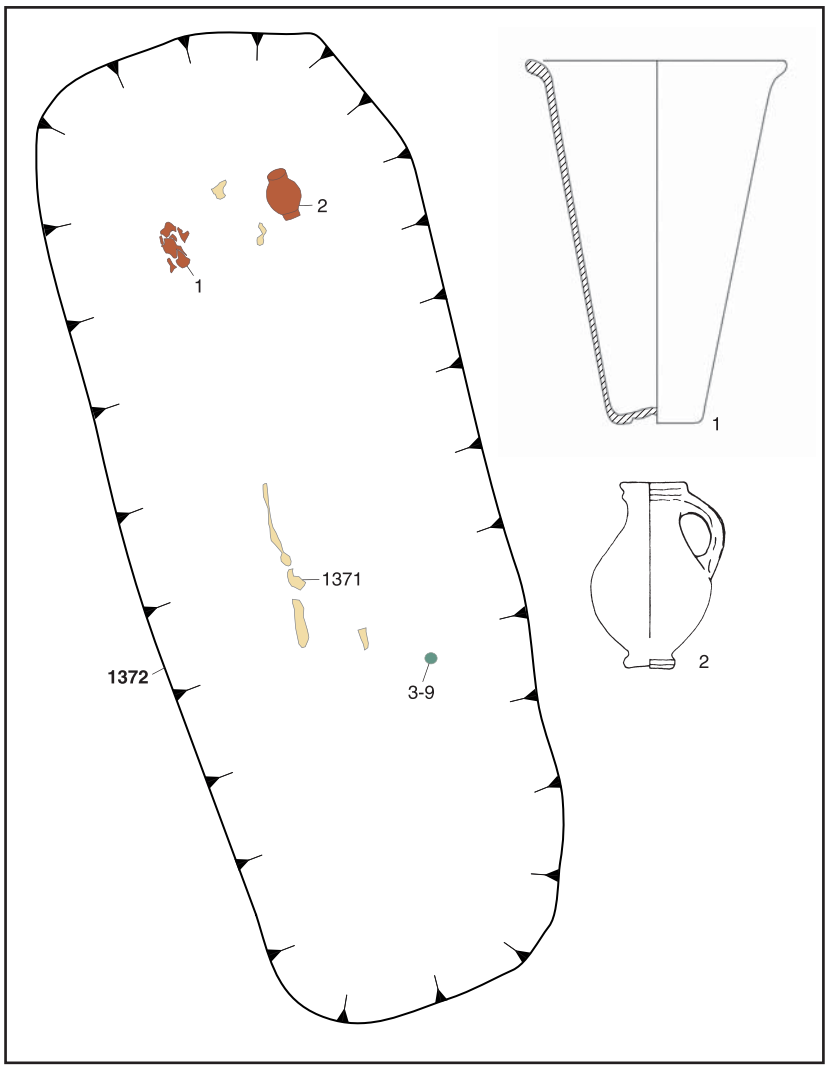


Fig. 3.196 Inhumation Grave 1373

Relationships: Relationships with Graves 1302 and 1324 could not be established as the features only intersected slightly

Skeleton 1284
Posture: Supine, legs extended and parallel
Arm position: Both arms flexed, lying across the stomach
Sex: ?Male
Age: Adult
Height: 178.9
Fragmentation: Fair
Condition: Skull 1, arms 4, hands 5+, torso 5+, legs 2, feet 1
Pathology: AMTL, DEH. Peg molar

Additional human remains: Fragments of a second adult (1286)

Coffin: Represented by an assemblage of 14 nails. L: 2.05-2.09 .m B: 0.43-0.45 m. Ht: 0.19 m. (2013)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 19 hobnails and two definite and one possible boot plates, associated with the left foot. SF 3393
2 **Hobnailed shoe**. Represented by a minimum of 13 hobnails and two boot plates, associated with the right foot. SF 3394

Other finds: A minimum of one hobnail was recovered from soil sample <1118>, taken from around the feet. Twenty-four sherds (180 g) of pottery, fabrics TCA (1 rim, Drag 31), TF, TR, ZF, ZM and SG, the last including a jar rim (1286)

Inhumation Grave 1379 (7921/0314, Fig. 3.198)

Grave cut 1380
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.50 x 0.85 m, 1.20 m deep
Fill: Mixed chalk and soil (1381)
Relationships: Cut Graves 1395, 1412 and 1460 and an unexcavated (unnumbered) grave, and ditch 450

Skeleton 1383
Posture: Not established due to poor preservation

Additional human remains: Numerous fragments of an adult and a child *c* 5 years old (1381)

Coffin: Represented by an assemblage of 11 nails. L: 1.79-1.85 m. B: 0.40-0.46 m. Ht: 0.14 m. (1382)

Grave goods:
1 **Copper alloy sheet fragment**, retaining two sides at 90 degrees. Dimensions 17 x 10 mm, thickness 1 mm. (1381) SF 3519 **(NI)**
2 **Hobnailed shoe**. Represented by a minimum of 46 hobnails, associated with the left foot. SF 3521
3 **Hobnailed shoe**. Represented by a minimum of 39 hobnails, associated with the right foot. SF 3520

Other finds: A minimum of four hobnails were recovered from soil sample <1165>, taken from around the feet, and one from soil sample <1164>, taken from the torso
Six sherds (97 g) of pottery, fabric ZM, including a flanged bowl (Fig. 4.2, No. 5) (1381)

Comments: Fragmentary *in situ* skeletal remains were observed on site but did not survive in a condition to

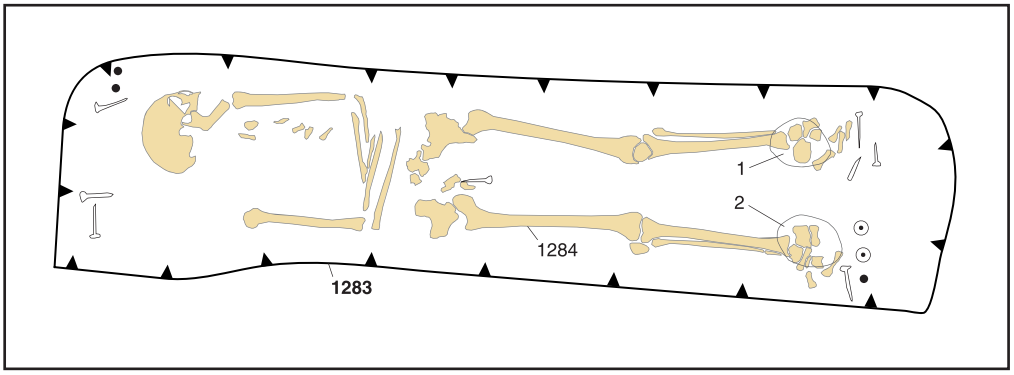


Fig. 3.197 Inhumation Grave 1375

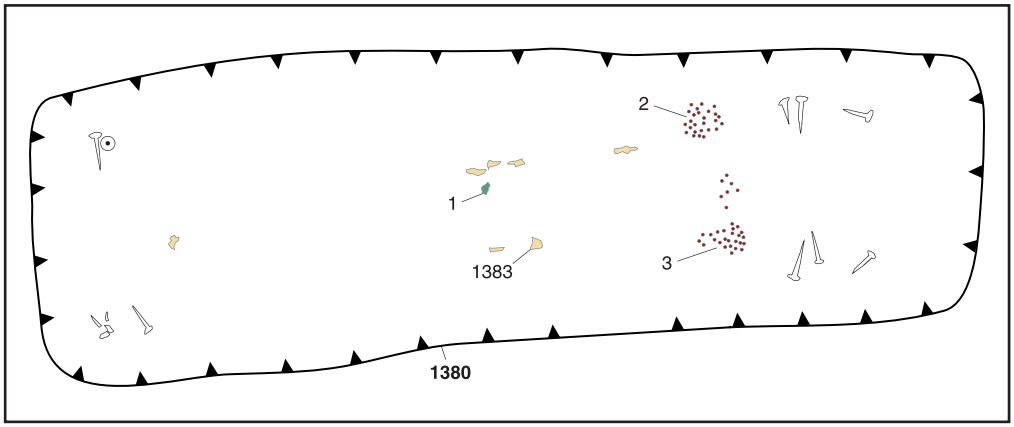


Fig. 3.198 Inhumation Grave 1379

be lifted. Remains in backfill 1381 probably derive from graves cut by 1379

Inhumation Grave 1385 (7912/0332, Fig. 3.199)

Grave cut 1386
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.45 x 0.65 m, 0.60 m deep
Fill: Friable mid yellowish brown clay silt and chalk (1387)

Skeleton 1438
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Good
Condition: Skull 9, arms 9, hands 9, torso 9, legs 5+, feet 9

Coffin: Represented by an assemblage of 9 nails and a small area of coffin stain defining part of the eastern end. L: 1.85-1.90 m. B: 0.33-0.34 m. Ht: 0.14 m. (1388)

Grave goods:
1 **Copper alloy bracelet**. Square-sectioned hoop tapering to circular-sectioned ends; expanding joint with four and a half turns around opposite side of hoop. Centre part of hoop torc-twisted. Diameter 106 x 103 mm, section 3.5 mm. (1385) SF 3612

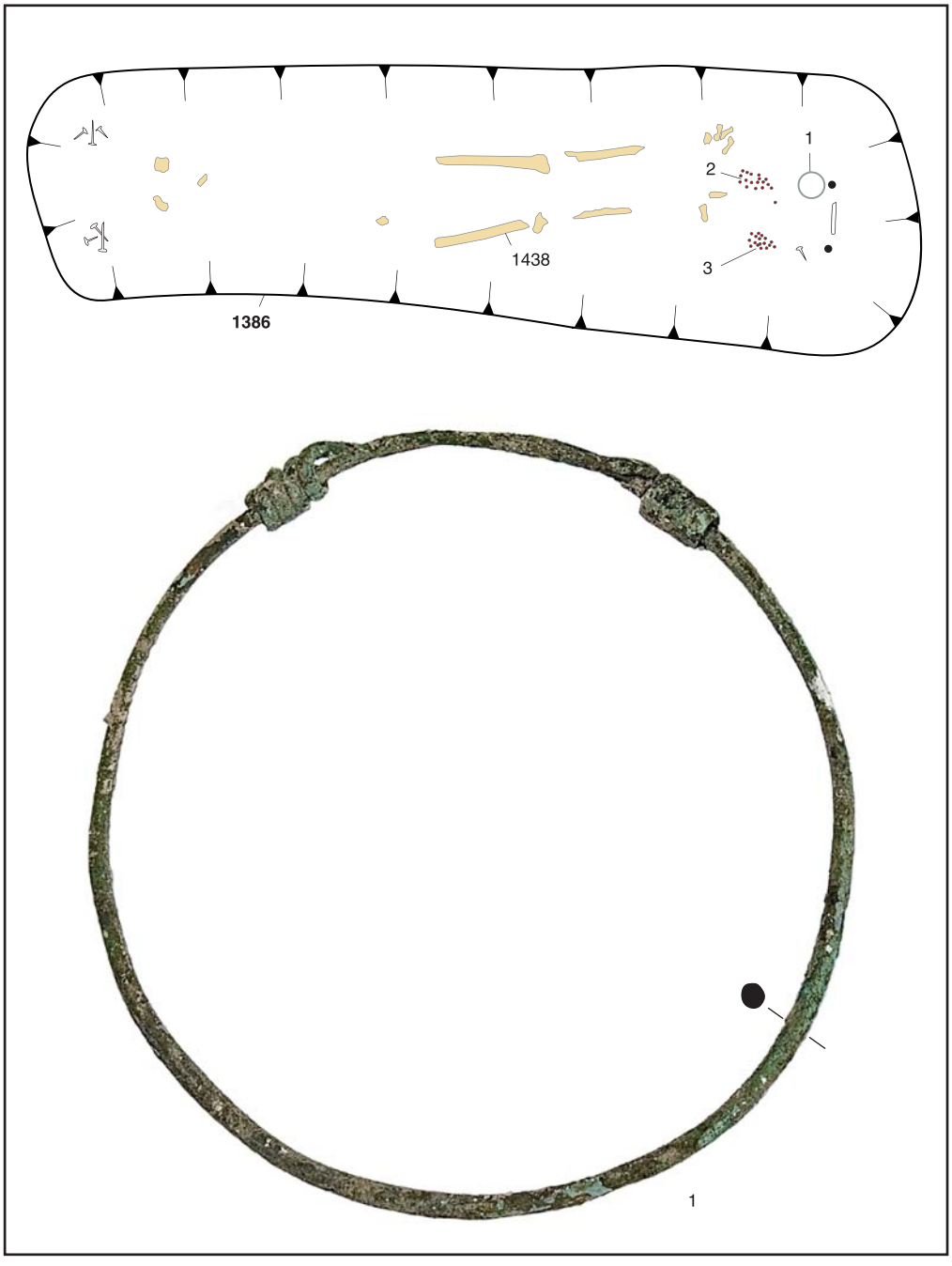


Fig. 3.199 Inhumation Grave 1385

2 **Hobnailed shoe**. Represented by a minimum of 19 hobnails (including soil sample <1207>), associated with the left foot. SF 3615
3 **Hobnailed shoe**. Represented by a minimum of 15 hobnails (including soil sample <1208>) and four boot plates, associated with the right foot. SF 3539

Other finds: One sherd (9 g) of pottery, fabric TF (1387)

Date: Calibrated radiocarbon date (2σ) AD 236-400

Inhumation Grave 1394 (7891/0316, Fig. 3.200)

Grave cut 1391
Orientation: SW-NE
Shape: Rectangular
Dimensions: 2.07 x 0.68 m, 1.44 m deep
Fill: Loose chalk and former topsoil (1392)

Skeleton 1393
Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed with the hand resting on the right side of the pelvis; right arm flexed, lying across the stomach
Sex: Male
Age: 60+. Much older adult
Height: 170.4
Fragmentation: Good
Condition: Skull 2, arms 1, hands 1, torso 1, legs 1, feet 2
Pathology: Possible left rib healed fracture. Spinal Schmorl's nodes and intervertebral disc disease. Caries (x2), calculus, periodontal disease

Coffin: Represented by an assemblage of 16 nails. L: 1.75-1.78 m. B: 0.45-0.47 m. Ht: 0.21 m. (2014)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 73 hobnails (including soil sample <1182>), associated with the left foot. SF 3549, 3550, 3551, 3552
2 **Hobnailed shoe**. Represented by a minimum of 110 hobnails (including soil sample <1183>), associated with the right foot. SF 3546, 3547, 3553

Other finds: one sherd (2 g) of pottery, fabric ZG? (1392)

Inhumation Grave 1395 (7922/1314, not illustrated)

Grave cut 1396
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.35 x 0.83 m, 1.10 m deep
Fill: Mixed chalk and soil (1397)
Relationships: Cut Grave 1464. Cut by Grave 1379 and an unexcavated (unnumbered) grave

Coffin: None

Comments: The grave had been largely destroyed by Grave 1379 and an unexcavated grave, leaving only the north-western and south-eastern corners. Only the north-eastern corner was excavated, where the fill had become unstable during the excavation of Grave 1379. No skeletal remains or evidence for a coffin were recovered

Inhumation Grave 1400 (7884/0324, Fig. 3.201)

Grave cut 1401
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >0.85 x 0.40 m, 0.35 m deep
Fill: Loose reddish brown clay silt and chalk (1398)
Relationships: Cut by Grave 1334

Skeleton 1399
Posture: The posture could not be established due to poor preservation
Age: 2-5. Young child
Fragmentation: Poor
Condition: Skull 3, arms 9, hands 9, torso 9, legs 9, feet 9

Additional human remains: Fragments of an adult (1411)

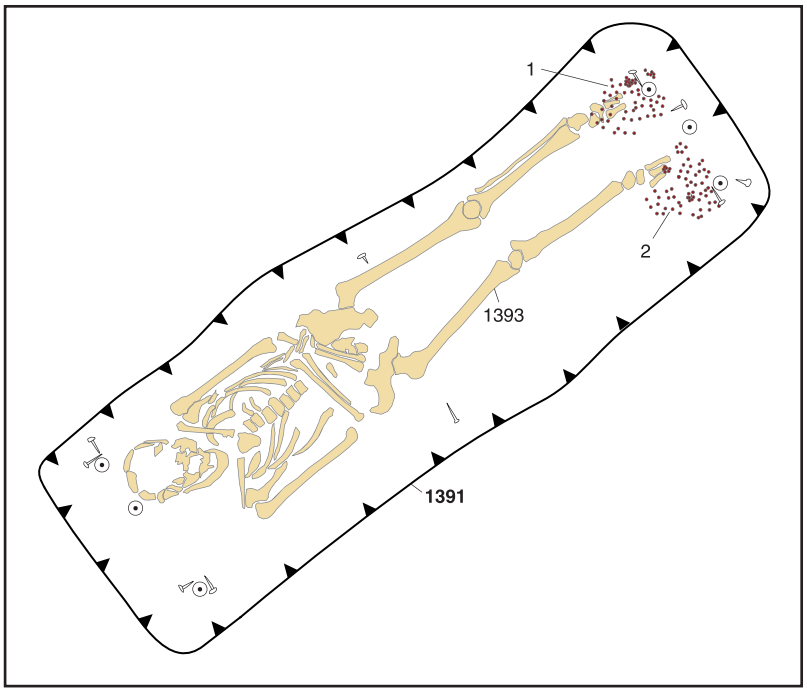


Fig. 3.200 Inhumation Grave 1394

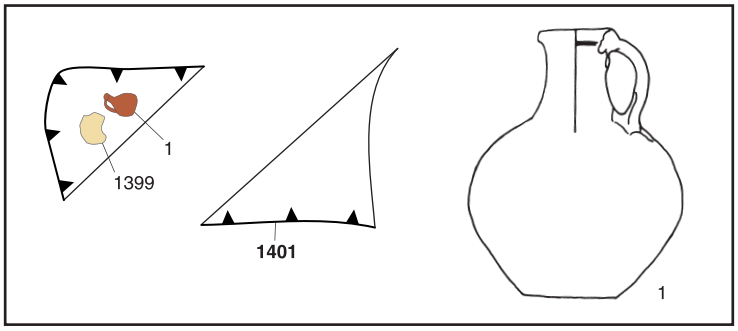


Fig. 3.201 Inhumation Grave 1400

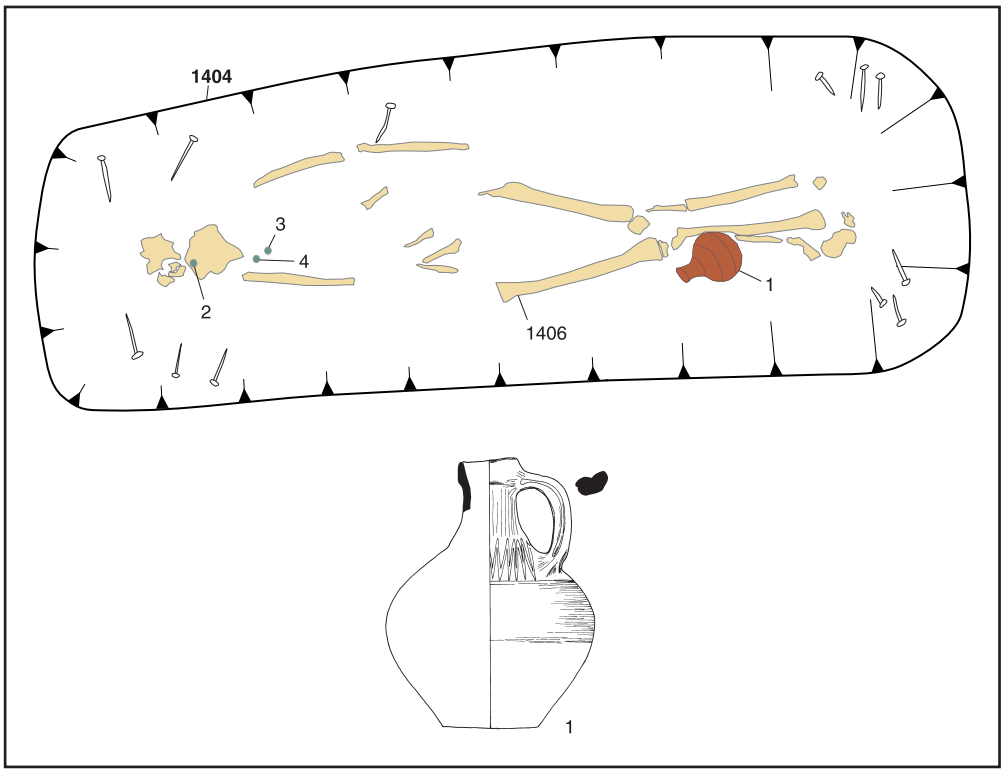


Fig. 3.202 Inhumation Grave 1403

Coffin: Two nails located in the NW corner of the grave may be evidence for a coffin, but this is not certain

Grave goods:
1 **Vessel**. Fabric TR, New Forest colour-coated ware. Small jug of Fulford (1975a) fine ware type 22. *c* AD 340-400. Complete. Located to the left of the skull, inside the coffin. (1402)

Date: Pottery dated AD 340-400

Comments: The eastern end of the grave had been cut away by Grave 1334, and a modern pipe trench had destroyed the central part. The skeletal remains in 1411 are in the backfill of the pipe trench and are therefore not certainly associated with this grave

Inhumation Grave 1403 (7909/0329, Fig. 3.202)

Grave cut 1404
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.47 x 0.72 m, 0.85 m deep
Fill: Firm dark grey silty chalk (1406)

Skeleton 1405
Posture: Supine, legs extended and close together
Arm position: The positions of the arms were uncertain due to poor preservation, although it is likely that the left arm was extended beside the body and the right arm semi-flexed
Sex: Undetermined
Age: Adult
Fragmentation: Good
Condition: Skull 1, arms 3, hands 9, torso 9, legs 2, feet 1
Pathology: Right fibula healed fracture

Coffin: Represented by an assemblage of 12 nails defining the corners. L: 1.96-2.10 m. B: 0.53 m. Ht: 0.24 m. (2015)

Grave goods:
1 **Vessel** 1450. Fabric ZM, New Forest reduced coarse

ware with black slip on neck and shoulder. Jug of Fulford (1975a) grey ware type 20.4, with burnished zig-zag line on shoulder. *c* AD 270-350. Top of rim is chipped, apparently in antiquity, otherwise complete. Located beside the right leg, inside the coffin, toppled onto its side. (1450)
2 **Coin**. Nummus, Urbs Roma, wolf and twins. AD 330-335. Located among the remains of the skull. SF 3623
3. **Coin**. Nummus of Constantius II, Gloria Exercitus (2 standards), Arles. AD 330-335. SF 3624
4. **Coin**. Nummus of Constantius II, Gloria Exercitus (2 standards). AD 330-335. Located in the neck/upper chest area. SF 3625

Date: Coins dated AD 330-335, pottery dated AD 270-350

Inhumation Grave 1410 (7891/0320, Fig. 3.203)

Grave cut 1407
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 0.80 x 0.35 m, 0.20 m deep
Fill: Compact chalk (1409)

Skeleton 1408
Posture: Posture could not be established as only skull fragments survived
Age: Infant
Fragmentation: Poor
Condition: Skull 2, arms 9, hands 9, torso 9, legs 9, feet 9

Additional human remains: Fragments of an adult (1409)

Coffin: Represented by an assemblage of 8 nails defining the corners. L: 0.67-0.70 m. B: 0.19 m. (2016)

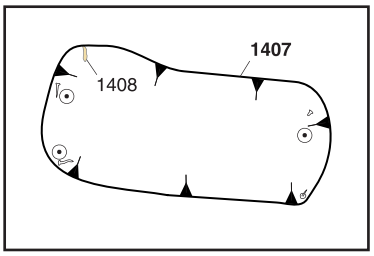


Fig. 3.203 Inhumation Grave 1410

Inhumation Grave 1412 (7919/0314, Fig. 3.204)

Grave cut 1413
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.10 x 0.74 m, 1.04 m deep
Fill: Mixed chalk and soil (1414)
Relationships: Cut Grave 1460 and hedgerow 460, cut by Graves 1341 and 1379

Skeleton 1416
Posture: Supine, legs extended and crossed at the ankles
Arm position: Left arm semi-flexed; right arm extended with the hand resting on the head of the right femur
Sex: Female
Age: 18-25. Young adult
Fragmentation: Fair
Condition: Skull 1, arms 3, hands 5+, torso 1, legs 2, feet 2
Pathology: Cribra orbitalia. DEH. Sinusitis

Coffin: Represented by an assemblage of 12 nails defining the corners. L: 1.70-1.71 m. B: 0.34-0.35 m. (1415)

Grave goods:
1 **Hobnailed shoes**. Represented by a minimum of 69 hobnails, located in the area of the feet, but could not be separated due to the proximity of the feet and so were collected as a single group. SF 3602

Other finds: A minimum of six hobnails were recovered from soil sample <1187>, taken from around the right hand

Comments: The north-eastern corner of the grave had been destroyed by Grave 1379

Inhumation Grave 1437 (7882/1318, Fig. 3.205)

Grave cut 1357
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.10 x 0.80 m, 0.55 m deep
Fill: Friable mid brown chalky silt (1358)

Skeleton 1361
Posture: Supine
Arm position: Both arms were raised above the head and folded with each hand beneath the opposite elbow
Sex: Female

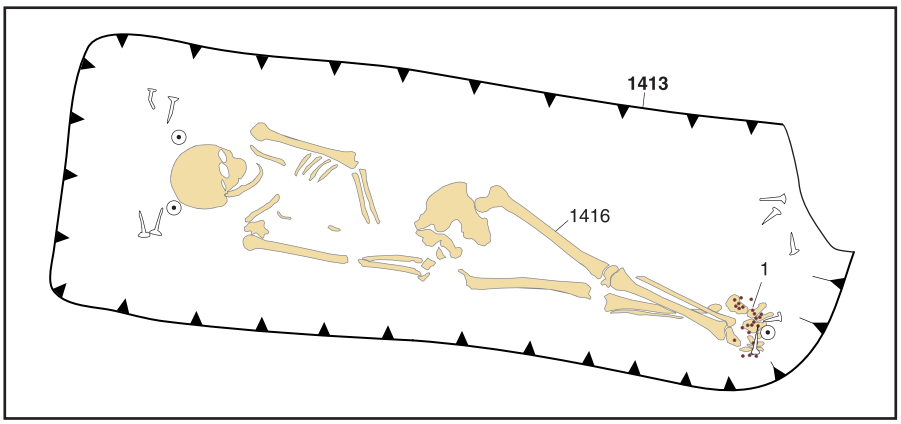


Fig. 3.204 Inhumation Grave 1412

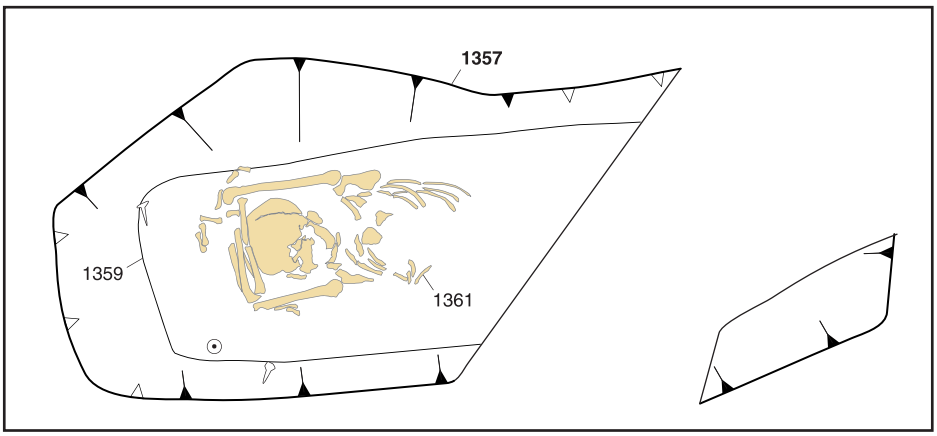


Fig. 3.205 Inhumation Grave 1437

Age: Adult
Fragmentation: Fair
Condition: Skull 1, arms 1, hands 1, torso 2, legs 9, feet 9
Pathology: 2 healed rib fractures. Caries, AMTL, DEH, periodontal disease. Sinusitis

Additional human remains: Fragments of a subadult (1358, 1359)

Coffin: Represented by an assemblage of 3 nails located at the north-western and south-western corners and an area of coffin fill. B: 0.48 m. (1359)

Comments: The eastern half of the grave had been destroyed by modern foundations

Inhumation Grave 1440 (7883/0325, Fig. 3.206)

Grave cut 1442
Orientation: N-S
Shape: Sub-rectangular
Dimensions: 2.60 x 0.80 m, 1.20 m deep
Fill: Loose reddish brown clay silt and chalk (1439)
Relationships: Cut Grave 1515. Relationship with Grave 1555 could not be established as the features only intersected slightly

Skeleton 1441
Posture: Supine, legs extended and parallel
Arm position: The positions of the arms could not be established due to poor preservation
Sex: ?Male
Age: Adult
Fragmentation: Fair
Condition: Skull 4, arms 5, hands 9, torso 9, legs 4, feet 5

Additional human remains: Fragments of a second adult (1439)

Coffin: Represented by an assemblage of 11 nails. L: 2.04 m. B: 0.30-0.34 m. (2017)

Grave goods:
1 **Glass vessel**. Rounded wide conical cup/bowl; seven large fragments with numerous small fragments and chips. Pale green glass with small bubbles; much corroded and granulating in places leading to fragmentation and likely loss of glass. Currently *c* 35% rim extant, most of body and all of base present. curved rim edge cracked off but probably not ground; wide convex-curved body; very slightly concave base. Surfaces thickly encrusted by enamel like iridescence and chalk/mortar deposits; traces of possible abraded bands below rim edge and on upper body, unclear whether any bands on lower body. Height 95 mm, rim diameter *c* 130 mm, base diameter 35 mm, wall thickness 2 mm. (1444) SF 3661
2 **Vessel**. Fabric TR, New Forest colour-coated ware. Beaker of Fulford (1975a) fine ware type 30. *c* AD 300-400. Complete. Located to the right of the skull. (1443)
3 **Coin**. Nummus, uncertain. ??AD 388-402. SF 3626
4 **Coin**. Nummus, Victoria Auggg. AD 388-402. SF 3627
5 **Coin**. Nummus of Theodosius I, Victoria Auggg. AD 388-395. SF 3628
6 **Coin**. Nummus of Valens, Securitas Reipublicae, Arles. AD 364-378 (LRBC2, 542). Fused to SF 3629b. SF 3629a
7 **Coin**. Nummus of Valentinian I, Gloria Romanorum. AD 364-375. Fused to SF 3629a. SF 3629b
8 **Penannular brooch**. Iron. Circular-sectioned hoop with turned back terminals, pin retaining mineralised remains, possibly fabric. Diameter 25 mm, hoop section 3.5 mm. SF 3640

Other finds: Eight sherds (76 g) of pottery, fabrics ZF and ZM (1439)

Date: Coins dated AD 388-402. Calibrated radiocarbon date (2σ) AD 240-401

Inhumation Grave 1455 (7883/1314, Fig. 3.207)

Grave cut 1456
Orientation: NW-SE
Shape: Sub-rectangular
Dimensions: 2.20 x 0.85 m, 0.60 m deep
Fill: Friable light greyish brown chalky silt (1457)

Skeleton 1474
Posture: Supine, legs extended and together. The skull has been displaced and was lying on its top
Arm position: Left arm extended beside body; right arm semi-flexed with the hand resting on the central part of the pelvis
Sex: Undetermined
Age: 45+. Older adult
Fragmentation: Good

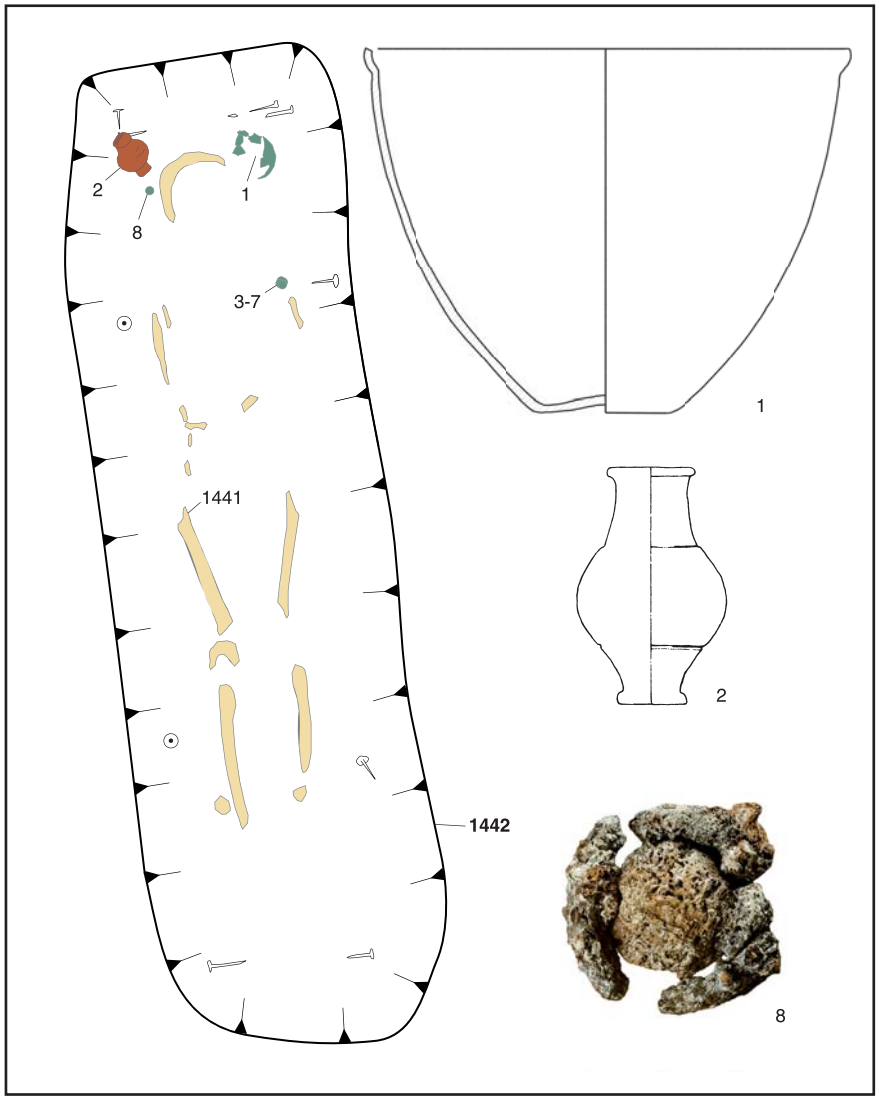


Fig. 3.206 Inhumation Grave 1440

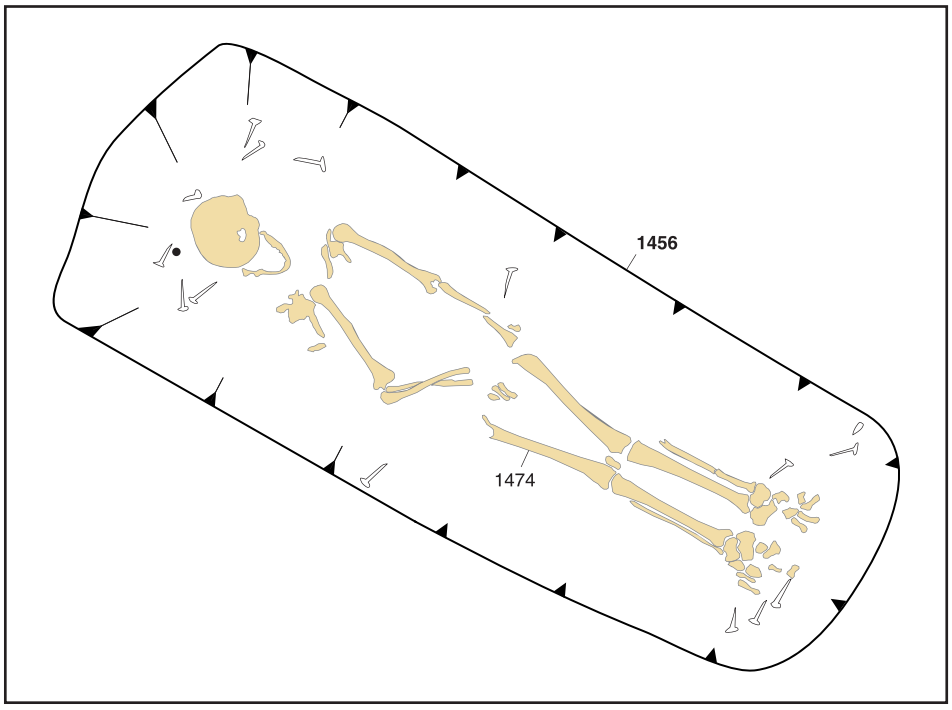


Fig. 3.207 Inhumation Grave 1455

Condition: Skull 1, arms 3, hands 2, torso 9, legs 3, feet 1
Pathology: Calculus, periodontal disease

Coffin: Represented by an assemblage of 16 nails. L: 1.80-1.93 m. B: 0.42-0.51 m. Ht: 0.16 m. (2018)

Inhumation Grave 1460 (7920/0304, not illustrated)

Grave cut 1461
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.45 x 0.70 m, 0.85 m deep
Fill: Mixed chalk and soil (1462)
Relationships: Cut ditch 450. Cut by Graves 1340, 1379 and 1412

Skeleton 1463
Posture: The posture could not be established due to poor preservation
Age: Child
Fragmentation: Good
Condition: Skull 9, arms 2, hands 9, torso 2, legs 9, feet 9

Coffin: None

Comments: Much of this grave had been destroyed by Graves 1379 and 1414, leaving only the north-western quarter and the south-eastern corner

Inhumation Grave 1464 (7921/0315, not illustrated)

Grave cut 1465
Orientation: W-E
Shape: Sub-square
Dimensions: 0.90 x 0.80 m, 0.50 m deep
Fill: Mixed chalk and soil (1466)
Relationships: Cut ditch 450 and gully 470. Cut by Graves 1336 and 1395

Skeleton 1467
Posture: On left side
Arm position: Extended in front of the body
Age: Infant
Fragmentation: Excellent
Condition: Skull 9, arms 0, hands 0, torso 0, legs 0, feet 9

Coffin: None

Comments: The western end of the grave had been destroyed by Grave 1336, removing the skull, and the southern edge by Grave 1379, removing the legs with the exception of the left femur

Inhumation Grave 1475 (7913/0331, Fig. 3.208)

Grave cut 1476
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.50 x 0.70 m, 0.80 m deep
Fill: Friable mottled orange brown clay silt and chalk (1478)
Relationships: Cut Grave 1510

Skeleton 1477
Posture: Supine, legs extended with feet together
Arm position: Positions of the arms could not be established due to poor preservation
Sex: ?Female
Age: Adult
Fragmentation: Good
Condition: Skull 2, arms 5, hands 9, torso 9, legs 3, feet 1
Pathology: Periostitis right and left tibia. DEH

Coffin: Represented by an assemblage of 18 nails. L: 1.84-1.89 m. B: 0.48-0.52 m. Ht: 0.17 m. (2019)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 112 hobnails, located inside the coffin beside the left foot. SF 3717
2 **Hobnailed shoe**. Represented by a minimum of 56 hobnails, located inside the coffin beside the left ankle. SF 3756
Other finds: Nine sherds (88 g) of pottery, fabrics TF (rim of NFF type 59), ZC, ZF and SG (1478)

Date: New Forest fine ware type 59 in backfill dated *c* AD 320-400

Inhumation Grave 1479 (7910/0322, Fig. 3.209)

Grave cut 1480
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.54 x 0.90 m, 1.18 m deep
Fill: Loose chalk with some former topsoil (1483)

Skeleton 1481
Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed with the hand resting over the central part of the pelvis; right arm extended beside body
Sex: Male
Age: 18-25. Young adult
Height: 168.9
Fragmentation: Good

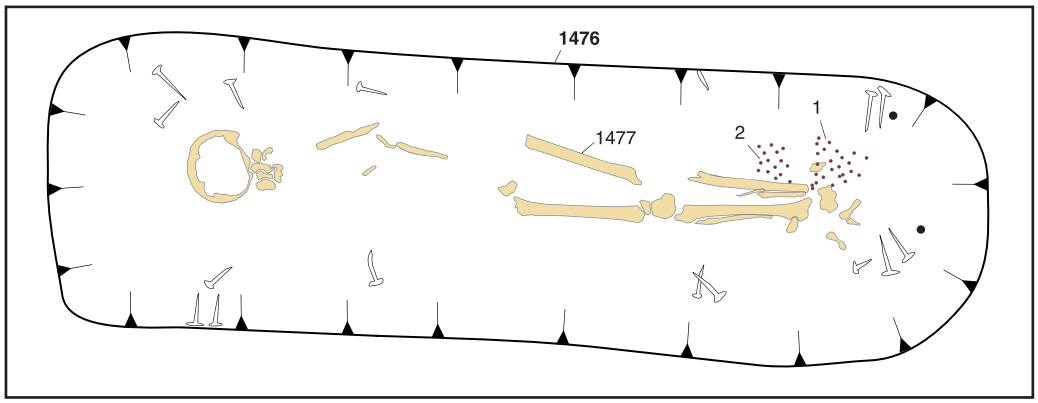


Fig. 3.208 Inhumation Grave 1475

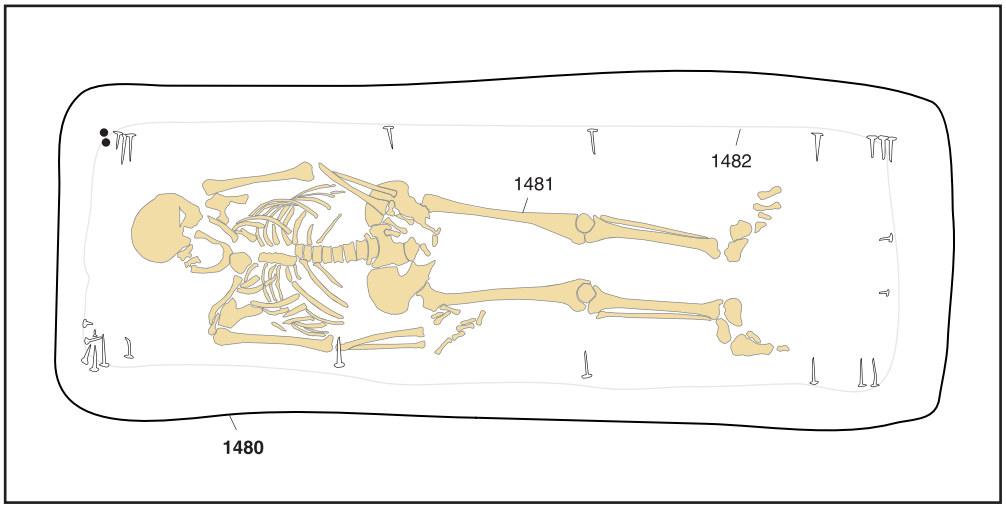


Fig. 3.209 Inhumation Grave 1479

Condition: Skull 5, arms 1, hands 0, torso 1, legs 0, feet 4
Pathology: Periostitis left and right tibia. Cleft neural arch S1&2. Calculus, periodontal disease

Additional human remains: Fragments of a second adult (1483)

Coffin: Represented by an assemblage of 23 nails, and a coffin stain defining the outline. L: 1.94-1.98 m. B: 0.59-0.60 m. Ht: 0.25 m. (1482)

Other finds: Flint scraper SF 3793 was recovered from the base of the grave
One sherd (5 g) of pottery, fabric ZG?

Inhumation Grave 1490 (7892/0315, Fig. 3.210)

Grave cut 1484
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 1.30 x 0.60 m, 0.60 m deep
Fill: Compact light brown silty soil and chalk (1486)
Relationships: Cut layer 1629. Cut by Grave 1491 and posthole 1458

Skeleton 1485
Posture: Not established due to poor preservation
Age: Infant?
Fragmentation: Good
Condition: Skull 2, arms 9, hands 9, torso 9, legs 9, feet 9

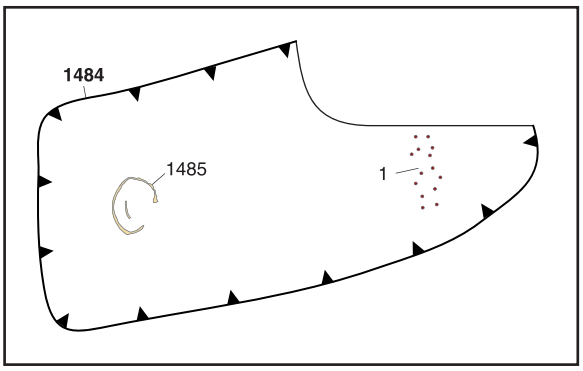


Fig. 3.210 Inhumation Grave 1490

Coffin: Represented by an assemblage of 13 nails. L: 1.10 m. B: 0.35 m. Ht: 0.13 m. (2020)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 27 hobnails (including a minimum of one recovered from soil sample <1232>), located in the area of the feet. SF 3804

Other finds: Coin SF 3633. Nummus of Gratian, Securitas Reipublicae, Lyons. AD 367-375 (LRBC2, 333 or 337)

Date: Coin dated AD 367-375

Comments: The north-eastern corner of the grave had been destroyed by Grave 1491

Inhumation Grave 1491 (7893/0316, Fig. 3.211)

Grave cut 1487
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.50 x 0.90 m, 1.60 m deep
Fill: Compact chalk and silty soil (1489)
Relationships: Cut Graves 1490, 1521 and layer 1629

Skeleton 1488
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body; right arm semi-flexed with the hand resting on the opposite side of the pelvis
Sex: Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 2, arms 5+, hands 4, torso 9, legs 4, feet 1
Pathology: Left talus, small area of evulsed/fractured bone. Calculus, periodontal disease, AMTL

Additional human remains: Fragments of a second adult (1489)

Coffin: Represented by an assemblage of 14 nails. L: 1.91-1.94 m. B: 0.50 m. Ht: 0.25 m. (2021)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 95 hobnails (including soil sample <1280>), associated with the left foot. SF 3916
2 **Hobnailed shoe**. Represented by a minimum of 69

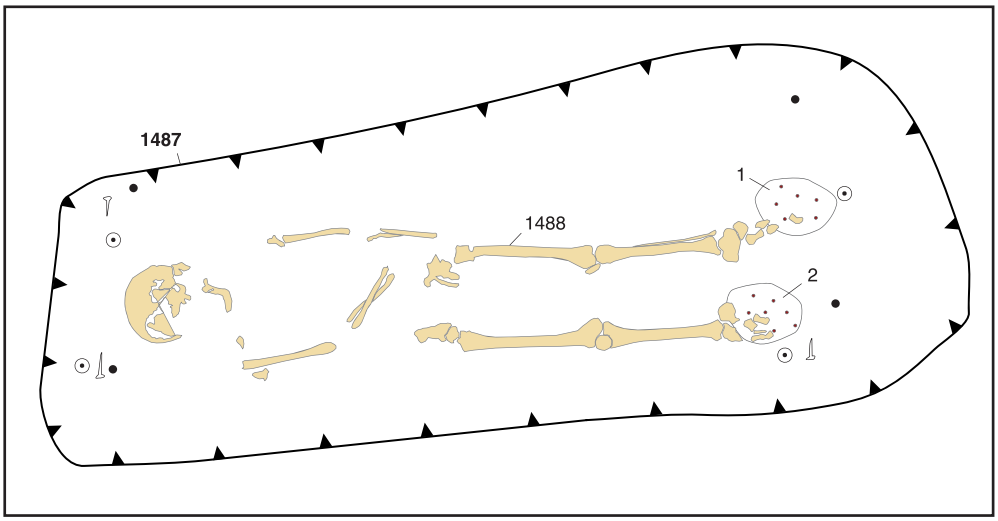


Fig. 3.211 Inhumation Grave 1491

hobnails (including soil sample <1279>), associated with the right foot. SF 3915

Other finds: Coin. Antoninianus of Gallienus, Iovi Cons Aug. AD 260-268. SF 4205
A single hobnail was recovered from the backfill
Seventy three sherds (1437 g) of pottery, fabrics TR, WF, YF, YM, ZF, ZM and SG. The bulk of the material is in fabric SG, including rims of 3 jars (see Fig. 4.2, No. 6) and 2 dishes (see Fig. 4.2, No. 7) (1489)
Date: Fill of Grave 1490 contained a coin dated AD 367-375. Fabric SG dish (Fig. 4.2, No. 7) is dated after AD 350 and may be later. Calibrated radiocarbon date (2σ) AD 257-303 & 316-408

Inhumation Grave 1495 (7902/0309, Fig. 3.212)

Grave cut 1492
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 2.24 x 0.90 m, 1.31 m deep
Fill: Loose silty sand and chalk (1494)
Relationships: Cut by Grave 291. Relationship with Grave 540 could not be established as the features only intersected slightly

Skeleton 1493
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body; right arm semi-flexed

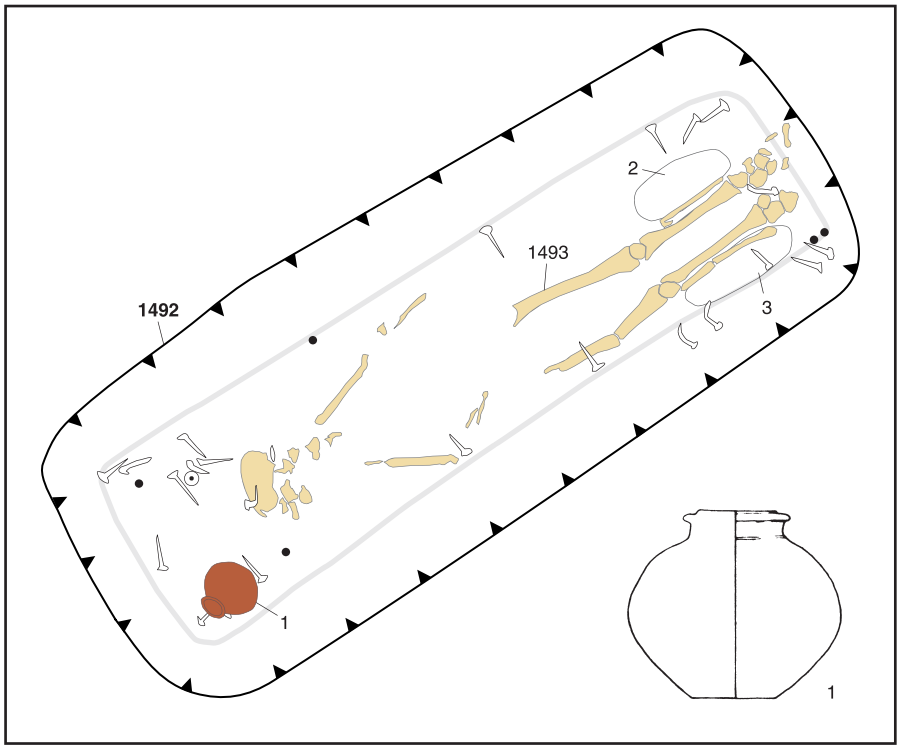


Fig. 3.212 Inhumation Grave 1495

Sex: Female
Age: Adult
Fragmentation: Good
Condition: Skull 3, arms 3, hands 3, torso 9, legs 3, feet 0
Pathology: Cribra orbitalia. DEH, lesions (x2)

Coffin: Represented by an assemblage of 30 nails and a rectangular coffin stain. L: 1.88-1.91 m. B: 0.49-0.50 m. Ht: 0.30 m. (2022)

Grave goods:
1 **Vessel**. Fabric ZM, New Forest reduced coarse ware. Jar of Fulford (1975a) grey ware type 32.1, burnished overall. *c* AD 270-350. Complete. Located inside the south-western end of the coffin, beyond the skull. (1496)
2 **Hobnailed shoe**. Represented by a minimum of 90 hobnails, associated with the left foot. SF 3732
3 **Hobnailed shoe**. Represented by a minimum of 87 hobnails, associated with the right foot. SF 3733

Other finds: A minimum of three hobnails were recovered from soil sample <1249>, taken from around the feet

Date: Pottery dated AD 270-350

Inhumation Grave 1500 (7915/0315, Fig. 3.213)

Grave cut 1497
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.68 x 1.04 m, 0.52 m deep
Fill: Compact light grey silty clay and chalk (1499)
Relationships: Cut hedgerow 460

Skeleton 1498
Posture: Supine, legs extended and parallel
Arm position: Left arm flexed, lying across the stomach; right arm tightly flexed with the hand resting on the left side of the chest
Sex: Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 2, arms 3, hands 3, torso 2, legs 2, feet 3
Pathology: Calculus, caries, AMTL. Osteochondritisis dissecans left and right femur distal condyle medial

Coffin: Represented by an assemblage of 8 nails defining the corners. L: 1.65-1.67m. B: 0.49-0.50 m. (2023)

Inhumation Grave 1505 (7881/0317, Fig. 3.214)

Grave cut 1501
Orientation: W-E
Shape: Sub-rectangular with rounded ends
Dimensions: 1.90 x 0.70 m, 0.60 m deep
Fill: Friable mid greyish brown chalk and silt (1502)

Skeleton 1504
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Sex: ?Male
Age: Adult
Fragmentation: Good
Condition: Skull 2, arms 5+, hands 9, torso 9, legs 4, feet 1
Pathology: AMTL. Bilateral 4th metatarsals new bone, appearance as if applied to the lateral surface

Coffin: Represented by an assemblage of 5 nails and an area of coffin fill. (1503)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 71 hobnails (including a minimum of eight recovered from soil sample <1220>), located in the area of the feet. SF 1220

Inhumation Grave 1510 (7914/0332, Fig. 3.215)

Grave cut 1511
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.00 x 0.50 m, 1.00 m deep

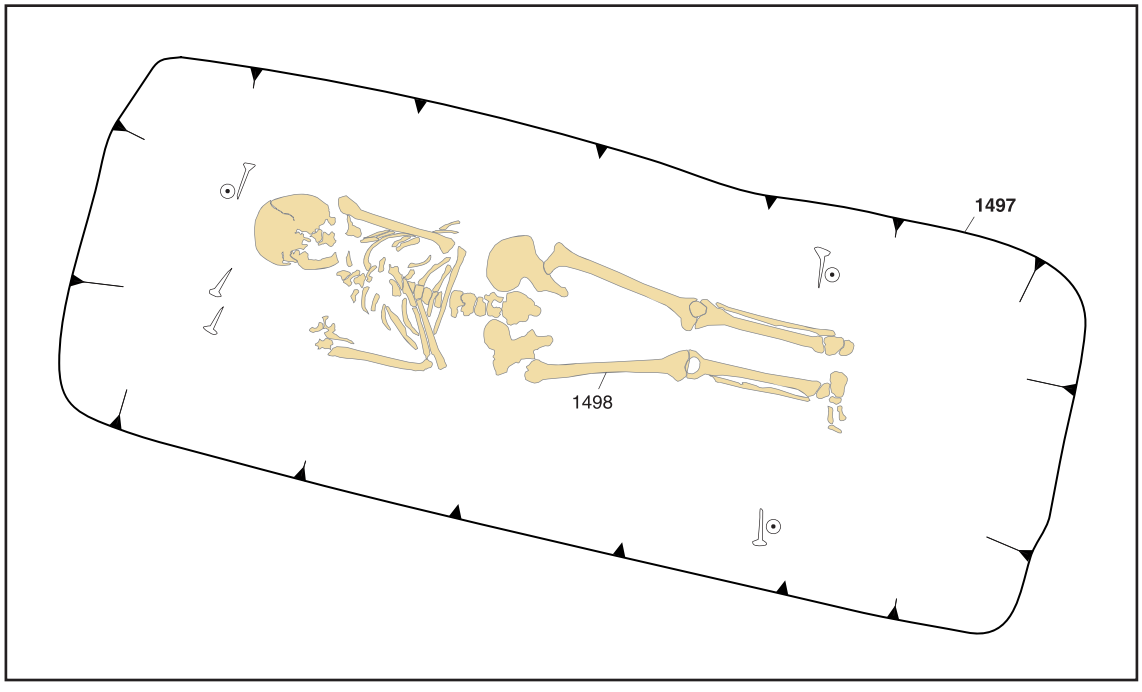


Fig. 3.213 Inhumation Grave 1500

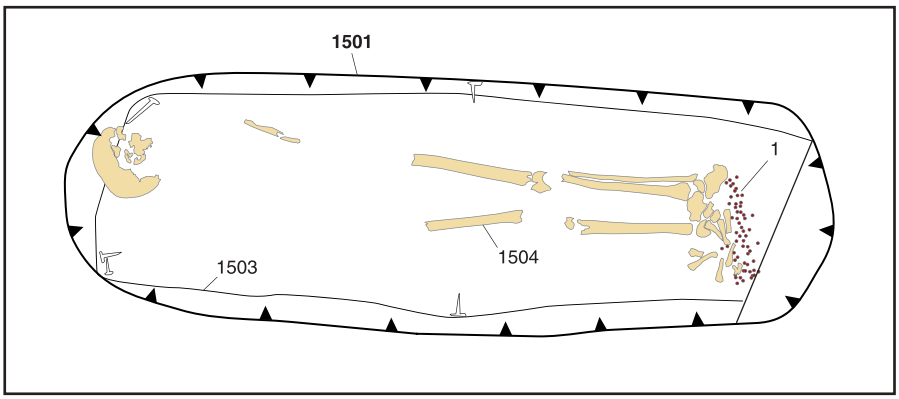


Fig. 3.214 Inhumation Grave 1505

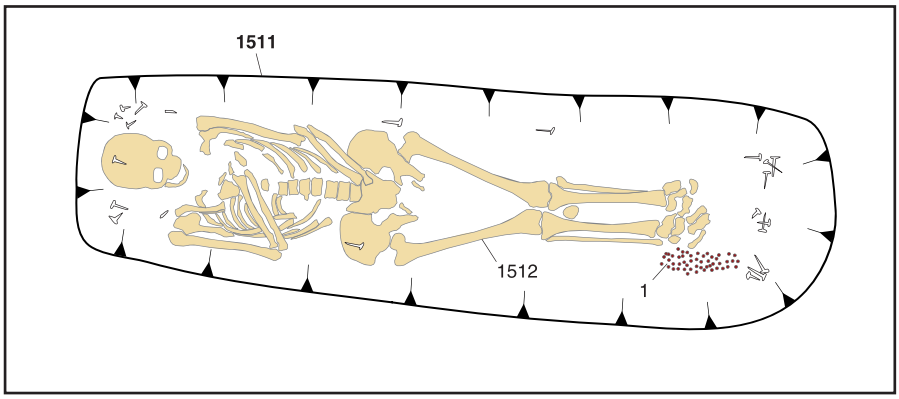


Fig. 3.215 Inhumation Grave 1510

Fill: Friable mottled orange and brown clay silt and chalk (1513)
Relationships: Cut ditch 1352. Cut by Grave 1475

Skeleton 1512
Posture: Supine, legs extended and close together
Arm position: Left arm semi-flexed with the hand resting on the central part of the pelvis; right arm tightly flexed with the hand on the left shoulder
Sex: Female
Age: 26-35. Prime adult
Height: 152.4
Fragmentation: Good
Condition: Skull 1, arms 2, hands 1, torso 1, legs 1, feet 1
Pathology: Childhood rickets radii and ulnae, tibiae and femora. Thoracic osteophytosis. Caries, DEH, calculus, periodontal disease

Coffin: Represented by an assemblage of 22 nails. L: 1.75-1.80 m. B: 0.30-0.38 m. Ht: 0.20 m. (2024)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 84 hobnails, located inside the coffin beside the right leg. SF 3896

Other finds: One sherd (6 g) of pottery, fabric ZMA (1513)

Inhumation Grave 1515 (7884/0325, Fig. 3.216)

Grave cut 1516
Orientation: W-E
Shape: Sub-rectangular?
Dimensions: >0.95 x 0.70 m, 0.33 m deep
Fill: Loose sandy silt and chalk (1514)
Relationships: Cut Grave 1535. Cut by Graves 1373 and 1440

Skeleton 1517
Posture: Crouched, lying on the right side with the legs tightly flexed. The head had been removed and placed on the legs
Arm position: Left arm semi-flexed; right arm extended with the hand beneath the legs
Sex: Male
Age: 45+. Older adult
Fragmentation: Poor
Condition: Skull 0, arms 0, hands 0, torso 1, legs 1, feet 1
Pathology: Periostitis left tibia and fibula. Ossified haematoma left tibia and fibula pseudo joint. Spinal osteophytosis and Schmorl's nodes. Caries (x6), AMTL, lesion. Decapitation cutmarks to cervical spine.

Coffin: None

Comments: The western end of the grave was destroyed by Grave 1440 and the eastern end by Grave 1373

Inhumation Grave 1521 (7894/0316, not illustrated)

Grave cut 1518
Orientation: WNW-ESE
Shape: Sub-rectangular?
Dimensions: 0.40 m deep
Fill: Chalk (1520)
Relationships: Cut by Grave 1491. Sealed by layer 1629

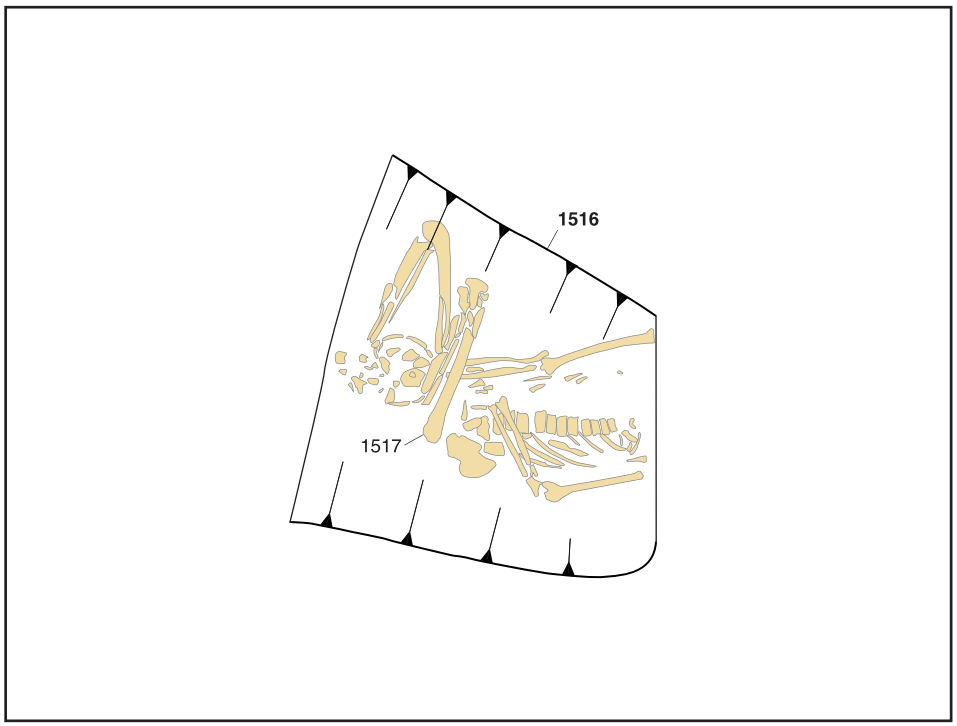


Fig. 3.216 Inhumation Grave 1515

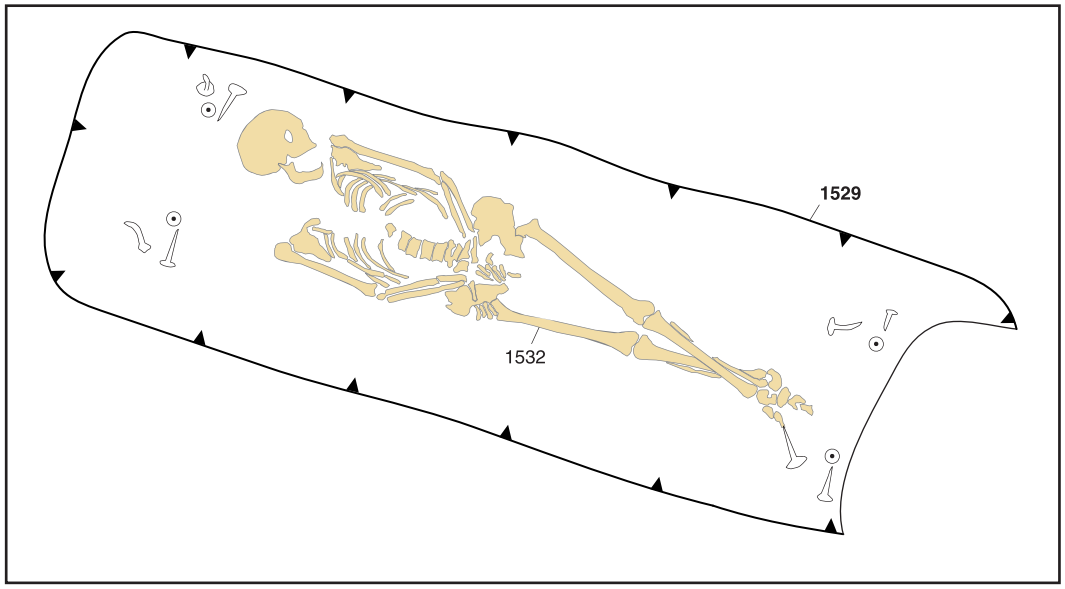


Fig. 3.217 Inhumation Grave 1528

Coffin: None

Comments: The grave had been mostly destroyed by Grave 1491, only the north-western corner surviving. No skeletal material was recovered and no evidence for a coffin was recorded

Inhumation Grave 1528 (7922/0316, Fig. 3.217)

Grave cut 1529

Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.60 x 0.80 m, 1.43 m deep
Fill: Mixed chalk and soil (1530)
Relationships: Cut Graves 1567 and 1601 and ditch 450. Cut by an unexcavated (unnumbered) grave

Skeleton 1532

Posture: Supine, legs extended and crossed at the ankles
Arm position: Both arms semi-flexed, the wrists crossing over the central part of the pelvis
Sex: ?Female
Age: 26-35. Prime adult

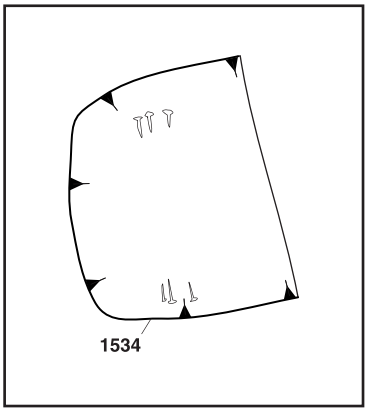


Fig. 3.218 Inhumation Grave 1535

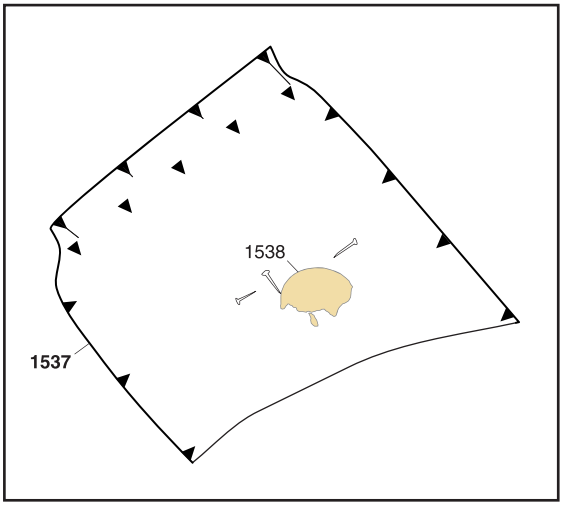


Fig. 3.219 Inhumation Grave 1540

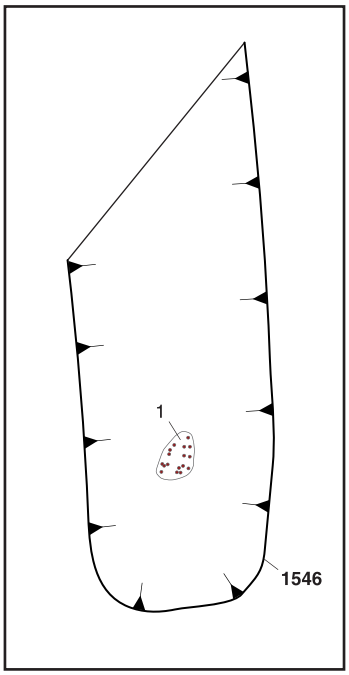


Fig. 3.220 Inhumation Grave 1545

Fragmentation: Fair
Condition: Skull 3, arms 3, hands 3, torso 3, legs 2, feet 2
Pathology: Right ribs periostitis, left ribs clear. Developmental delay left part of C2 spinous process. Caries, calculus. Sinusitis. Fine pitting right parietal

Additional human remains: Fragments of a second adult (1530)

Coffin: Represented by an assemblage of 12 nails defining the corners. L: 1.81-1.91 m. B: 0.28-0.45 m. Ht: 0.13 m. (1531)

Other finds: Two sherds (9 g) of pottery, fabric TF and ZF, the latter a beaker rim (1530)

Date: Grave 1567 contained a pottery vessel dated AD 300-400

Inhumation Grave 1535 (7884/0326, Fig. 3.218)

Grave cut 1534
Orientation: W-E
Shape: Sub-rectangular?
Dimensions: >0.55 x 0.65 m, 0.73 m deep
Fill: Loose reddish brown silty clay and chalk (1533)
Relationships: Cut by Graves 1373 and 1515

Coffin: Represented by an assemblage of 6 nails defining the corners of the western end. B: 0.50 m. (2025)

Comments: All but the western end of the grave had been destroyed by Grave 1373

Inhumation Grave 1540 (7898/0308, Fig. 3.219)

Grave cut 1537
Orientation: NNW-SSE
Shape: Sub-rectangular
Dimensions: >0.75 x 0.95 m, 1.06 m deep
Fill: Loose mid brown silty sand (1539)

Skeleton 1538
Posture: The posture could not be established due to poor preservation
Sex: ?Female
Age: 45+. Older adult
Fragmentation: Good
Condition: Skull 3, arms 9, hands 9, torso 9, legs 9, feet 9

Coffin: Represented by an assemblage of 3 nails defining the north-western end. B: 0.32 m. (2026)

Comments: The grave had been largely destroyed by a modern soakaway, leaving only the north-western end

Inhumation Grave 1545 (7886/0325, Fig. 3.220)

Grave cut 1546
Orientation: N-S?
Shape: Sub-rectangular
Dimensions: >1.50 x 0.50 m, 0.50 m deep
Fill: Loose reddish brown silty clay and chalk (1544)

Coffin: None

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 17 hobnails (including a minimum of one recovered from soil sample <1257>), located in the probable area of the feet. SF 3808

Comments: The northern end of the grave had been destroyed by a modern manhole. No skeletal material

or evidence for a coffin was recovered. The grave has been categorised as N-S on the basis of the hobnailed shoes, as these were generally either worn or placed near the feet

Inhumation Grave 1547 (7896/0316, Fig. 3.221)

Grave cut 1541
Orientation: WSW-ENE
Shape: Sub-rectangular with rounded ends
Dimensions: 1.28 x 0.56 m, 0.48 m deep
Fill: Loose mixed chalk and former topsoil (1542)
Relationships: Cut pit 1623. Sealed by layer 1629

Skeleton 1554
Posture: Uncertain as the infant bones were recovered together with those of horse skull 1543
Age: 1-6 months. Young infant
Fragmentation: Good
Condition: Skull 2, arms 3, hands 9, torso 2, legs 3, feet 9
Pathology: Moderate pitting of ectocranial surface of parietal/frontal bones

Coffin: Represented by an assemblage of 10 nails defining the corners. L: 0.68-0.75 m. B: 0.25-0.31 m. Ht: 0.13 m. (2027)

Grave goods:
1 **Coin**. Nummus of Constantine II, Gloria Exercitus (2 standards), Trier. AD 330-331 (RIC VII, Trier 527). SF 3822
2 **Horse skull.** Complete (though fragmented) except for the mandibles, probably male and *c* 4-7 years old on the basis of the incisors. Located within the backfill above the burial. (1543) **(NI)**

Other finds: Seven sherds (98 g) of pottery, fabrics ZF, ZM and SG (1542)

Date: Coin dated AD 330-331

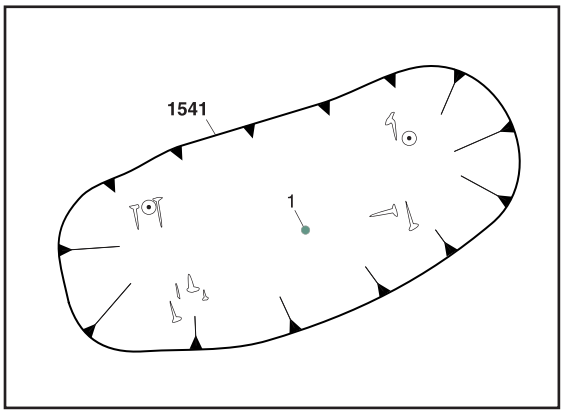


Fig. 3.221 Inhumation Grave 1547

Inhumation Grave 1550 (7911/0324, Fig. 3.222)

Grave cut 1468
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 2.10 x 0.85 m, 0.70 m deep
Fill: Firm mixed dark brown clay silt and chalk (1469)

Skeleton 1522
Posture: Supine, legs extended with feet together
Arm position: Left arm extended with the hand beneath the head of the left femur; right arm semi-flexed
Sex: Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 2, arms 1, hands 1, torso 1, legs 9, feet 9
Pathology: AMTL

Coffin: Represented by an assemblage of 15 nails. L: 1.71-1.77 m. B: 0.42-0.49 m. Ht: 0.15 m. (2028)

Inhumation Grave 1555 (7883/0323, not illustrated)

Grave cut 1558
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 1.80 x 0.45 m, 0.42 m deep
Fill: Loose reddish brown silty clay and chalk (1556)
Relationships: The relationship with Grave 1440 could not be established as it had been removed by modern foundations

Skeleton 1557
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Sex: Female

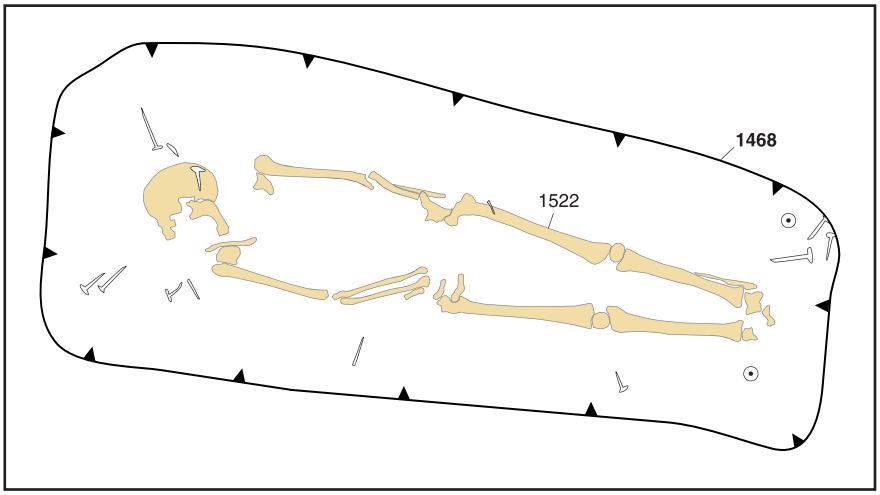


Fig. 3.222 Inhumation Grave 1550

Age: 36-45. Mature adult
Fragmentation: Fair
Condition: Skull 1, arms 1, hands 9, torso 1, legs 1, feet 1
Pathology: Calculus, caries (x2)

Coffin: None

Comments: The central part of the grave had been destroyed by modern foundations

Inhumation Grave 1567 (7921/0316, Fig. 3.223)

Grave cut 1562
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 1.25 x 0.50 m, 0.70 m deep
Fill: Mixed chalk and soil (1563)
Relationships: Cut ditch 450 and gully 470. Cut by Grave 1528

Skeleton 1565
Posture: Supine, legs extended
Arm position: Both arms extended beside body
Age: Child
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: left tibia periostitis

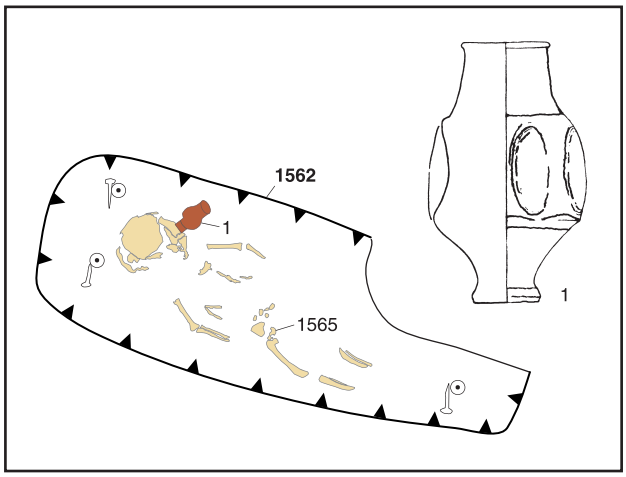


Fig. 3.223 Inhumation Grave 1567

Coffin: Represented by an assemblage of 6 nails defining the corners, with the exception of the north-east corner. L: 0.99 m. B: 0.28 m. (1564)

Grave goods:
1 **Vessel**. Fabric TR, New Forest colour-coated ware. Small indented beaker of Fulford (1975a) fine ware type 33, perhaps similar to type 33.7. *c* AD 300-400. Complete. Located to the left of the skull, inside the coffin. (1566)

Date: Pottery dated AD 300-400

Comments: The north-eastern corner of the grave had been destroyed by Grave 1528

Inhumation Grave 1570 (7904/0308, Fig. 3.224)

Grave cut 1568
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >1.40 x 0.90 m, 1.17 m deep
Fill: Loose mid brown silt sand with 30% chalk pieces (1571)
Relationships: Cut Grave 1575

Skeleton 1569
Posture: Supine, legs extended and parallel
Arm position: The legs did not survive
Sex: ?Female
Age: Adult
Fragmentation: Good
Condition: Skull 9, arms 9, hands 9, torso 9, legs 2, feet 2

Additional human remains: Fragments of an adult male (1571)

Coffin: The remains of the eastern end of a coffin were represented by an assemblage of 6 nails defining the corners. B: 0.39 m. Ctx 2029

Comments: The western half of the grave had been destroyed by a modern soakaway

Inhumation Grave 1575 (7905/0308, Fig. 3.225)

Grave cut 1572
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.90 x 0.70 m, 1.16 m deep

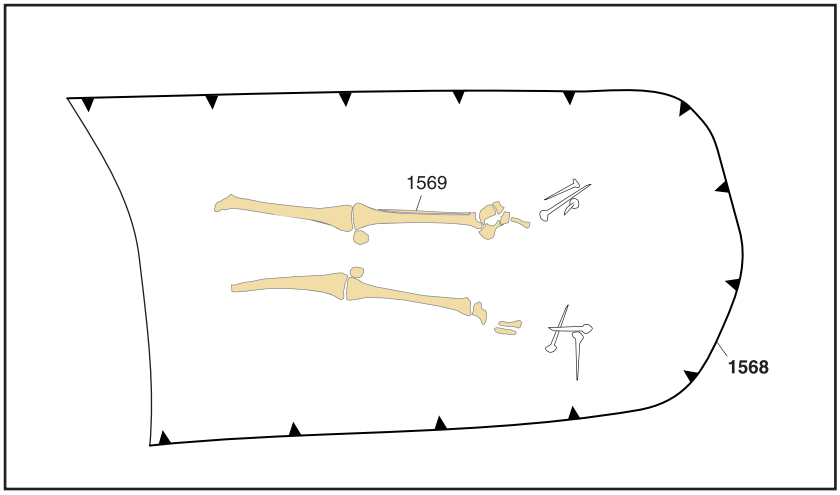


Fig. 3.224 Inhumation Grave 1570

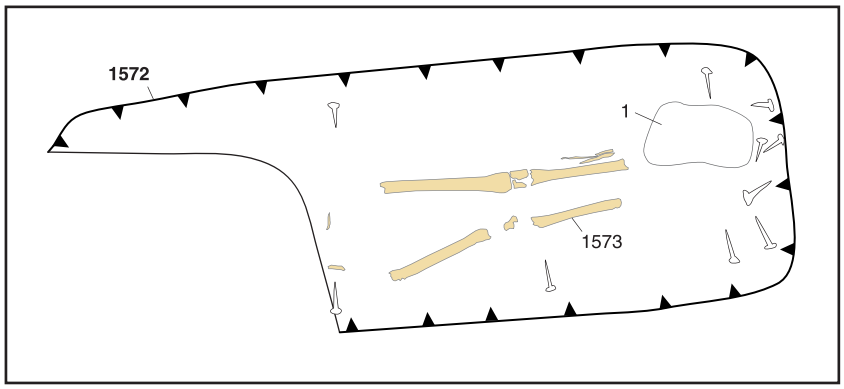


Fig. 3.225 Inhumation Grave 1575

Fill: Loose mid brown silty sand with 35-40% chalk pieces (1574)
Relationships: Cut by Grave 1570

Skeleton 1573
Posture: Supine, legs extended with feet together
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Destroyed
Condition: Skull 9, arms 5+, hands 9, torso 9, legs 5+, feet 9

Coffin: Represented by an assemblage of 11 nails. B: 0.41 m. (2030)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 189 hobnails (including a minimum of nine recovered from soil sample <1272>), located in the area of the feet. SF 3860

Comments: The western half of the grave had been destroyed by Grave 1570

Inhumation Grave 1580 (7886/0315, Fig. 3.226)

Grave cut 1551
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: >0.90 x 0.94 m, 0.34 m deep

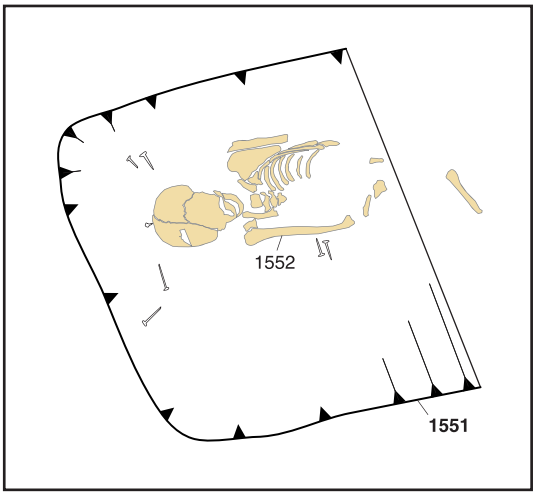


Fig. 3.226 Inhumation Grave 1580

Fill: Dark brown clay silt and chalk (1553)

Skeleton 1552
Posture: Supine
Arm position: The arms did not survive
Sex: Female
Age: 26-35. Prime adult
Fragmentation: Fair
Condition: Skull 2, arms 1, hands 1, torso 1, legs 9, feet 9
Pathology: Calculus, caries (x2). sinusitis

Additional human remains: Fragments of a second adult (1553)

Coffin: Represented by an assemblage of 7 nails at the west end. B: 0.42 m. (2031)

Comments: Most of the grave had been destroyed by modern foundations, leaving only the western end

Inhumation Grave 1590 (7886/0323, Fig. 3.227)

Grave cut 1589
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.25 x 0.68 m, 1.60 m deep
Fill: Loose chalk (1587)

Skeleton 1588
Posture: Supine, legs extended and parallel
Arm position: Both arms extended beside body
Sex: ?Female
Age: Adult
Fragmentation: Good
Condition: Skull 5+, arms 5, hands 5, torso 9, legs 4, feet 4
Pathology: Caries. Os trigonum right talus

Coffin: Represented by an assemblage of 14 nails. L: 1.85-1.88 m. B: 0.46-0.48 m. Ht: 0.16 m. (2032)

Grave goods:
1 **Shale spindle whorl**, complete. Annular with flat face around cylindrical perforation. One face has two concentric grooves, other face has a single groove; two grooves around widest girth. Diameter 33 mm, thickness 15.5 mm, perforation diameter 7 mm. Weight 13 g. (1587) SF 3923
2. **Hobnailed shoe(s)**. Represented by a minimum of 74 hobnails (including a minimum of 13 recovered from soil sample <1305>), located outside the coffin at the foot of the grave. SF 3921

Date: Spindle whorl probably dated after *c* AD 340

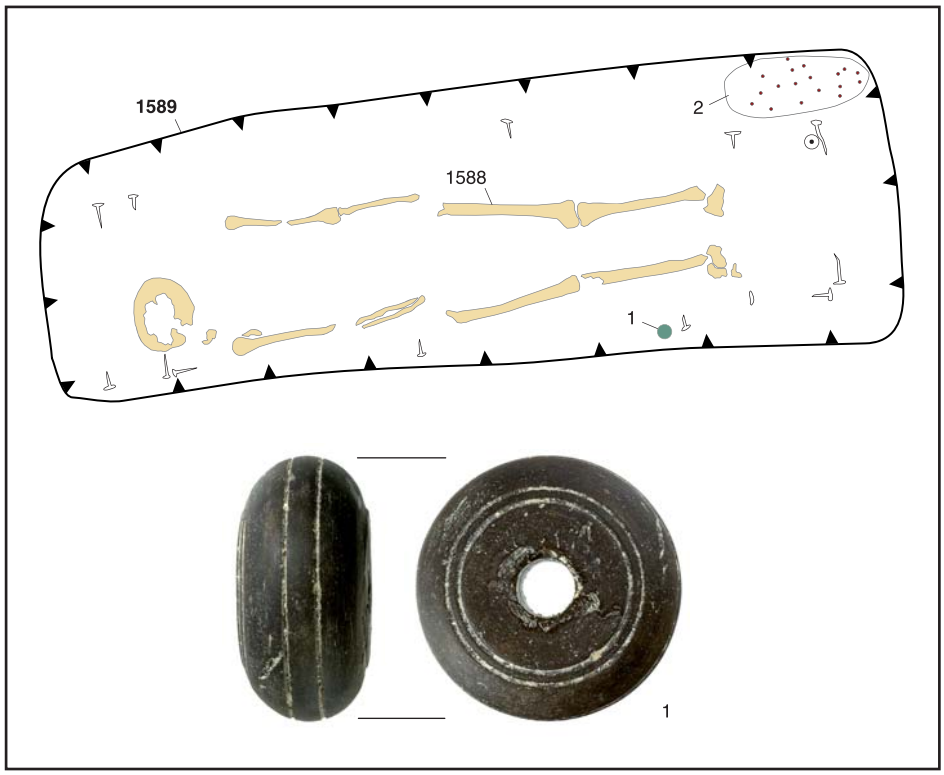


Fig. 3.227 Inhumation Grave 1590

Inhumation Grave 1595 (7885/0312, Fig. 3.228)

Grave cut 1576

Orientation: W-E
Shape: Sub-rectangular, tapering from west to east
Dimensions: 1.49 m long, width varied from 0.85 – 0.65 m, 0.21 m deep
Fill: Firm mid brown clay silt and chalk (1577)

Skeleton 1591

Posture: Posture could not be established due to poor preservation
Arm position: The arms did not survive
Age: 2-5. Young child
Fragmentation: Poor
Condition: Skull 3, arms 9, hands 9, torso 9, legs 9, feet 9

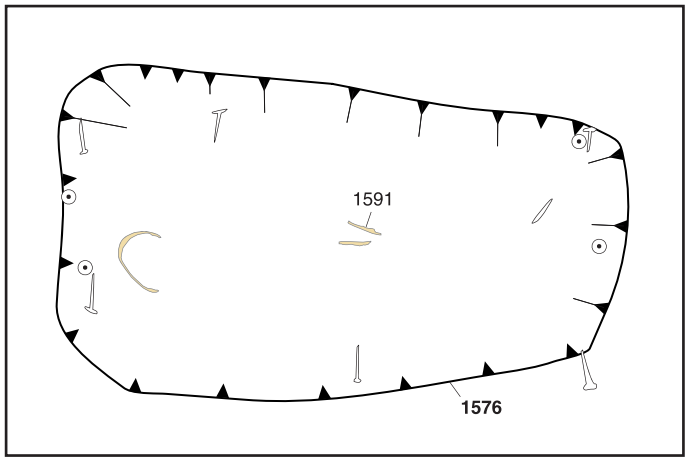


Fig. 3.228 Inhumation Grave 1595

Coffin: Represented by an assemblage of 10 nails. L: 1.31-1.38 m. B: 0.35-0.42 m. (2033)

Grave goods:

1 **Hobnailed shoe(s)**. Represented by a minimum of 20 hobnails, located in the approximate area of the feet. SF 3886

Inhumation Grave 1599 (7922/0320, Fig. 3.229)

Grave cut 1596

Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 1.78 x 0.85 m, 1.05 m deep
Fill: Friable mid – dark brown chalky silt (1597)
Relationships: Cut hedgerow 460 and gully 470. Cut by Grave 52

Skeleton 1598

Posture: Supine, legs extended
Arm position: Both arms extended beside body
Sex: Female
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 2, arms 3, hands 2, torso 3, legs 3, feet 3
Pathology: Spinal osteophytosis. Right hip joint osteoarthritis. Right hand 1st carpal metacarpal joint osteoarthritis. Left hip DJD. Multiple joint osteophytosis. DEH, caries (x4), AMTL

Coffin: Represented by an assemblage of 9 nails. L: 1.67 m. B: 0.47 m. Ht: 0.20 m. (2034)

Comments: The north-eastern side of the grave had been disturbed by Grave 52, removing the left leg, left side of the pelvis and the left forearm and hand. The left leg and left side of the pelvis had been pushed back into the surviving fill of Grave 1599

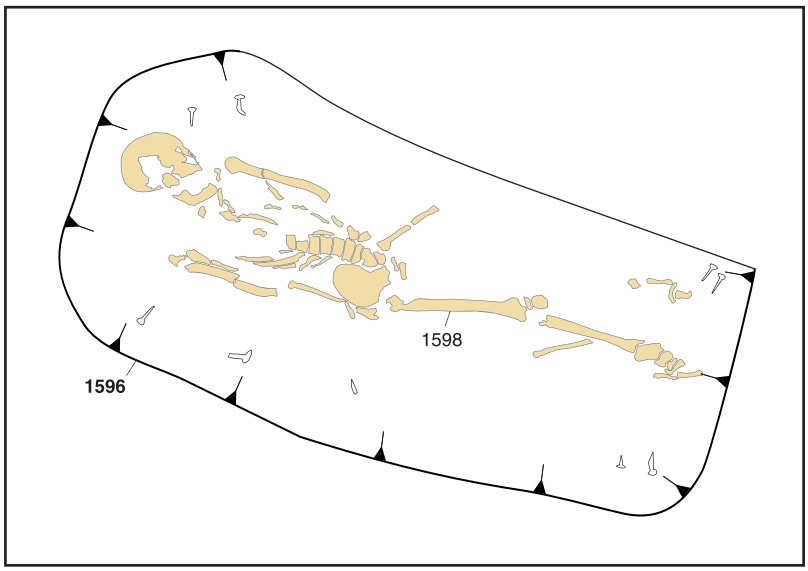


Fig. 3.229 Inhumation Grave 1599

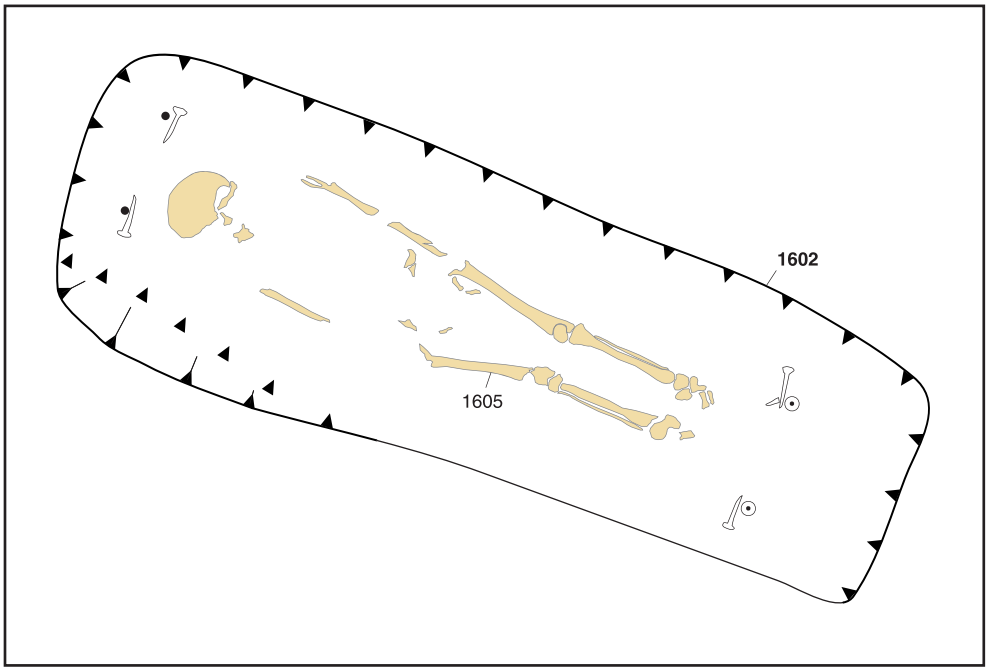


Fig. 3.230 Inhumation Grave 1601

Inhumation Grave 1601 (7922/0317, Fig. 3.230)

Grave cut 1602
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.35 x 0.80 m, 1.05 m deep
Fill: Mixed chalk and soil (1603)
Relationships: Cut ditch 450. Cut by Grave 1528

Skeleton 1605
Posture: Supine, legs extended and parallel
Arm position: Left arm extended with the hand resting on the top of the left femur; position of right arm could not be established due to poor preservation of the forearm and hand
Sex: ?Female
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 3, arms 4, hands 3, torso 9, legs 3, feet 2
Pathology: AMTL, caries

Coffin: Represented by an assemblage of 10 nails defining the corners. L: 1.72-1.82 m. B: 0.29-0.32 m. (1604)

Other finds: Bone (?)inlay. Rectangular strip, both ends broken, smoothed cancellous tissue on the underside. Present length 49 mm, section 8 x 1.5 mm. (1603) SF 4009

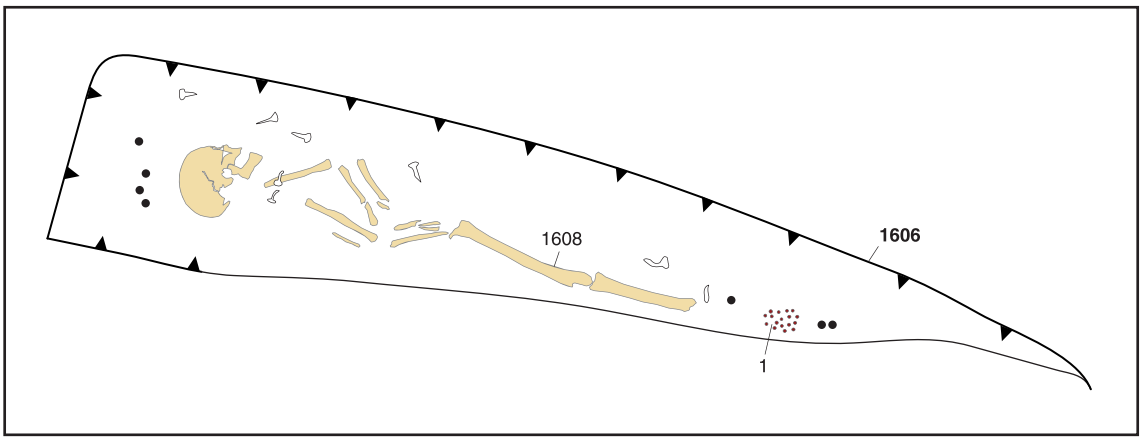


Fig. 3.231 Inhumation Grave 1610

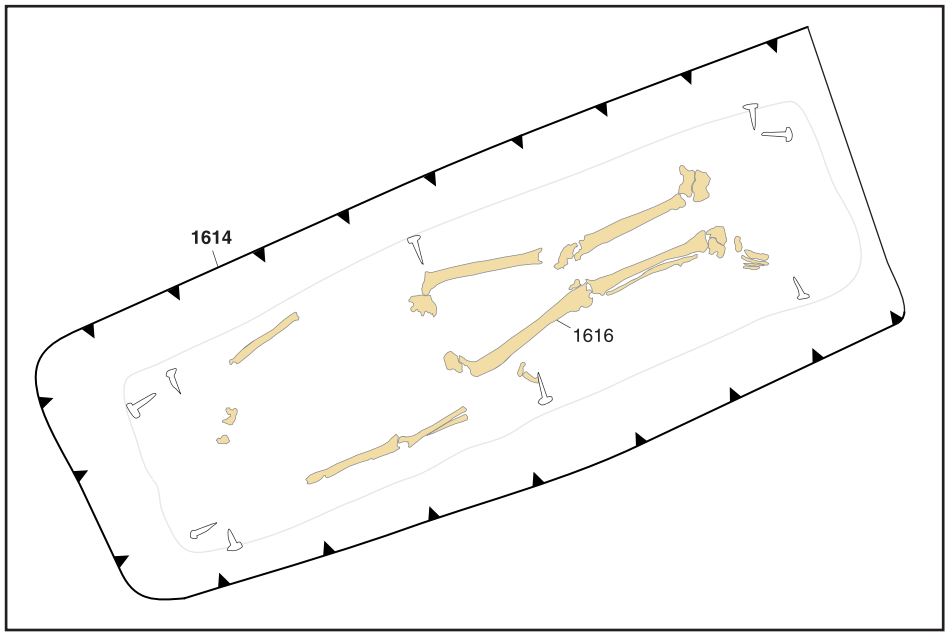


Fig. 3.232 Inhumation Grave 1615

Inhumation Grave 1610 (7915/0316, Fig. 3.231)

Grave cut 1606
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.20 x 0.56 m, 0.82 m deep
Fill: Loose dark brown silty soil (1607)
Relationships: Cut hedgerow 460. Cut by Grave 1745

Skeleton 1608
Posture: Supine, legs extended
Arm position: Left arm semi-flexed; right arm no longer *in situ*
Sex: Male
Age: Adult
Fragmentation: Fair
Condition: Skull 0, arms 3, hands 9, torso 9, legs 2, feet 0
Pathology: Left distal tibia periostitis. Cribra orbitalia. Calculus, AMTL

Coffin: Represented by an assemblage of 16 nails.
L: 1.84 m. B: 0.27-0.34 m. (2035)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 11 hobnails. Located in the area of the left foot. SF 4089

Comments: The southern side of the grave had been destroyed by Grave 1745, removing the right side of skeleton 1608. The right arm had been pushed back into the fill of Grave 1610

Inhumation Grave 1615 (7897/0306, Fig. 3.232)

Grave cut 1614
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 2.24 x 0.88 m, 1.23 m deep
Fill: Loose mid brown silty sand and chalk (1617)

Skeleton 1616
Posture: Supine, legs extended and together
Arm position: Position of left arm could not be established due to non-survival of the forearm and hand; right arm extended beside body

Sex: ?Female
Age: 36-45. Mature adult
Fragmentation: Poor
Condition: Skull 2, arms 3, hands 1, torso 5+, legs 5, feet 4
Pathology: Caries (x2)

Coffin: Represented by an assemblage of 19 nails and a rectangular coffin stain. L: 1.74 m. B: 0.47 m. (2036)

Inhumation Grave 1622 (7895/0316, Fig. 3.233)

Grave cut 1619
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >2.00 x 0.96 m, 1.16 m deep
Fill: Loose chalky silt (1620)
Relationships: Cut pit 1623. Sealed by layer 1629. Cut by Grave 1491

Skeleton 1621
Posture: Supine, legs extended and parallel
Arm position: Left arm semi-flexed with the hand resting on the head of the left femur; right arm extended with the hand resting on the right femur
Sex: Female
Age: 26-35. Prime adult
Height: 160.3
Fragmentation: Fair
Condition: Skull 0, arms 1, hands 3, torso 1, legs 3, feet 2
Pathology: Spinal osteophytosis, cervical eburnation and thoracic intervertebral disc disease. Left and right 4th metatarsals smooth plaque new bone formation. DEH, calculus, periodontal disease, AMTL. Peg molar. Calculi from thoracic area.

Additional human remains: Fragments of a second adult and a neonate (1620)

Coffin: Represented by an assemblage of 5 nails. B: 0.44 m. (2037)

Grave goods:
1 **Vessel**. Fabric ZM, New Forest reduced coarse ware. Medium mouthed jar of Fulford (1975a) grey ware type 30.10, but undecorated. *c* AD 300-350. One, possibly two deliberate holes in the body. Located in an inverted position within mound 1696, over the grave. (1592)

Other finds: Two hobnails were recovered from the backfill
Eleven sherds (258 g) of pottery, fabrics ZF, ZM and SG (1620)

Date: Pottery vessel dated AD 300-350. Calibrated radiocarbon date (2σ) AD 138-380

Comments: Deposit 1696, which overlay this grave, may be associated mound material

Inhumation Grave 1635 (7887/0322, Fig. 3.234)

Grave cut 1636
Orientation: N-S
Shape: Sub-rectangular, rounded southern end
Dimensions: 2.10 x 0.65 m, 0.90 m deep
Fill: Loose white chalk rubble with some reddish brown clay silt (1633)

Skeleton 1634
Posture: Unknown
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Destroyed
Condition: Skull 5+, arms 9, hands 9, torso 9, legs 9, feet 9

Coffin: Represented by an assemblage of 6 nails defining the northern end. B: 0.55 m. (2038)

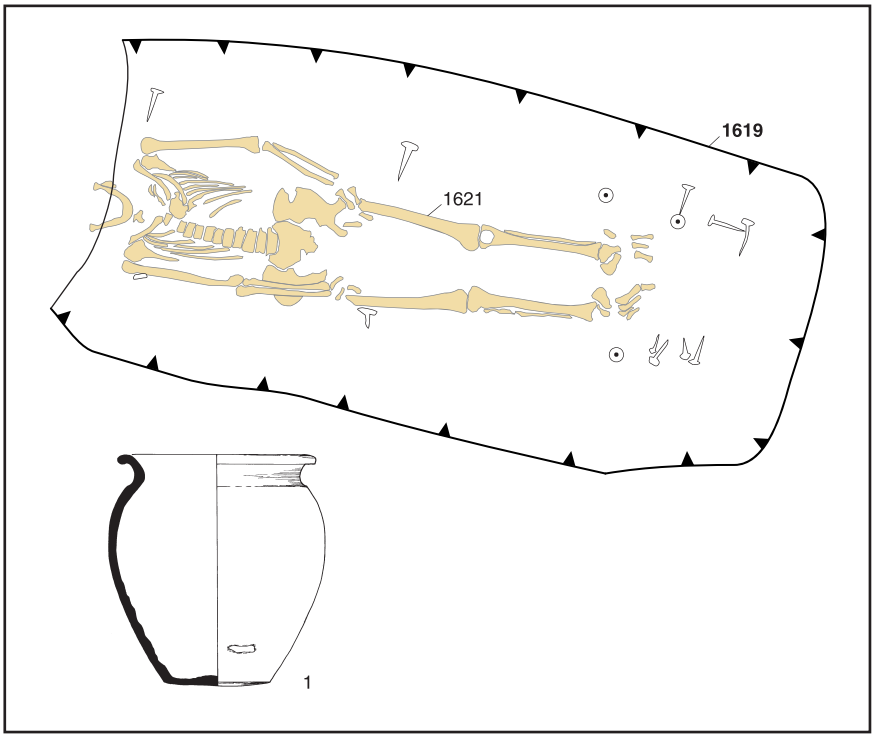


Fig. 3.233 Inhumation Grave 1622

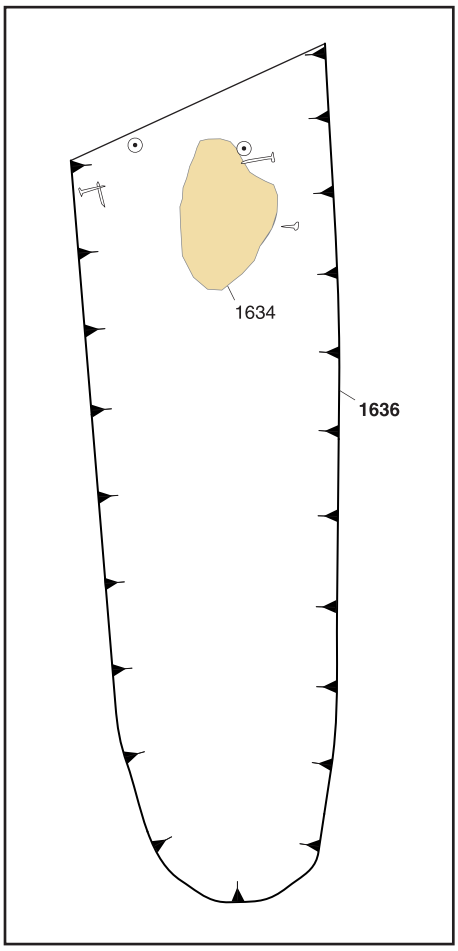


Fig. 3.234 Inhumation Grave 1635

Comments: The northern end and part of the southern end of the grave had been truncated by modern service trenches

Inhumation Grave 1638 (7924/0319, Fig. 3.235)

Grave cut 1639
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.70 x 1.05 m, 1.60 m deep
Fill: Loose mottled white and light brown chalk rubble with a small proportion of topsoil (1642)
Relationships: Cut ditch 450. Cut by Graves 38 and 1866 and Grave 162, which was only examined superficially

Skeleton 1640
Posture: Supine, legs extended and parallel
Arm position: Left arm extended with the hand between the legs and the hand facing upward; right arm extended beside body
Sex: Male
Age: 45+. Older adult
Height: 186.8
Fragmentation: Good
Condition: Skull 0, arms 2, hands 2, torso 1, legs 1, feet 0
Pathology: Osteophytosis and Schmorl's nodes spine. 2nd and 3rd right metatarsal healed fracture. L5-S1 fusion across left side. Right sided only heavy calculus deposits, facial paralysis? DEH, caries (x2), AMTL, lesions (x4). Sinusitis

Coffin: Represented by an assemblage of 12 nails defining its corners and south-western edge and a rectangular area of coffin fill. L: 1.97-2.04 m. B: 0.56-0.60 m. Ht: 0.17 m. (1641)

Grave goods:
1 **Coin**. Nummus, uncertain. 4th century. SF 4015
2 **Coin**. Nummus of Constans, Fel Temp Reparatio. AD 348-350. ?Regular. SF 4016

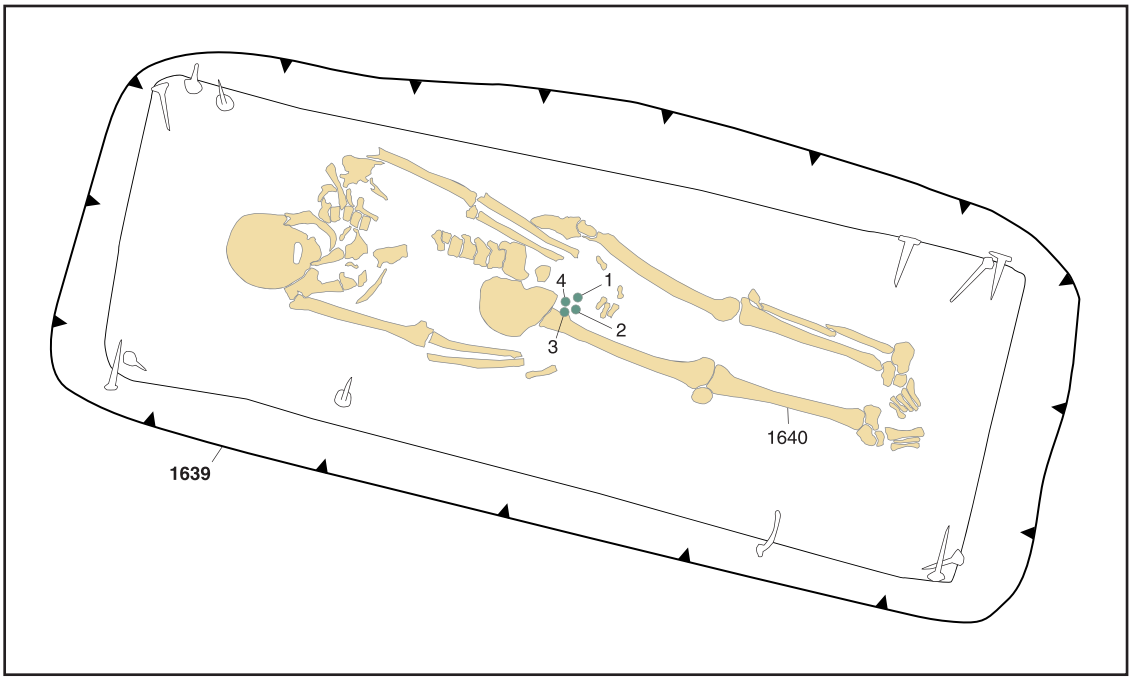


Fig. 3.235 Inhumation Grave 1638

3 **Coin**. Nummus of Valens, Gloria Romanorum, Arles. AD 364-367 (LRBC2, 480). SF 4017
4 **Coin**. Nummus of Valentinian I, Securitas Reipublicae, ?Arles. AD 364-375. SF 4020

Date: Latest coin dated AD 364-375

Comments: The coins were held in the left hand

Inhumation Grave 1670 (7886/0320, not illustrated)

Grave cut 1669
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: >0.40 x >0.18 m, 0.10 m deep
Relationships: Cut by Grave 1635

Skeleton 1668
Posture: Unkown
Arm position: Unkown
Sex: Undetermined
Age: Adult
Fragmentation: Poor
Condition: Skull 9, arms 9, hands 9, torso 9, legs 2, feet 2

Coffin: Uncertain. A single nail (SF 4012) was recorded, possibly *in situ*

Comments: The eastern, foot end of the grave had been truncated by Grave 1635 and the majority of the grave had been destroyed by modern concrete foundations (no separate fill was described), leaving only part of the southern edge

Inhumation Grave 1690 (7924/0323, not illustrated)

Grave cut 1687
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 1.20 x 0.30 m, 0.20 m deep
Fill: Friable dark greyish brown chalky silt (1689)
Relationships: Cut by Grave 1790

Skeleton 1688
Posture: Unknown
Arm position: Unknown
Age: Neonate
Fragmentation: Poor
Condition: Skull 3, arms 9, hands 9, torso 9, legs 9, feet 9

Additional human remains: Fragments of an adult (1690)

Coffin: None

Comments: The north-western end of the grave had been truncated by Grave 1790

Inhumation Grave 1693 (7889/0324, not illustrated)

Grave cut 1692
Orientation: WSW-ENE
Shape: Sub-rectangular, rounded north-eastern end
Dimensions: 1.20 x >0.30 m, 0.85 m deep
Fill: Loose chalk rubble with some reddish brown silty clay (1691)

Coffin: Uncertain. A single nail was recorded

Comments: The north-western half of the grave was truncated by a modern service trench

Inhumation Grave 1705 (7887/0326, Fig. 3.236)

Grave cut 1706
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >1.50 x 0.70 m, 0.63 m deep
Fill: Loose chalk rubble with some reddish brown silty clay (1703)

Skeleton 1704
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive

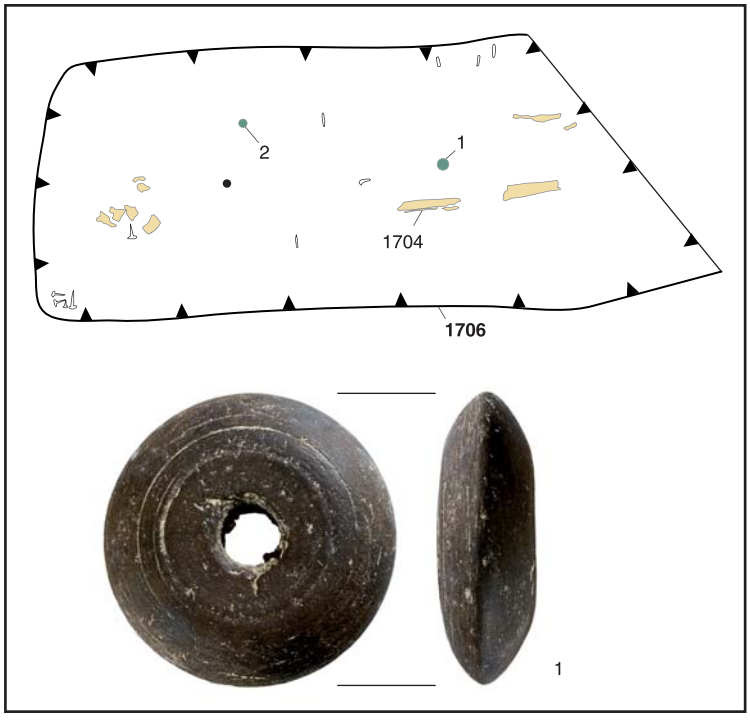


Fig. 3.236 Inhumation Grave 1705

Sex: Undetermined
Age: Adult
Fragmentation: Poor
Condition: Skull 2, arms 9, hands 9, torso 9, legs 2, feet 9

Additional human remains: Fragment of an adult (1741)

Coffin: Represented by an assemblage of 12 nails. B: 0.34 m. (2039)

Grave goods:
1 **Shale spindle whorl**; complete. Biconical with flat field around cylindrical perforation on each face. Diameter 38 mm, length 20 mm, perforation diameter 8 mm. Weight 20 g. (1703) SF 4071
2 **Coin**. Irregular nummus, ?Gloria Exercitus (2 standards). ?AD 330-348. SF 4059

Other finds: One sherd (1 g) of pottery, fabric ZF (1703)

Date: Coin dated AD 330-348 and spindle whorl likely to date after *c* AD 340

Comments: The eastern, foot end of the grave had been truncated by a modern service trench. The single human bone in 1741 was from the fill of this trench, but it is uncertain if it was from skeleton 1704

Inhumation Grave 1707 (7925/0320, Fig. 3.237)

Grave cut 1708
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 1.06 x 0.60 m, 0.17 m deep
Fill: Compact light brown chalk rubble and chalky silt (1711)
Relationships: Cut ditch 450. Relationship with Grave 52 uncertain as the features only intersect slightly.

Skeleton 1709
Posture: Unknown
Arm position: Unknown
Age: young child
Fragmentation: Fair
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 9

Coffin: Represented by an assemblage of 6 nails and a faint coffin stain defining the outline of the eastern end and part of the northern edge. L: 0.82 m. B: 0.32 m. (1710)

Inhumation Grave 1719 (7920/0308, not illustrated)

Grave cut 1720
Orientation: W-E
Shape: Sub-rectangular
Dimensions: >0.46 x >0.40 m, 0.30 m deep
Fill: Orange brown sandy silt with 25% chalk rubble (1721)
Relationships: Cut ditch 450. Cut by pit 1671 and Grave 1175.

Skeleton 1722
Posture: Crouched, lying on left side
Arm position: Left arm extended in front of body; right arm slightly flexed with hand lying on the pelvis
Age: Neonate
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 3, feet 5+

Coffin: None

Other finds: one sherd (1 g) of pottery, fabric TF (1721)

Comments: Both legs were truncated at the lower femur by pit 1671

Inhumation Grave 1725 (see Fig. 2.11)

Skeleton 1723
Posture: Crouched, lying on the left side with the head resting on the left arm
Arm position: Left arm extended beneath the head; right arm extended in front of the body
Age: Neonate
Fragmentation: good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 9, feet 9

Coffin: None

Comments: A neonatal skeleton placed on the base of ditch 450, with no apparent grave cut. The lower half of the skeleton had been removed by cremation burial 1724

Inhumation Grave 1732 (7920/0320, Fig. 3.238)

Grave cut 1729
Orientation: WNW-ESE
Shape: Sub-rectangular, rounded ends
Dimensions: 1.32 x 0.75 m, 0.76 m deep
Fill: Friable mid brown silt with 40% chalk rubble (1730)
Relationships: Cut gully 470

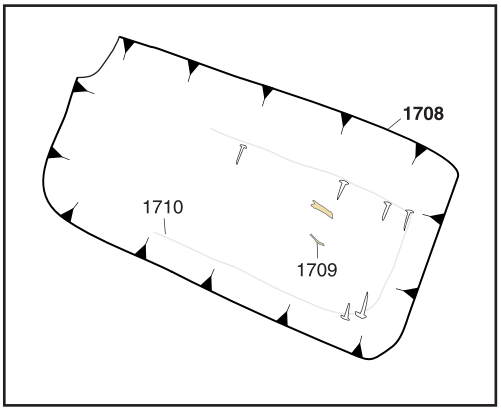


Fig. 3.237 Inhumation Grave 1707

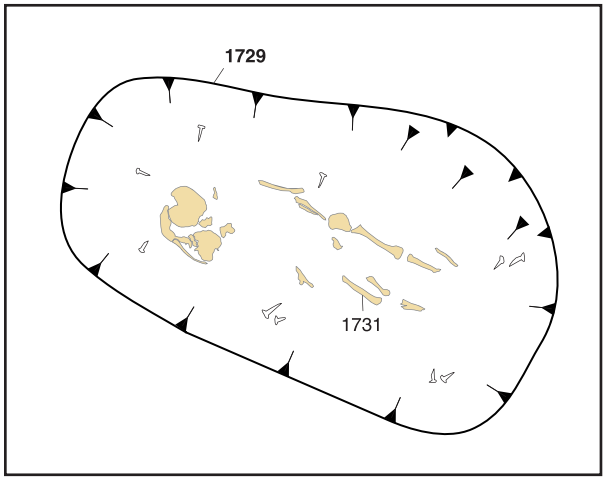


Fig. 3.238 Inhumation Grave 1732

Skeleton 1731
Posture: Supine, legs extended and parallel
Arm position: Both arms extended beside body
Age: Infant
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 9
Pathology: Cribra orbitalia.

Additional human remains: Fragment of a second infant (1730)

Coffin: Represented by an assemblage of 10 nails defining the coffin outline. L: 0.83-0.94 m. B: 0.29 m. (2040)

Inhumation Grave 1735 (7923/0322, Fig. 3.239)

Grave cut 1733
Orientation: WNW-ESE
Shape: Rectangular, parallel-sided, square ends.
Dimensions: 2.12 x 0.65 m, 0.68 m deep
Fill: Loose mid brown silty sand and chalk (1736)
Relationships: Cut away south-eastern end of Grave 1740 and cut into the upper fill of Grave 1810

Skeleton 1734
Posture: Supine, legs extended and parallel
Arm position: Left arm extended, very tight to body. The position of the right forearm indicates that it was semi-flexed with the hand on the pelvis, but the humerus had become displaced toward the torso.
Sex: Female
Age: 26-35. Prime adult
Fragmentation: Good
Condition: Skull 4, arms 5, hands 1, torso 5+, legs 3, feet 1

Coffin: None

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 63 hobnails, located in the area of the feet. SF 4091

Date: Grave 1810, cut by Grave 1740 and then by this grave, contained a pottery vessel dated AD 270-350

Inhumation Grave 1740 (7922/0322, not illustrated)

Grave cut 1737
Orientation: WNW-ESE
Shape: Rectangular

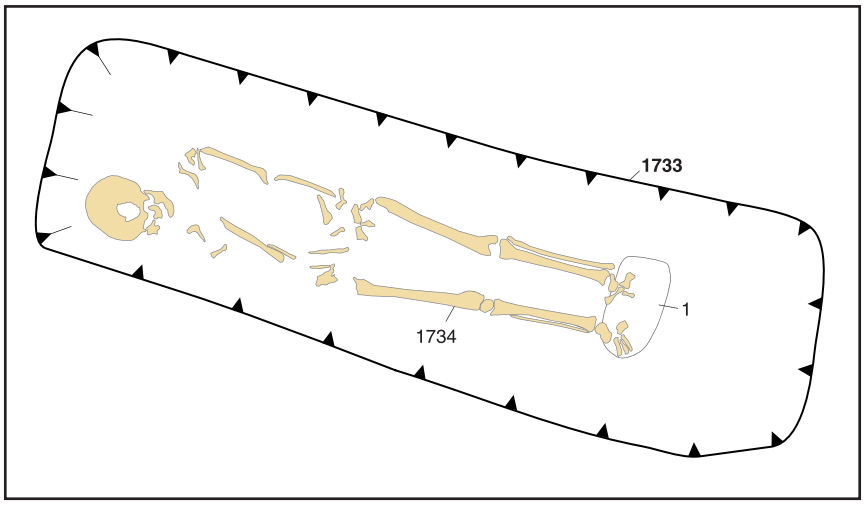


Fig. 3.239 Inhumation Grave 1735

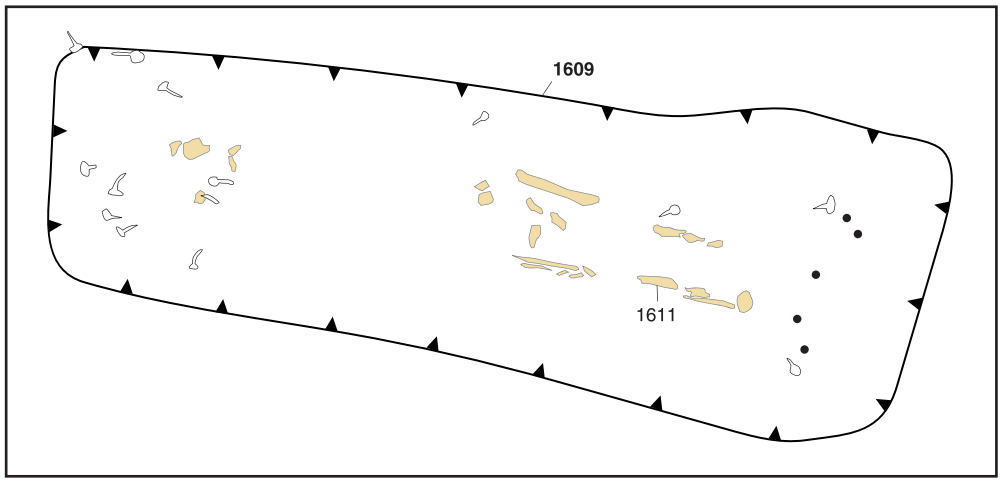


Fig. 3.240 Inhumation Grave 1745

Dimensions: >0.80 x 0.40 m, 0.87 m deep
Fill: Loose mid brown silty sand and chalk (1739)
Relationships: Cut Grave 1810. Cut by Grave 1735

Skeleton 1738
Posture: Supine
Arm position: The arms were truncated at the elbows by Grave 1735
Sex: Female
Age: 26-35. Prime adult
Fragmentation: Poor
Condition: Skull 3, arms 4, hands 9, torso 5+, legs 9, feet 9
Pathology: DEH

Coffin: None

Date: Grave 1810 contained a pottery vessel dated AD 270-350

Comments: The south-eastern half of this grave had been truncated by Grave 1735

Inhumation Grave 1745 (7916/0316, Fig. 3.240)

Grave cut 1609
Orientation: WNW-ESE
Shape: Rectangular, square ends
Dimensions: 2.40 x 0.60 m, 1.15 m deep
Fill: Dark brown silt backfill (1612)
Relationships: Cut Grave 1610

Skeleton 1611
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Poor
Condition: Skull 5+, arms 9, hands 9, torso 2, legs 4, feet 9

Additional human remains: Numerous fragments of a young adult (1612)

Coffin: Represented by 18 nails at either end of the grave. L: 1.88-1.89 m. B: 0.29-0.34 m. Ht: 0.13 m. (1613)

Inhumation Grave 1755 (7913/0329, Fig. 3.241)

Grave cut 1756
Orientation: W-E
Shape: Sub-rectangular, slightly rounded ends
Dimensions: 2.50 x 0.90 m, 1.30 m deep
Fill: Friable mottled yellowish brown, orange brown and whitish brown chalky clay silt (1758)
Relationships: Cut ditch 1420

Skeleton 1757
Posture: Supine, legs extended
Arm position: Arms did not survive
Sex: ?Female
Age: Adult
Fragmentation: Good
Condition: Skull 5, arms 5, hands 9, torso 9, legs 5, feet 9
Pathology: Right femur midshaft healed fracture

Additional human remains: Fragments of a child (1758)

Coffin: Represented by an assemblage of 21 nails. L: 1.93-1.97 m. B: 0.37-0.46 m. Ht: 0.22 m. (2041)

Grave goods:
1 **Coin**. ?Irregular nummus, Urbs Roma, wolf and twins. AD 330-335 or later. Fused to SF 4217b. SF 4217a
2 **Coin**. ?Irregular nummus of Constantine I, Gloria Exercitus (1 standard). AD 335-337 or later. SF 4217a. SF 4217b
3 **Coin**. Nummus of Constantine I (posthumous), quadriga. AD 337-341. Located in the area of the left side of the chest. SF 4216
4 **Hobnailed shoe(s)**. Represented by a minimum of 33 hobnails (including a minimum of three recovered from soil sample <1479>), located in the area of the feet. SF 4127

Other finds: Two sherds (20 g) of pottery, fabric TF, rim of a jug similar to NFF type 19 (1758)

Date: Latest coin dated AD 337-341, but irregular issues may be up to *c* AD 348. New Forest fine ware type 19 in backfill is dated *c* AD 350-400

Inhumation Grave 1760 (7887/0325, Fig. 3.242)

Grave cut 1762
Orientation: WSW-ENE
Shape: Sub-rectangular, rounded ends
Dimensions: 1.60 x 0.57 m, 0.75 m deep
Fill: Loose chalk lumps and reddish brown silty clay (1759)

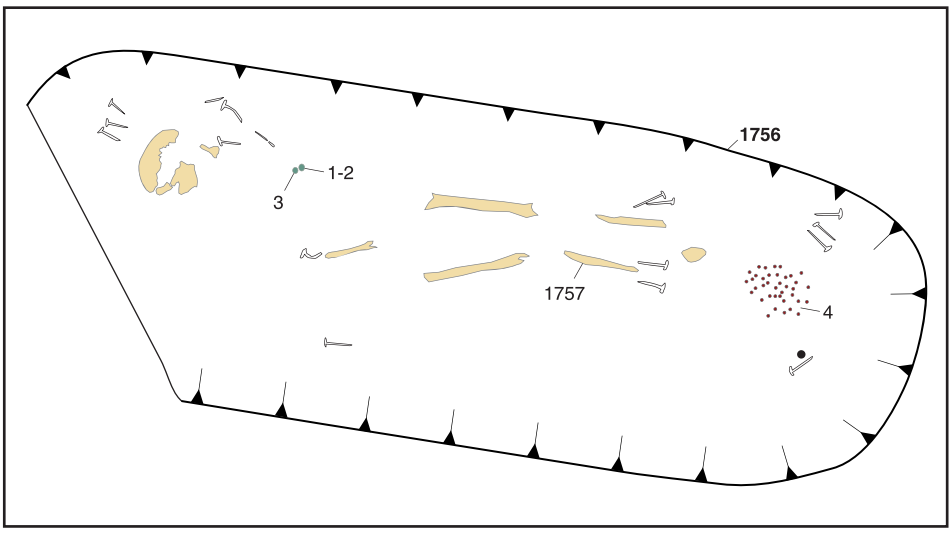


Fig. 3.241 Inhumation Grave 1755

Relationships: Cut Grave 1840

Skeleton 1761
Posture: Supine, legs extended and parallel
Arm position: Arms did not survive
Age: Child
Fragmentation: Fair
Condition: Skull 9, arms 5+, hands 9, torso 9, legs 5+, feet 9

Coffin: None

Grave goods:
1 **Biberon or tettine**, complete but broken in three pieces, neck and handle detached. Very small chip missing at junction of broken fragments. Pale green glass with small bubbles. Rim bent out horizontally and edge rolled in and flattened; cylindrical neck curving out to spherical body; tubular pushed-in base ring; slightly concave base; pontil scar retaining small fragment of tubular ring. Thick trail applied at junction of rim and neck. Curved ribbon handle with pronounced side ribs, applied to upper part of body with ribs pulled out into two ribs, upper attachment has loop forming thumb rest then applied to the trail and trailed up the underside of the rim. Small conical spout applied to centre of body at 90° to handle, hole pushed through body, end of spout chipped. Height 107 mm, rim diameter 37.5 mm, maximum body diameter 72 mm, base diameter 41 mm, wall thickness 1 mm, diameter pontil ring 17 x 14 mm. (1764) SF 4090

2 **Iron knife**. Rectangular sectioned tang set centrally to blade; stepped shoulder and choil, straight blade, slight curved back dropping down to tip. Blade concave near tang from sharpening. Length 147 mm,

Fig. 3.242 Inhumation Grave 1760

length of blade 82 mm, maximum width of blade 20 mm. (1759) SF 4119
3 **Iron buckle**. Circular frame; straightened crossbar with pin wound around it. Diameter 22 x 20 mm. (1759) SF 4142
4 **Iron ring**. Rectangular-sectioned. Diameter 15 mm, section 4 x 2 mm. (1759) SF 4141
5 **Vessel**. Fabric TR, New Forest colour-coated ware. Beaker. The form is as Fulford (1975a) fine ware type 30.4, but the vessel has two rows of barbotine scale decoration as type 47. *c* AD 340-400. Complete. (1763)
6 **Coin**. Nummus of ?Valentinian II, Victoria Auggg. ?AD 388-392. SF 4118
7 **Hobnailed shoe(s)**. Represented by a minimum of 12 hobnails, located to the right of the upper part of the body. SF 4120

Date: Coin dated AD 388-392

Inhumation Grave 1781 (7881/0319, not illustrated)

Grave cut 1782
Orientation: NNE-SSW
Shape: Rectangular?
Dimensions: >0.82 x >0.46 m, 0.26 m deep
Fill: Loose chalk rubble with a small quantity of silty topsoil (1784)

Skeleton 1783
Posture: Unknown
Arm position: Unknown

Coffin: Unknown

Comments: The grave had been mostly destroyed by a modern pipe trench, leaving only the southern corner and a single foot bone noted on site. The latter did not survive lifting

Inhumation Grave 1790 (7922/0324, Fig. 3.243)

Grave cut 1791
Orientation: NW-SE
Shape: Sub-rectangular, slightly rounded north-western end, square south-eastern end
Dimensions: 2.40 x 0.90 m, 1.45 m deep
Fill: Friable light brownish grey silty chalk (1792)
Relationships: Cut by Grave 1690

Skeleton 1793
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed with hands resting on pelvis
Sex: Female
Age: 26-35. Prime adult
Height: 156.8
Fragmentation: Excellent
Condition: Skull 0, arms 0, hands 0, torso 0, legs 0, feet 0
Pathology: AMTL, caries (x2)

Skeleton 1852
Posture: Supine, legs extended with feet together
Arm position: Both arms semi-flexed with hands resting on pelvis
Sex: Male
Age: 60+. Much older adult
Height: 166.1
Fragmentation: Fair
Condition: Skull 1, arms 0, hands 0, torso 1, legs 0, feet 1
Pathology: Spinal osteophytosis and intervertebral disc disease. DJD right humerus. 1 left rib periostitis. Healed fracture nasal bones. AMTL, lesion, periodontal disease. Sinusitis

Additional human remains: Fragments of a third adult (1792)

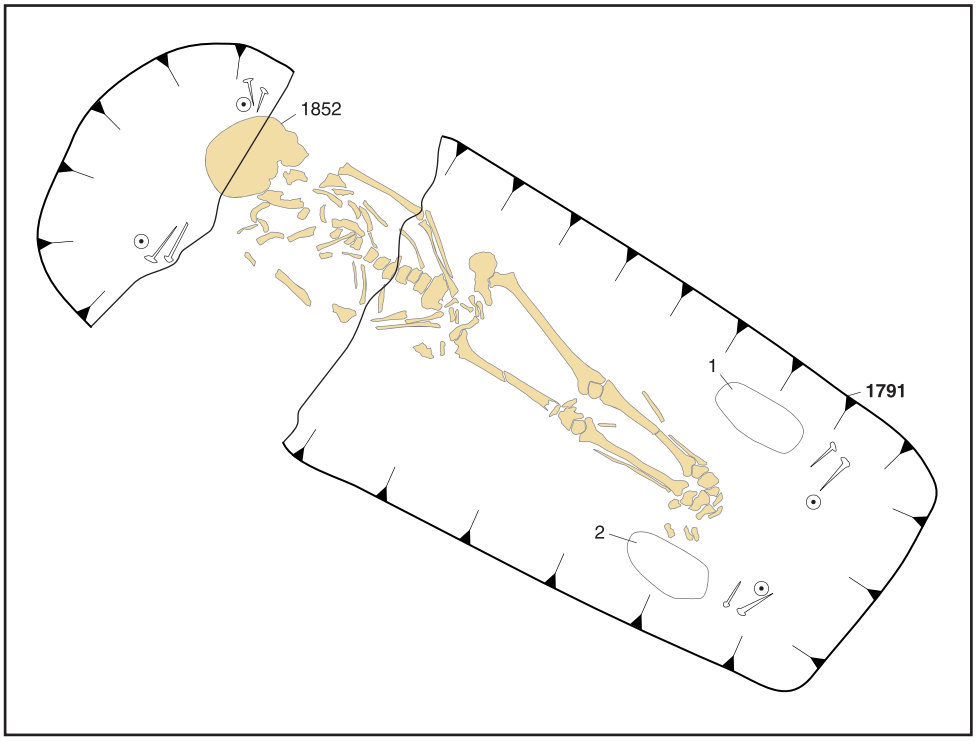


Fig. 3.243 Inhumation Grave 1790

Coffin: Burial 1852 was contained in a coffin represented by an assemblage of 12 nails (SF 4220-31), three at each corner. L: 1.87 m. B: 0.44-0.48 m. (2042)

Grave goods:

1 **Hobnailed shoe**. Represented by a minimum of 45 hobnails, located inside the coffin, beside the left foot of skeleton 1852. SF 4258

2 **Hobnailed shoe**. Represented by a minimum of 36 hobnails, located inside the coffin, beside the right foot of skeleton 1852. SF 4259

Comments: Burial 1793 was located approximately 0.30 m above burial 1852, and appears to have been deliberately inserted as a secondary burial

Inhumation Grave 1805 (7909/0303, Fig. 3.244)

Grave cut 1643

Orientation: W-E
Shape: Sub-rectangular, rounded ends
Dimensions: 2.48 x 0.71 m, 0.83 m deep
Fill: Dark brown clay silt with 20% chalk lumps (1644)
Relationships: Intersected with Clarke's grave 218, but the relationship had been dug away by the excavation of the latter feature.

Skeleton 1697

Posture: Supine, legs extended and parallel
Arm position: Left arm angled slightly across body with the hand resting on the pelvis, right arm extended beside body
Sex: Male
Age: 26-35. Prime adult
Height: 173.7
Fragmentation: Fair
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Pathology: Spinal osteophytosis and Schmorl's nodes, eburnation C1-2. Ankylosis T11-12. AMTL

Coffin: Represented by 10 nails. L: 1.87 m. B: 0.51 m. Ht: 0.37 m. (2043)

Grave goods:

1 **Iron knife** with bone handle and silver guard. Square-sectioned tang placed centrally to blade with stepped shoulder and choil. Pointed oval blade with straight back sloping up and down, convex-curved blade sloping up to tip. Tang inserted into cylindrical bone handle with four grooves around upper end. Lower end of handle bound with iron band with tinning or silvering on outer face, band divided into three zones with paired grooves, lowest two zones have raised dots, upper zone retains traces of diagonal lines, raised dots (?) below upper set of grooves. Upper end of handle has silver disc with separate cruciform finial fastened onto end of shank. Total length 200 mm, length blade 105 mm, maximum width blade 33 mm. (1644) SF 4035

2 **Coin**. Nummus of ?Valens, Securitas Reipublicae, Arles. AD 364-378. SF 4052

3 **Coin**. Nummus of Valentinian I, Securitas Reipublicae, Rome. AD 367-375. (LRBC2, 724). Minerally preserved textile on reverse. SF 4053

4 **Coin**. Nummus of Gratian, Gloria Romanorum, ?Lyons. AD 364-378. SF 4082

Date: Coins dated AD 367-378

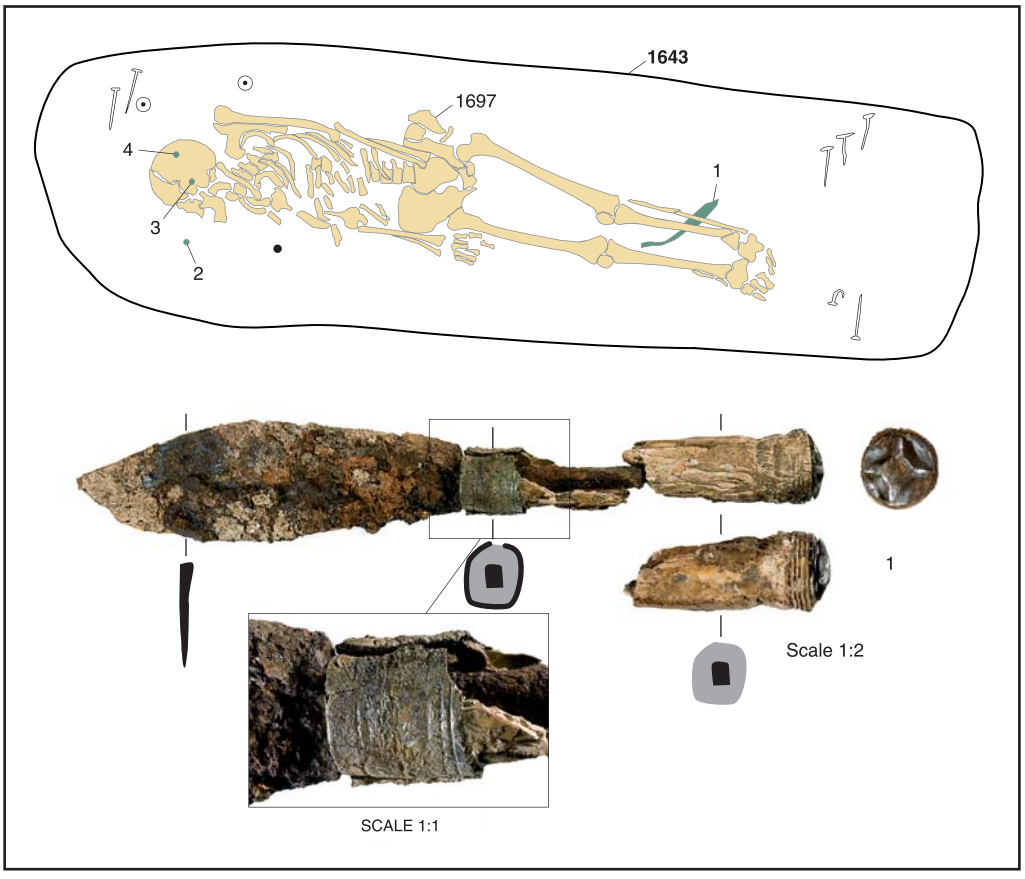


Fig. 3.244 Inhumation Grave 1805

Inhumation Grave 1810 (7922/0322, Fig. 3.245)

Grave cut 1801
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 2.28 x 1.10 m, 1.24 m deep
Fill: Loose mid brown silty sand with 30% chalk pieces (1804)
Relationships: Cut ditch 450. The upper part of the fill was cut by Graves 1735 and 1740

Skeleton 1802
Posture: Supine, legs extended and parallel
Arm position: Left arm extended beside body, right arm semi-flexed with the hand resting on the pelvis
Sex: Male
Age: 36-45. Mature adult
Height: 173.2
Fragmentation: Poor
Condition: Skull 2, arms 2, hands 2, torso 2, legs 2, feet 2
Pathology: Spinal osteophytosis and Schmorl's nodes. DJD left and right glenoid fossa. Caries (x2), lesion, calculus, periodontal disease

Coffin: Represented by extremely friable wood fragments defining the outline of the western half of the coffin, and an assemblage of 25 nails and a coffin stain defining the western end and part of either side. L:

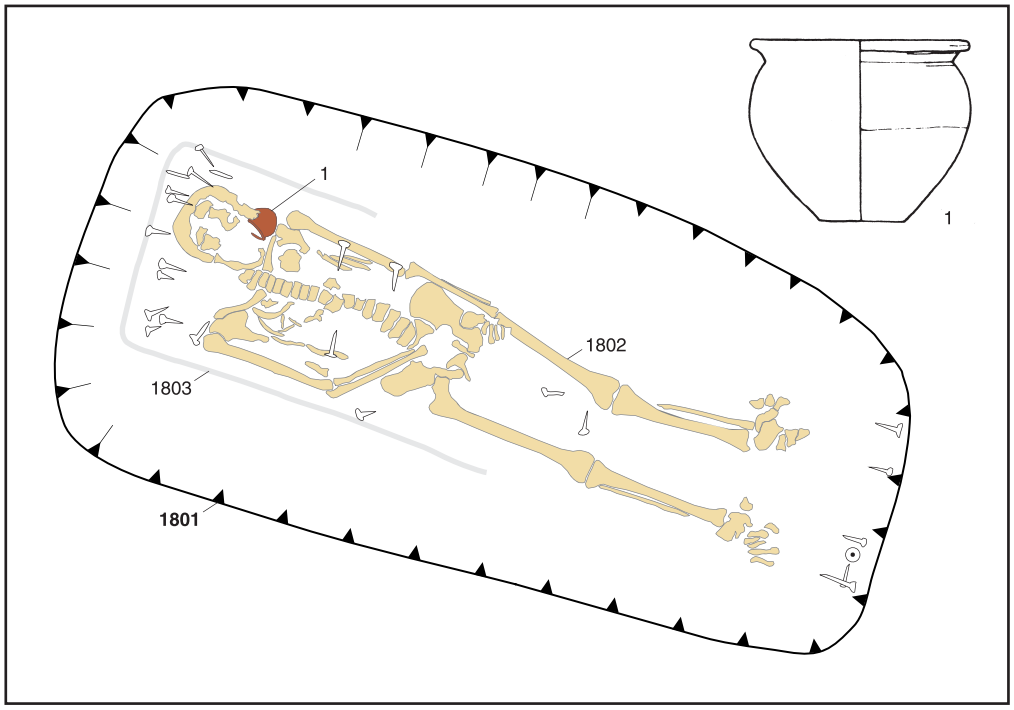


Fig. 3.245 Inhumation Grave 1810

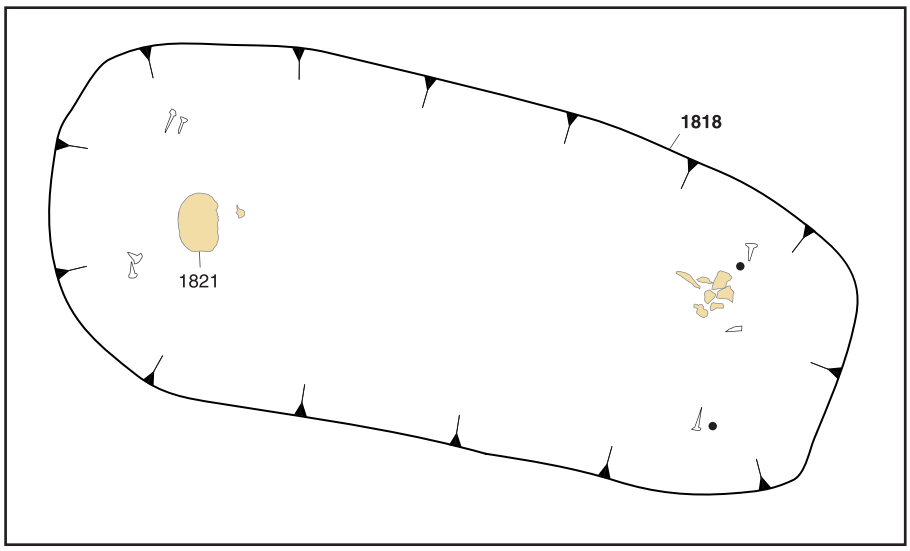


Fig. 3.246 Inhumation Grave 1820

1.99-2.00 m. B: 0.42-0.45 m. Ht: 0.15 m. (1803)

Grave goods:

1 **Vessel** 1807. Fabric ZM, New Forest reduced coarse ware. Jar of Fulford (1975a) grey ware type 30.9. *c* AD 270-350. Complete. (1807)

Date: Pottery dated AD 270-350

Inhumation Grave 1820 (7920/0319, Fig. 3.246)

Grave cut 1818

Orientation: WNW-ESE
Shape: Sub-rectangular, rounded ends
Dimensions: 2.05 x 0.87 m, 0.96 m deep
Fill: Friable mid-dark greyish brown chalky silt (1819)
Relationships: Cut gully 470

Skeleton 1821

Posture: Unknown
Arm position: Unknown
Sex: ?Female
Age: Adult
Fragmentation: Poor
Condition: Skull 1, arms 9, hands 9, torso 9, legs 9, feet 5

Coffin: Represented by an assemblage of 8 nails. L: 1.59-1.63 m. B: 0.37-0.48 m. Ht: 0.14 m. (2044)

Inhumation Grave 1840 (7887/0325, Fig. 3.247)

Grave cut 1841

Orientation: WSW-ENE
Shape: Sub-rectangular, square western end, rounded eastern end
Dimensions: 1.30 x 0.65 m, 0.83 m deep
Fill: Loose white chalk rubble (1838)
Relationships: Cut by Grave 1760

Skeleton 1839

Posture: Unkown
Arm position: Unknown
Age: Infant
Fragmentation: Fair
Condition: Skull 2, arms 9, hands 9, torso 9, legs 9, feet 9
Pathology: Cribra orbitalia

Coffin: Represented by an assemblage of 14 nails. L: 0.93-0.96 m. B: 0.19-0.33 m. (2045)

Comments: Skeletal preservation was very poor, with only a few skull fragments surviving.

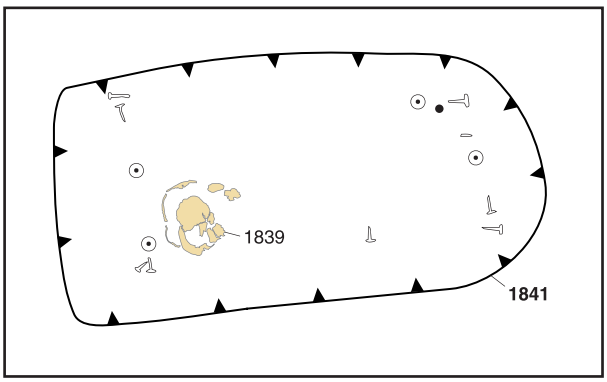


Fig. 3.247 Inhumation Grave 1840

Inhumation Grave 1846 (7889/0322, Figures 3.248 and 3.249)

Grave cut 1847

Orientation: WSW-ENE
Shape: Rectangular
Dimensions: 2.50 x 0.96 m, 1.20 m deep
Fill: Loose white chalk rubble with a small proportion of topsoil (1850)

Skeleton 1848

Posture: Supine, legs extended and parallel
Arm position: The arms do not survive.
Sex: Undetermined
Age: Adult
Fragmentation: Fair
Condition: Skull 5+, arms 5+, hands 9, torso 5+, legs 5, feet 9
Pathology: Caries (x2)

Coffin: Represented by an assemblage of 14 nails and a rectangular area of coffin fill. L: 1.89 m. B: 0.46-0.48 m. (1849)

Grave goods:

1 **Gilded copper alloy crossbow brooch**, lacking central knob. Hexagonal-sectioned crossbar with transversely ribbed collar at either end; solid spherical knobs with pointed ends cast in one with bar; scar from third knob on top of bow; rectangular perforated bar on front face of crossbar cast in one with it. Triangular-sectioned curved bow of approximately same width and length as foot; beaded rib around base of bow with constricted ribbed junction between bow and foot, central rib beaded. Front of foot has bevelled sides with two pairs of outward facing scrolls with similar scroll on foot. Catch plate closed at base. Hinged pin fastened in catch plate. Many areas of gilding over front and on back of crossbar, traces on catch plate but generally gilding is much less apparent on back than front, none remains on apex of bow. Inscriptions in niello on either side of the bow. VENE VIVAS on one side, VTRE FELIX on other. Patch of mineralised ?leather detached from head end of brooch; adhering to this fine ?linen textile, Z x ? (no further details possible); similar fine threads on brooch foot (PWR); also mineralised fly pupae. Length 77 mm, width of crossbar and knobs 74 mm, section of knob 14 mm, section of bow 9 x 7.5 mm. Weight 87 g. (1850) SF 4190

2 **Gilded silver buckle plate and frame**, complete. Oval plate bent around crossbar of facetted 'D'-shaped frame, crossbar shows break inside plate on X-radiograph. Edges of upper face of plate bent over at outer edge; lower face uneven; cut-out for articulation of pin. Facetted 'D'-sectioned pin wrapped around crossbar; two transverse grooves on upper surface with wedge-shaped depressions on sides between them; tip of pin bent around upper face of frame. Three dome-headed rivets fasten plate with shanks bent under. Distance between two sides of plates suggest the strap end was probably doubled with outer end bent back inside the upper face. Total length 36 mm, dimensions of frame 27 x 20 mm, dimensions of plate 28 x 20 mm, space between plate *c* 4 mm. (1850) SF 4260

3 **Gilded silver amphora-shaped strap end**. Flat heart-shaped plate with onion-shaped terminal, upper end has openwork scroll sides with serrated upper edge, this area split in two over the upper part for the reception of the strap, two dome-headed studs

through upper part with ends burred on the other side, small part of scrollwork missing on one side. Upper face has bevelled edges. Length 48 mm, maximum section of plate 20 x 1 mm, gap for strap 1.5 mm. (1850) SF 4244

4 **Spur**; copper alloy base (XRF leaded bronze with Zinc), with iron prick. Triangular-sectioned arms with oval plate at either end, rectangular-sectioned junction between arm and plate vertically channelled and on one side retains traces of beading on outer ridge; centrally a similar oval plate and rectangular junction above and a flat-backed fleur-de-lys moulding below. Each of plates has central hole retaining shank of rivet. One side plate retains part of a silver plate fastened by the rivet, the face of this has lines of gilding in a cross pattern. Centrally a hole

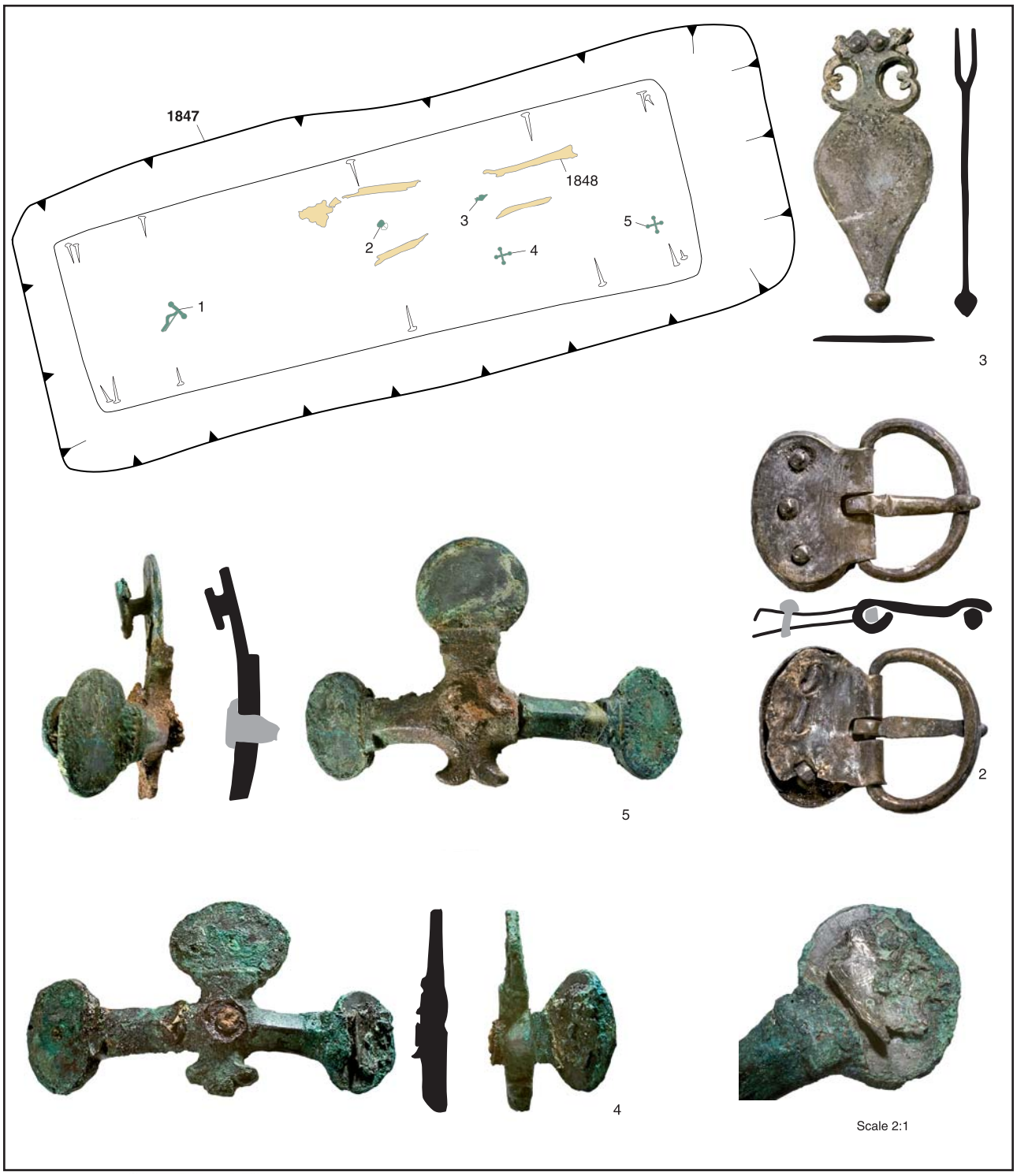


Fig. 3.248 Inhumation Grave 1846

Fig. 3.249 Crossbow brooch from Grave 1846

with the remains of the shank of an iron prick spur. Width 63 mm, depth 33 mm, dimensions of side plate 19 x 14 mm, section arm 7 x 4.5 mm. (1850) SF 4243

5 **Spur**; copper alloy base (XRF leaded bronze with zinc), with iron prick. Description similar to above with regard to shape but they are not an identical pair as this example is deeper, the arms are slightly longer and the plates circular rather than oval. Side and top plates have disc-ended fasteners centrally behind, possibly cast in one with body as there is no evidence on the front faces that these were inserted. Beading on the rectangular junctions is more pronounced. Traces of lead/tin solder (identified by XRF) on front of plates. Iron conical prick spur with rounded moulding inserted centrally through hole. Some detached fragments of mineralised leather have soft folds which suggest boots rather than a strap: grain surface absent (PWR). Width 67 mm, depth 41 mm, dimensions of side plate 19 x 18 mm, section arm 7 x 4 mm, depth attachment stud 5 mm, diameter attachment disc 9 mm. (1850) SF 4214

Date: Crossbow brooch dated after *c* AD 330, but was worn and repaired when deposited. The belt fittings probably date after AD 350 and the spurs perhaps after *c* AD 370. Calibrated radiocarbon date (2σ) AD 255-414

Inhumation Grave 1859 (7888/0325, Fig. 3.250)

Grave cut 1858

Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 1.15 x 0.50 m, 0.75 m deep
Fill: Loose white chalk lumps with some reddish brown silty clay (1856)

Skeleton 1857

Posture: Unknown

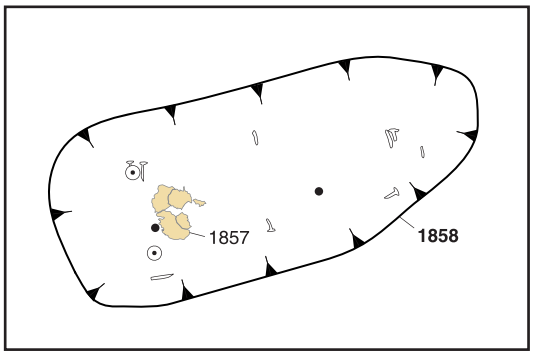


Fig. 3.250 Inhumation Grave 1859

Arm position: Unknown
Age: Infant
Fragmentation: Good
Condition: Skull 1, arms 9, hands 9, torso 9, legs 9, feet 9
Pathology: Endo- and ecto-cranial new bone growth

Additional human remains: Fragments of an older child (1856)

Coffin: Represented by an assemblage of 13 nails. L: 0.65-0.77 m. B: 0.28 m. (2046)

Comments: Skeletal preservation was very poor, with only a few skull fragments surviving. The south-eastern corner of the grave was truncated by a modern pipe trench.

Inhumation Grave 1860 (7892/0310, not illustrated)

Grave cut 1853
Orientation: WSW-ENE
Shape: Sub-rectangular, rounded ends
Dimensions: 2.07 x 0.69 m, 0.61 m deep
Fill: Mottled dark brown and white clay silt and chalk rubble (1855)

Skeleton 1854
Posture: Supine
Arm position: Both arms flexed, lying across the stomach
Sex: Female
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 5, arms 5+, hands 4, torso 5, legs 5+, feet 4

Additional human remains: Fragments of a second adult (1855)

Coffin: None

Inhumation Grave 1866 (7922/0318, Fig. 3.251)

Grave cut 1867
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 1.45 x 0.50 m, 0.90 m deep
Fill: Mixed silt, chalk and flint (1868)
Relationships: Cut Grave 1638, ditch 450 and gully 470

Skeleton 1870
Posture: Supine, legs extended with feet together
Arm position: Left arm extended beside body with the hand bent inward at 90° to the wrist, palm upward; right arm tightly flexed with the hand under the left humerus
Age: 6-12. Older child
Fragmentation: good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 1
Anomalies: Shovelling upper first incisors

Coffin: None

Grave goods:
1 **Copper alloy bracelet** (XRF heavily leaded bronze with small amount of zinc). Rectangular-sectioned hoop widest to wrist, one end perforated, other cut down to form upward hook. Groove parallel to each long edge; diagonal cross in front and groove behind of eye; short unit behind eye with notched edges and a pair of ring and dots; rest of hoop divided into seven units by pair of vertical grooves, second, fourth and sixth units decorated by ring and dots. Diameter 60 mm, section 5 x 1.5 mm. (1870) SF 4268. (worn on left arm at elbow)
2 **Bone bracelet**; two fragments joining at terminal; approximately two-thirds extant. Traces of copper alloy sheet sheath held in place by two iron rivets. Rounded rectangular section. Present diameter *c* 63 mm., section 4.5 x 3 mm. (1870) SF 4270. (worn on left arm at elbow)
3 **Bone bracelet**; two joining fragments, outer ends broken; approximately 85% circumference. Rounded rectangular section tapering to outer broken ends, one of which retains green staining probably from terminal sheath. Present diameter *c* 65 x 56 mm, section 5 x 3 mm. (1870) SF 4270. (worn on left arm at elbow) **(NI)**
4 **Copper alloy bracelet**, complete. Three strands, right hand cable twist; hook and eye terminal formed by one strand with other two wrapped around as cuff. Diameter 58 x 55 mm, section 4 mm. (1870) SF 4269. (worn on left arm at elbow)
5 **Copper alloy bracelet** (XRF – leaded brass); broken in two pieces. Circular-sectioned hoop tapering to double hooked terminals, one chipped. Slight rib spiralling around central part of hoop imitating left-hand cable twist, best preserved on interior. Traces of mineralised fabric(?) on one terminal. Diameter 58 x 46 mm, section 2.5 mm. (1870) SF 4267. (worn on right arm on wrist)
6 **Copper alloy finger ring**. Complete. Rectangular-section with rounded upper and lower faces; penannular with straight but ends. Terminals show differential corrosion, possibly from where a soldered plate. Diameter 17 x 16 mm, section 1.5 x 1 mm. (1870) SF 4265
7 **Copper alloy finger ring**. Rectangular-sectioned strip with rounded upper edges, bent into ring with overlapping ends. Diameter 18 mm, section 4 x 1 mm. (1870) SF 4266
8 **Vessel**. Fabric TR, New Forest colour-coated ware. Beaker of Fulford (1975a) fine ware type 30. It is not clear if it was decorated. *c* AD 300-400. Complete. Located to the right of the skull. (1869)

Date: Pottery dated AD 300-400. Bracelets dated after AD 350. Grave 1638 contained coins, the latest dated AD 364-375

Inhumation Grave 1880 (7921/0322, not illustrated)

Grave cut 1877
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: 0.93 x 0.52 m, 0.45 deep
Fill: Friable mid greyish brown silt with 30% chalk rubble and flint (1878)
Relationships: Cut gully 470

Skeleton 1879
Posture: On left side, legs slightly flexed
Arm position: Left arm under body, right arm slightly flexed with hand on pelvis
Age: Infant
Fragmentation: Poor
Condition: Skull 1, arms 1, hands 9, torso 1, legs 1, feet 9

Coffin: None

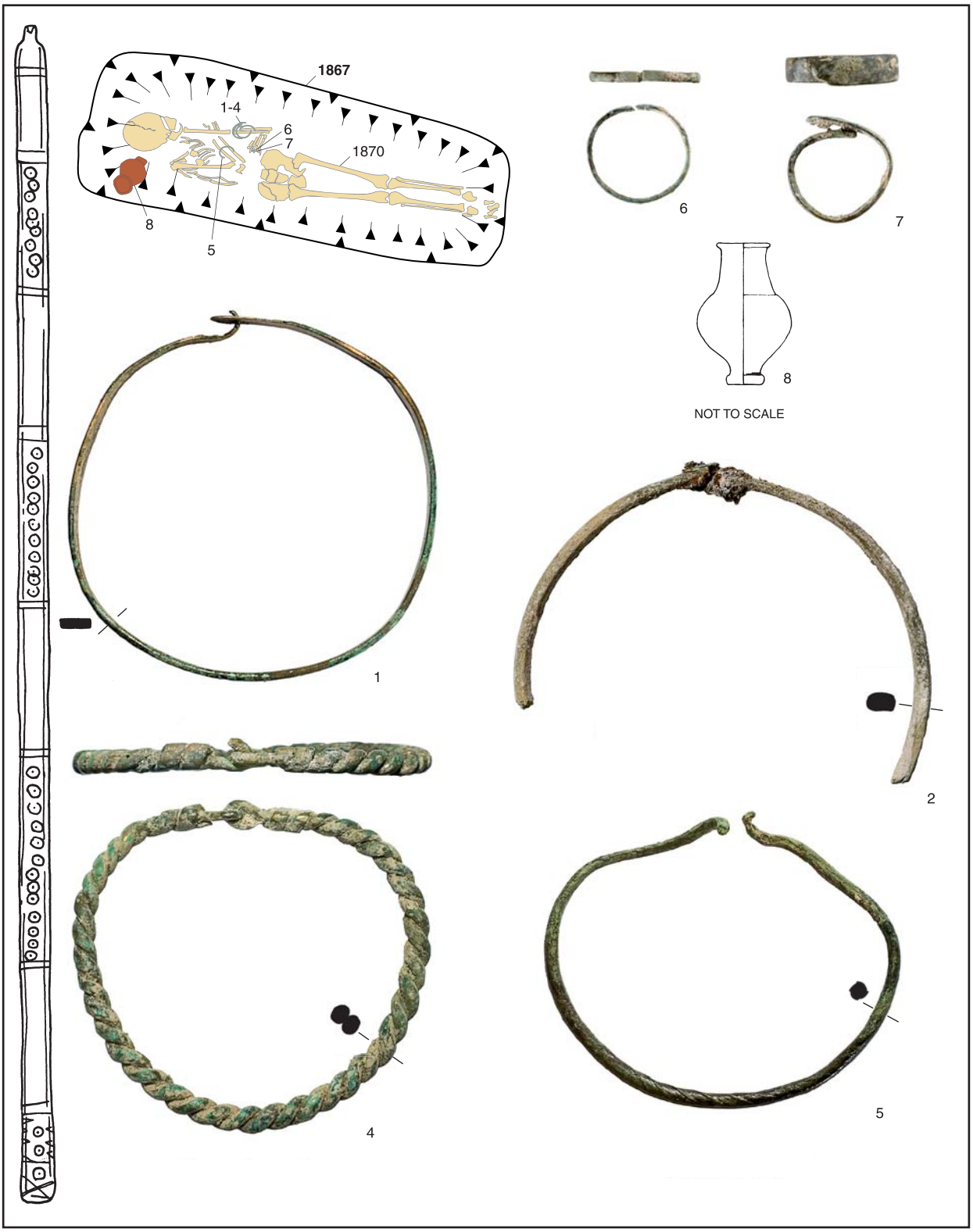


Fig. 3.251 Inhumation Grave 1866

Inhumation Grave 1884 (7883/0322, Fig. 3.252)

Grave cut 1883
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.10 x 0.90 m, 0.89 m deep
Fill: Loose white chalk lumps with reddish brown clay silt (1881)
Relationships: Adjacent to Grave 1885 but no discernible relationship

Skeleton 1882
Posture: Lying on left side, legs extended
Arm position: Left arm in front of body, slightly flexed; right arm resting on body, slightly flexed.
Sex: Male
Age: 45+. Older adult
Height: 166.6
Fragmentation: Fair
Condition: Skull 0, arms 0, hands 2, torso 0, legs 0, feet 9
Pathology: Spinal osteophytosis and Schmorl's nodes. Osteoarthritis right TMJ. Ankylosis C2-3. Cervical intervertebral disc disease. AMTL, calculus, periodontal disease

Coffin: Represented by an assemblage of 9 nails. B: 0.45 m. (2047)

Comments: The eastern end of the grave had been truncated by a modern pipe trench, removing the lower parts of the legs

Inhumation Grave 1885 (7884/0322, Fig. 3.253)

Grave cut 1886
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 1.80 x 0.76 m, 0.96 m deep
Fill: Loose white to light brown chalk rubble with a small proportion of topsoil (1889)
Relationships: Adjacent to Grave 1884 but no discernible relationship

Skeleton 1887
Posture: Uncertain
Arm position: Uncertain
Sex: ?Female
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 3, arms 9, hands 9, torso 9, legs 5+, feet 9

Coffin: Represented by an assemblage of 13 nails and a rectangular area of coffin fill. B: 0.45 m. (1888)

Inhumation Grave 1895 (7897/0311, Fig. 3.254)

Grave cut 1896
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 2.40 x 1.00 m, 1.25 m deep
Fill: Friable light brownish white chalk lumps and chalky silt (1897)

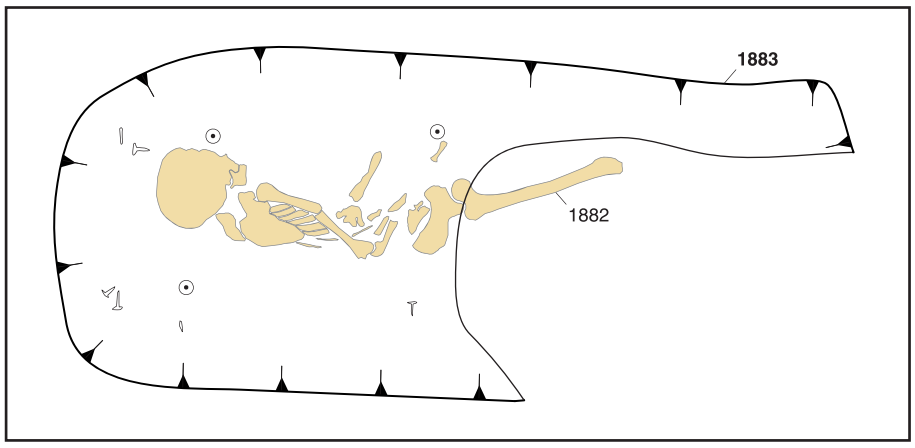


Fig. 3.252 Inhumation Grave 1884

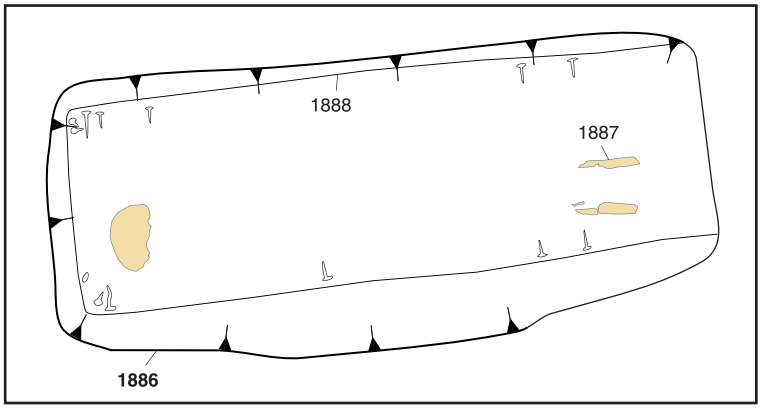


Fig. 3.253 Inhumation Grave 1885

Skeleton 1894
Posture: Supine, legs parallel
Arm position: Both arms flexed, lying across the stomach
Sex: Male
Age: 18-25. Young adult
Height: 170.8
Fragmentation: Good
Condition: Skull 1, arms 2, hands 1, torso 1, legs 1, feet 1
Pathology: Schmorl's nodes. Calculus

Coffin: Represented by an assemblage of 20 nails. L: 1.87-1.95 m. B: 0.41-0.45 m. (2048)

Other finds: One sherd (7 g) of pottery, fabric ZG (1897)

Inhumation Grave 1900 (7889/0321, Fig. 3.255)

Grave cut 1901
Orientation: WSW-ENE
Shape: Sub-rectangular, rounded eastern end
Dimensions: 1.72 x 0.52 m, 0.15 m deep
Fill: Loose grey to mid brown chalk and silty clay (1903)

Skeleton 1902
Posture: Supine, left leg straight, right leg turned slightly inward
Arm position: Both arms flexed, lying across stomach
Age: 13-17. Adolescent
Fragmentation: Fair
Condition: Skull 1, arms 2, hands 1, torso 2, legs 1, feet 1
Pathology: Cribra orbitalia. Right distal humerus osteomyelitis. Periostitis very small patch on right ulna, femora and left radius.

Additional human remains: Fragments of a neonate (1903)

Coffin: Represented by an assemblage of 10 nails. L: 1.40-1.47 m. B: 0.29-0.34 m. (2049)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 23 hobnails, associated with the left foot. SF 4330
2 **Hobnailed shoe**. Represented by a minimum of 20 hobnails and three boot plates (SF 4326-8), associated with the right foot. SF 4329

Comments: The grave was located in the part of the site truncated by the boiler room of the School House, resulting in the loss of all but the bottom 0.15 m of the feature

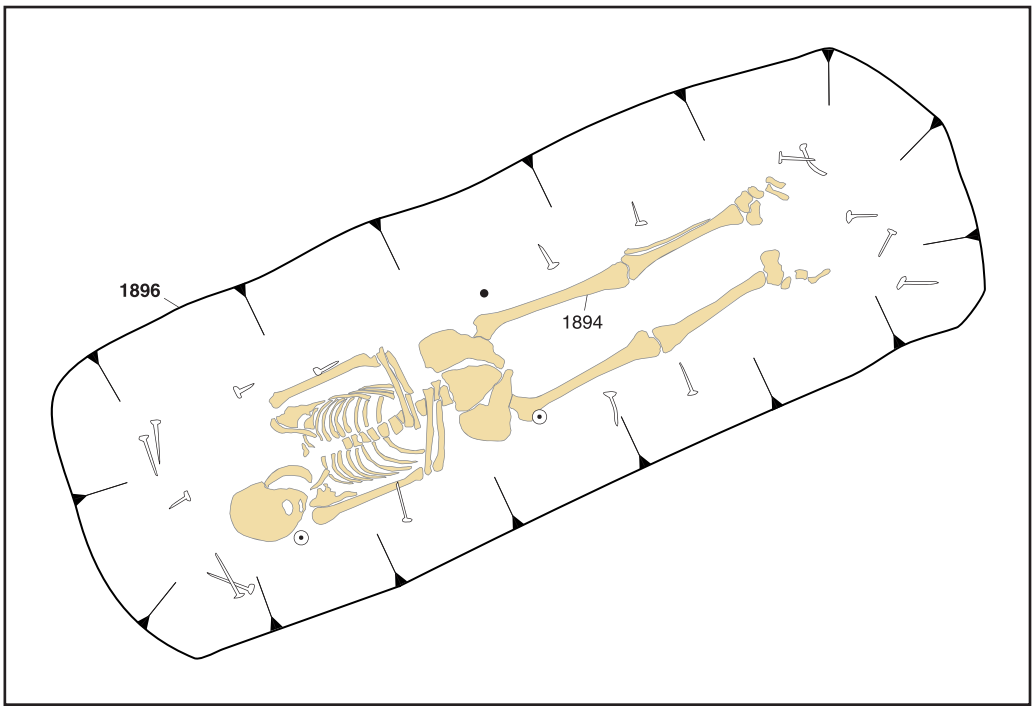


Fig. 3.254 Inhumation Grave 1895

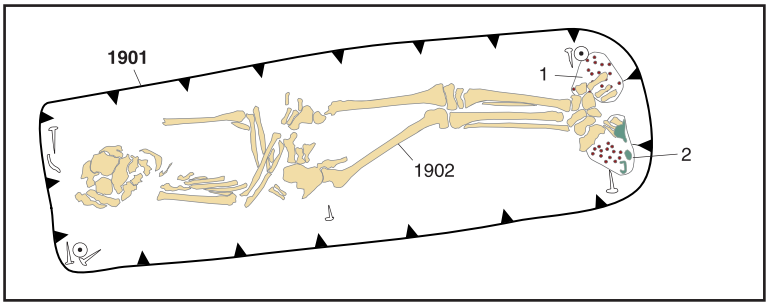


Fig. 3.255 Inhumation Grave 1900

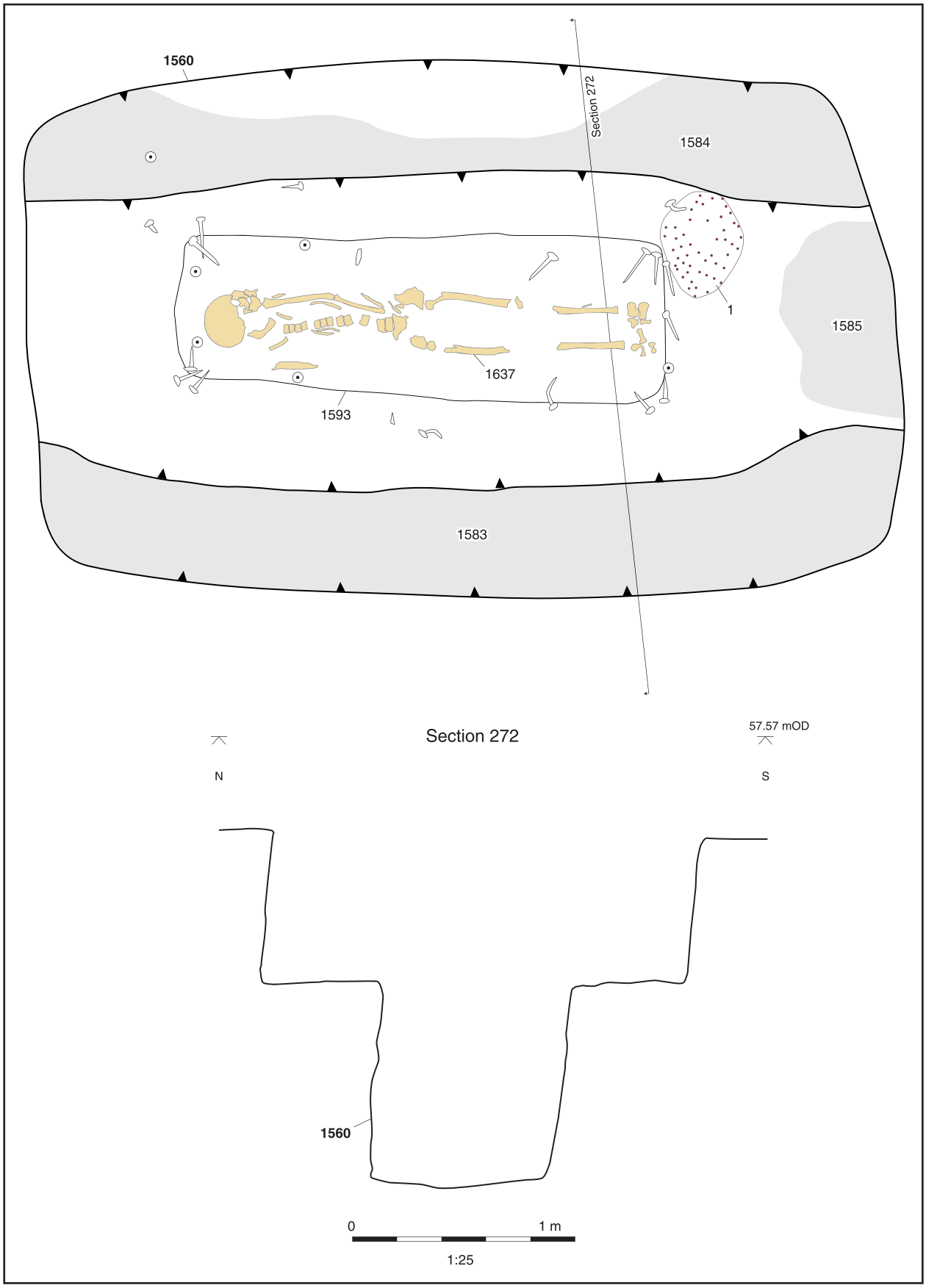


Fig. 3.256 Inhumation Grave 1907

Inhumation Grave 1907 (7908/0309, Fig. 3.256)

Grave cut 1560
Orientation: W-E
Shape: Rectangular
Dimensions: 3.10 x 1.90 m, 1.48 m deep with a step 0.40 m wide along each of the long sides at a depth of 0.70 m
Fill: Loose mid yellowish brown silty clay with frequent chalk pieces (1582)

Skeleton 1637
Posture: Supine, legs extended and parallel
Arm position: Left arm slightly flexed with the hand resting on the pelvis; position of right arm uncertain as only part of the humerus survived
Sex: Female
Age: 36-45. Mature adult
Fragmentation: Fair
Condition: Skull 3, arms 3, hands 2, torso 2, legs 5, feet 4
Pathology: Schmorl's nodes. AMTL, lesions (x2). Sinusitis

Additional human remains: Groups of bone fragments representing two adults, one male and one female (1368, 1559, 1561, 1578, 1579, 1582, 1586, 1588)

Coffin: Represented by an assemblage of 21 nails and a rectangular area of coffin fill. L: 1.69-1.74 m. B: 0.53-0.56 m. Ht: 0.21 m. (1593)

Grave goods:
1 **Hobnailed shoe(s)**. Represented by a minimum of 65 hobnails, located outside the coffin at the foot of the grave. SF 4038

Other finds: Twenty-one sherds (146 g) of pottery, 1 prehistoric, and fabrics WFA and TF, almost all from a beaker in fabric TF (1582)

Comments: Areas of brown silt (1583-5) interpreted as the remains of planking were observed on the surface of the steps

Inhumation Grave 1910 (7890/0317, Fig. 3.257)

Grave cut 1908
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: 1.07 x 0.45 m, 0.10 m deep
Fill: Mid greyish white chalk and mid brown silty clay (1911)

Skeleton 1909
Posture: Uncertain
Arm position: Uncertain

Coffin: Represented by an assemblage of 11 nails. L: 0.74-0.79 m. B: 0.29-0.30 m. (2050)

Comments: The grave was in a part of the site that had been severely truncated by the construction of the School House. Skeletal preservation was very poor with only teeth fragments surviving

Inhumation Grave 1915 (7890/0325, Fig. 3.258)

Grave cut 1912
Orientation: WSW-ENE
Shape: Sub-rectangular, slightly rounded ends
Dimensions: 2.37 x 0.80 m, 0.32 m deep
Fill: Loose mid brown silty sand with chalk rubble and flint (1914)

Skeleton 1913
Posture: Uncertain due to poor preservation, although the position of the surviving parts of the lower legs indicate that they were slightly flexed, with the body possibly lying on its left side

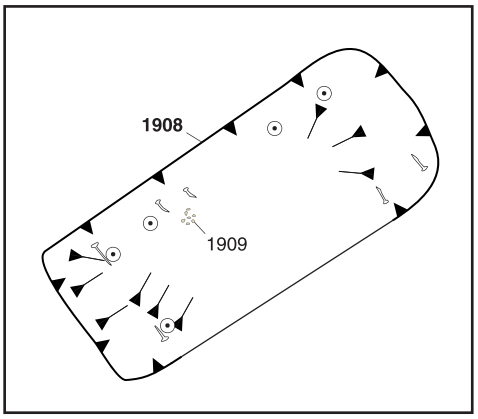


Fig. 3.257 Inhumation Grave 1910

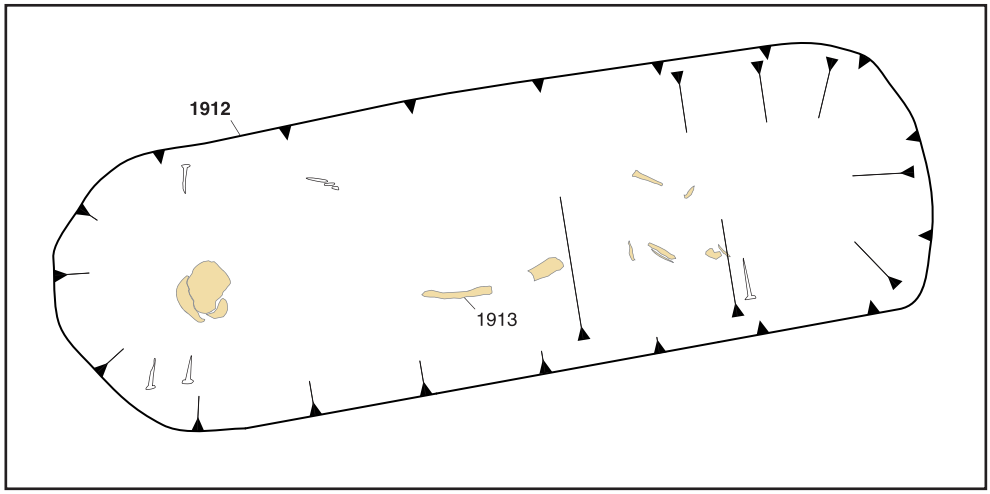


Fig. 3.258 Inhumation Grave 1915

Arm position: The arms did not survive
Sex: Male
Age: 45+. Older adult
Fragmentation: Fair
Condition: Skull 2, arms 9, hands 9, torso 9, legs 2, feet 2
Pathology: Thickened cranium: Paget's?/age-related.

Coffin: Represented by an assemblage of 5 nails. L: 1.56 m. B: 0.47 m. (2051)

Other finds: One sherd (9 g) of pottery, fabric ZF jar rim (1914)

Comments: The grave was in a part of the site that had been severely truncated by the construction of the School House

Inhumation Grave 1920 (7887/0319, Fig. 3.259)

Grave cut 1916
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.00 x 1.10 m, 0.31 m deep at NE end, decreasing to 0.14 m at SW end
Fill: Mixed chalk and flint with mid-light grey clay silt (1917)

Skeleton 1919
Posture: Supine, legs extended and parallel
Arm position: Both arms semi-flexed with wrists crossing over the pelvis
Sex: ?Female
Age: Adult
Fragmentation: Fair
Condition: Skull 1, arms 3, hands 4, torso 5, legs 2, feet 2
Pathology: Cribra orbitalia. Healed fracture left parietal

Coffin: Represented by an assemblage of 13 nails. L: 1.76-1.79 m. B: 0.41 m. (1918)

Grave goods:
1 **Hobnailed shoe**. Represented by a minimum of 72 hobnails (including soil sample <1529>), worn on left foot. SF 4361
2 **Hobnailed shoe**. Represented by a minimum of 75 hobnails, worn on right foot. SF 4362

Comments: The grave was in a part of the site that had been severely truncated by the construction of the School House

Inhumation Grave 1921 (7893/0327, Fig. 3.260)

Grave cut 1922
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.01 x 0.65 m, 0.19 m deep
Fill: Loose mid brown silty sand (1924)

Skeleton 1923
Posture: Supine, legs extended and parallel
Arm position: Left arm flexed across stomach; right arm extended beside body
Sex: Male
Age: 60+. Much older adult
Fragmentation: Fair
Condition: Skull 5+, arms 3, hands 9, torso 4, legs 3, feet 4

Coffin: None

Grave goods:
1 **Copper alloy buckle plate and frame** (buckle plate and pin – XRF leaded brass with some tin; buckle loop – XRF heavily leaded bronze with some zinc). Oval buckle plate bent around crossbar of saddle-shaped frame with facetted section, crossbar narrows with step at each end. Frame grooved on saddle. Shallow D-sectioned pin with facetted sides bent around crossbar, two cross grooves by crossbar and tip curved over frame. Plate has cut out for pin and upper part has bent over edges; three perforations, the front two by the crossbar have considerable iron corrosion with mineralised fly pupae, and textile on one and ?leather on the other: textile is ?tabby, 16-20/Z x ?/Z per cm (PWR). Rear of plate has small perforation now without any rivet. Total length 39 mm, frame – width 42 mm, length 19 mm, plate width 44 mm, length 29 mm. (1924) SF 4363
2 **Copper alloy buckle plate and frame** (XRF: plate – high tin bronze; frame – brass with some lead; pin – ?high tin leaded bronze with zinc). Long rectangular plate bent in half around crossbar of rectangular-sectioned frame. Rectangular-sectioned pin wrapping

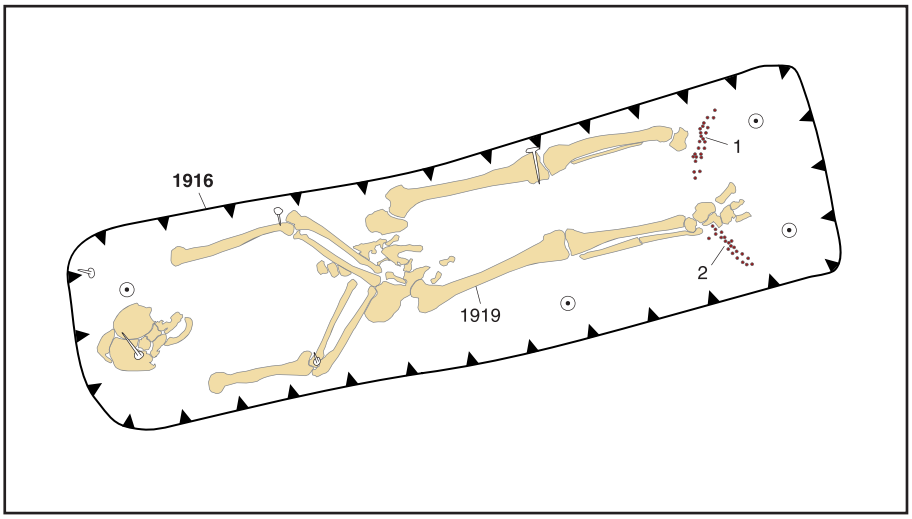


Fig. 3.259 Inhumation Grave 1920

around crossbar through rectangular cut-out, two grooves over loop, pin tapering to point. Upper face decorated with repoussé punched decoration – a row of dots around sides and end, row of 'C'-shaped punch marks inside this frame down each long side; 4 larger punched bosses in a rectangular pattern internally, and a small boss by the cut-out. Fastened by two small copper alloy rivets in outer corners. A circular perforation (upper face only) may mark a third fastening rivet or a rivet to fasten on some form of mount as there is differential corrosion close to it. Between two parts of plate possible traces of ?leather strap (PWR). Total length 71 mm, frame – width
28 mm, length 21 mm, plate – width 23 mm, length 55 mm, space between plates 2 mm. (1924) SF 4365

3 **Iron knife**. Square-sectioned shank placed approximately centrally to blade; stepped shoulder and choil; Curved blade with blade and back following a very weakly S-shaped outline with point sloping down. Total length 220 mm, length of blade 134 mm, maximum width of blade 27 mm. (1924) SF 4364

Other finds: A minimum of five hobnails were recovered from soil sample <1537>, taken from the abdomen Eight sherds (103 g) of pottery, fabrics WC (jar rim), ZC, ZF and ZM (1924)

Date: The buckles are likely to date after *c* AD 350

Comments: The grave was in a part of the site that had been severely truncated by the construction of the School House

Fig. 3.260 Inhumation Grave 1921

Inhumation Grave 1925 (7893/0320, Fig. 3.261)

Grave cut 1929
Orientation: W-E
Shape: Rectangular
Dimensions: 2.33 x 0.72 m, 0.70 m deep
Fill: Mixed chalk fragments and mid brown silty clay (1928)

Skeleton 1926
Posture: Supine, legs extended and parallel
Arm position: Both arms flexed across the stomach
Sex: Undetermined
Age: Adult
Fragmentation: Fair
Condition: Skull 2, arms 3, hands 9, torso 4, legs 3, feet 3

Coffin: Represented by an assemblage of 13 nails and a rectangular area of coffin fill. L: 1.95-1.97 m. B: 0.41-0.50 m. (1927)

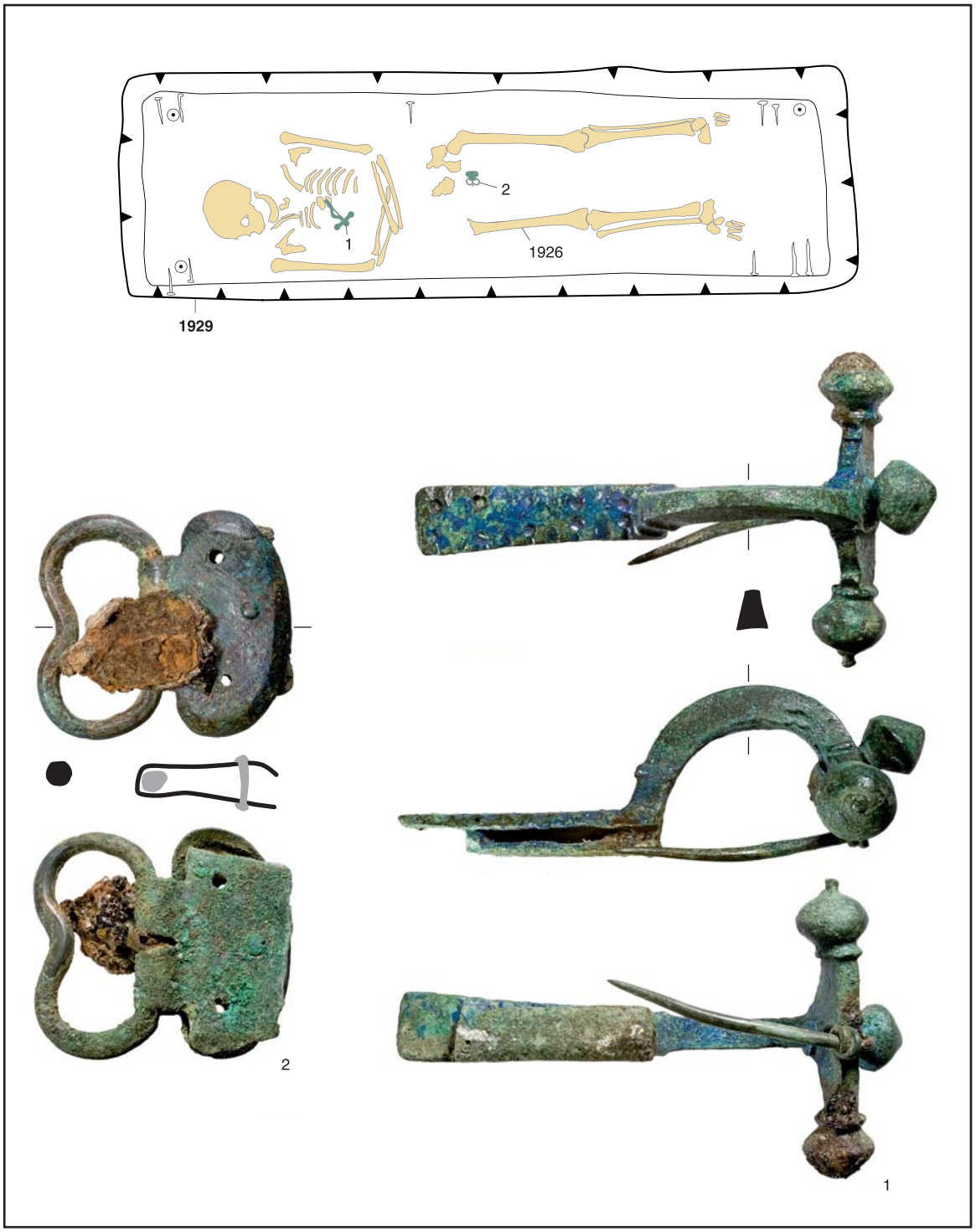


Fig. 3.261 Inhumation Grave 1925

Grave goods:

1 **Copper alloy crossbow brooch**, (XRF – side of bow – Cu 73%, Zn 14%, Pb 10%) complete, repaired. Rectangular-sectioned crossbar with notched collar at either end; asymmetrical solid knobs at either end, one squashed spherical with pointed boss at end, one biconical with iron corrosion products on end. Iron corrosion products also visible in slot suggesting internal bar for pin articulation. Central knob is biconical and inserted through centre of crossbar with end projecting on underside. Front of crossbar expands to either side of bow with vertical rib at either end. Rectangular-sectioned bow slightly narrower and shorter than foot; angular rib at end with constriction before foot. Decoration down each side consists of alternating circular punch marks with grooves alternating with notches; flange bent over to form catch plate extending three-quarters of length down the foot with slight extension on bottom corner bent over and touching back of foot. Iron corrosion products internally at top of catch plate. Pin replaced by pointed wire, threaded through bar within cross arm and wrapped around pin. Fibres preserved inside hinge of pin suggest that the brooch originally fastened cloth, but no further details can be recorded (PWR). Length 83 mm, length of crossbar and knobs 48 mm, section of knob 11 mm, section bow 5.5 x 7 mm. Weight 42 g. (1927) SF 4402

2 **Copper alloy belt buckle and frame** (XRF: frame – leaded bronze with a trace of Zn; plate – gunmetal/brass with tin and lead). Oval top plate with angled down edges, wrapped around crossbar with angular plate on underside. Saddle-shaped frame with facetted section; plate fastened with three rivets, only one extant – domed top and burred underside. Iron pin entirely corroded. Mineralised leather strap inside frame, pierced by buckle pin, with further remains on back of plate, though not inside it; grain surface absent (PWR). Total length 38 mm; frame: width 35 mm, length 19 mm; plate: width 34 mm, length 23 mm, thickness of gap between plates 3 mm. (1927) SF 4403

Date: Brooch dated after *c* AD 330, but was old by the time of deposition

Inhumation Grave 1930 (7892/0324, Fig. 3.262)

Grave cut 1931

Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.55 x 0.50 m, 0.35 m deep
Fill: Mixed chalk, flint and former topsoil (1932)

Skeleton 1934

Posture: Supine, legs extended and parallel
Arm position: Arms did not survive
Sex: Undetermined
Age: Adult
Fragmentation: Poor
Condition: Skull 9, arms 9, hands 0, torso 0, legs 0, feet 0
Pathology: Left hand phalanges osteoarthritis

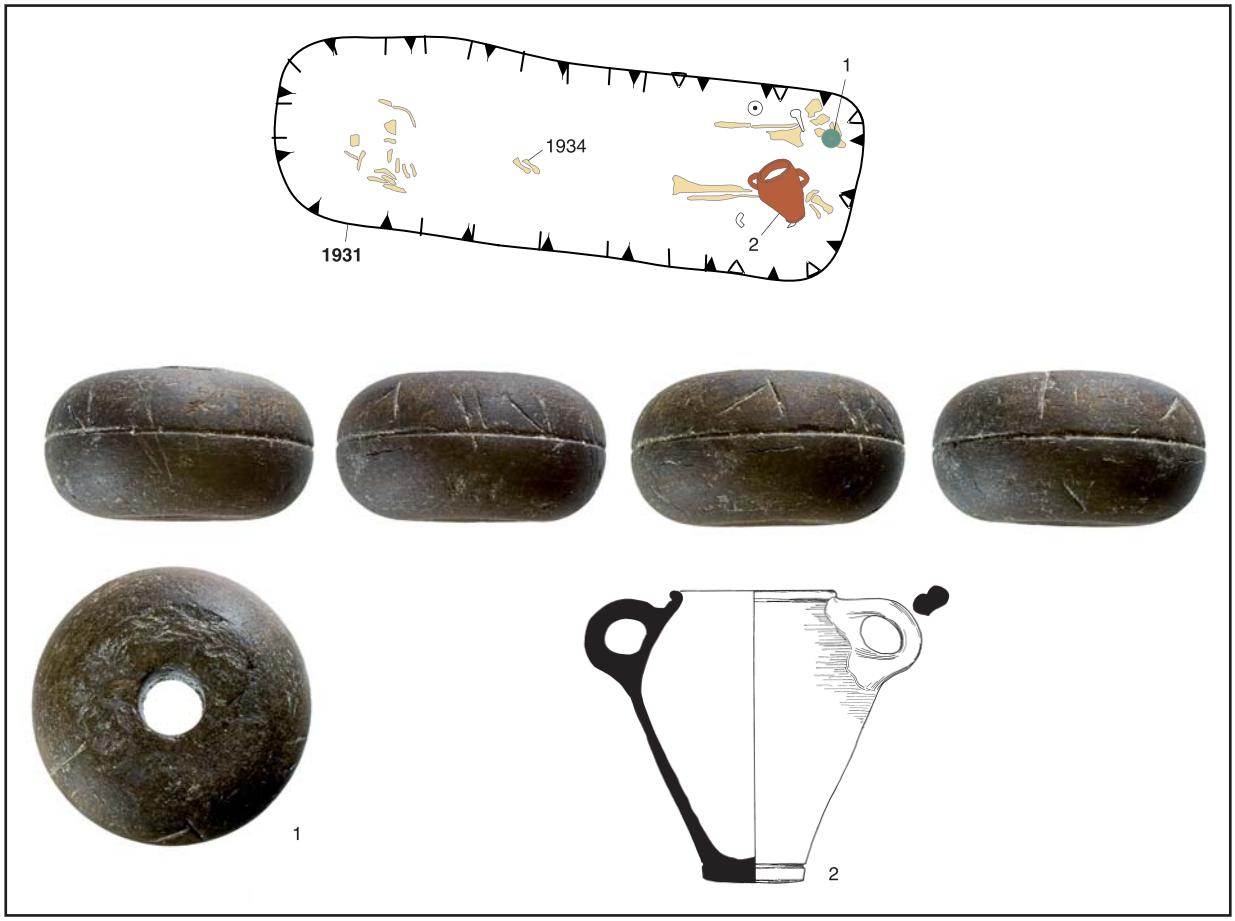


Fig. 3.262 Inhumation Grave 1930

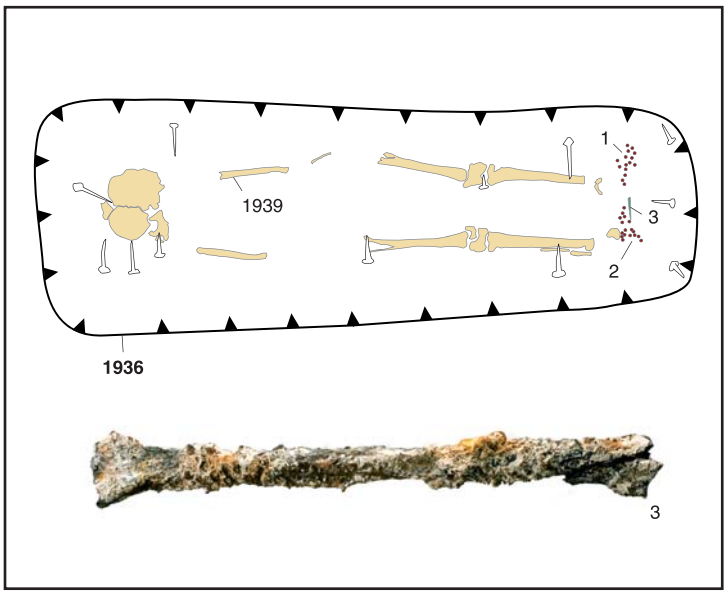


Fig. 3.263 Inhumation Grave 1940

Coffin: Represented by an assemblage of 6 nails defining the outline of the eastern end. (1933)

Grave goods:

1 **Shale spindle whorl**. Annular with flat faces around cylindrical perforation. Groove around widest point of girth. Graffito scratched on one side of girth groove with final letter/mark crossing it. – I l Λ I l V I l with two faint lines after it. Diameter 35 mm, thickness 18 mm, perforation diameter 8 mm, weight 19 g. (1932) SF 4372

2 **Vessel**. Fabric ZM, New Forest reduced coarse ware. Two-handled ?beaker roughly comparable to Fulford (1975a) grey ware types 17 and 18, but closely paralleled at Portchester (Fulford 1975b, 364, type 175.1). Burnished overall, groove on lower body. *c* AD 300-370. Complete. (1935)

Date: Pottery dated AD 300-370. Spindle whorl probably dated after *c* AD 340

Comments: The grave had been severely truncated by a modern service trench, resulting in the loss of much of the skeleton and evidence for all but the eastern end of the coffin

Inhumation Grave 1940 (7890/0324, Fig. 3.263)

Grave cut 1936

Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.75 x 0.60 m, 0.38 m deep
Fill: Mixed chalk, flint and former topsoil (1937)

Skeleton 1939

Posture: Supine, legs extended and parallel
Arm position: Uncertain as only the upper parts of the arms survive
Age: 13-17. Adolescent
Fragmentation: Fair
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 9
Pathology: DEH

Coffin: Represented by an assemblage of 14 nails defining the outline. L: 1.50 m. B: 0.29. (1938)

Grave goods:

1 **Hobnailed shoe**. Represented by a minimum of 25 hobnails, located in the area of the left foot. SF 4487

2 **Hobnailed shoe**. Represented by a minimum of 24 hobnails, located in the area of the right foot. SF 4488

3 **Stylus(?)** Iron. Circular-sectioned shank expanding at one end to triangular eraser with broken upper edge; other end possibly has broken central projection. Present length 72 mm, shank section 3 mm, width of eraser 7 mm. SF 4404

Inhumation Grave 1941 (7886/0313, Fig. 3.264)

Grave cut 727

Orientation: S-N
Shape: Sub-rectangular
Dimensions: 2.20 x 0.74 m, 0.40 m deep
Fill: Compact chalk and light brown silty clay (728)

Skeleton 729

Posture: Supine, legs extended and parallel
Arm position: Both arms extended beside body
Sex: ?Male
Age: Adult
Fragmentation: Fair
Condition: Skull 5+, arms 3, hands 0, torso 5+, legs 3, feet 1

Additional human remains: Fragment of a second adult (728)

Coffin: Represented by an assemblage of 13 nails defining the outline of the northern half. B: 0.38 m. Ht: 0.14 m. (2052)

Grave goods:

1. **Hobnailed shoe**. Represented by a minimum of 23 hobnails, located inside the coffin beside the left hip. SF 1817, 1834

2. **Hobnailed shoe**. Represented by a minimum of 16 hobnails, located inside the coffin beneath the lower part of the right leg. SF 1835

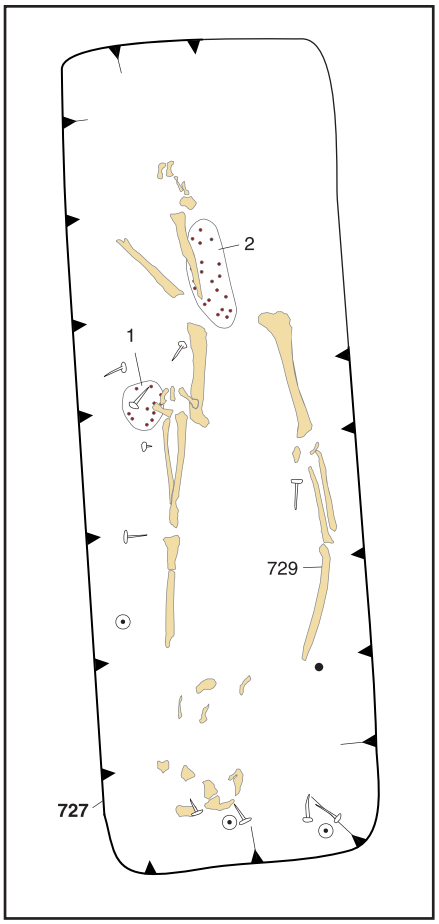


Fig. 3.264 Inhumation Grave 1941

Other finds: An additional group of eight hobnails (SF 1841) was recovered from this grave but its location was not recorded.

Comments: The northern end and south-western corner of the grave had been truncated by modern service trenches, resulting in the loss of evidence for the northern half of the coffin and of the lower part of the right leg

Inhumation Grave 1942 (7923/0327, not illustrated)

Grave cut 1012
Orientation: NW-SE?
Shape: Uncertain, as only the south-eastern corner survives
Dimensions: >0.70 x >0.20 m, 0.30 m deep
Fill: Friable light greyish brown chalk lumps and loam (1013)
Relationships: Cut by Grave 1150. Relationship with Grave 1945 uncertain as it was removed by Grave 1150

Coffin: No evidence for a coffin survived

Other finds: One sherd (3 g) of pottery, fabric TF (1013)

Comments: South-eastern corner of a possible grave that had been largely destroyed by Grave 1150

Inhumation Grave 1943 (7901/0332, Fig. 3.265)

Grave cut 1016
Orientation: W-E

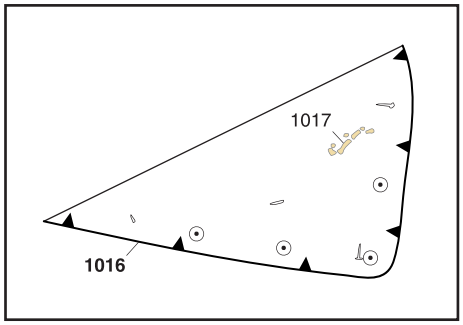


Fig. 3.265 Inhumation Grave 1943

Shape: Sub-rectangular
Dimensions: > 0.85 x 0.60 m, 0.15 m deep
Fill: Chalk and flint with light orange brown silty clay (1018)

Skeleton 1017
Posture: Uncertain, as the only part of the skeleton not removed by modern truncation was part of the left foot
Age: 6-12. Older child
Fragmentation: Fair
Condition: Skull 9, arms 9, hands 9, torso 9, legs 9, feet 2

Coffin: Represented by an assemblage of 8 nails defining the outline of the eastern end and part of the southern side. (2053)

Other finds: One sherd (9 g) of later middle Iron Age pottery, jar rim (1018)

Comments: Most of the grave had been destroyed by construction of the School House, leaving only part of the eastern end intact

Inhumation Grave 1944 (7906/0329, Fig. 3.266)

Grave cut 1058
Orientation: WNW-ESE
Shape: Sub-rectangular
Dimensions: >1.10 x 0.58 m, 0.71 m deep
Fill: Mixed chalk and mid brown silty clay (1059)

Skeleton 1061
Posture: Supine
Arm position: Both arms semi-flexed with the hands resting on the pelvis

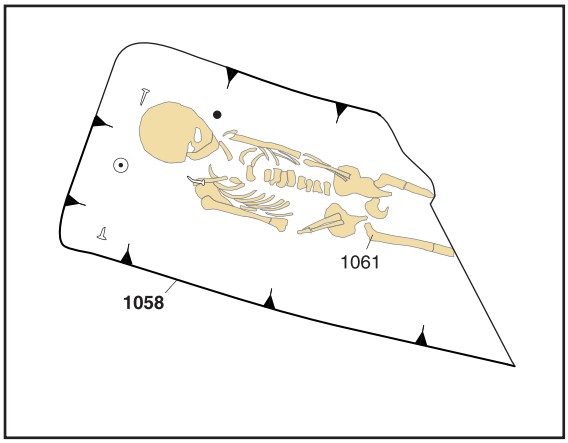


Fig. 3.266 Inhumation Grave 1944

Age: Child
Fragmentation: Good
Condition: Skull 1, arms 1, hands 1, torso 1, legs 1, feet 9
Pathology: Cribra orbitalia. Periostitis diffuse throughout the skeleton. Shovelling upper first incisors

Coffin: Represented by an assemblage of 6 nails defining the outline of the western end. B: 0.38 m. (2054)

Comments: The eastern end of the grave had been truncated by the foundations of the School House

Inhumation Grave 1945 (7923/0327, not illustrated)

Grave cut 1099
Orientation: NW-SE
Shape: Sub-rectangular
Dimensions: 2.00 x >0.20 m, 1.20 m deep
Fill: Friable mid greyish brown chalk lumps and silt (1101)
Relationships: Cut by Grave 1150. Relationship with possible Grave 1942 uncertain as both were substantially dug away by Grave 1150

Coffin: None

Comments: The grave had been largely destroyed by Grave 1150, only the north-eastern edge surviving. No skeletal material was observed.

Inhumation Grave 1946 (7922/0312, not illustrated)

Grave cut 1905
Orientation: SW-NE
Shape: Sub-rectangular
Dimensions: >0.18 x 0.37 m, 0.35 m deep
Fill: Mid to light grey silt with 10% chalk rubble (1906)
Relationships: Cut by pit 1823

Coffin: None

Comments: Possible grave, although no skeletal material or coffin nails were present. The feature had been truncated by pit 1823, leaving only the north-eastern end intact

Inhumation Grave 2064 (*c* 7922/0322, not illustrated)

Skeleton 2064
Skeleton recovered during analysis from disarticulated material found in association with skeletons 1734 and 1738.
Age: Child
Fragmentation: Poor
Condition: Skull 9, arms 0, hands 0, torso 0, legs 9, feet 9
Pathology: Cut mark on mandible, possibly from decapitation. DEH

Coffin: None

Comments: Skeleton may have been orientated north-south and truncated by the Graves 1735 and 1740. It is unclear if this burial was placed in a cut (cf 1725)

Inhumation Grave 3026 (7857/1316, Fig. 3.267)

Grave cut 3000
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.06 x 0.78 m, 0.17 m deep
Fill: Friable dark yellowish brown silty clay and chalk (3001)
Relationships: Cut gully 3021

Skeleton 3002
Posture: Supine, legs extended and parallel
Arm position: Both arms extended beside body
Sex: ?Female
Age: 26-35. Prime adult
Fragmentation: Poor
Condition: Skull 2, arms 2, hands 2, torso 5+, legs 2, feet 1
Pathology: DEH

Coffin: Represented by an assemblage of 7 nails. (3015)

Grave goods:
1 **Copper alloy sheet**. Two fragments, dimensions of largest 11 x 9 mm. (3002) SF 5031 **(NI)**
2 **Vessel**. Fabric TR, New Forest colour-coated ware, with red slip. Beaker of Fulford (1975a) fine ware type

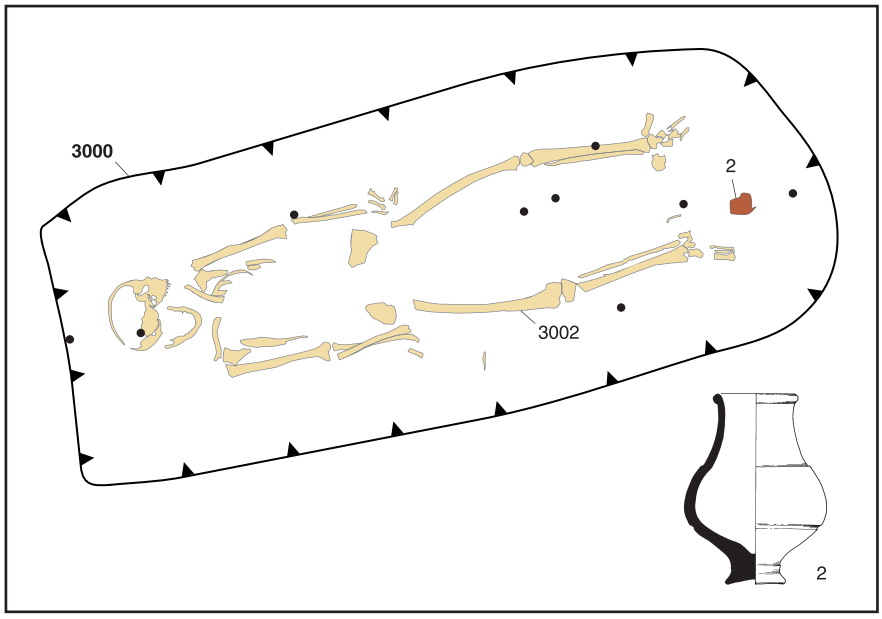


Fig. 3.267 Inhumation Grave 3026

41. Painted decoration is almost entirely lost but seems to have consisted groups of short roughly vertical lines on the shoulder. *c* AD 300-400. Complete, but now fragmented. (3025)

Date: Pottery dated AD 300-400

Inhumation Grave 3027 (7858/0317, Fig. 3.268)

Grave cut 3006
Orientation: SSE-NNW
Shape: Sub-rectangular
Dimensions: 1.25 x 0.45 m, 0.10 m deep
Fill: Brown silty clay and chalk (3007)

Skeleton 3009
Posture: Supine, legs extended and parallel
Arm position: The arms did not survive
Age: Child
Fragmentation: Good
Condition: Skull 9, arms 9, hands 9, torso 9, legs 4, feet 3

Coffin: None

Grave goods:
1 **Vessel**. Fabric TR, New Forest colour-coated ware with orange-red slip. Small jar/bowl of Fulford (1975a) fine ware type 57.2 dated *c* AD 330-400. Complete. (3008)

Date: Pottery dated AD 330-400

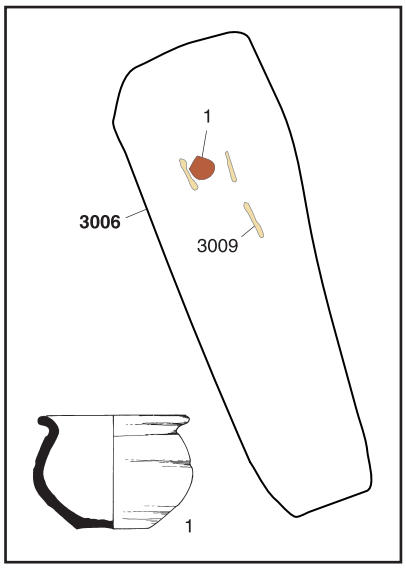


Fig. 3.268 Inhumation Grave 3027

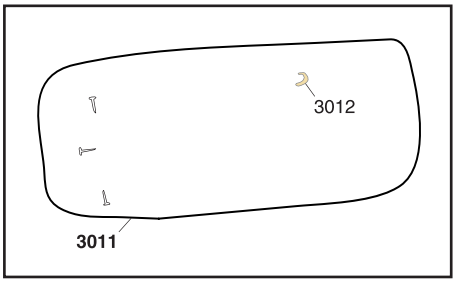


Fig. 3.269 Inhumation Grave 3028

Inhumation Grave 3028 (7855/0315, Fig. 3.269)

Grave cut 3011
Orientation: W-E
Shape: Sub-rectangular
Dimensions: 1.00 x 0.45 m, 0.12 m deep
Fill: Loose chalk and former topsoil (3014)

Skeleton 3012
Posture: Posture could not be established due to poor preservation

Coffin: Represented by an assemblage of 3 nails defining the western end, and a stain. L: 0.85 m. B: 0.30 m. (3013)

Comments: Only one tiny fragment of long bone survived, which disintegrated on lifting. On site observation and the coffin size establish that this was the burial of an infant or small child

Inhumation Grave 3029 (7859/0317, Fig. 3.270)

Grave cut 3016
Orientation: W-E
Shape: Oval
Dimensions: 1.55 x 0.88 m, 0.46 m deep
Fill: Loose dark greyish brown chalk and soil (3017)
Relationship: Cut gully 3021

Skeleton 3024
Posture: Supine, legs extended
Arm position: Left arm did not survive; right arm extended beside body
Sex: ?Female
Age: Adult
Fragmentation: Good
Condition: Skull 4, arms 4, hands 3, torso 3, legs 9, feet 1

Coffin: Represented by an assemblage of 4 nails defining the western end. (3020)

Grave goods:
1 **Coin**. Denarius of Hadrian, emperor holding rudder and spear, Rome. AD 119-138. BMC 3, no. 237. Minerally preserved textile present. SF 5046

Date: Coin dated AD 119-138, but this piece is probably extremely residual

Inhumation Grave 3030 (7859/0316, Fig. 3.271)

Grave cut 3003
Orientation: WSW-ENE
Shape: Sub-rectangular
Dimensions: 2.15 x 0.92 m; *c* 0.27 m deep

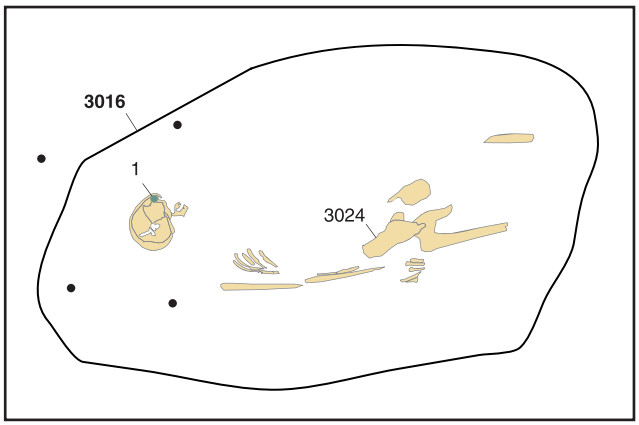


Fig. 3.270 Inhumation Grave 3029

Fill: Brown silty clay and chalk (3005)

Coffin: Represented by an assemblage of 12 nails. L: 1.86 . B: 0.60 m. Ht: 0.19 m. (3019)

Grave goods:

1 **Copper alloy crossbow brooch**, complete. Rectangular-sectioned cross arm with collar at each end with squashed spherical knobs; iron corrosion centrally on each probably from iron crossbar; stepped front to cross arm. Onion-shaped central knob with collar below on the top of the bow (currently the underside of the bow at that point is obscured so it is difficult to see if that is inserted). Rounded bow with hollow back; collar at end and constriction below before the foot; foot tapering slightly to base; sides have moulded decoration but in current state it is not possible to see if it is scrollwork or notches. Flange bent around to form catch plate lower part sealed. A folded strip of organic material, almost certainly a leather strap, *c* 8 mm wide, has been pierced by the pin of the brooch, close to the cross arm (PWR). Length 78 mm, width of cross arm and knobs 48 mm, section of knob 11 mm, width of bow 11 mm. Weight 48 g. (3005) SF 5040

2 **Copper alloy belt buckle and plate**, complete. Lozenge-sectioned D-shaped frame; sheet plate bent around crossbar, front oval, back rectangular, fastened by two iron rivets; plate has rectangular slot cut-out for pin; D-sectioned pin possibly faceted at tip. Traces of mineralised material between front and back of plate (not seen by PWR). Total length *c* 48 mm, buckle frame – width 35 mm, length 27 mm, section 4 mm, plate – width 30 mm, length 27 mm. (3005) SF 5041 **(NI)**

3 **Copper alloy ring**. 'D'-sectioned. Traces of mineralised fabric (not seen by PWR) around outer face at one point. Diameter 19 mm, section 3.5 x 3 mm. (3005). SF 5042 **(NI)**

4 **Iron knife blade**, fragmentary, to the right of the skull (3005) SF 5043 **(NI)**

Other finds: Four sherds (46 g) of pottery, costrel in fabric ZF (see Fig. 4.2, No. 8) (3005)

Date: Brooch dated after *c* AD 330

Comments: No skeletal remains survived

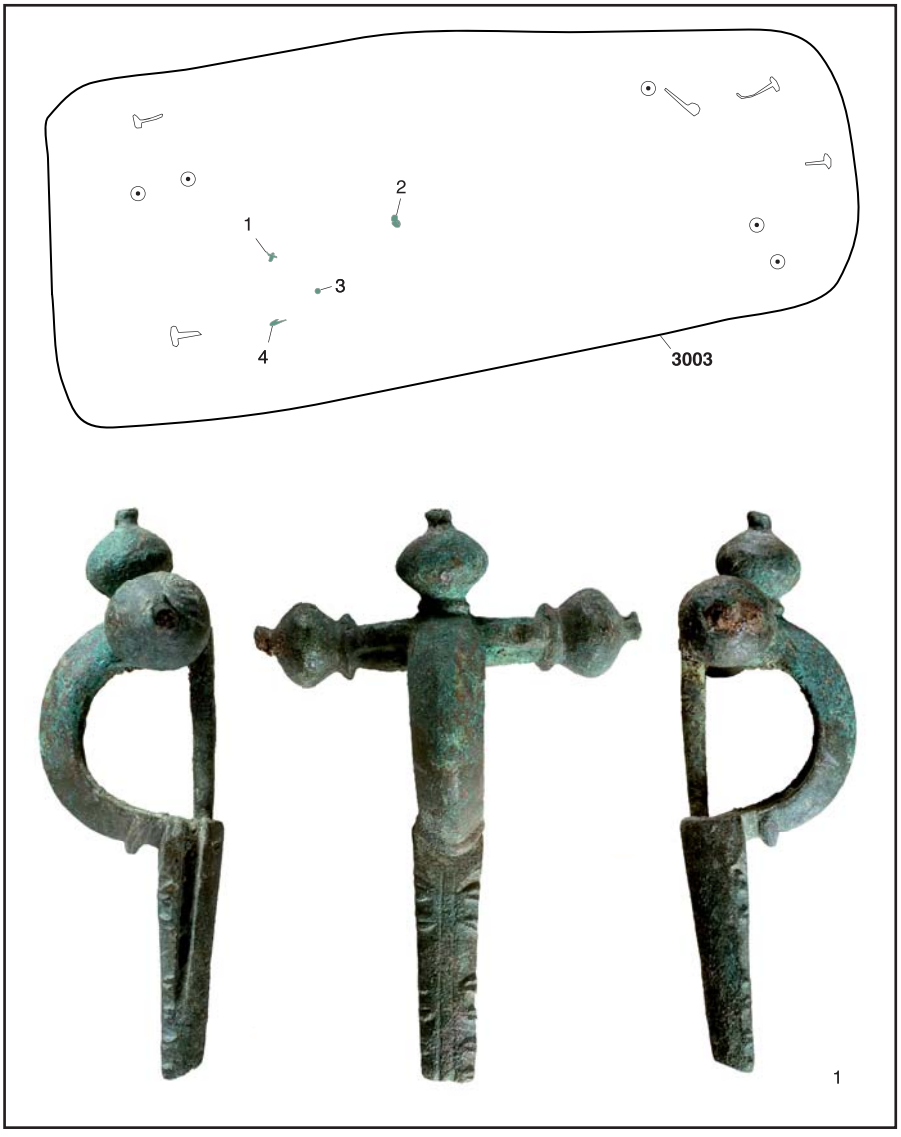


Fig. 3.271 Inhumation Grave 3030

CREMATION BURIALS

The format of the cremation burial catalogue is similar to that of the inhumation burials. In the description of cremated bone MNI is minimum number of individuals. Dating is again based on the evidence of artefacts within the burials or in other features directly related to them. Grave goods or pyre goods that are not illustrated are indicated (**NI**).

Cremation burial 510 (7895/0323, Fig. 3.272)

Grave cut 456
Shape: Sub-circular
Dimensions: 0.60 x 0.48 m, 0.10 m deep
Fill: Loose layer of calcined bone (457)
Relationships: Cuts inhumation Graves 995 and 1020

Cinerary urn (467): Fabric SG, local grog-tempered ware, hand made. Fragmented base, lower body and part of neck of jar, burnished on lower body and with burnished lattice on the shoulder. Additional fragments in 457 and 466 are probably from this vessel. *c* AD 300-400

Cremation deposit 468
Weight: 369 g
Largest fragment: 47 mm (rib shaft)
Identified bones and teeth: Skull, vertebrae, ribs, pelvis, long bones, hand bones, foot bones
Colour: Yellow-white
MNI: 1
Age: Young adult
Sex: Male

Grave goods: **Vessel**. Fragment of flanged bowl in fabric SG may be a grave good (467)

Other finds: A further 282.8 g of calcined bone was recovered from backfill 457 and 60 g from deposit 466. An assemblage of 9 hobnails and a single structural nail (SF 1126) was recovered from deposit 457

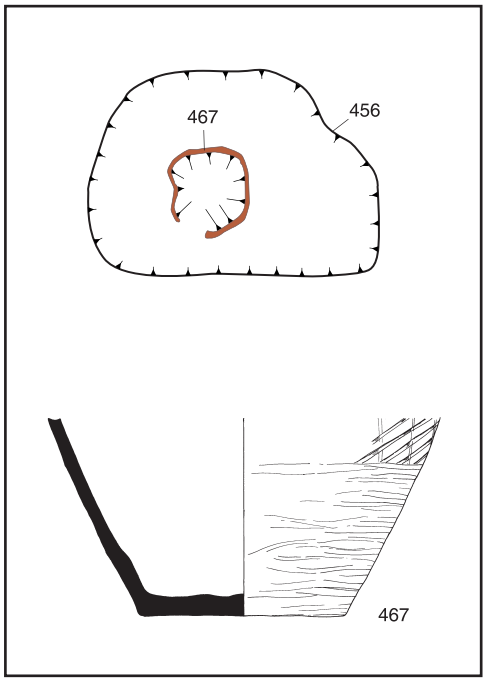


Fig. 3.272 Cremation Grave 510

Date: Inhumation Grave 1020 contained a coin of AD 364-378

Comments: The burial was substantially truncated, only the base of the cinerary urn surviving *in situ*. The urn was surrounded by a mottled dark brown and light brownish orange deposit (466)

Cremation burial 655 (7902/0321, Fig. 3.273, see also Fig. 2.36)

Grave cut 601
Shape: Sub-rectangular, vertical-sided
Dimensions: 1.95 x 0.73 m, 0.43 m deep
Fills: The lower 0.05-0.10 m of the grave was filled by a layer of loose, dark red clay sand (607). The cremated material lay on and within this deposit. The remainder of the feature was backfilled with loose chalk and clay silt (602)
Relationships: Cuts pit 847 and inhumation Graves 665 and 1070

Cinerary urn: Un-urned

Cremation deposit 617
Weight: 1621 g
Largest fragment: 82 mm (tibia)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, pelvis, shoulder girdles, long bones, hand bones, foot bones
Colour: White
MNI: 1
Age: Adult
Sex: ?Male

Pyre goods:
1 **Glass body fragment**. Green-tinged colourless. Heat distorted. 13 x 4 mm, wall thickness 1 mm. (607) <496> **(NI)**
2 **Burnt bird bones**, comprising a long bone and indeterminate bones **(NI)**
3 **Burnt cattle bones**, comprising a mandible fragment and indeterminate fragments **(NI)**

Grave goods:
1 **Horse skull.** Unburnt and largely complete, but lacking the mandibles. Probably male and *c* 8 years old based on the incisors. Located on the surface of fill 607. (603) **(NI)**
2 **Vessel**. Fabric SG, local grog-tempered ware, hand made. The base and lower body of a very large jar, with overall burnish of the lower parts and roughly vertical burnished strokes above. *c* AD 300-400. Inverted over the nose of horse skull 603. (604)
3 **Vessel**. Fabric TR, New Forest colour-coated ware. Small jug of Fulford (1975a) fine ware type 22. *c* AD 340-400. Incomplete. Located adjacent to horse skull 603 and vessel 604. (606)

Other finds: An assemblage of a minimum of 24 hobnails and three structural nails (SF 1569, 1570, 1573) was recovered from the deposit of burnt material 607 and three (SF 1548-50) from backfill 602
Two sherds (6 g) of pottery (fabric TR beaker) from 602; 6 sherds (19 g), fabrics TR, WF, ZM and SG from samples <497>, <498> and <505>, (607)

Date: Vessel 3 is dated AD 340-400. Calibrated radiocarbon date (2σ) AD 267-272, 335-465 & 482-533

Comments: The base and sides of the grave pit were heat-discoloured

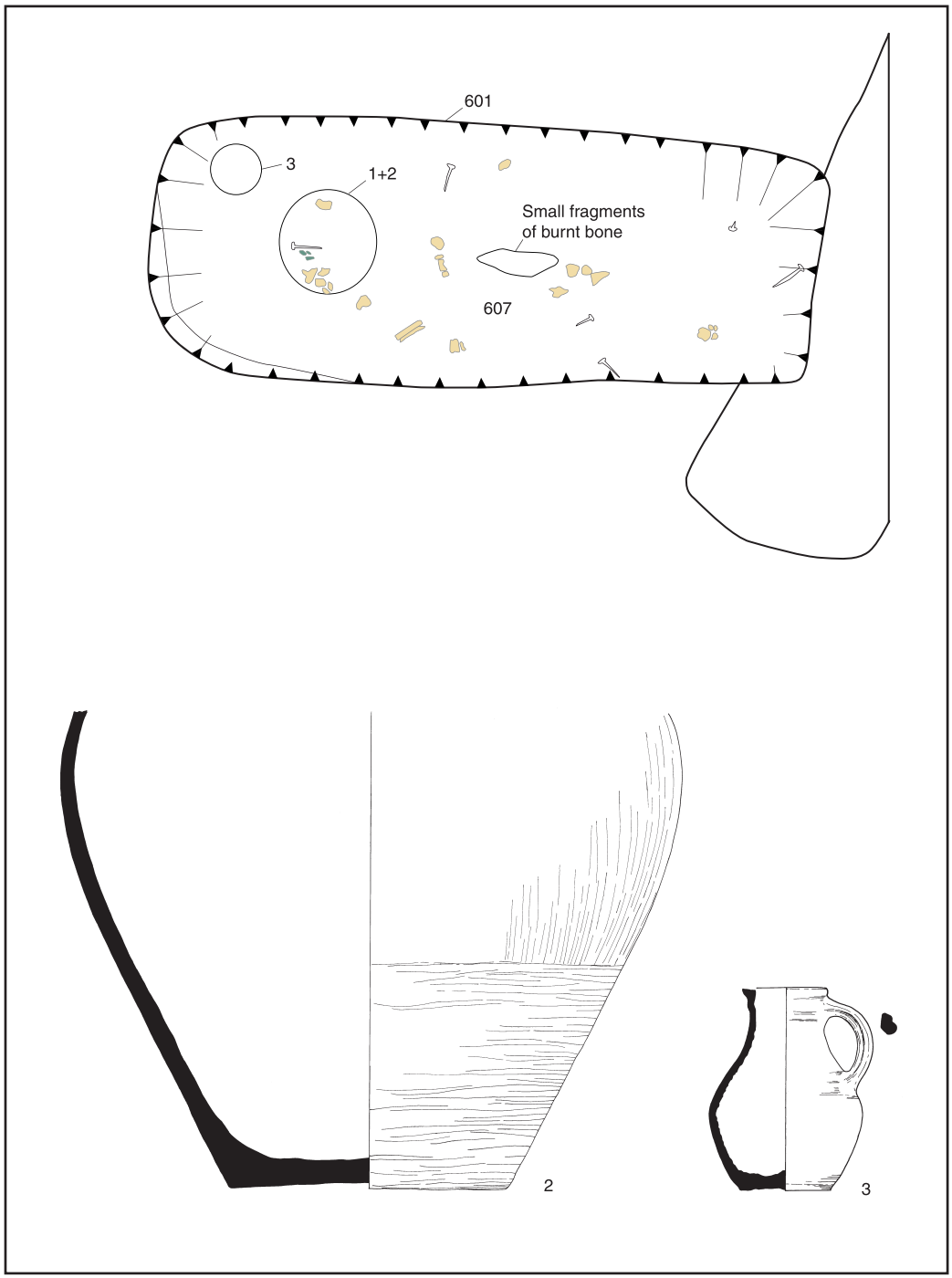


Fig. 3.273 Cremation Grave 655

Cremation burial 845 (7901/0323, Fig. 3.274)

Grave cut 762
Shape: Circular
Dimensions: 0.40 m in diameter, 0.11 m deep
Fill: Loose mid brown silty sand (763)
Relationships: Cuts cremation burial 1060

Cinerary urn (764): Fabric SG, local grog-tempered ware, hand made. Base and lower half of jar, burnished horizontally on lower body and shoulder, with zone of oblique burnished lines between. *c* AD 300-400 (Fig. 3.274)

Cremation deposit 766
Weight: 563.1 g
Largest fragment:
Identified bones and teeth: Skull, vertebrae, ribs, shoulder girdle, long bones
Colour: yellow-white
MNI: 1
Age: Adult
Sex: Unknown

Date: Material from earlier features has generalised 4th-century date

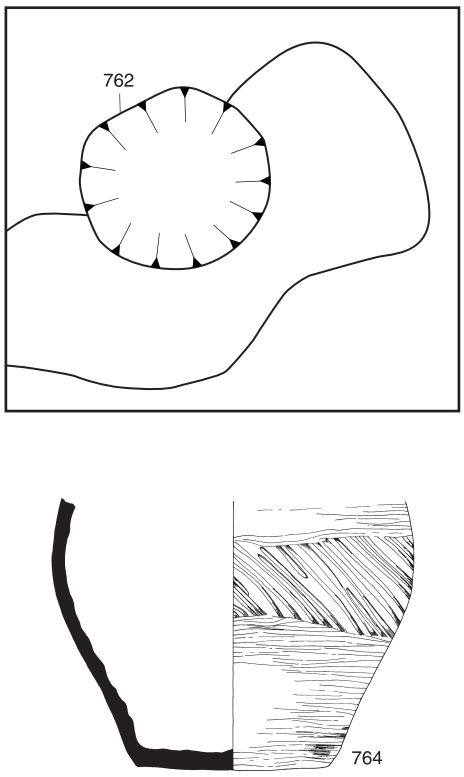


Fig. 3.274 Cremation Grave 845

Comments: The burial was substantially truncated, resulting in the survival of only the base of the cinerary urn, and only a small quantity of cremated remains

Cremation burial 895 (7895/0324, Fig. 3.275)

Grave cut 842
Shape: Circular, steep-sided bowl-shaped profile
Dimensions: 0.30 m in diameter, 0.22 m deep
Fill: Friable dark grey/black gritty mixed charcoal, calcined bone and chalk (843)
Relationships: Cuts cremation burial 910 and inhumation Grave 990

Cinerary urn: Un-urned

Cremation deposit 843
Weight: 1097.6 g
Largest fragment: 50 mm (femur)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones, foot bones
Colour: Yellow-white
MNI: 1
Age: Adult
Sex: ?Male

Pyre goods:
1 **Crossbow brooch**, in four burnt fragments, lacking one side of cross arm and lower part of foot. Copper alloy cross arm rectangular-sectioned with stepped front to the side of the bow; collar and onion-shaped knob at end with void for crossbar visible. Back of arm has split open from the heat, probably originally a slot cut for the crossbar. End of cross arm and top of bow broken across the circular hole for the separate upper knob which is preserved – onion-shaped with collar and probably originally square-sectioned shank. Trapezoidal bow with narrow flat front panel; constriction but no obvious collar before junction with foot, no details of decoration preserved; remnants of catch plate bent over. Present length 55mm, original width of crossbar and knobs *c* 55-60 mm, section of knob 12 mm, bow section 8 x 8 mm, SFs 2212, 2219-21. (843)
2 **Copper alloy strip**, possibly part of a belt plate. Rectangular-sectioned widest to wrist, now flat. Groove parallel to one edge, edge necks along the other. Heat affected. Present length 12 mm, section 3 mm, thickness 1 mm. (843) <698> **(NI)**
3 **Sheet fragment**, bent and heat affected. Dimensions 7 x 6 mm, thickness 1 mm. (843) <698> **(NI)**

Other finds: The base of a glass vessel (SF 2189), an iron object (SF 2211) and an assemblage of a minimum of five hobnails were recovered

Date: Crossbow brooch is dated after *c* AD 330

Cremation burial 910 (7895/0324)

Grave cut 868
Shape: Sub-rectangular, vertical-sided
Dimensions: 1.19 x 0.39 m, 0.39 m deep
Fill: Friable dark grey/black mixed charcoal, calcined bone and chalk (869)
Relationships: Cut by cremation burial 895. Cut inhumation Grave 990

Cinerary urn: Un-urned

Cremation deposit 869
Weight: 1277.3 g
Largest fragment: 65 mm (femur)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones, foot bones
Colour: Yellow-white
MNI: 1
Age: 35-45?
Sex: ?Female

Pyre goods:
1 **Sheep/goat mandible or head**, represented by a tooth and 40 other medium mammal tooth, jaw and indeterminate fragments **(NI)**

Cremation burial 915 (7895/0324)

Grave cut 871
Shape: Sub-circular, bowl-shaped profile
Dimensions: 0.35 m in diameter, 0.23 m deep
Fill: Friable dark grey/black mixed charcoal, calcined bone and chalk (872)
Relationships: Cut inhumation Grave 990

Cinerary urn: Un-urned

Cremation deposit 872
Weight: 1174.1 g
Largest fragment: 77 mm (humerus)
Identified bones and teeth: Skull, teeth, shoulder girdle, vertebrae, ribs, pelvis, long bones, hand bones, foot bones
Colour: Yellow-white
MNI: 1
Age: Adult
Sex: Unknown

Pyre goods:
1 **Pig humerus fragment**, from an individual aged over 12 months old at death, and a single indeterminate fragment **(NI)**

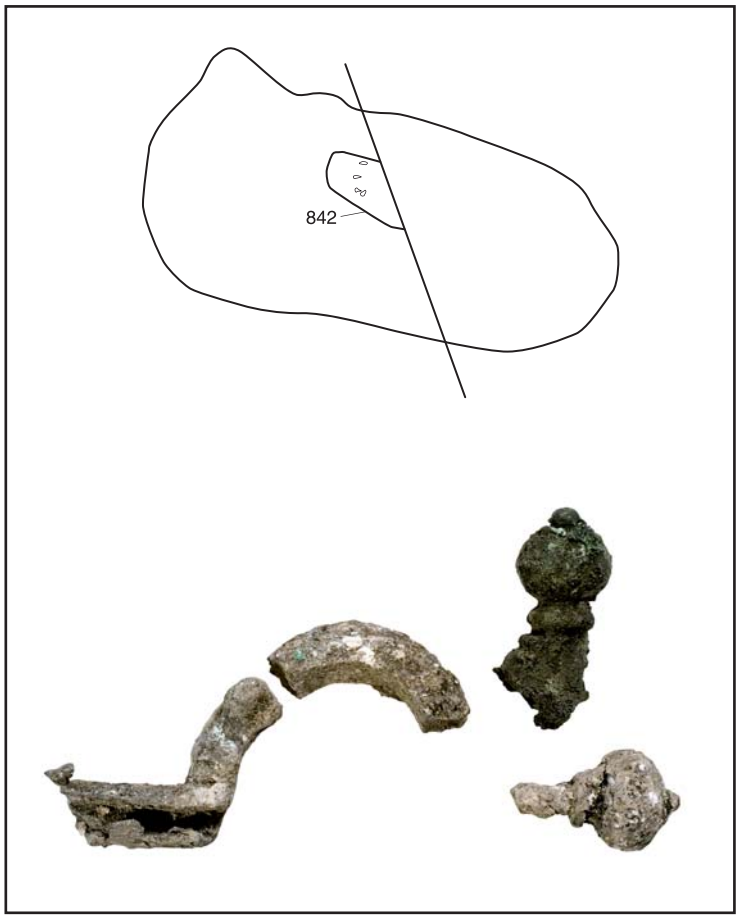


Fig. 3.275 Cremation Grave 895

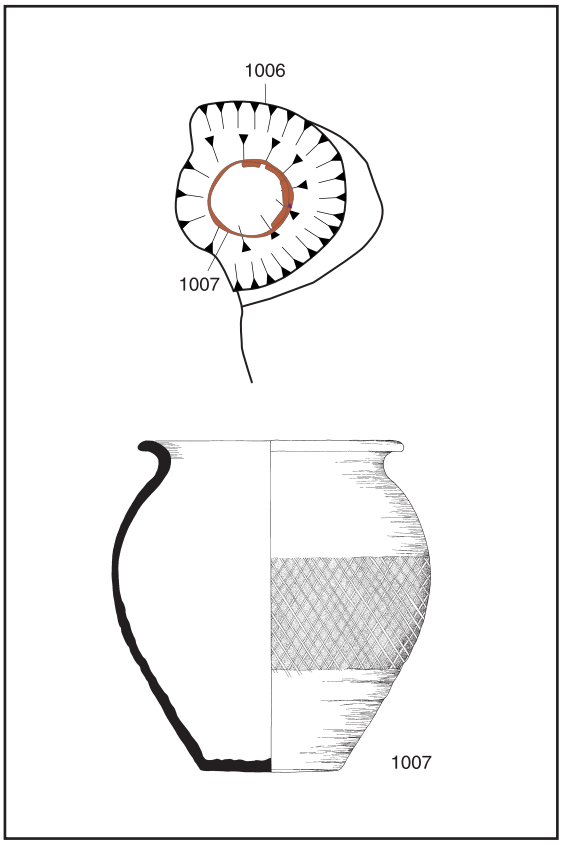


Fig. 3.276 Cremation Grave 1055

Other finds: An assemblage of minimum of 16 hobnails was recovered

Cremation burial 945 (7891/0328)

Grave cut 887
Shape: Oval
Dimensions: 0.58 x >0.31 m, 0.15 m deep
Fill: Cremation deposit of loose, dark brown/black silty clay with 50% chalk pieces (888), two backfill layers of friable light greyish brown chalky clay loam 0.05 m thick (889, 891)
Relationships: Cut grave 950. Cut by grave 930

Cinerary urn: Un-urned

Cremation deposit 888
Weight: 14.7 g
Largest fragment: 15 mm (radius?)
Identified bones and teeth: Skull, ribs, upper limb bones
Colour: Yellow-white
MNI: 1
Age: Adult
Sex: Unknown

Pyre goods: Three fragments of indeterminate large mammal

Other finds: Three pottery fragments (12 g), fabrics SG and ZM (888) and three hobnails

Cremation burial 1055 (7900/0323, Fig. 3.276)

Grave cut 1006
Shape: Circular, vertical-sided profile
Dimensions: 0.65 m in diameter, 0.34 m deep
Fill: Loose mid brown silty sand backfill (1009)
Relationships: Cut pit 794

Cinerary urn (1007): Fabric SG, local grog-tempered ware, apparently wheel thrown. Substantially complete (but fragmented) jar, cf Portchester type 123 (Fulford 1975b, 346-8). Burnished on lower body and shoulder, with a zone of burnished lattice decoration between. *c* AD 300-400

Cremation deposit 1008
Weight: 794.5 g
Largest fragment: 89 mm (humerus)
Identified bones and teeth: Skull, vertebrae, ribs, shoulder girdle, pelvis, long bones, foot bones
Colour: Blue, grey
MNI: 1
Age: Adult
Sex: Male

Cremation burial 1060 (7901/0323, Fig. 3.277)

Grave cut 807
Shape: Oval, concave profile
Dimensions: 1.17 x 0.93 m, 0.27 m deep
Fill: Loose dark brownish black sandy silt with

prolific charcoal, pottery and calcined bone (808)
Relationships: Cut Grave 970. Cut by inhumation Grave 790 and cremation burial 845

Cinerary urn: Un-urned

Cremation deposit 808
Weight: 1055.1 g
Largest fragment: 77 mm (femur)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bone, foot bones
Colour: Yellow-white/light grey
MNI: 1
Age: Young adult

Pyre goods:
1 **Burnt large mammal remains**, including fragments of skull, long bone and other indeterminate pieces, with no specimens identifiable to individual species **(NI)**
2 **Vessel**. 'Cooking pot type' jar in fabric SG. Over half the vessel, highly fragmented (46 sherds, 717 g), survives. A further 7 heat-crazed sherds (102 g) are less certainly from this vessel (808)

Other finds: A minimum of 131 hobnails, two boot plates (SF 2034, 2370) and ten structural nails (sf 2021, 2033, 2371-2392)
Sixty-one sherds (511 g) of pottery in fabrics TF, TR, YC, YM, ZM and SG. Most are in fabric TR, including rims of 4 different beakers, one of NFF type 27, and body sherds from other folded beakers. Other rim sherds are from a bowl in fabric TF and a jar in fabric SG (808)

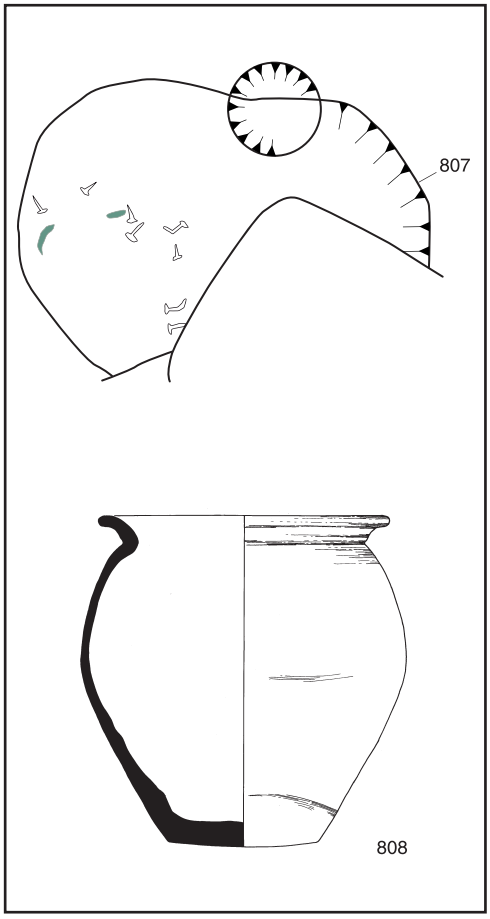


Fig. 3.277 Cremation Grave 1060

Cremation burial 1065 (7900/0322)

Grave cut 909
Shape: Oval
Dimensions: 1.44 x 0.89 m, 0.14 m deep
Fill: Loose, dark blackish-brown sandy silt (911)
Relationships: Cut Grave 970 and cremation burial 1195. Cut by inhumation Grave 1010

Cinerary urn: Un-urned

Cremation deposit 911
Weight: 47.3 g
Largest fragment: 42 mm (tibia)
Identified bones and teeth: Skull, vertebrae, ribs, upper and lower limb bones, hand bones
Colour: Grey
MNI: 1
Age: ?Adult
Sex: Unknown

Pyre goods: Two large mammal flat bone fragments

Other finds: Seven sherds (120 g) of a jar in fabric SG, local grog-tempered ware, cf. Portchester type 123 (Fulford 1975b, 346-8). Burnished on lower body and shoulder, with a zone of burnished oblique lines between. *c* AD 300-400 (911). A further 6 sherds (19 g) from this context include more fragments of fabric SG and one of fabric TR

Date: Cremation burial 1195 contained a coin dated AD 364-378

Comments: The fabric SG jar sherds in 911 possibly represent the remains of a cremation urn

Cremation burial 1160 (7898/0320)

Grave cut 1106
Shape: Oval
Dimensions: >0.43 x 0.30 m, 0.15 m deep
Fill: Loose very dark blackish-brown loamy silt (1107)
Relationships: Cuts cremation 1195 and pit 1182

Cinerary urn: Un-urned

Cremation deposit 1107
Weight: 237.3
Largest fragment: 39 mm
Identified bones and teeth: Skull, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones, foot bones
Colour: Grey
MNI: 1
Age: ?Adult
Sex: Unknown

Pyre goods:
1 **Burnt medium mammal remains**, including fragments of skull, ribs, long bone and other indeterminate pieces, with no specimens identifiable to individual species **(NI)**

Grave goods:
1 **Sheep/goat skull**. Represented by unburnt skull fragments, maxillary teeth and the majority of a left mandible among the material derived from sieved samples. The animal was aged 10-20 months old at death **(NI)**

Other finds: A minimum of 12 hobnails. Five sherds (91 g) of pottery, fabrics TR and SG, mostly from a flanged bowl in the latter fabric (1107)

Date: Cremation burial 1195 contained a coin dated AD 364-378

Comments: The northern part of the burial was truncated by the footings of the School House

Cremation burial 1180 (7890/0314, Fig. 3.278)

Grave cut 982
Shape: Sub-rectangular with rounded ends, vertical-sided
Dimensions: 1.45 x 0.55 m, 0.13 m deep
Fill: Loose dark brown to black cremation deposit (983)
Relationships: Cuts layer 1629

Cinerary urn: Un-urned

Cremation deposit 983
Weight: 1566.7 g
Largest fragment: 42 mm (rib shaft)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones, foot bones
Colour: Yellow-white
MNI: 1
Age: Young adult
Sex: ?Male

Pyre goods:
1 **Buckle and plate**, copper alloy, damaged by fire. Rectangular sheet plate bent in half and enclosing crossbar of iron frame, probably oval originally, outer edge of frame mostly missing. Plate cut out for buckle pin, stump only remains, plate originally fastened by four iron rivets, two remaining. Extant pair show typical bright edges on x-radiograph indicative that the object has been burnt. One side and end of plate missing. Upper face decorated by punched dot repoussé decoration, central scroll pattern and traces of decoration around edges. Plate length 38 mm, width 31 mm. SF 2752 (983) **(NI)**
2 **Belt plate**? Copper alloy. Fragment of sheet with two small flat-headed rivets in place with small fragment of second sheet still attached. Width of plate 17 mm, extant length 10 mm. (983) <830> **(NI)**
3 **Cattle remains**, a large mammal-sized flat bone fragment and two large mammal-sized long bone fragments **(NI)**
4 **Burnt medium mammal remains**, comprising fragments of skull, long bone and indeterminate fragments **(NI)**

Grave goods:
1. **Vessel**. Fabric SG. Base and lower body sherds from a small-medium sized jar with burnish on lower body and burnished lattice decoration above (999)

Other finds: An assemblage of a minimum of seven hobnails and seven structural nails (SF 2745-51) was recovered. A copper alloy object (SF 2752) was recovered from the eastern end of the feature.

Date: All the artefacts have a 4th-century date range

Comments: Vessel 999 was inverted on the upper surface of the grave fill

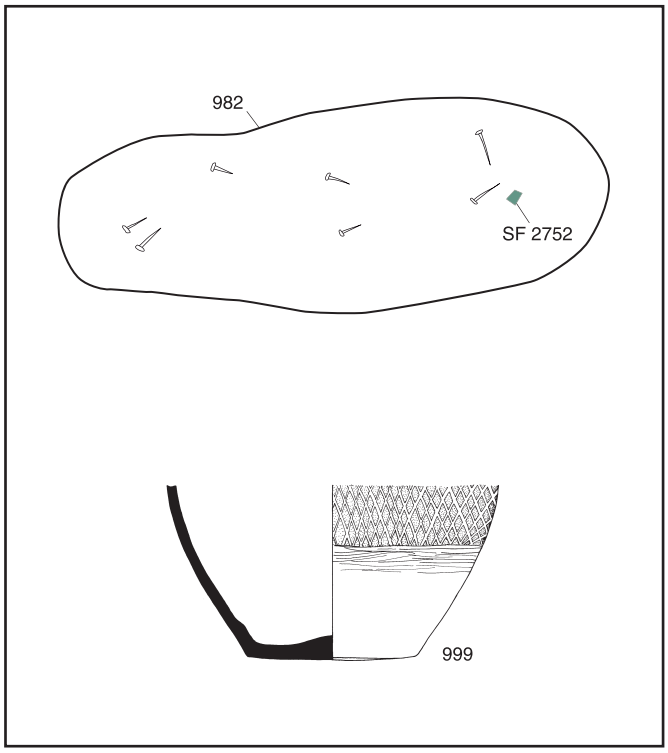


Fig. 3.278 Cremation Grave 1180

Cremation burial 1195 (7899/0321, Fig. 3.279)

Grave cut 402
Shape: Sub-rectangular, vertical-sided
Dimensions: 2.20 x 0.60 m, 0.68 m deep
Fill: Loose black charcoal-rich fill (1121) 0.07-0.09 m thick, overlain by loose mid brown sandy silt backfill (1122)
Relationships: Cuts cremation burial 1215. Cut by cremation burials 1065 and 1160 and gully 1123

Cinerary urn: Un-urned

Cremation deposit 1121
Weight: 1308 g
Largest fragment: 95 mm (tibia)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones, foot bones
Colour: Light grey and white
MNI: 1
Age: Adult
Sex: Unknown

Pyre goods:
1 Bone **spindle whorl**; burnt and fractured into 5 joining pieces. Shallow hemispherical; concentric grooves on upper and lower faces. Diameter 33 mm, thickness 9 mm, perforation diameter 7 mm. (1121) sample 963
2 **Coin** SF 3013. Nummus of Valens, reverse burnt. AD 364-378. Recovered from cremation deposit 1121
3 **Vessel**. Fabric SG. Fragments of a jar (8 sherds, 340 g) include heat-crazed pieces from the lower body (1121)

Other finds: An assemblage of a minimum of 168 hobnails, unburnt dog foot bones, seven sherds (78 g) of pottery, fabrics SG (1 sherd) and TR, including a beaker rim were recovered from the backfill (1122)

Comments: Appears to have been deliberately dug directly into the backfill of earlier cremation burial 1215. The material surrounding the grave pit was heat-altered to a thickness of 0.03-0.04 m

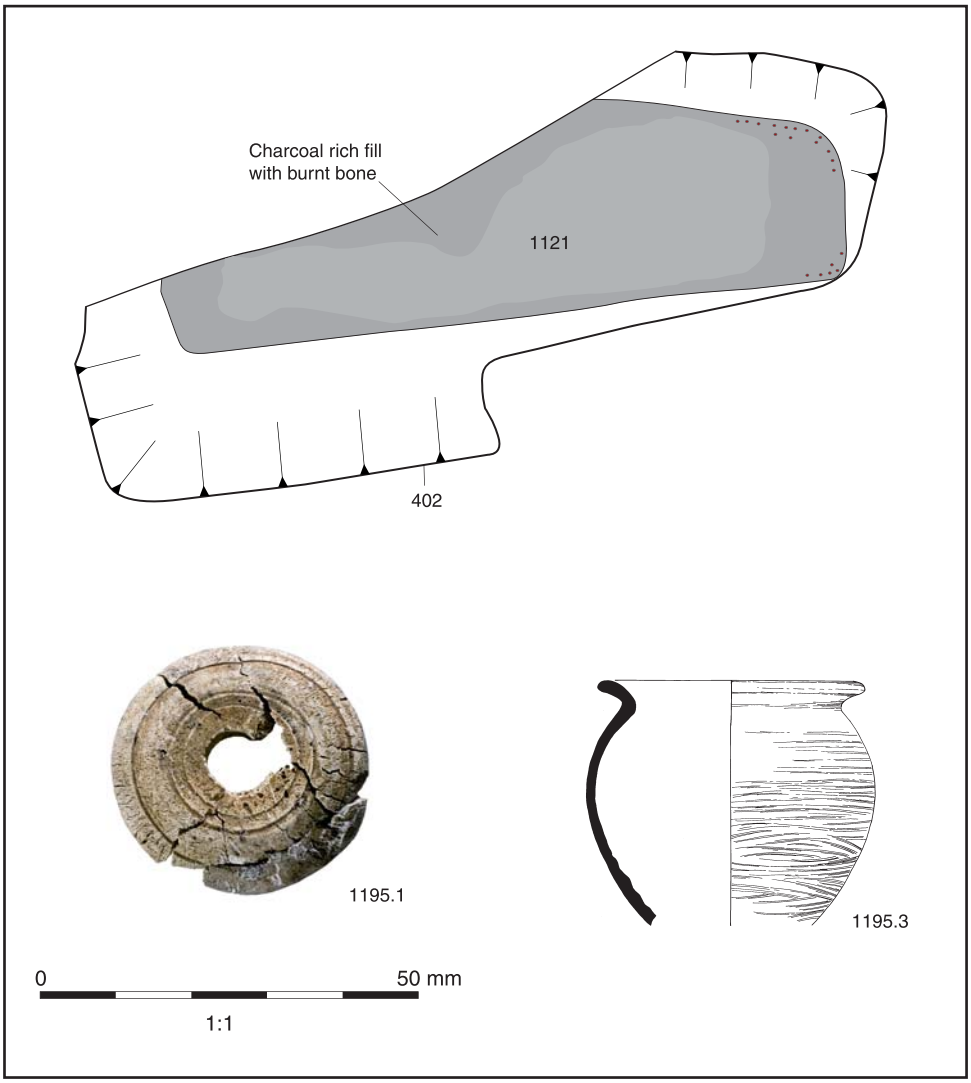


Fig. 3.279 Cremation Grave 1195

Cremation burial 1215 (7899/0321, Fig. 3.280)

Grave cut 1147
Shape: Sub-rectangular, vertical-sided
Dimensions: 2.44 x 1.14 m, 1.20 m deep
Fill: Loose brownish black charcoal and calcined bone (1148) 0.15 m thick, with a layer of burnt flint across the south-western half of the deposit; friable light brown sandy silt with 20% chalk fragments (1149)
Relationships: Cuts pit 1182 and cremation burial 1255. Cut by cremation burial 1195

Cinerary urn: Un-urned

Cremation deposit 1148
Weight: 1155.5 g
Largest fragment: 70 mm (ulna)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones, foot bones
Colour: Mainly blue, some white
MNI: 1
Age: Adult
Sex: ?Male

Pyre goods: Vessel, fabric SG. Most (*c* 80%) of a 'cooking pot type' jar, fragmented. Partly burnt or refired after breakage (1148)

Other finds: An assemblage of a minimum of 87 hobnails and some animal (bird?) bones were recovered from the backfill (1149)

Cremation burial 1255 (7899/0320, Fig. 3.281)

Grave cut 1184
Shape: Oval
Dimensions: 0.70 x 0.40 m, 0.16 m deep
Fill: Loose, light brown silty sand (1188)
Relationships: Cut by pit 1182 and cremation burial 1215?

Cinerary urn 1186: Fabric ZM, New Forest grey ware. Complete (but slightly fragmented) jar, cf New Forest coarse ware (Fulford 1975a) type 30.1. Undecorated. *c* AD 270-400

Cremation deposit 1187
Weight: 51 g
Largest fragment: 80 mm (rib)
Identified bones and teeth: Skull, vertebrae, ribs
Colour: White
MNI: 1

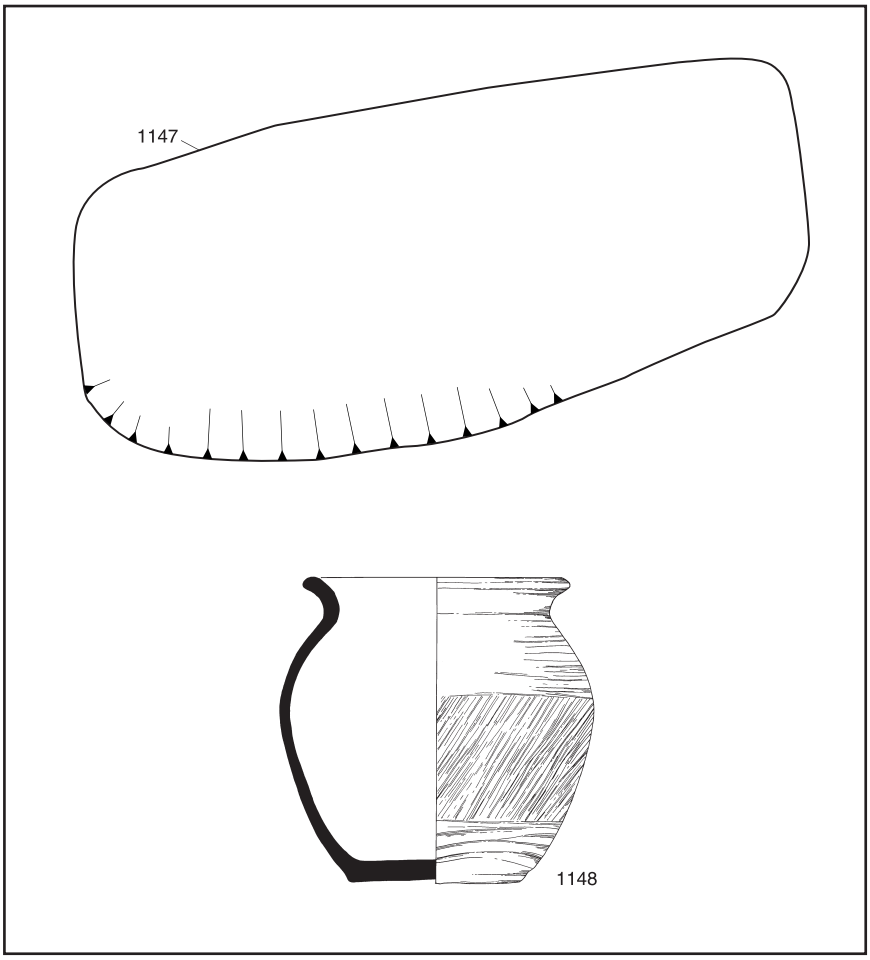


Fig. 3.280 Cremation Grave 1215

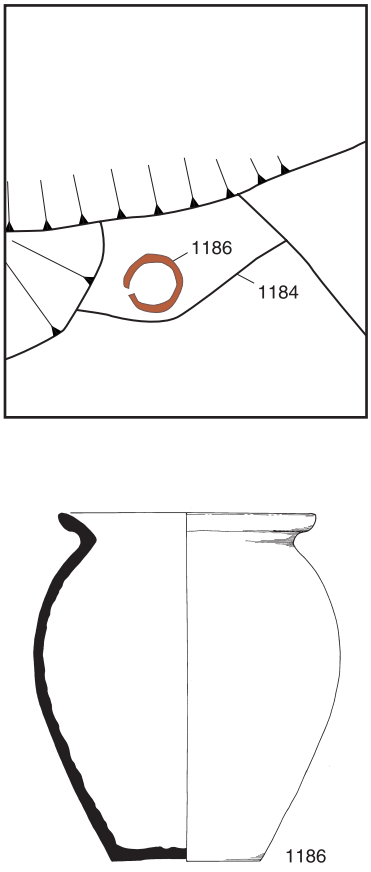


Fig. 3.281 Cremation Grave 1255

Age: Adult
Sex: Unknown

Pyre goods: 79 very small medium mammal-sized indeterminate fragments and one medium mammal-sized cranial fragment

Comments: Eastern side truncated by foundations of the School House

Cremation burial 1320 (7882/0322)

Grave cut 1239
Shape: Sub-circular
Dimensions: 0.35 x 0.25 m, 0.02 m deep
Fill: Loose black silt (1238)
Relationships: Cut inhumation Grave 1335

Cinerary urn : Un-urned

Cremation deposit 1238
Weight: 580.6 g
Largest fragment: 50 mm (femur)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones
Colour:
MNI: 1
Age: Adult
Sex: Male

Other finds: Four sherds (46 g) of pottery, fabric SG, including a fragment of jar rim (1238)

Cremation burial 1527 (7896/0317)

Grave cut 1525
Shape: Square or rectangular
Dimensions: 0.80 x >0.30 m, 0.05 m deep
Fill: Loose, brownish black cremation debris (1526)
Relationships:

Cinerary urn: Un-urned

Cremation deposit 1526
Weight: 95 g
Largest fragment: 51.9 mm (radius)
Identified bones and teeth: Skull, vertebrae, ribs, long bones, hand bones
Colour: White and grey
MNI: 1
Age: Possible adult
Sex: Unknown

Other finds: A minimum of one hobnail and a single structural nail (SF 3757)
Two sherds (3 g) of pottery, ?fabric SG

Cremation burial 1724 (7921/0309)

Grave cut 1712
Shape: Circular, bowl-shaped in profile
Dimensions: 0.4 m in diameter, 0.06 m deep
Fill: Mid grey sandy silt containing charcoal and calcined bone (1661)

Relationships: Cuts inhumation burial 1725. Cut by pit 1671

Cinerary urn: Un-urned

Cremation deposit 1661
Weight: 335.8 g
Largest fragment: 75 mm (tibia)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdles, pelvis, loong bones, hand bones, foot bones
Colour: Yellow-white
MNI: 1
Age: Adult
Sex: ?Female

Pyre goods:
1 **Burnt medium mammal remains**, including fragments of skull and other indeterminate pieces, with no specimens identifiable to individual species **(NI)**

Other finds: An assemblage of at least nine hobnails was recovered

Comments: The burial is likely to have been dug into the primary fill of ditch 450. It was severely truncated by pit 1671, leaving only the base of the burial intact

Cremation burial 1742 (7893/0316)

Grave cut 1727
Shape: Circular, concave profile
Dimensions: 0.35 m in diameter, 0.09 m deep
Fill: Black silt (1698/1728)
Relationships: Cut pit 2062. Sealed by layer 1629

Cinerary urn: Un-urned

Cremation deposit 1698/1728
Weight: 471.5
Largest fragment: 41 mm
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones, foot bones
Colour: Grey
MNI: 1
Age: Adult
Sex: Female

Pyre goods:
1 **Burnt medium mammal remains**, including one indeterminate fragment that could not be identified to individual species, and fragments of skull, long bone and other indeterminate fragments, none of which could be positively identified as non-human. **(NI)**

Other finds: Four sherds (18 g) of pottery, fabrics TF, WF and SG (1728)

Cremation burial 1786 (7922/0312)

Grave cut 1787
Shape: Circular, bowl-shaped profile
Dimensions: 0.32 m in diameter, 0.1 m deep
Fill: Mid-dark brown sandy silt with charcoal and calcined bone (1788)
Relationships: Cuts fill 1663 of ditch 450

Cinerary urn: Un-urned

Cremation deposit 1788
Weight: 724.9
Largest fragment: 70 mm (tibia)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones, foot bones
Colour: Yellow-white/light grey
MNI: 1
Age: Adult
Sex: Female

Other finds: An assemblage of a minimum of 11 hobnails

Comments: Cut into the primary fill of ditch 450

Cremation burial 1798 (7895/0315, see Fig. 2.12)

Grave cut 1695
Shape: Oval
Dimensions: 1.00 x 0.94 m, 0.12 m deep
Fills: Loose, dark purplish black soil (1628)
Relationships: Cut pit 2062, cut by pits 1630 and 1623

Cinerary urn: Un-urned

Cremation deposit 1628
Weight: 405.7 g
Largest fragment: 41 mm (humerus)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones, foot bones
Colour: Yellow-white
MNI: 1
Age: ?Middle-aged adult
Sex: Unknown

Pyre goods:

Other finds: A minimum of 11 hobnails and 11 structural nails

Cremation burial 1806 (7895/0317)

Grave cut 1769
Shape: Sub-rectangular with rounded south-eastern end. Steep-sided profile
Dimensions: >0.8 x 0.4 m, 0.25 m deep
Fills: Cremation deposit of black silt containing calcined bone (1770) 0.13m thick, overlain by a backfill of friable light brown silt (1771)
Relationships: Cut pit 2062. Sealed by layer 1629

Cinerary urn: Un-urned

Cremation deposit 1770
Weight: 1052.4 g
Largest fragment: 70 mm (tibia)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones, foot bones
Colour: Yellow-white/grey
MNI: 1
Age: Adult
Sex: Male

Pyre goods:
1 **Burnt bird bones**, comprising a single long bone **(NI)**
2 **Burnt large mammal remains**, comprising fragments of skull, long bone, and other indeterminate fragments **(NI)**
3 **Burnt medium mammal remains**, comprising fragments of radius, alveolar, long bones and other indeterminate fragments **(NI)**

Other finds: An assemblage of a minimum of 72 hobnails and a further 58.75 g of calcined bone was recovered from backfill 1771.
Seven sherds (64 g) of pottery, 1 prehistoric (1 g), the remainder in fabric SG, including a 'cooking pot type' jar rim (1770, 1771)

Comments: The north-western end of the burial was truncated by the footings of the School House

Cremation burial 1845 (7894/0317)

Grave cut 1842
Shape: Rectangular, vertical sided
Dimensions: 1.0 m x 0.4 m, 0.3 m deep
Fills: Cremation deposit of black silt containing calcined bone (1843) 0.1 m thick, overlain by a backfill of friable light brown silt (1844) 0.2 m thick.
Relationships: Cut pits 1873 and 2062. Sealed by layer 1629

Cinerary urn: Un-urned

Cremation deposit 1843
Weight: 168 g
Largest fragment: 42 mm
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, long bones, hand bones
Colour:
MNI: 1
Age: *c* 2 years
Sex: Unknown

Pyre goods:
1 **Burnt dog remains**, comprising a complete male dog, aged at least 18 months at death **(NI)**
2 **Burnt sheep/goat remains**, comprising charred first and second phalanges **(NI)**

Other finds: A further 3.4 g of calcined bone was recovered from backfill 1844.
A minimum of nine hobnails
Twenty-six sherds (124 g) of pottery, fabric SG, mostly from one 'cooking pot type' jar, hand-made, with burnished surfaces on shoulder and lower body and zone of multiple oblique burnished lines between. *c* AD 300-400 (1843, 1844)

Date: Calibrated radiocarbon date (2σ) 38 BC-AD 60. Pottery suggests a date after *c* AD 300

Comments: The status of the jar fragments in 1843 and 1844 is uncertain

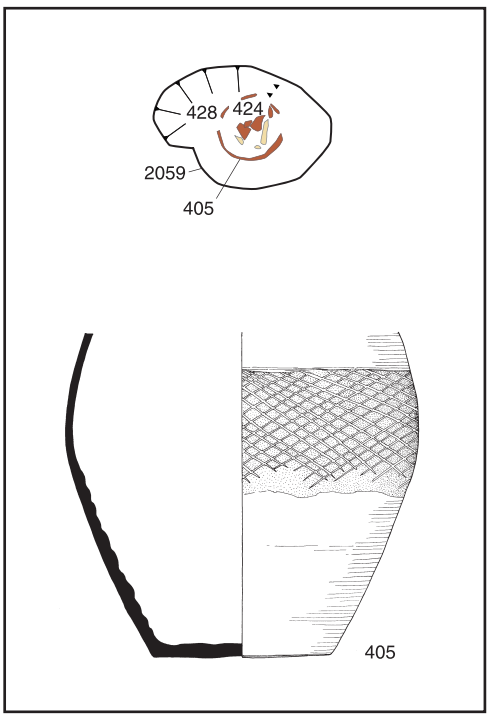


Fig. 3.282 Cremation Grave 2060

Cremation burial 1904 (7895/0316, see Fig. 2.12)

Grave cut 1748
Shape: Oval
Dimensions: 0.95 x 0.40 m, 0.24 m deep
Fills: A lower fill of black deposit with calcined bone (1751) 0.04 m thick, overlain by a light orange brown deposit (1750) 0.12 m thick and an upper fill of dark brown soil (1749)
Relationships: Cut pit 2062. Sealed by layer 1629 and cut by inhumation burial 1491

Cinerary urn: Un-urned

Cremation deposit 1749 and 1750
Weight: 351.7 g
Largest fragment: 74 mm (proximal femur)
Identified bones and teeth: Skull, teeth, vertebrae, ribs,, shoulder girdle, pelvis, long bones, hand bones
Colour: Mostly yellow-white
MNI: 1
Age: Adult
Sex: Unknown

Other finds: Nine sherds (44 g) of pottery, fabrics WF, WM, ZMA and SG (1749, 1750, 1751)

Date: Calibrated radiocarbon date (2σ) AD 84-254 & 308-312. Pottery suggests a date after *c* AD 300

Comments: The southern half of the burial was truncated by inhumation grave 1491

Cremation burial 2060 (7889/0326, Fig. 3.282)

Grave cut 2059
Shape: Not recorded
Dimensions: Not recorded
Fill: 428
Relationships: Cuts inhumation Grave 445

Cinerary urn: 405. Fabric ZM, New Forest reduced coarse ware. Base and large part of body of jar, perhaps intermediate between Fulford (1975a) grey ware types 30.10 and 30.11. Burnished on shoulder and lower body, with band of obtuse angle burnished lattice on the upper body. AD 270-400

Cremation deposit 424 and 425
Weight: 834.6 g
Largest fragment: 78 mm (radius)
Identified bones and teeth: Skull, teeth, vertebrae, ribs, shoulder girdle, pelvis, long bones, hand bones, foot bones
Colour: Yellow-white/grey
MNI: 1
Age: Adult
Sex: Male

Other finds: A further 123.1 g of calcined bone was recovered from backfill 428

Chapter 4: Artefactual evidence

POTTERY *by Paul Booth*

Introduction

In total just over 40 kg of pottery were recovered during the excavations. The great majority of this was of Roman date (39.7 kg) – small assemblages of pre- and post-Roman pottery are summarised briefly below, after which the Roman pottery is treated in more detail. The pottery was recorded using a standardised OA system, but to aid comparability with other Winchester data fabric codes used in recent Winchester work (Rees forthcoming), kindly supplied by Helen Rees, were employed. In addition to fabric, details of vessel form, decoration and other aspects such as evidence for use and reuse, were recorded where present. Quantification was by sherd count, weight, rim equivalents (REs) and a more subjective vessel count based (usually) on rim sherds. This last is of particular significance for the funerary assemblage, where the number of vessels involved is the most important individual statistic.

Pre-Roman pottery

A small quantity of hand-made prehistoric pottery (34 sherds, 214 g) was recovered, almost exclusively from the fills of late Roman graves. Many of the sherds were abraded. This material was broadly comparable to that found in the earlier excavations (Barclay 1979). The majority of the sherds were in fabrics tempered either solely with flint or with a combination of flint and sand. Flint inclusions were typically moderate in frequency and up to 2-3 mm in length, but occasional more coarsely tempered sherds were also seen. A very few sherds were in fine sandy fabrics with no flint inclusions. These included the only rim sherd in the collection, from a slightly shouldered jar with an insloping rim, a form typical of the later part of the middle Iron Age, from the fill of Grave 1016. The remaining material lacked diagnostic characteristics. Much of it may have been of Iron Age date, but some of the more coarsely flint-tempered sherds might have been earlier, perhaps of the middle or late Bronze Age. The later prehistoric pottery sites in the Winchester area are typically dominated by flint-tempered fabrics, a broad tradition that extended from the Neolithic (Ellison 1989, 87) at least into the middle Iron Age (eg Hawkes 1985, 62; 1987, 27). In the absence of other diagnostic features close dating is impossible.

Post-Roman pottery

Some 36 sherds of medieval pottery (258 g) were recovered. These were not examined in detail. Most of these sherds came from poorly-stratified or unstratified contexts. Six of them, however, weighing 36 g, came from Roman grave fills, one each from Graves 595, 650, 705, 720, 735 and 790. In each case the medieval sherd was from the upper fill of the grave. It is considered that the sherds are intrusive from the topsoil and other overlying deposits; there is no reason to believe that they indicate disturbance of graves at the medieval period. In addition, 34 sherds (315 g) of post-medieval pottery were recovered, all from topsoil or analogous deposits.

Roman pottery

Quantities

The Roman assemblage included 45 complete or partly complete vessels (79 sherds, 14250 g, 40.67 REs) which seem certain to have been placed as grave goods in inhumation burials. A largely complete vessel (1592, 1 sherd, 354 g, 1.00 RE) seems to have been placed deliberately on the top of the fill of Grave 1622. Some 729 sherds (8853 g, 10.97 REs) came from inhumation grave backfill deposits. Cremation burial and related deposits produced 343 sherds (10329 g, 7.55 REs) plus two further incomplete vessels (604 and 606, totalling 50 sherds, 2680 g, 1.00 RE), placed deliberately within the backfill of the unusual burial 655. The remaining pottery (some 455 sherds, 3233 g, 3.98 REs) came from the fills of ditches and pits, from layers and from unstratified deposits. It is noted with regret that a number of the complete vessels were stolen from OA premises before the assessment phase of the project was complete. In every case, however, it has been possible to reconstruct a reasonable record of the vessel using site records and photographs, finds administration system data and the assessment notes where applicable. The missing vessels are included in the following analysis and their vessel numbers are asterisked in Table 4.2. Only in one instance is the weight of a vessel estimated on the basis of comparative data. Generic illustrations of the missing vessels are provided, but in most cases the decoration, where present, had not been recorded in detail at the time the vessels went missing.

Fabrics

The range of fabrics present was restricted as a consequence both of the relatively narrow date range of the site (with the majority of deposits assigned to the 4th century) and its specific function. Some diversity

did result from the presence of a component, presumably largely residual, which may have derived from pre-cemetery phase activity in the area. Fabrics are quantified in Table 4.1 in terms of the Winchester code system, but grouped in terms of major ware categories defined by the OA recording system. Only fabrics indicated with an asterisk were used specifically in burial contexts. The others did not appear either as grave goods or in any of the cremation burials or cremation related deposits.

Overall, the assemblage is dominated by fine wares and reduced coarse wares. These are of course the principal elements of the grave good and cremation urn assemblages, but they were widespread in other contexts as well. The widest range of fabrics is seen in the oxidised coarse ware group, but few of the individual fabrics in this group were common, and despite the occasional occurrence of sherds in grave fills and in cremation related deposits only one fabric in this group (a distinctive import placed here in the generic fabric Y category) was used for grave goods (see further below). The majority of the oxidised wares, like the occasional fragments of samian ware and the single amphora sherd, were clearly not related to the use of the site in its cemetery phase. For the most part the coarse ware fabrics defined by the Winchester system are not assigned to specific sources, partly because at a local level these are not well-understood and partly because of difficulties in distinguishing between the fabrics of the two major regional suppliers, the New Forest and Alice Holt industries. In both Clarke's excavation and the present work, however, the reduced ware grave good vessels were assigned without exception to the New Forest industry (see further below) and only one group of sherds (in fabric ZF from the fill 671 of Grave 1190) was specifically noted as being probably of Alice Holt origin. Clearly attribution is aided by the presence of large typologically diagnostic sherds, and it may also have been the case that the distinction between the reduced ware products of the two industries was more marked in the 4th century than earlier.

However, another significant component of the reduced coarse wares at Lankhills, the grog-tempered jars particularly favoured as cremation urns, remains unattributed, although a relatively local source seems likely. In addition, the minor contribution of black-burnished ware to the assemblage is notable, particularly when the single grave good vessel is discounted.

Table 4.1: Quantification of Roman pottery fabrics by sherd count, weight and rim equivalents

Ware group	*Fabric code*	*Summary description*	*No. sh.*	*% sh.*	*Wt (g)*	*% wt*	*RE*	*% RE*
S samian ware	TCA	Central Gaulish samian ware	3	0.2	11	+	0.06	0.1
	TUS	samian ware, uncertain source	1	0.1	3	+	-	-
F fine wares	TF*	New Forest colour coated ware fabric 1b	121	7.3	2232	5.6	3.83	5.9
	TR*	New Forest colour-coated ware fabric 1a	211	12.7	6800	17.1	25.41	39.0
A amphorae	ADA	South Spanish 'Dressel 20' fabric	1	0.1	9	+	-	-
O oxidised	WC	Orange, with medium and coarse sand	5	0.3	84	0.2	0.21	0.3
coarse wares	WCA	Orange, medium sand, iron oxides and clay pellets	56	3.4	267	0.7	0.68	1.0
	WF*	Orange, dense fine sand, iron oxides	8	0.5	30	0.1	0.30	0.5
	WFA	Orange, sparse fine sand, iron oxides	5	0.3	17	+	-	-
	WM*	Orange, medium sand and iron oxides	8	0.5	320	0.8	-	-
	WMG	Orange, medium sand, iron oxides, micaceous	1	0.1	9	+	-	-
	Y*	Buff, sandy (imported, ?Trier region)	2	0.1	291	0.7	1.00	1.5
	YC*	Buff, medium-coarse sand and iron oxides	18	1.1	140	0.4	0.08	0.1
	YF	Buff, fine sand	3	0.2	19	+	-	-
	YM	Buff, dense medium sand, iron oxides	5	0.3	48	0.1	0.22	0.3
R reduced	SG*	Grey-dark grey but surface colour variation.	694	41.9	16816	42.4	10.24	15.7
coarse wares		Fine sand, grog and iron oxides						
	Z	Grey, fine, otherwise uncharacterised	4	0.2	34	0.1	-	-
	ZC	Grey, dense medium-coarse sand, iron oxides	7	0.4	60	0.2	-	-
	ZF*	Grey, dense fine sand, iron oxides	187	11.3	1562	3.9	2.36	3.6
	ZG	Grey, slightly sandy with abundant flint	16	1.0	209	0.5	-	-
	ZM*	Grey, dense medium sand, iron oxides	268	16.2	10208	25.7	19.68	30.2
	ZMJ	Grey, medium sand with occasional grog	22	1.3	240	0.6	0.10	0.2
B black-burnished ware	ZMA*	Dorset BB1	12	0.7	293	0.7	1.00	1.5
TOTAL			1658		39702		65.17	

*Fabrics used for grave good vessels

Grave goods

As mentioned above, 45 vessels were placed deliberately in the lower parts of grave fills as grave goods. They occurred in 39 graves, six of which contained two pots. In most cases, therefore, pottery vessels were placed singly, although they were often associated with other types of objects (see further below). The principal characteristics of the grave good vessels are shown in Table 4.2. The vessels are described in detail in the relevant grave catalogue entries. The ceramic dates are based on the New Forest chronologies set out by Fulford (1975a).

The vessels deposited as grave goods occurred in a narrow range of fabrics and forms. The correlation of vessel classes with ware group, quantified by REs with figures for vessel count in brackets, is shown in Table 4.3.

Colour-coated ware vessels (23 out of the 45 vessels) were entirely in New Forest fabrics, with the great majority (19) in the white/pale grey fabric TR (Fulford 1975a fabric 1a). In contrast with the material from Clarke's excavation, Oxford colour-coated wares appeared to be completely absent in the present assemblage. The fine ware vessels consisted of flasks, flagons and jugs (12) and beakers (9), with a single open form (a hemispherical bowl) and a small jar/bowl. The range of types in coarse ware fabrics was similar in some respects, again having a high proportion of flasks/flagons (10 of the 18 vessels in New Forest grey ware fabric ZF/ZM). The remaining types included vessels probably for drinking, ranging from the beaker NFC type 1.3 to the two-handled vessel paralleled at Portchester (Fulford 1975b type 175.1), a hybrid of New Forest coarse ware types 17 and 18 (Fulford 1975a, 93, 96) but presumably derived from that industry. A single example of the former type was found in Clarke's excavations (in grave 22) but the taller form seen in the OA site was not present there. Analogous vessels, but in black-burnished ware, are known for example from the cemetery at Alington Avenue, Dorchester (Seager-Smith 2002, nos 14 and 21). Jar forms were also present in fabric ZM and consisted of New Forest coarse ware types 30.9 (2 examples), 30.11, 32.1 and 33/35. The small size of all these vessels may indicate that they were seen as beaker substitutes. The New Forest grey ware repertoire was completed by a single flanged bowl (NFC type 6), while the two examples of simple plain rimmed dishes from graves were in fabrics not otherwise represented among the grave goods, one each of Dorset black-burnished ware and the ?local grog-tempered fabric SG.

The only other vessels deposited as grave goods were the two sandy oxidised unguent bottles (Nos 147 and 148) from Grave 82 (Fig. 4.1). These exactly parallel a vessel from Clarke's excavation (Clarke 1979, fig. 69 no. 61) which was identified as an import, probably from the Trier region, and at the time was thought to be unique in Britain (Fulford 1979, 227; see also Fulford and Bird 1975, 178).

Fig. 4.1 Probable North African unguentaria from Grave 82

Table 4.2: Grave good and other significant vessels

Grave	*Vessel number*	*Fabric*	*Form*	*'Functional' category*	*Ceramic date*	*Location in grave*	*No.sh./ wt (g)*	*Completeness*	*Comment*
18	27	ZM	NFC 30.11	Small jar	270-350?	OC? near l foot	1/213	A/B	Chips out of rim; three notches cut on rim. Vessel possibly placed on coffin, but this seems unlikely
41	46	ZM	cf NFC 1.3	Drinking vessel	300-350	IC next to skull	1/240	B	
82	147	Y	as Clarke Grave 45 no. 61	Uncertain	300-400?	OC near l foot above vessel 148	1/137	C	Neck and rim absent, break appears old
	148	Y	ditto	Uncertain	300-400?	OC near l foot below vessel 147	1/154	A	
87	230	TR	NFF 17	Liquid container	350-400	IC next to l lower leg	1/512	A	Patchy firing. Form is closest to NFF 17.4
99	128	ZM	cf NFC 33/35	Small jar	270-350?	OC at foot end	1/393	A/B	Outer lip of rim largely absent
256	286	ZM	NFC 20.2	Liquid container	270-350	OC at foot end	1/483	A/B	Surfaces quite eroded
272	273	ZF	NFC 20.2	Liquid container	270-350	OC on r near waist	1/314	A?	
291	319*	TR	NFF 13	Liquid container	300-340	IC by l foot	1/400E	A	
423	427*	TR	NFF 27.3	Drinking vessel	270-340	IC near r hand	1/233	A	
490	493*	TR	NFF 27.7	Drinking vessel	270-340	OC above l shoulder	1/102	A	
545	509	TF	cf NFF 1	Liquid container	300-330?	OC beside r femur	1/299	B	Rim more everted and overhung than NFF 1.2 which the vessel otherwise resembles. ?Deliberate hole in body
560	568	SG	Plain rim dish	Eating vessel	300-400	OC beyond r shoulder	8/384	A?	
565	516*	TR	NFF 18	Liquid container	320-370	OC at foot end	1/466	A	
575	608	ZM	NFC 30.9	Small jar	270-350?	OC at foot end	1/193	B?	
	609	TR	NFF 44.3	Drinking vessel	300-350	IC by r leg	1/95	A/B	Two rows of coarse 'roulette' decoration
620	569*	TR	NFF 12	Liquid container	300-350	OC above l shoulder	1/294	A	Rouletted and barbotine decoration
630	613	ZM	NFC 20.5	Liquid container	270-350	IC by l leg	1/345	A	
680	801	ZM	NFC 20.4	Liquid container	270-350	IC by r foot	24/537	B	Deliberate damage in girth area may have resulted in complete fracture of vessel body in antiquity
745	713	ZM	NFC 20	Liquid container	270-350	IC by l foot	1/365	B	Neck and rim absent, break appears old
880	828*	TR	NFF 11	Liquid container	300-350	IC between feet	2/371	A	No decoration
890	831	ZM	cf NFC 20	Liquid container	270-350	OC N of skull	1/421	A	Cf NFC 20, but squat and has two handles
	832	TF	NFF 11	Liquid container	300-350?	OC N of skull	1/343	A/B	Part of neck flange missing
965	936	ZMA	as NFC 19.1	Eating vessel	270-400	IC by r lower leg	1/237	A?	Fragmented and flaking surfaces so assessment of true condition difficult
	937*	TR	NFF 1	Liquid container	300-350	IC by r ankle	1/134	A	
1200	1151	TF?	NFF 11	Liquid container	300-350?	OC at foot end	1/506	B	Neck and handle present but no rim, lost in antiquity
1205	1144	TF	NFF 71	?Food container	325-380	?above coffin, pelvis	1/268	A	Fabric lightly oxidised 1a or 1b?
	1146	ZM	cf NFC 20.4	Liquid container	270-350	?above coffin, lower legs	1/281	A/B	Eroded/spalled
1225	1179*	ZM	NFC 20	Liquid container	270-350	IC at head end	1/345	A	
	1181	ZM	NFC 6	Eating vessel	270-400	IC at head end	1/230	A	
1349	1256*	ZM	NFC 20.1	Liquid container	270-350	IC by l foot	1/271	A	Form as NFC 20.1 but decoration as 20.5

1351	1342	TR	NFF 41.8	Drinking vessel	320-400	IC l of skull	1/173	A	Barbotine rather than painted decoration
1362	1384	TR	NFF 18.2	Liquid container	320-370	IC by l foot	1/359	B	Handle missing before deposition
1373	1374*	TR	NFF 17	Liquid container	350-400	IC l of skull	1/265	A?	No decoration?
1400	1402*	TR?	NFF 22	Liquid container	340-400	IC by l shoulder	1/148	A?	
1403	1450	ZM	NFC 20.4	Liquid container	270-350	IC by r knee	1/370	A/B	Rim chipped before deposition
1440	1443*	TR	NFF 30-	Drinking vessel	300-400	IC r of skull	1/496	A	Decoration uncertain
1495	1496*	ZM	NFC 32.1	Small jar	270-350	IC above r shoulder	1/642	A	
1567	1566*	TR	NFF 33	Drinking vessel	300-400	IC? l of skull	1/113	A	Poss placed on top of coffin
1760	1763*	TR	NFF 30-	Drinking vessel	300-400	OC? beyond r shoulder	1/370	A	Decoration uncertain
1810	1807*	ZM	NFC 30.9	Small jar	270-350	IC l of skull	1/302	A	
1866	1869*	TR	NFF 30-	Drinking vessel	300-400	r of skull (uncoffined)	1/523	A	Decoration uncertain
1930	1935	ZM	Portchester 175.1	Drinking vessel?	300-370	IC at r foot	1/668	A	cf NFC types 17 and 18
3027	3008	TR	NFF 57.2	Small jar/bowl	330-400	IC between feet	1/123	A	
3028	3025	TR	NFF 41	Drinking vessel	300-400	IC between feet	1/132	A	
Significant grave associated vessels									
1622	1592	ZM	NFC 30.10	Small jar	?270-350	Inverted above grave fill	1/354	B	No decoration. One and possibly two deliberate holes in body

Abbreviations: Form - NFC=New Forest coarse ware type series (Fulford 1975a, 89-103), NFF=New Forest fine ware type series (Fulford 1975a, 43-76); Location - IC=inside coffin, OC=outside coffin; Completeness - A=complete, B=damaged or incomplete before placement in grave, C=mostly complete (80% or more), D=incomplete (50-80% present)

These uncommon but widely-distributed vessels are now thought to come from Tunisia and are dated to the late 3rd to the mid 4th century (Pirling 2003, 200). Several more of these vessels are now known from Britain, and it may be significant that a number of them are from burials. A further possible Winchester example comes from Henly's Garage, where a vessel from a late pit fill is described thus "156. 585.2. Y fabric, bottle or flask with flanged rim. and incised lines around the body, near-complete. The surface is abraded, but appears to have an orange wash. The vessel is similar, although not precisely the same in form to a vessel from the Lankhills cemetery (Fulford 1979, 227, no. 61), and it is also similar to a form made in New Forest colour-coated ware (Fulford, 1975a, 47, type 10)" (Rees forthcoming). This vessel has not been seen by the present writer and the identification is uncertain. Another vessel is known from Verulamium (Wilson 1984, 206-7, no. 1982) and one from the East London cemetery (Barber and Bowsher 2000, 146-7, grave B166.2). Two further examples of the form have been recorded from Colchester (Symonds and Wade 1999, 352 nos 116 and 117), from LWC (Lion Walk) A30 Gp 20 and BUC (Butt Road cemetery) C1467 Gp 18 respectively. The latter is from a double grave (grave 395/396) of west-east aligned inhumations in nailed timber coffins in a vault with plaster (Crummy and Crossan 1993, 112). This feature has some superficial resemblance to the arrangement of the step grave (Grave 82) from which both the new Lankhills finds came. In contrast with the earlier Lankhills find, however, the vessels from Grave 82 were outside the coffin, one above the other. It is also notable that the upper vessel 147 was incomplete, with part of the shoulder and all of the neck and rim missing, but it is unclear why this should have been the case – the breaks were ancient and there was no trace of the missing fragments elsewhere in the grave fill.

The broad vessel form and interpretative classifications used in Tables 4.2 and 4.3 are of course subjective. They are based initially upon commonly-accepted terminology, but modern categorisations, however value-neutral, may not always reflect ancient usage. Nor, of course, was the latter necessarily the same in a funerary context as it was in daily life. The labels in Table 4.3 are essentially typologically based, while in Table 4.2 an attempt has been made to suggest the possible function of vessels in their role as grave goods, but as this is largely based on typological characteristics the interpretations offered may be open to question. Nevertheless, the broad vessel class names used here have been retained as a shorthand for terms which would otherwise involve lengthy qualification with regard to potential function.

As far as possible, the completeness of the grave good vessels was considered systematically (see Table 4.2) particularly (but not exclusively) in the light of an increasing body of evidence for deliberate

Table 4.3: Quantification by RE (and vessel count in brackets) of grave good vessel classes in relation to ware groups (including all vessels listed in Table 4.2)

	Ware group					
Vessel class	*F*	*O*	*R*	*B*	*Total*	*%*
B flagons/flasks	11.75 (13)	1.00 (2)	8.70 (10)		21.45 (25)	50.3 (52.1)
C jars	1.00 (1)		5.26 (7)		6.26 (8)	14.7 (16.7)
E beakers	9.00 (9)		0.96 (1)		9.96 (10)	23.3 (20.8)
G handled jar/beakers			1.00 (1)		1.00 (1)	2.3 (2.1)
H bowls	1.00 (1)		1.00 (1)		2.00 (2)	4.7 (4.2)
J dishes			1.00 (1)	1.00 (1)	2.00 (2)	4.7 (4.2)
Total	22.75 (24)	1.00 (2)	17.92 (21)	1.00 (1)	42.67 (48)	
%	53.3 (50.0)	2.3 (4.2)	43.0 (43.8)	2.3 (4.2)		

damage to vessels deposited in burials, presumably intended to render the vessel non-functional in an everyday sense or to mark it as special in some other way, although much of the evidence currently available relates to cremation cemeteries (eg Going 1988; Biddulph 2002, 104-5). The evidence takes several forms. In the case of unguentarium 147 the vessel seems to have been deposited in an incomplete state, but whether it was damaged before or at the time of deposition in the grave is not clear. Three other vessels, all closed forms, were clearly incomplete at the time of deposition in graves. The neck and rim of vessel 713 (Grave 745) were missing, the rim of vessel 1151 (Grave 1200) was absent above the flange, and vessel 1384 (Grave 1362) had no handle. Such absences are paralleled in the assemblage from Clarke's excavation, which included a flagon of the same form as vessel 1151 with the topmost part of the nozzle missing (Fulford 1979, 228 no. 95) and a grey ware flagon with most of the handle broken away (ibid., 230 no. 203). In all cases the vessels remained 'functional' at one level, so it is difficult to be certain if they had been damaged in a domestic context and were included in graves in the same way as other unmodified vessels, whether they were specially selected from the domestic assemblage because of their condition, or whether the damage was done deliberately immediately prior to placement in the grave, the 'missing' parts of the vessels being disposed of in some other part of the site.

Less equivocal is the evidence for deliberate damage which is seen in two cases. Vessel 509 in Grave 545, a small flask of NFF type 1, had a small hole at the girth. Vessel 801 (Grave 680), a flagon in fabric ZM, was also damaged at the girth, although this had resulted in fracture of the vessel body into two main parts, generating a number of smaller fragments in the process. It is possible that this damage was caused accidentally within the coffin, but the character of the fracture at the vessel girth suggests that it resulted from a deliberate attempt to puncture the pot at the time of burial. Other damage is evident on a number of vessels, but its status is much less clear. Chips from rims and footrings are as likely as not to have resulted from the day-to-day use of vessels before they were selected as grave goods, and vessels with this type of damage have generally been recorded as A/B in the completeness category of Table 4.2, with very minor chips etc usually ignored. Even features such as the loss of part of the flange on the neck of flagon 832 in Grave 890 could have been accidental. Damage to rims can be more difficult to assess, as the removal of a relatively small sherd here could be considered sufficient to symbolically affect the function of the vessel. No clear-cut examples of such action, rather than of 'wear and tear' damage, were identified in this assemblage, however. In the East London cemetery, where a significant proportion of damaged vessels was identified (23% of 200 vessels including cremation containers) the implication was that these vessels may have been preferentially selected from existing household stock for use in burial contexts (Barber and Bowsher 2000, 122).

Location of grave good vessels

The general location of vessels placed within graves is recorded in Table 4.2. Complete certainty is not possible in every case, but 24 vessels from 22 burials were recorded as probably or certainly within the coffin, with a further 4 vessels from 3 graves perhaps placed on top of the coffin. Some 16 vessels from 14 burials lay certainly or probably outside the coffin and there was a single case of a vessel associated with a (juvenile) un-coffined burial (1866). This was a beaker (1869) placed fairly close to the right of the head, a location shared by three other vessels in graves containing coffins. Of the 24 vessels placed within coffins nine were at the head and ten in the vicinity of the feet, while the other five were positioned from the waist downwards next to the legs, three on the right side and two on the left. Of the vessels outside the coffin six were around the head end and five at the feet, with two adjacent to the right upper leg and three next to the left lower leg; in other words the distributions of vessels inside and outside the coffin in relation to the

position of the body were quite similar. It is noticeable, however that the distribution of vessels outside the coffin at the head end extended to the corners of the coffin and the grave pit, whereas all the vessels outside the coffin at the foot end were clustered in the centre of the long axis of the grave. Two of the four vessels tentatively identified as having been placed on top of the coffin were in positions commonly used for vessels within the coffin, one at the left shoulder and the other by the right foot. The other two of these vessels, both from Grave 1205, were in unique locations, one on the pelvis and the other roughly between the knees. Even in this case it is not certain that the vessels were originally placed upon the coffin rather than inside it, but this seems likely.

In three cases (Graves 1373, 1440 and 1763) a single pottery vessel was accompanied by a glass vessel. In Grave 1373 the pottery and glass vessels lay respectively to left and right of the skull, while in Grave 1440 these positions were reversed. In Grave 1763 the glass vessel was again near the right shoulder but the pot (1760) lay further away on the same side and was probably, though not certainly, placed outside the coffin. It is notable that these three graves lay close together in the north-western corner of the site and that all were dated after AD 388 by associated coins.

Cremation burials

The pottery associated with cremation burials contrasts markedly with that from the inhumations. The exact number of cremation burials is slightly uncertain because of the degree of intercutting of features in the areas favoured for cremation burial and related activities, and the consequent difficulty of distinguishing genuine (but disturbed) cremation burials from deposits containing cremation-related debris, but the most likely total of such burials is 25. For the purposes of Table 4.4 deposits containing relatively small quantities of pottery have been disregarded (total quantities of pottery from cremation burials and cremation-related deposits are given in Table 4.5). Five certain cremation urns were identified, and other possible examples are also listed in Table 4.5. Only two of the five certain examples are effectively complete, and only one is relatively unfragmented. Two of these five vessels were New Forest grey ware (fabric ZM) jars of type NFC 30, while the remainder were jars in grog-tempered fabric SG. These varied considerably in size but were probably all of the same general, medium mouthed 'cooking-pot' form, characterised by a fairly simple curving everted rim and typically having a roughly burnished surface finish, often of close-set horizontal strokes around the shoulder and lower body and oblique strokes at the girth of the vessel. Very similar vessels were associated with three cremation burials (G60, G237 and G361) in Clarke's excavation (a fourth cremation urn, G26, was in a sandy grey fabric).

Although fabric SG is grouped with reduced coarse wares in Table 4.1 its surface colour is very variable, and can range from dark grey to orange and reddish-brown. In a number of cases there were joining oxidised and reduced sherds from the same vessel, these vessels having been broken and some parts of them subjected to refiring. The refiring may have been accidental, but it seems more likely that the vessels affected in this way have been placed on or adjacent to the cremation pyre. This interpretation has been adopted in the case of vessels in cremation burials 1060, 1195 and 1215, although it cannot be regarded as absolutely certain. It is notable that in every case the vessel was a jar in fabric SG, the preferred container for cremated human remains. Some uncertainty that vessels were definitely placed on the pyre rather than burnt in other contexts arises because the evidence indicates that cremation-related activity was concentrated very heavily in a couple of small areas, carrying with it the implication that cremation burials placed in these areas were susceptible to disturbance by later episodes of cremation and burial of the resulting remains. Another form of disturbance, however, may be represented by the absence of the upper parts of a number of the cremation urns. While it is possible that in some cases such truncation occurred within the late Roman period it is equally likely that it was the result of post-Roman use of the site, the upper parts of shallowly-buried vessels being removed by medieval agricultural activity or even by post-medieval landscaping.

Two of the vessel fragments in fabric SG were from flanged bowls of characteristic late Roman type. One of these (in context 467) was closely associated with the truncated cremation urn in grave group 550. Unfortunately, because of the disturbed nature of the feature it is impossible to determine if the bowl was an ancillary vessel or had perhaps served as a lid for the cremation urn. The other flanged bowl was the only significant vessel in feature 1160, but its function remains unclear. Context 808, in feature 1060, is likely to have been a deposit of cremation-related and other debris, rather than representing a disturbed burial. Although it contained a substantial part of a fabric SG cremation urn, the total pottery from this feature amounted to 114 sherds (1328 g) in six fabrics with a minimum of seven different vessels represented by rims – including at least four beakers in colour-coated fabric TR. The most complete of these, listed in Table 4.4, was notable for the presence of a substantial calcareous deposit on its interior surface which extended over the broken edges of some of the sherds. It seems, therefore, that this vessel had broken in an environment with voids which allowed the accumulation of this material, perhaps suggesting the interior of an inhumation grave rather than a cremation-related feature. These sherds and much of the other material are therefore likely to have been redeposited in context 808. There is thus no certainty that any of the urned cremation burials

Table 4.4: Vessels certainly or possibly associated with cremation burials

Grave/ feature	*Context/ vessel number*	*Fabric*	*Form*	*Functional category*	*Ceramic date*	*Completeness*	*Comment*
510	467	SG	Jar	Cremation urn	300-400	D	Most of upper body and rim missing
	467	SG	Flanged bowl	Secondary	300-400	E?	Fragment
655	604	SG	Jar base	Large jar	300-400	D	Lower part of vessel placed over horse skull and vessel 606
655	606	TR	NFF 22	Liquid container	340-400	C	Associated with horse skull beneath vessel 604
845	764	SG	Jar	Cremation urn	300-400	D	Rim and shoulder missing
1055	1007	SG	Large jar	Cremation urn	300-400	A?	Fragmented but apparently complete
1060	808	SG	Jar	Cremation urn?	300-400	D	Just over half survives. Some sherds refired
	808	TR	NFF 27	Drinking vessel	270-350?	D	Interior calcareous deposits
1160	1107	SG	Flanged bowl	Uncertain	300-400	E	Status of these fragments unclear
1180?	999	SG	Small jar	Secondary	300-400	E	Sherds mostly from base and lower body, inverted on upper surface of feature fill
1195	1121	SG	Jar	Cremation urn?	300-400	E	Lower part heavily burnt
1215	1148	SG	Jar	Cremation urn?	300-400	C/D	Fragmented, some sherds refired after breakage
1255	1186	ZM	NFC 30	Cremation urn	270-400	A?	Undecorated, closest to NFC 30.1
2060	405	ZM	NFC 30	Cremation urn	270-350?	D	Between NFC 30.10 and 30.11, but rim and shoulder missing

were accompanied by drinking vessels, though the association is attested in a late Roman context, for example at Barrow Hills, Radley, Oxfordshire (Chambers and Boyle 2007, 29-30). In the northern cemetery of Winchester itself a ?mid-late 4th-century cremation burial excavated at Hyde Street in 1979 (grave 39) contained two New Forest colour-coated ware flasks alongside the grog-tempered cremation urn (Rees forthcoming, Appendix 3).

Comparison of pottery assemblages by general context type

The overall breakdown of pottery fabric quantities by generalised feature type is shown in Table 4.5. Some of the inferences that can be drawn from this are limited because some of the feature type assemblages are only small, but there are variations that appear to be significant. The principal characteristics of the inhumation grave goods (in particular their dominance by fine ware fabrics) and the pottery from cremation burials have already been noted. Table 4.5 shows, however, a slightly different aspect of the material from cremation-related deposits. The importance of the fine ware component in these deposits, hinted at by vessel 808 in feature 1060, is underlined, at least by the RE figures, although the fact that such totals can be boosted by quite small sherds (particularly deriving from the rims of beakers) is demonstrated by the minimal weight of the fine wares from these contexts (only 5.3%). Fine wares constitute a reasonable proportion of the material from all the other context types, ranging from 23.9% of REs in layers to 37.8% in pits and ditches, figures that probably reflect the occurrence of redeposited disturbed grave good material. The impact of such disturbance is less clear in relation to the occurrence of reduced coarse wares. Fabric ZM (New Forest grey ware), the only significant reduced fabric used for grave goods in the inhumation burials, was generally less common in other context types than in the graves, except in terms of RE representation in pits and ditches, which gave a closely comparable figure to that from the graves, but from a much smaller sample. The grog-tempered fabric SG, fundamentally important in its use for cremation urns, was less well-represented (but quite common) in terms of REs in both inhumation grave fills and layers, probably reflecting the potential of the cremation urns to be disturbed and truncated within the Roman period as well as later.

Grave fills, forming the largest group of material in terms of sherd count, unsurprisingly produced the widest range of fabrics, including both reduced and (particularly) oxidised fabrics which did not occur among the repertoire of grave goods. While it is possible that some of this material could have derived from disturbed grave goods in fabrics not otherwise present in the excavated burials, it seems more likely that the majority of this pottery represents material related to other activities on the site, probably, but not necessarily, predating the use of the cemetery. A residual component in the grave fill pottery is certainly indicated by the presence of redeposited prehistoric sherds.

In terms of further general characterisation of the assemblage the correlation of major ware groups and vessel classes is shown in Table 4.6; the same correlation, but just for the inhumation grave goods and associated vessels listed in Table 4.2, is shown above in Table 4.3.

Table 4.5: Quantification of pottery fabrics by feature type

		*Grave goods**			*Grave fills*			*All cremation deposits***			*Pits and ditches*			*Layers*			*Unstratified*		
Ware group	*Fabric code*	*% sh*	*% wt*	*% RE*	*% sh*	*% wt*	*% RE*	*% sh*	*% wt*	*% RE*	*% sh*	*% wt*	*%RE*	*% sh*	*%wt*	*% RE*	*% sh*	*%wt*	*% RE*
S samian ware	TCA				0.3	0.1	0.5										3.0	1.5	-
	TUS																3.0	1.5	-
F fine wares	TF	3.1	8.2	6.6	9.6	6.3	7.4	1.5	0.2	0.3	25.5	22.7	9.0	2.5	0.7	2.8			
	TR	30.8	31.8	46.8	10.4	6.4	19.1	16.9	5.1	31.5	15.3	13.5	28.8	4.6	4.0	21.1	9.1	3.9	33.3
A amphorae	ADA				0.1	0.1	-												
O oxidised coarse wares	WC				0.5	0.9	1.9				0.7	0.1	-						
	WCA				0.5	0.6	-				2.9	3.0	14.7	16.9	8.8	20.6			
	WF				0.3	0.1	-	1.2	0.2	4.0				0.7	0.3	-			
	WFA				0.5	0.1	-				0.7	1.3	-						
	WM				0.8	3.5	-	0.3	+	-	0.7	1.0	-						
	WMG																3.0	4.4	-
	Y	1.5	1.7	2.3															
	YC				0.1	0.1	-	0.6	0.4	1.1				5.3	4.5	-			
	YF				0.4	0.2	-												
	YM				0.7	0.5	2.0												
R reduced coarse wares	SG	31.5	16.7	2.3	35.4	49.3	41.7	75.2	79.5	50.5	17.5	14.1	-	38.4	56.7	34.4	9.1	20.7	45.8
	Z				0.1	0.1	-				2.2	3.1	-						
	ZC				1.0	0.7	-												
	ZF	0.8	1.8	2.3	18.1	10.8	10.5	0.3	+	-	16.8	13.1	10.3	5.3	4.4	-	45.5	37.9	20.8
	ZG				2.1	2.2	-				0.7	1.5	-						
	ZM	31.5	38.5	37.3	17.2	17.1	17.0	3.8	14.6	12.7	16.1	26.2	37.2	20.8	11.5	16.5	21.2	22.7	-
	ZMJ				0.4	0.3	-				0.7	0.5	-	5.6	9.1	4.6	6.1	7.4	-
B black-burnished ware	ZMA	0.8	1.4	2.3	1.4	0.6	-	0.3	+	-									
TOTAL		130	17284	42.67	731	8859	10.97	343	10329	7.55	137	947	1.56	284	2080	2.18	33	203	0.24

All vessels in Table 4.2; **Includes all vessels in Table 4.3*

Table 4.6: Overall quantification (by RE) of vessel classes in relation to ware groups

	Ware group						
Vessel class	*S*	*F*	*O*	*R*	*B*	*Total*	*%*
B flagons/flasks		12.92	1.00	9.07		22.99	35.3
C jars		1.00	1.40	16.85		19.25	29.5
D jar/bowls			0.09	0.10		0.19	0.3
E beakers		13.51		1.31		14.82	22.7
F cups		0.13				0.13	0.2
G handled jar/beakers				1.32		1.32	2.0
H bowls		1.68		1.72		3.40	5.2
J dishes	0.06			1.92	1.00	2.98	4.6
L lids				0.02		0.02	+
Z uncertain				0.07		0.07	0.1
Total	0.06	29.24	2.49	32.38	1.00	65.17	
%	0.1	44.9	3.8	49.7	1.5		

While not as pronounced as the pattern revealed by the figures in Table 4.3, the essentially funerary character of the assemblage is clear both from the high percentage of colour-coated wares and also from the balance of the principal vessel classes, with closed forms (flagons, flasks and jugs) the most common individual class (35.3% of all vessels by REs), jars comprising just under 30% and beakers 22.7%. The very low representation of open forms (bowls and dishes) is particularly notable. These two classes together amount to just less than 10% of the assemblage, whereas the figures from ten broadly contemporary non-funerary Winchester assemblages (a series of 'later Roman primary key groups'; Rees forthcoming, table 2.2.35), admittedly based on rim count rather than REs, show a single group with 15% of open forms, while in the remaining groups these types range from 28% to 58%. Comparative data based on percentages of REs are, however, available for Winchester late Roman groups from The Brooks and recently-recorded assemblages from the Cultural Centre and Northgate House sites within the north-west corner of the walled town (Biddulph and Booth forthcoming). These are summarised alongside the Lankhills figures in Table 4.7.

Table 4.7: Comparison of vessel classes from late Roman groups in Winchester quantified by RE (The Brooks data (Groups 13397, F1684, F1466, F1342) from Lyne forthcoming, Tables A2.4.2-5)

Vessel class	*The Brooks*	*Cultural Centre*	*Northgate House*	*Lankhills*
Beakers	12%	12%	14%	24.7%
Bowls/dishes	33%	25%	33%	9.8%
Cups	1%	1%	0%	0.2%
Flasks/flagons	6%	15%	4%	35.3%
Jars	43%	42%	44%	29.8%
Lids	3%	1%	1%	+
Mortaria	2%	4%	4%	-
Total RE	26.18	15.34	20.91	65.17

The contrast between the Lankhills material and the approximately contemporary domestic assemblages is very clear, particularly when it is recognised that many of the jars have a funerary function, either as cremation urns or as small ancillary vessels that may in fact have functioned as cups (see above). Nevertheless the distinction between funerary and domestic assemblages is less marked in the late Roman period than earlier, principally because the expansion of the New Forest and Oxford industries results in the presence of much higher proportions of beakers and flagons compared with early and middle Roman groups. However, the combined proportion of these classes by REs (18% for The Brooks (Lyne forthcoming), 27% for the Cultural Centre and 18% for Northgate House) are substantially lower than the 60% at Lankhills. Drinking-related forms therefore remained of fundamental importance in late Roman funerary assemblages (at least among graves that contained pottery) while also being of growing significance in the contemporary Roman household.

One unusual vessel from the grave fill assemblages calls for further comment. This was part of a small costrel-like form (not in Table 4.6) from fill 3005 of Grave 3030 (Fig. 4.2, No. 8). The vessel, with a strap handle at the end, was in the oxidised New Forest colour-coated fabric TF and appears not to have been recorded in that fabric hitherto.

Chronology

Very few of the vessels from the 2000-2004 work have closely-defined date ranges. Dating was based on that in the standard corpus of New Forest pottery (Fulford 1975a), rather than that given in the

Table 4.8: Grave good and other key vessels by approximate period of manufacture

Date range	*Vessel numbers*	*Total*
270-340/350	27, 128, 273, 286, 427, 493, 608, 613, 713, 801, 831, 1146, 1179, 1256, 1450, 1496, 1592, 1807	18
300-330/350	46, 319, 509, 569, 609, 828, 832, 937, 1151	9
300-370	1935	1
320/325-370/380	516, 1144, 1384	3
320/330-400	1342, 3008	2
340/350-400	230, 606, 1374, 1402	4
300-400	147?, 148?, 568, 604, 1443, 1566, 1763, 1869, 3025	9
270-400	936, 1181	2
Total		48

original Lankhills report (Fulford 1979) where differences exist, and that of the vessels from graves is summarised in Table 4.8. All these vessels had date ranges from *c* AD 270 (or later) onwards. A few of the reduced ware types could only be assigned a date in the period AD 270-400. Where closer dating was possible the most common ranges were AD 270-350 and AD 300-350 (for example for such common types as 20 and 30 in the reduced ware typology). Relatively few vessels were dated specifically to the middle part of the 4th century (eg colour-coated type 18, dated AD 320-370, from Grave 565 and type 71, dated AD 325-380, from Grave 1205) or to the second half of the 4th century (fine ware types 17 (dated AD 350-400+, from Grave 87), 22 (dated AD 340-400, from Graves 655 and 1400) and 57.2 (dated AD 330-400, from Grave 3008 in the watching brief area,). Superficially, therefore, 28 of the 48 vessels have date ranges focussed on the first half of the 4th century while only 9 have date ranges encompassing the middle part or the second half of the century; a further 11 can only be dated broadly to the 4th century. Of course some examples of types with a wide 4th-century date range could belong to the later part of the century, but this is not demonstrable from the pottery alone.

In five cases pottery vessels occurred in coin-dated graves. Vessels 1384 and 1450 were in graves with coins of the period 330-335 (Graves 1362 and 1403 respectively), the coin dates falling within the ceramic date ranges assigned to the relevant vessel types. Three vessels (1374, 1443 and 1763) came from graves (1373, 1440 and 1760 respectively) all with coins dated after AD 388 (for the occurrence of glass vessels in all these graves see above). In the first of these cases the date of the coins corresponded with that of the vessel, a flagon of NFF type 17 dated AD 350-400. This type is known to have late Roman associations, as three of the four examples from Clarke's excavation were from graves dated AD 380-410 (Fulford 1975a, 48). The two vessels from Graves 1440 and 1760 (vessels 1443 and 1763 respectively) were beakers within the range of NFF type 30 with a broad 4th-century date bracket; these vessels might therefore have been old at the time of burial, but equally could have been placed in the grave only a short time after manufacture. These last three graves were all in the north-west corner of the excavated area, which contained a notable cluster of late burials among which Graves 1373 and 1440 were aligned north-south. This is consistent with a more general view of the contexts of the later (post *c* AD 350) vessels, almost all of which are from components of clusters of graves and other features of distinctive character and mostly dated to the later 4th century by other finds as well as by pottery.

Inevitably, however, a fairly high proportion of the graves with pottery have no or few other artefactual or stratigraphic associations; in almost all of these cases the relevant vessels were dated AD 270-350 or AD 300-350. In view of this evidence it is possible that some of the graves with pottery could have dated to the late 3rd century, but none of the other evidence from the cemetery supports this conclusion. There were no instances of the use of obviously 'old' or 'heirloom' vessels in these burials, as has been noted in a number of Romano-British cemeteries such as Pepper Hill, Springhead, Kent (Biddulph forthcoming), East London (Barber and Bowsher 2000, 122) and Butt Road, Colchester (Going 1993, 149 – though not the 'Brockley Hill' vessel that he quotes there). Some additional examples are given by Biddulph (2005, 38).

The pottery from grave backfills sheds a little further light on the overall chronology of the cemetery. Some 96 graves incorporated non-grave good pottery in their fills, but out of all this material a date necessarily after *c* AD 350 is demonstrable with reasonable confidence in only a single case, Grave 1755 (which has a *terminus post quem* of AD 337-341 based on coins), and even here the vessel in question was only similar, rather than exactly parallel to, New Forest fine ware type 19, dated after AD 350 (Fulford 1975a, 48). The grave backfill pottery therefore supports the evidence of the bulk of the grave goods in suggesting that a large proportion of the pottery from the site should be assigned to the first half of the 4th century rather than later. Given the overall chronological profile of the ceramic grave goods this was perhaps to be expected, but it is nevertheless of interest that the two groups of material present a consistent picture.

Discussion

Only four of the 45 vessels deposited as grave goods (as opposed to those used for example as cremation urns) were certainly not products of the New Forest industry. The dominance of this industry reflects both its relative proximity to Winchester and the specialised aspects of the funerary assemblage, with its requirement for drinking and related vessels and

a preference (albeit far from absolute) that these should be in fine wares. A wider range of sources (and presumably vessel types) was represented among the material that found its way into contexts such as grave fills. While some of this material will have been generated through disturbance of earlier graves, some of it is also likely to have derived from deposits and activities that were unconnected with the cemetery, either functionally or chronologically.

As would be expected there are substantial similarities between the 2000-2004 assemblage and that from Clarke's excavation, but there are also some differences. The 91 grave good vessels from inhumation graves in Clarke's excavations (Fulford 1979) are summarised here in Table 4.9.

The headings used in Table 4.9 are not exactly the same as those shown in Table 4.3 above but can be compared quite closely. The OA excavations show slightly higher representations of flasks/flagons/jugs and jars, while Fulford's data show slightly higher levels of beakers and bowls. In neither case, however, are the differences large enough (or the vessels involved sufficiently numerous) for the variations to be statistically significant. In broad terms, vessels potentially associated with drinking (flasks, flagons, jugs and beakers and the handled beakers) in effect constituted identical percentages of the ceramic grave good assemblage (by vessel count) from the OA excavations and from Clarke's comparable material (75% and 74.7% respectively). In addition it is possible that some of the small jars from both assemblages also functioned as drinking vessels, thus emphasising the importance of this function still further. These figures indicate the highly selective and specialised nature of the funerary assemblage (see also comparative discussion above). It is notable, however, that a large majority of the graves with pottery only contained a single vessel. Thirty-three out of 39 graves from the OA excavations and 67 out of 79 graves from Clarke's excavations fell into this category, although in a further three of the OA graves (1373, 1440 and 1760) and nine of those from Clarke's excavation single pots were accompanied by glass vessels. What seems clear, therefore, is that where pottery vessels were used at all (which is to say, in about one grave in eight in the OA excavations, although it must be remembered that more graves may originally have contained vessels which were disturbed and removed by the cutting of later graves) there is no suggestion that it was considered obligatory to provide a 'set' of drinking-related vessels, ie a flask/flagon/jug and a beaker. The questions that follow from this are whether a single vessel was considered an adequate representative of the set, whether the concept of the 'drinking set' is valid at all, or whether indeed all of the apparently different components of the set were multifunctional and therefore interchangeable?

The suggestion that the concept of 'drinking set' is of limited validity seems to be supported by the evidence of the vessel types in those cases where two vessels were present. In the six such instances in the OA excavation none of pairings involved a flask/flagon and a beaker; in two cases both vessels were closed flagons/flasks, and in all the others the pairing comprised a flask/jug or beaker with a more open form, tentatively associated with consumption of food. This evidence is consistent with, for example, recent analyses of vessel associations in cemeteries at East End, Ash, at Pepper Hill and Ospringe, all in Kent (Biddulph 2002; forthcoming), where many of the combinations do not fit the model of a standard dining set consisting, for example, of drinking vessel, liquid container and plate/dish. The chronological emphasis of these sites is earlier than that of Lankhills, however, and many of the vessels concerned (though by no means all) are from cremation burials. Strictly comparable data for the composition of the Lankhills assemblage are relatively scarce. Major late Roman cemeteries such as Butt Road (Colchester), Bath Gate (Cirencester) and Poundbury (Dorchester) have produced only minimal amounts of pottery grave goods. In the East London cemetery, where some 362 inhumation burials were assigned to

Table 4.9: Clarke's excavations: correlation of grave good pottery (vessel count) from inhumation burials by fabric group and vessel class

	Ware group and source/fabric type								
Vessel class	*F Oxford CC*	*F New Forest CC*	*R New Forest grey*	*F Pevensey CC*	*O (Trier)*	*R Grog (SG)*	*B Dorset BB1*	*TOTAL*	*%*
Flask	2	5			1			8	8.8
Flagon/jug	5	10	20					35	38.5
Jar			10			1		11	12.1
Beaker	3	20	1	1				25	27.5
Bowl	4	2	4				1	11	12.1
Dish							1	1	1.1
TOTAL	14	37	35	1	1	1	2	91	

phases dated from AD 250 or later, there were perhaps as many as 35 grave good vessels from 28 graves (in a few cases it was difficult to determine whether parts of vessels represented grave goods or were redeposited in fills). These included 2 flasks, 4 flagons and 16 beakers, while a miniature jar could have represented another beaker, though this is uncertain. The proportion of liquid container/ consumption vessels, at just under 63%, was therefore a little lower than that at Lankhills, but perhaps not significantly different from it. The pattern of the other vessels types is rather different from Lankhills, however, including two 'odd' types (an unguent jar and a tazza) but being dominated by jars, of which there were 7 examples (data from Barber and Bowsher 2000, passim). Another roughly comparable assemblage is seen at Barrow Hills, Radley, Oxfordshire. Here, in a cemetery of 57 inhumation and 12 cremation burials, probably all of 4th-century date, 9 burials (6 cremations and 3 inhumations) were accompanied by colour-coated ware beakers or small jars suggested as having a drinking function, none of which can have dated before AD 270 at the earliest. Apart from cremation urns, other vessel types were completely absent (Booth 2007, 35-6). These figures underline the drink-related aspect of at least some late Roman cemetery assemblages.

The principal apparent difference between the Clarke and OA assemblages is in the identification of Oxfordshire products in the former. Fulford's report was prepared in 1973 (Fulford 1979, 221, fn3), at a time when the products of the Oxfordshire industry were not as well understood as they are now. It is accepted that distinction between the red colour-coated ware products of the two industries can be difficult in cases where it is not possible to examine the fabric in a fresh break (as with complete grave good vessels), a difficulty exacerbated by the partial overlap in typological ranges. Nevertheless, the fact that no Oxfordshire products were identified among the grave goods from the OA excavation, and that some of the vessels attributed to Oxfordshire by Fulford are of forms not closely paralleled in the industry (eg nos 3 (grave 6), 8 (grave 27), 242 (grave 186), 322 (grave 195) and 384 (grave 299)), suggest that he may have been over-optimistic in identifying Oxfordshire vessels. The other vessels attributed to the Oxford industry by Fulford are certainly acceptable in typological terms (although most are also found in the New Forest repertoire: their fabrics have not been re-examined), so the likelihood that at least some Oxford products were present in Clarke's assemblage is in contrast with the evidence from the recent excavations. The significance of this contrast is uncertain – the distribution of graves with possible Oxford vessels in Clarke's excavation does not reveal any obvious patterning, except that all are to the west of the north-south ditch F12 and two of the graves in question (182 and 186) lie next to one another in the middle of excavated area.

Chronological aspects of the assemblage have been discussed above. Broadly the assemblage reflects the chronological range established for the material from the earlier excavation, although it may contain a rather smaller proportion of vessels assigned to the second half of the 4th century, in part because the OA excavated area did not include the eastern extremity of the cemetery thought by Clarke to contain most of the latest burials. For the same reason it is less clear that the pottery demonstrates the general scheme of west-to-east development of the cemetery established in the earlier work, though this remains a plausible model (see general discussion below). Overall, this assemblage appears to show a concentration of burial activity in the first half of the 4th century. It is uncertain whether the deposition of pottery vessels as grave goods continued into the 360s and 370s (none of the graves dated to this period by coins contained pottery vessels, but this is not necessarily significant as the numbers of graves involved are quite small) or if there was discontinuity in this practice. However, the placing of pots as grave goods was certainly a characteristic of some of the latest graves (in terms of artefact dating) in the site, assigned to the last decade of the 4th century if not later, a pattern which mirrors that seen in Clarke's excavation. That three of the four graves dated after 388 by coins contained a pottery vessel is a striking and significant association.

Lankhills pottery vessels of intrinsic interest other than grave goods

A number of graves contained ceramic material that was probably or certainly redeposited in the backfill material (see above). A small selection of this material, consisting of vessels of some intrinsic interest, is illustrated in Figure 4.2.

1. Grave 580 fill context 532. Fabric TR, New Forest colour-coated ware. Upper part of a jug of Fulford (1975a) fine ware type 18 with linear scratch marks on shoulder, *c* AD 320-370.

2. Grave 580 fill context 532. Fabric SG, local grog-tempered ware, hand-made. About one third of a jar, with overall burnish of the upper parts and scribble burnished lines below, *c* AD 300-400.

3. Grave 930 fill context 799. Fabric ZM, New Forest reduced coarse ware with black slip on neck and shoulder, burnished. Medium-necked jar broadly of Fulford (ibid.) grey ware type 31, *c* AD 270-400.

4. Grave 1030 fill context 961 and Grave 1295 fill context 1218. Fabric ZM, New Forest reduced coarse ware with black surface, burnished on neck and top of rim. Neck of jug of Fulford (1975a) grey ware type 20.8, *c* AD 270-350.

5. Grave 1379 fill context 1381. Fabric ZM, New Forest reduced coarse ware with black surface.

Flanged bowl of Fulford (1975a) grey ware type 6, *c* AD 270-400.

6. Grave 1491 fill context 1489. Fabric SG, local grog-tempered ware, hand-made. Large part of a jar, with overall rough horizontal burnish of upper and lower parts, with zone of close-set oblique burnished lines between. *c* AD 300-400. This vessel may have been the urn in cremation burial 1695, disturbed by inhumation grave 1491.

7. Grave 1491 fill context 1489. Fabric SG, local grog-tempered ware, hand-made. Fragment of curving sided dish with exterior boss. Overall burnish of

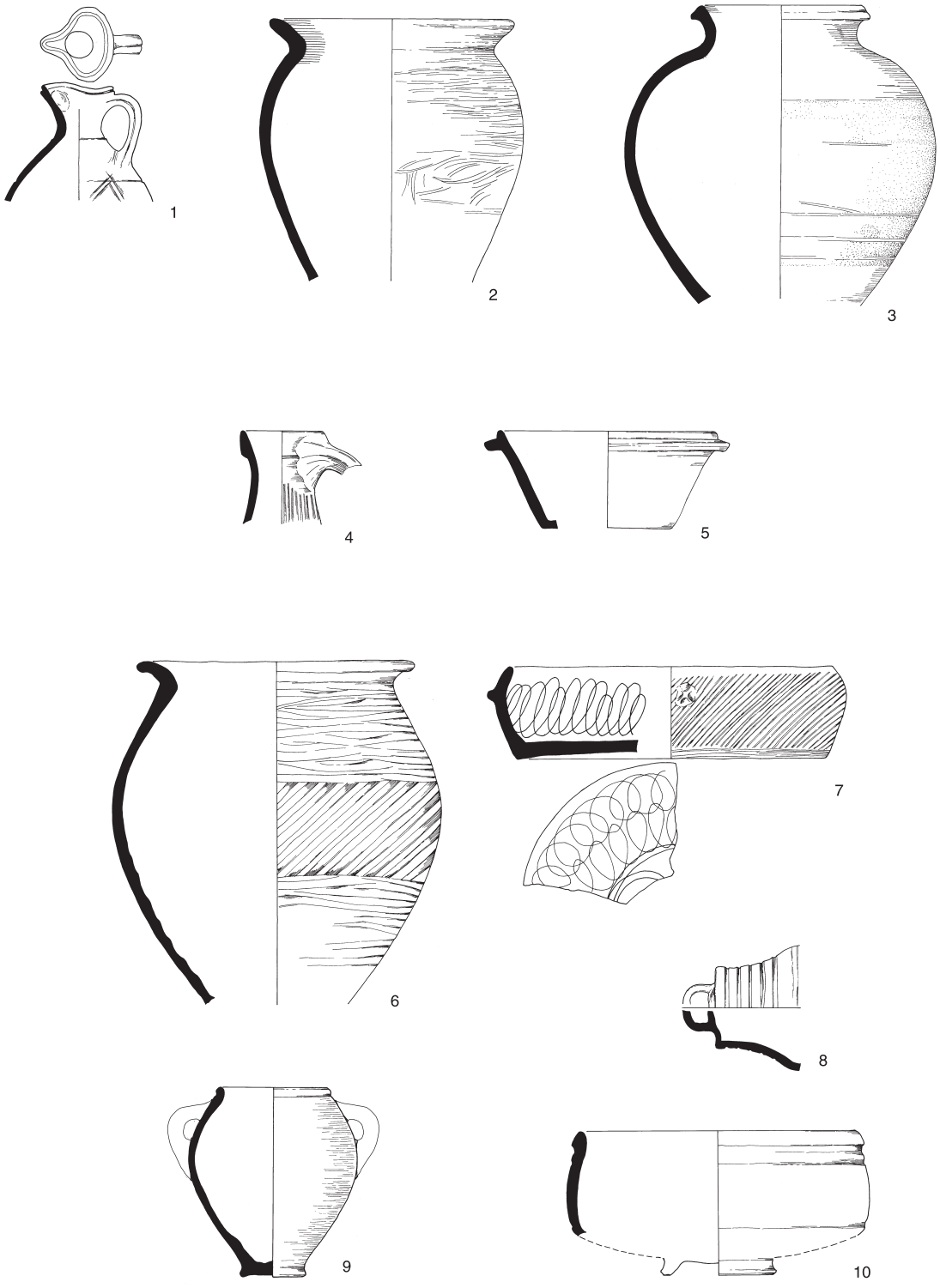


Fig. 4.2 Lankhills pottery vessels of intrinsic interest not from grave goods

closely spaced oblique lines on exterior and continuous scribble burnished line on interior. Lyne (1999a, 285-6) has suggested a very late 4th-century date for analogous vessels from Portchester and elsewhere. ?*c* AD 350-400.

8. Grave 3030 fill context 3005. Fabric TF, New Forest colour-coated ware with red-brown slip. Fragment of small costrel-like vessel with handle at one end. The general form is well known (see eg Gillam 1970, no. 21), but examples are rare and this vessel is apparently unique within the New Forest industry. It is presumed that the barrel-like vessel had an opening at the widest point of the body, but insufficient survived for this to be demonstrable. A potentially close parallel from a site near Tewkesbury, which like the Lankhills example has a handle on one end, is in Severn Valley ware (Hart and McSloy 2008, 39-40, no. 40), while a further example, perhaps also in Severn Valley ware, comes from Wroxeter (Atkinson 1942, 295, 297, vessel D7 in 'brown ware'). The fragmentary nature of the Lankhills vessel makes its status uncertain, but it should be noted that two complete costrels, in glazed fabrics, are recorded as grave goods from the late Roman cemetery at Krefeld-Gellep (Pirling 1986, 92, 105), raising the possibility that this unusual piece might originally have been a deliberate inclusion in the grave.

9. Pit 847 fill 856, with sherds in fill 833 of Grave 790 (which directly cut pit 847) and fill 838 of Grave 1010. Fabric ZM, New Forest reduced coarse ware. Handled beaker of Fulford (ibid.) grey ware type 26, perhaps dated after *c* AD 350. The scars show that there were two handles, mounted high on the shoulder.

10. Pit 1671 fill 1673. Fabric TF, New Forest colour-coated ware with orange slip. Bowl, perhaps a hybrid of Fulford (1975a) fine ware types 67 and 68. ?*c* AD 300-370.

ROMAN COINS *by Paul Booth*

Seventy-two Roman coins were recovered, of which 52 derived from the fills of inhumation graves and one from a cremation burial. The remainder were from topsoil or poorly stratified superficial deposits. The coins are in very variable condition, which has affected the reliability of identification in some cases and also restricted consistent assessment of the degree of wear, although this has been attempted, generally using the categories defined by Brickstock (2004, 7). The coins range in date from the reign of Hadrian to the end of the 4th century, with all but three coins (one unstratified) dating from the mid-late 3rd century onwards. Notable pieces are a denarius of Hadrian and a nummus of Maximian, dated AD 303-5 and in very good condition, from pit 1261.

The 52 coins from inhumation burials came from 28 graves. In three instances (Graves 22, 1000 and 1491) a single coin derived from the backfill of the grave, thus providing a general *terminus post quem* for the infill, while a further coin may have been in the upper fill of Grave 1490 or in a layer immediately overlying it. Twenty-four graves therefore contained coins which are certain or very likely to have been deposited deliberately at the time of burial (and it is possible that the coins from grave backfills were also deliberately deposited; see Philpott (1991), 212). Graves 263, 635, 660, 790, 870, 1020, 1080, 1150, 1175, 1240, 1362, 1547, 1705, 1760 and 3029 each contained a single coin, while Graves 710 (3), 1010 (2), 1370 (3), 1373 (7), 1403 (3), 1440 (5), 1638 (4), 1755 (3) and 1805 (3) produced multiple coins.

The coin-dated graves have been tabulated in terms of the issue period of the latest coin within each, rather than in relation to any systematic attempt to estimate the likely date of deposition, as done by Reece (1979) for the coins from the earlier excavation. It is important, however, to consider the coin from Grave 3029 in this way, because this was anomalous in the context of the rest of the group. The coin is a denarius of Hadrian. It was worn, but not heavily so, and the presence of mineral-replaced textile adhering to the coin suggests that it was wrapped in fabric or laid on the clothing(?) of the deceased, with the implication that it was deliberately deposited rather than accidentally incorporated within the grave. Technically, the coin thus provides an early 2nd-century *terminus post quem* for the grave, but such a date is not supported by other evidence (see further below) and it is more likely that the coin was old (though not, presumably, regularly circulated) and had been carefully curated up to the time of deposition.

With this exception the figures from the OA site in Table 4.10 support Reece's assertion that 'graves with coins in them date from after *c* 320' (ibid., 202) but not, apparently, the view that 'it was not until *c*. 350 that such burials became common' (ibid.). In crude terms, ten of the coin-dated graves from the present excavations can be assigned to the second quarter of the 4th century and 12 to the third and fourth quarters of the century, with one uncertain. On this basis there is no evidence for a significant change of practice around the middle of the 4th century with regard to coin deposition within the part of the cemetery considered here. Moreover, while the condition of many of the coins makes precise assessment of their degree of wear uncertain, there is no indication that the issues of the 330s and 340s were more worn than the coins appearing in later graves, and therefore no suggestion that they should be regarded as residual or as having been in circulation for an extended period before deposition. Indeed the earliest 4th-century pieces from coin-dated graves, Providentiae Caess issues of AD 324-5 and AD 326, were both in good condition, the latter barely, if at all, worn.

A comparable breakdown of the coins from Clarke's excavation does indeed suggest a slightly different emphasis in terms of the chronology of

Table 4.10: Numbers of graves with deliberately deposited coins, by latest issue period

Latest issue date	*OA Grave groups (with total coins in each)*	*OA graves*	*Av. no. coins per OA grave*	*Clarke's graves*	*Av. no. coins per grave*
pre 324	3029(1)	1	1	5	1
324-330	263(1); 635(1)	2	1	1	1
330-341	660(1); 870(1), 1362(1); 1370(3); 1403(3); 1547(1); 1705(1*); 1755(3)	8	1.8	5	1.2
341-350				1	1
350-364	1010(2); 1150(1); 1240(1)	3	1.3	6	3.7
364-378	710(3); 1020(1); 1638(4); 1805(3)	4	2.8	13	1.6
378-388	790(1);	1	1		
388-402	1175(1); 1373(7); 1440(5); 1760(1)	4	4	8	3
4C	1080(1)	1	1	4	1.3
TOTAL		24		43	
Total coins		48		83	

Note: numbers exclude non-grave features and graves only dated by coins ?incidentally included in backfill. Such coins are also excluded from totals for graves with deliberately deposited coins.
*imitation coin assigned to period of regular issue

deposition (the figures in the present table are based on the data in Reece's coin list (Reece 1979, 203-5) and not on the more restricted interpretation of 'graves with coins' given by Clarke (1979, 164-5, 357-9) and followed by Philpott (eg 1991, 213); the issue of associated objects is not significant here. Allowing for the fact that the overall totals involved, particularly from the present excavation, are only small, the earlier excavation has a higher proportion of coin-dated graves assignable to the second half of the 4th century. Only one grave predating *c* 350 contained more than one coin, whereas the present excavation produced three grave groups that contradict the earlier evidence that graves with three or more coins date after *c* 360 (Clarke 1979, 359). In contrast, the augmented mid 4th-century activity noted by Reece is attested by the deposition of significantly more coins in graves of this period than is the case in the present excavation. This trend is not observed in the Valentinianic period, however. In both parts of the site the latest grave groups tended to contain multiple coins, sometimes with a relatively wide chronological spread (Reece 1979, 202). This is seen in extreme form in the present excavation in Grave 1373, which contained seven coins, four of the House of Theodosius, two of the mid 4th century and a sestertius, probably of Antoninus Pius, very worn but nevertheless contrasting markedly in size and weight with the other pieces.

The four coins perhaps incidentally incorporated in grave fills were broadly comparable to the deliberately deposited ones, the earliest coin, of Gallienus, being heavily worn, supporting the idea that at least some of these coins were residual, accidental incorporations in grave fills. In addition to the coins from inhumation graves, a single coin of Valens came from cremation burial 1195. This appears to have been placed on the pyre, with the result that the details of the reverse are lost. The coins from non-grave contexts, mostly topsoil, covered the same chronological range as those from burials, but with a much stronger emphasis on the earlier part of the range; six of the eight 'radiates' from the site coming from these deposits (all but one from topsoil). Among other things this contrast suggests that the topsoil material does not reflect closely the burial assemblage and therefore probably only derived in part from features such as disturbed graves. The 3rd-century component in the assemblage may indicate pre-cemetery activity at the margins of Winchester. Finally, it can be noted that the identifiable mints represented were the main sources recognised for late Roman Britain, headed by Trier (with 10 examples) followed by Arles (6 or 7), 3 coins from Lyons and 1 each from London and Rome.

The coins were placed in a variety of locations within graves. In four cases (SF2688 in Grave 1020, SF3350 in Grave 1080, SF2967 in Grave 1175 and SF3536 in Grave 1362) it is certain or almost certain that the coin was placed in the mouth of the deceased. Other possible examples of this practice were recorded (for example SF1558 in Grave 635 and SF1720 in Grave 660) but have been treated with caution, particularly in view of the presence of some evidence for movement of the skull consequent upon decay of the body in the coffin. For example, the three coins in Grave 1805 lay adjacent to the front of the skull, which was on its side, and the excavator of the grave speculated that they had originally been placed in the mouth. This is far from certain, however. For one thing, examples of the practice usually consist of single coins, as is seen in all the four 'certain' and two 'possible' cases above (these coins, incidentally, suggest the continuation of the practice throughout the 4th century). In addition, in the case of Grave 1805 one of the coins,

Table 4.11: Coins in deposit type and number order

Group	Context	SF no.	Date	Denomination	Obverse	Reverse	Mint	Wear	Reference/comment
Grave goods in inhumation graves									
263	265	886	324-325	AE3 18 mm	CONSTANTINUSIUNNOBC	PROVIDENTIAE CAESS	London	SW/SW	RIC VII London, 296
635	577	1558	326	AE2 18-19 mm	CONSTANTINUSIUNNOBC	PROVIDEN TIAE CAESS	Trier	UW/UW	RIC VII Trier, 479
660	656	1720	330-341	AE3 16-18 mm	head r	?Gloria Exercitus (2 standing figures)	-	C/C	heavily eroded and damaged at edges
710	779	1961	367-375	AE3 17 mm	DNGRA]TIAN USAUGGAUG	SECURITAS REIPUBLICAE	Lyons	SW/SW	eroded, fused to SF 1962
710	779	1962	367-375	AE3 17 mm	DNG]RATIANUSAUGGAUG	GLORIA NO VI]SAECULI	Arles	W/W	eroded, fused to SF 1961
710	779	1963	364-378	AE3 18-16 mm	?DNVALEN [SPFAUG	GLORIA RO]MANO[RUM, emperor and captive (8)	II in r field	SW/SW	eroded
790	833	SS664	383-388	AE3 17 mm	] USPFAUG, head r	VOT X MULT XX in wreath		W/W	surfaces eroded
870	738	2018	335-341	AE3 15 mm	head r	GLORIA EXERCITUS, 1 standard	Trier	?SW/SW	eroded, particularly obverse
1010	838	2539	260-295	antoninianus 18 mm	radiate head	?		SW/SW	barbarous, overstruck?
1010	838	2538	352-354?	AE2 18-21 mm	DNCON[STANTIUSPFAUG	FE]LTEMPRE PARATIO, falling horseman (4)	-	SW/SW	date depends on ID of reverse type as FH4, ascribed to Rome in this period. Mostly well struck, but flan is irregular in shape and exergue area largely lost
1020	968	2688	364-378	AE2 18-19 mm	DNVA]LEN SPFAUG	SE]CURI[TAS] REIPUB[LICAE	-	SW/SW	eroded
1080	1233	3350	4C	AE3 17 mm	head r			eroded	
1150	1013	2892	350-364	AE3 14 mm	]IUS[ ]AUG	Fel Temp Rep, falling horseman	-	SW/SW	irregular - rev very crude
1175	1117	2967	388-395	AE4 12-13 mm	DN THEOD[OSIUS PFAUG	Victory	-	W/SW	wear uncertain, rev very poorly struck, eroded
1240	1172	3150	353-360	AE3 18 mm	DNCONSTAN TIUSPFAUG	FEL TEMP REPARATIO, falling horseman	Lyons	SW/SW	LRBC2, 253 or 256
1362	1366	3536	333-334	AE3 17 mm	CONSTANTI NUSMAXAUG	GLORIA EXERCITUS 2 standards	Arles	SW/SW	RIC VI1, Arles 370 or 375, eroded
1370	1066	2869	330-335	AE3 18 mm	URBS ROMA	Wolf and twins	Trier	SW/SW	RIC VII, Trier 529
1370	1066	2868	330-335	AE3 18 mm	CONSTAN TINOPOLIS	Victory on prow (obscured)	Trier	SW/SW	RIC VII, Trier 530, mineralised wood on reverse
1370	1066	2867	337-341	AE3 14 mm	FLMAXTHEO DORAEAUG	PIETAS ROMANA	Trier		?as LRBC1, 120
1373	1369	3505	138-161	sestertius	Antoninus Pius	Figure standing l		EW/EW	Antoninus almost certain
1373	1369	3501	348-350?	AE3 16-17 mm	head r, probably Constantius II	FEL TEMP RE]PARATIO, falling horseman	-	W/W	damaged
1373	1369	3502	355-360	AE3 15 mm	head r	?Spes Reipublice	-	VW/VW	Rev ID reasonably certain
1373	1369	3503	388-402	AE4 12-13 mm	DNARC[ADIUS PFAUG	VICTORI]A AUGGG	-	SW/SW	
1373	1369	3504	388-402	AE4 c 13 mm	head r	SALU]SREI [PUBLICAE		W/W	damaged and part encrusted
1373	1369	3506	388-402	AE4 12 mm	head r	Salus Reipublicae	-	?SW/W	wear uncertain, very poor, cracked flan, eroded

Table 4.11 (continued): Coins in deposit type and number order

Sgroup	*Context*	*SF no.*	*Date*	*Denomination*	*Obverse*	*Reverse*	*Mint*	*Wear*	*Reference/comment*
1373	1369	3507	388-402?	AE3? 12-14 mm	head r	?		?/?	damaged. General character and poor, cracked flan suggest date
1403	1406	3623	330-335	AE4 13 mm	Urbs Roma	Wolf and twins	-	W/W	mostly eroded
1403	1406	3624	330-335	AE3 18 mm	FLIULCONSTAN]TIUSNOBC	GLORIA EXERCITUS, 2 standards	Arles	SW/SW	?almost new when deposited, now eroded
1403	1406	3625	330-335	AE3 18 mm	FLIULCONSTANTIUSNOBC	Gloria Exercitus, 2 standards	?	SW/?SW	encrusted, particularly on reverse
1440	1439	3629a	364-378	AE3 17 mm	DNVALEN SPFAUG	SECURITAS REIPUBLICAE	Arles	W/W	LRBC2, 542, fused to SF3629b
1440	1439	3629b	364-375	AE3 17 mm	DNVALENTINI [ANUSPFAUG	GLORIA ROMA]NORUM	-	VW/VW	fused to SF3629a
1440	1439	3628	388-395	AE3 13-14 mm	DNTHEODO] SIUSPFAUG	VICTORIA AUGGG	-	W/W	
1440	1439	3627	388-402	AE4 12 mm	head r	VI[CTORIA AUGGG	?	W/VW	wear uncertain, dies positioned well off-centre
1440	1439	3626	388-402?	AE3 14 mm	head r	?	?	VW/VW	wear uncertain, very poorly struck
1547	1542	3822	330-331	AE3 16 mm	CONSTANTI[NUS IU]NNOBC	GLORIA EXERCITUS 2 standards	Trier	W/W	RIC VII Trier, 527
1638	1642	4016	348-350	AE3 16 mm	DNCONST ANSPFAUG	FEL TEMP REP]ARAT[IO	-	SW/W	?regular, mm eroded
1638	1642	4017	364-367	AE3 17-18 mm	DN]VALEN SPFAUG	GLORIA ROMANORUM emperor and captive	Arles	SW/SW	LRBC2, 480
1638	1642	4020	364-375	AE3 16 mm	DNVALENTINI ANUSPFAUG	SECURITAS] REIPUBLICAE	Arles?	SW/SW	
1638	1642	4015	4C	AE3 15-16 mm	head r			W/W	encrusted
1705	1703	4059	330-348	AE3 13-14 mm	head r	Gloria Exercitus? 2 standards	-	VW/?VW	irregular
1755	1758	4217a	330-335	AE3 13-14 mm	Urbs Roma	Wolf and twins	-	W/SW	irregular?, fused to SF4217b
1755	1758	4217b	335-337	AE3 14-15 mm	CONSTANTI] NUSMAXA[UG	Gloria Exercitus, 1 standard	-	SW/SW	?irregular, legends partly off flan, fused to SF4217a}
1755	1758	4216	337-341	AE3 14-15 mm	Veiled head r	Quadriga	?	W/W	no surviving legends
1760	1759	4118	388-392?	AE3 13-14 mm	? DN VALENT]INI ANUS[PFAUG	VICTOR]IAAUGGG	?	W/W	unevenly struck on very poor flan, obverse legend not certain
1805	1644	4053	367-375	AE3 17-18 mm	DNVAL]ENTINI ANUSPFAUG	SECURITAS REIPUBLICAE	Rome	SW/SW	LRBC2, 724, minerally preserved fabric on reverse
1805	1644	4052	364-378	AE3 17 mm	?DNVALEN] SPFAUG	SECURITAS [REIPUBLICAE	Arles?	W/W	
1805	1644	4082	364-378	AE3 17 mm emperor and captive	DNGRATIAN] USAUGGAUG	GLORIA RO] MANORUM,]?GSdot	O F II S over	W/W	mm not exactly matched in LRBC2 for Lyons
3029	3017	3046	119-138	denarius	]ADRIAN COS[	P M TR P [COS III], emp stg r holding rudder and spear	(Rome)	W/W	BMC 3, no. 237, minerally preserved textile
In backfill of inhumation graves									
22	26	159	322	AE2 19 mm	CONSTANT INUSAUG	BEATA TRANQUILLITAS	Trier	SW/SW	as RIC VII Trier, 343

Table 4.11 (continued): Coins in deposit type and number order

Sgroup	*Context*	*SF no.*	*Date*	*Denomination*	*Obverse*	*Reverse*	*Mint*	*Wear*	*Reference/comment*
						altar VO/TIS/XX			
1000	944	2512	350-364	AE4 8 mm	head r	Fel Temp Reparatio, falling horseman		W/W	irregular minim
1490?	1454	3633	367-375	AE3 17 mm	DNGRAT]IAN USAUGGA[UG	SECURITAS REIPUBLICAE	Lyons	SW/SW	LRBC2, 333 or 337
1491	1851	4205	260-268	antoninianus 20 mm	radiate head r, Gallienus	IO]VI CONS AUG, goat	-	VW/VW	residual
Pyre good in cremation burial									
1195	1121	3013	364-378	AE3 17-16 mm	DNVALEN] SPFAUG	?	-	SW/?	burnt, reverse lost as a result
In non-grave features									
	426	1888	?	AE3 18 mm					damaged
	1189	3028	260-295	antoninianus 15x17 mm	radiate head	'figure'		W/W	barbarous
1261	1266	3379	303-305	nummus 25-26 mm	IMPMAXIMIANVSAVG	GENIO POPV LI ROMANI	Trier	UW/UW	RIC VI Trier, 587b
In topsoil/unstratified contexts									
	1	456	161-180??	?sest 28 mm	??Marcus Aurelius	figure seated l holding cornucopia	VW/EW	no surviving legends	
	1	1	268-270	antoninianus 18 mm	IMPCCLAUDIUSAUG	SALU]S AUG Salus 1		SW/W	RIC Vi, 98
	1	16	260-295	antoninianus 16 mm	radiate head r	?		VW/EW	
	1	19	260-295	antoninianus 19-20 mm	]…AUG radiate head r	figure		VW/VW	perforated behind head
	1	28	260-295	antoninianus 18-20 mm	radiate head r	?Mars r		VW/VW	encrusted
	1	388	260-295	antoninianus 16-17 mm	radiate head r	figure		VW/VW	
	1	186	332-333	AE3 17 mm	URBS ROMA	Wolf and twins	Trier	SW/SW	RIC VII Trier, 547
	1	21	330-335	AE3 16-17 mm	head r	Gloria Exercitus, 2 standards	-	EW/EW	
	1	167	348-364	AE3 14 mm	head r	Fel Temp Reparatio falling horseman	Trier??	W/W	?irregular
	1	166	364-378	AE3 15 mm	DN VA[	GLORIA ROMANORUM emperor and captive		mm missing	W/W
	1	20	364-378	AE3 16 mm	head r	Victory ?Securitas Reipublicae	-	W/W	eroded, no surviving legends
	1	17	388-402	AE4 12 mm	DNARCADIUSAUG	VICTORIA AUGGG	mm lost	W/W	
	1	15	388-402	AE4 12 mm	head r	Victoria Auggg	-	?SW/SW	
	4	44	341-348	AE3	CONS[ ]SPFAUG not necessarily Constans	VICTORIAEDDAUGGQNN		W/W	damaged
	4	40	350-364?	AE4 9-11 mm	head r	??Fel Temp Reparatio, falling horseman	-	VW/VW	irregular minim
	4	41	350-364?	AE4 7.5 mm	head r	?	-	W/W	irregular minim, cut down from larger coin

SF4053, had minerally replaced fabric on one side. Here, as in the other cases in the cemetery, multiple coins were usually found close together if not immediately adjacent to one another. In two instances (Graves 1440 and 1755) pairs of coins were fused together (SF3269a and b and SF4217a and b respectively), with a further 3 coins in Grave 1440 and one other in Grave 1755. This suggests that in some cases, at least, coins were placed in the grave in small bags or purses or wrapped in pieces of cloth, a suggestion supported by the evidence of the minerally replaced fabric in Grave 1805 already mentioned and also attached to the denarius in Grave 3029. Comparable evidence remains relatively scarce (see eg Philpott 1991, 212), but at Roden Downs, Berkshire, for example, it was suggested that coins from four graves were contained in leather bags or purses (Hood and Walton 1948, 21). Apart from being placed in the mouth, generalised locations of coin deposition were the head area and the vicinity of the waist, but these were not rigidly defined. In terms of other associations, exactly one third of the 24 graves with deposited coins also contained other grave furniture. These aspects are discussed in more detail elsewhere.

MEDIEVAL COINS AND POST-MEDIEVAL TOKENS *by Martin Allen*

The three coins from the site can be dated between 1266 and *c* 1314. The billon (base silver) *denier tournois* of King Louis IX of France, issued in 1266-70, is an example of a denomination imported into England in significant quantities in the late 13th century and first half of the 14th century (Cook 1999, 244-5, 254-5, 273). The English silver penny of Edward I, produced in 1300, shows some signs of wear but its edges do not seem to have been clipped, which was common after reductions of the weights of English silver coins in 1344-51, and it is unlikely to have been deposited later than the end of the 14th century. The silver farthing of Edward II (issued *c* 1310-*c* 1314) is probably also a 14th-century loss.

The two 17th-century tokens were both issued by Nicholas Purdue of Winchester, providing some evidence of the local circulation of such tokens. They were probably deposited no later than the 1670s, as the circulation of tokens was suppressed by proclamation in 1672-4 (Peck 1964, 105-6).

OBJECTS OF GLASS, SHALE, BONE AND METAL (EXCEPT NAILS) *by H E M Cool*

Introduction

Lankhills has long attracted attention because it is one of the most richly furnished 4th-century cemeteries in Britain. Compared to the practices in many other provinces, Romano-British society tended to be frugal when it came to making provision for the dead, at least in as far as grave goods that leave archaeological traces were concerned. In part Lankhills stands alone because it was dug under modern conditions and published in an exemplary manner (Clarke 1979). The 4th-century cemeteries of some cities such as York (RCHME 1962) obviously had many graves that were richly furnished but they are known primarily from antiquarian finds and normally there is only a patchy record of what was found. Even allowing for this, however, it is likely that Lankhills would have stood apart due to the nature of some of the furnishings. The number of individuals buried with crossbow brooches and belt equipment, for example, is unrivalled within Britain. The new excavations have increased the number of furnished graves by a considerable amount, and provide the opportunity to re-assess the sometimes controversial conclusions that Clarke drew from the ones he had excavated. The aim of this section is to consider the finds from the Oxford Archaeology excavations and integrate them with the finds from the earlier excavations in the cemetery. By doing so it is hoped to illuminate the lives of the community or communities who were burying their dead there. All the finds, other than coins, pottery vessels and hobnails, which were deliberately burnt on the pyre or placed as grave goods, are considered here. The catalogue entries for the material will be found in Chapter 3.

It has become very clear that in many Roman communities the choice of items to accompany the deceased was often closely governed by their age

Table 4.12: Medieval coins and post-medieval tokens

No.	*Description*	*Date*	*Weight*	*Condition*
448	France, Louis IX (1226-70), billon denier tournois. Lafaurie 1951 no. 201	1266-70	0.87 g	moderate wear
461	Edward I (1272-1307), silver penny, class 9b1, London mint	1300	1.34 g	moderate wear; bent
81	Edward II (1327-77) silver farthing, Withers 2005 type 31 (Fox class 13), London mint	*c* 1310-*c* 1314	0.31 g	moderate wear
59	Copper-alloy farthing token, Winchester, Nicholas Purdue, Williamson 1889-91, Hampshire 226	1649-72	0.96 g	light wear
162	Copper-alloy farthing token, Winchester, Nicholas Purdue, Williamson 1889-91, Hampshire 226	1649-72	0.94 g	light wear; corroded

and sex. In part this related to what the different sexes wore in life. Also important was the life stage that people had reached when they died because it was clearly felt that grave goods were more appropriate for some categories of people than others. A good example here is the quantities of jewellery deposited with (presumably) girls on the cusp of adolescence (see for example Gowland 2001) which can be seen as an aspect of the response to the premature death resulting in an unfulfilled life, as discussed by Martin-Kilcher (2000). Other sites have shown that items such as vessels which do not have any obviously gendered interpretation in modern eyes, were seen by the communities burying their dead in particular cemeteries as appropriate for a particular sex or age (eg Cool 2004).

In the light of this, all the discussions that follow are integrated with the information about the deceased provided by the osteology report. At the outset it is useful to summarise the pattern of deposition at Lankhills. Table 4.13 presents the data for inhumation burials with a single occupant where the grave has not been disturbed in any major way, either by subsequent burials, by truncation or by modern disturbance, any of which might have removed some of the items originally deposited with the body. The table includes graves which have been re-opened for a subsequent interment but excludes burials where two (or more) individuals were buried at the same time. The age categories are those used in this report. The data for the Clarke's burials are those of Gowland (2001) and not those presented by Clarke (1979). The age categories for the two different sets of excavations are broadly rather than precisely comparable in the mature to older adult categories and Gowland did not assign any bodies to the much older adult category (60+) used here. For the age categories up to and including the prime adult category, however, the two sets of data are directly comparable. (The individual in Clarke's grave 333 was aged by Gowland as being up to one year. This is a lavishly furnished grave and features in several of the tables that follow. It has been included as an infant (1-3) as the size of the body seen on the plan (Clarke 1979, fig. 62) is at some odds with the age suggested by Gowland).

The first eight columns of Table 4.13 show the numbers of graves without goods and those which

Table 4.13: Single undisturbed inhumation graves with and without grave goods in Clarke's and OA excavations, by age and sex

Age/Sex	*No grave goods*		*Coins only*		*Hobnails only*		*Vessel only*		*Other goods & combinations*		*Total*
	Clarke	*OA*	*Clarke*	*OA*	*Clarke*	*OA*	*Clarke*	*0A*	*Clarke*	*OA*	
Neonate	29	3	2	1	-	1	-	-	-	-	36
Infant	10	10	2	-	1	3	1	3	7	1	38
Young child	10	3	1	-	2	1	3	1	7	2	30
Older child	1	2	1	-	3	4	-	-	2	4	17
Child	16	2	-	-	1	1	1	1	9	2	33
Female adolescent	-	-	-	-	-	-	-	-	1	4	5
Male adolescent	1	-	-	-	1	-	-	-	1	-	3
Adolescent	-	2	-	-	-	1	-	-	4	-	7
Female young adult	11	1	1	-	7	1	3	1	9	1	35
Male young adult	6	2	-	-	5	2	2	1	4	2	24
Young adult	2	1	-	-	1	-	1	-	-	1	6
Female prime adult	13	6	-	1	3	5	-	-	7	2	37
Male prime adult	10	4	1	-	6	3	3	1	2	4	34
Prime adult	2	-	-	-	2	-	1	-	4	-	9
Female mature adult	4	3	1	2	4	6	1	-	5	1	27
Male mature adult	11	7	2	-	1	6	2	1	6	5	41
Mature adult	2	1	-	-	1	-	-	-	2	-	6
Female older adult	3	7	2	-	1	3	1	-	2	2	21
Male older adult	4	11	-	1	6	9	1	-	3	4	39
Older adult	1	1	-	-	-	-	-	-	1	1	4
Female much older adult	-	3	-	1	-	1	-	-	-	1	6
Male much older adult	-	-	-	-	-	5	-	-	-	1	6
Female adult	7	4	-	1	5	6	1	-	5	10	39
Male adult	6	4	-	-	3	5	2	1	6	1	28
Adult	17	2	2	1	26	2	3	1	15	8	77
Unknown	-	1	-	-	-	2	-	-	-	2	5
Total	166	80	15	8	79	67	26	11	102	59	613

just have coins or hobnails or vessels (of all materials). The final pair of columns shows the more lavishly furnished graves which have combinations of those categories and/or other sorts of finds of the types discussed here. As can be seen, most of the age categories are well represented with only the older children, adolescents and much older adult category being represented by smaller numbers. It has been possible to sex large numbers of individuals, summarised in Table 4.14 for ease of reference. This table again deals only with the graves with a single individual but also includes those disturbed graves where the skeleton could be sexed.

More lavish furnishing of graves only ever occur in a minority of cases, amounting to approximately one quarter of the corpus. Even here, at a cemetery where grave goods were provided in abundance in comparison to other 4th-century cemeteries such as Poundbury near Dorchester (Farwell and Molleson 1993) and Butt Road at Colchester (Crummy *et al.* 1993), well over a third of the individuals were buried without any goods at all.

Against this background, it is possible to explore in some detail quite why certain individuals were accompanied in their graves by particular types of objects. As part of this exploration formal significance tests will be used from time to time. The methodology used is discussed in Cool and Baxter 2005 and tests have been conducted in the R package (http://www.r-project.org/). Given that only a subset of the individuals in the cemetery have what has been termed here lavishly furnished graves, the tests look at the incidence in these, ie taking the total numbers in each age sex category from the final two columns of Table 4.13. Thus if it was desired to compare the incidence of a particular item in young female graves (adolescent and young adult) against those in the graves of the older females, the total of graves in each category would be 15 (5 + 10) and 20 (9+6+4+1).

Some of the graves contain legible coins as either grave good or inclusions in the fills. For ease of reference the incidence of the small finds in the graves with coins is summarised in Table 4.15. From this it can be seen that it is the coins of the middle third of the 4th century that are the most numerous. This probably reflects more the circulation patterns of coinage within the province than providing an accurate summary of the dating of the graves in which the coinage was found. Certainly the middle third of the 4th century, Periods 17 and 18 in the Reece system, is one that sees a major increase in the number of coins in circulation (Reece 1995, fig. 1). As will become apparent in what follows, dating for the objects derived from site assemblages of finds often suggests a generally later currency than the coins in the various graves would suggest. It is possible that the choice of a coin to be placed in a grave might have been governed by other factors than a casual selection from the small change available in the purses of the bereaved. The coins should be recognised as providing very much a *terminus post quem* indicator, and the actual date of the grave could be some decades after the date of minting. This is well-demonstrated in the case of Grave 710 because of its stratigraphic relationship with Grave 810 that contained a comb.

The detailed discussion of the finds follows the pattern and order set out in the Clarke (1979)

Table 4.14: Numbers of sexed individuals in inhumations with a single body

Sex	*Clarke undisturbed*	*OA undisturbed*	*Clarke disturbed*	*OA disturbed*	*Total*
Female	97	73	1	10	181
Male	96	80	-	15	191
Total	193	153	1	25	372

Table 4.15: Incidence of different small find categories in inhumations with coins

	Coins minted first third 4th century	*Coins minted second third 4th century*	*House of Valentinian 364-378*	*House of Theodosius 388-402*	*Number of occurrences in graves without coins*
Comb	-	-	3	1	14
Shale spindle	-	3	1	-	11
Knife	-	2	1	3	8
Crossbow brooch	-	2	1	-	10
Belts	1	3	1	3	12
Bead strings	-	3	-	-	25
Bracelets					
Copper alloy	-	5	-	-	32
Iron	-	1	-	-	8
Jet/shale	-	1	-	-	10
Bone/ivory	-	3	1	1	23
Hair pins	-	3	-	-	6
Finger rings	-	1	-	-	14

monograph to allow for ease of comparison. This is followed by an overview where the evidence is integrated. For ease of reference the earlier excavations will be referred to as Clarke's excavations, and those conducted by Oxford Archaeology as the OA excavations. The convention has been adopted of referring to items from the OA excavations by grave number and individual number in bold thus: **1846.1**, and from Clarke's excavations by grave number and find number in italics thus: *322/447*. In the tables that show the distribution of particular types according to the age and sex of the individual, female graves will be shown in red and males graves in blue. The sex categories include both those securely identified in the osteology reports (male, female) and those less securely assigned (?male, ?female).

Glass vessels

In the OA excavations glass vessels were deposited in three graves, each of which contained coins indicating that interment took place in the final decade of the 4th century at the earliest. All three vessels are forms that were not represented among the glass recovered from the earlier excavations.

Grave 1373 had a small conical beaker with a fire-rounded rim (**1373.1**). This latter feature distinguishes it from the conical beakers found in the earlier excavations which all had cracked-off rims (Harden 1979, 213-4 Class II). The form with the fire-rounded rim came into use later than that with a cracked-off rim, and traditionally has been viewed as a 5th-century form though it was in use in the second half of the 4th century (Price and Cottam 1998, 121-31). In late 4th- to 5th-century assemblages the form with the cracked-off rim still tended to be numerically dominant (Cool 1995, 13). From the site finds at Winchester it is not possible to separate out late 4th- to 5th-century assemblages from the earlier 4th-century ones, but it is clear that taking the 4th to 5th century as a whole, cups and beakers with cracked-off rims were much more numerous than those with fire-rounded ones. Among the 4th-century glass from the suburb and defences sites only the forms with cracked-off rims were found (Cool 2008, 93). In the large 4th-century assemblage from The Brooks (unpublished) the cracked-off form is approximately three times as common as the fire-rounded form (3.8 EVE to 1.2 EVE).

It seems reasonable to conclude that a beaker like the one in Grave 1373 would not have been particularly common in Winchester in the last decade of the 4th century, and a 5th-century date of deposition might be preferred. As will be discussed below, in some of the graves the choices of the type of glass vessel to be deposited definitely erred towards the unusual and uncommon, but this does not seem likely to have influenced the choice here. As far as the drinking vessels go, the choice seems to have depended on what was commonly available in the community. If that is applied here, then the burial is likely to have taken place in the 5th century rather than the late 4th.

The second drinking vessel came from Grave 1440 (**1440.1**). Although superficially similar to the hemispherical cups with cracked-off rims found deliberately deposited in two of Clarke's graves (Harden 1979, 211 Class I), this vessel is considerably larger and is slightly more conical in shape. In Britain, this form was first defined as a separate type by Price and Cottam in their study of the glass from Beadlam (1996, 99) and subsequently in their handbook to Romano-British glass (1998, 126-8). They date the form to the second half of the 4th century, but unfortunately few of the examples have come from well-dated contexts. At Beadlam, where the form was very well-represented, it is not possible to relate the glass to the contexts from which it came, but the occupation on the site clearly runs into the 5th century. The coin list runs up to Theodosian issues which form just under one-quarter of all the identifiable coins (Barclay 1996, table 1). The finds assemblage includes such items as bone combs and a spur which, as will be discussed below, may be dated to the very late 4th century and into the 5th century (Neal 1996, 49 no. 20 and 50 no. 26). The presence of Fowler Type E and F penannular brooches also points to occupation in the 5th century (Neal 1996, 49 nos 12 and 13).

The fact that the form is so well-represented at Beadlam where 5th-century occupation seems to be well attested, but is rare in 4th-century assemblages generally, perhaps indicates that its *floruit* is slightly later than that originally suggested and that a later 4th to 5th century one should be preferred. Such a date would fit happily with the evidence of Grave 1440 and would also fit the pair forming part of a group of glass vessels found within a bronze bowl at Burgh Castle (Harden 1983, 123 nos 83-4).

Cups such as this do occur among site finds at Winchester. Price and Cottam note several examples from unpublished material (probably from the Biddle excavations – Price and Cottam 1998, 127), and it is possible that some of the less diagnostic rim fragments from The Brooks also belonged to this type (unpublished).

Both of the forms discussed so far can be shown to be part of the range of vessels in use in the town; the same is not true of the third vessel from Grave 1760 (**1760.1**, Fig. 4.3). This is a small globular jug with a lateral spout on the body. It belongs to the class of vessels normally called *tettines* or sometimes *biberons*. The glass examples are Form 99 in the Isings (1957) typology. While never numerous it is not uncommon to find such vessels among the goods deposited in cemeteries in Gaul and the Rhineland. In the discussions of those from Strasbourg (Arveiller-Dulong and Arveiller 1985, 116-7) and from the Poitiers region (Simon-Hiernard 2000, 169-72) numerous others from France and Germany were noted and more examples could easily be added to these lists. The form appears first

in the Flavian period (Moirin 2003, 219) and thereafter appears to have been made throughout the Roman era. An example from Steinfort in Luxembourg was deposited in a grave contemporary with Lankhills Grave 1760 as the rest of the grave furniture was dated to the end of the 4th and beginning of the 5th century (Wilhelm 1979, 29-30 no. 120).

Through its long history the form shows a variety of types of rim finish, base type, length of the neck, precise type of spout, colour etc, but these do not regularly combine in such a way as to suggest a standardised chronological progression. It seems most likely that a need was felt for a vessel with a lateral spout and that it was occasionally made by a wide range of glass-houses over a number of centuries. Quite what that function was has been a matter of some debate. For similar vessels in pottery it is often suggested that they were used to feed infants or invalids, or sometimes to fill oil lamps (for discussion see Webster 1981).

Given that the spouts of glass examples are often rough, the interpretation as an infant's feeding vessel seems unlikely. The glass examples are often stated to have been found in childrens' graves but many of the discoveries are antiquarian finds and, as has been pointed out, there is sometimes the suspicion that the mere presence of a *tettine* has been sufficient to identify the grave as that of a child, rather than relying on the osteological evidence (Arveiller-Dulong and Arveiller 1985, 117). In this case, however, the vessel did accompany a child, probably with a minimum age of about five. In determining the function of this vessel type there is also the problem that the position and orientation of the lateral spout is sometimes not very practical for dispensing the contents. In the present example, the spout is centrally placed on the body and is horizontal, so the contents would have started to flow out when the vessel was only half full. In the case of one found at Steinfort the spout is on the lower body and points down, so the contents would have started to drain out even earlier. It is possible that the spouts were plugged to prevent this, though the thinness of the glass at the end of the spout would have led to damage and breakage if this was done on a regular basis. Whatever the vessels held was not required in large quantities. This example would have held approximately 150 ml of liquid.

Glass *tettines* have rarely been found before in Britain. The present writer knows of only two, both from Colchester. One is a blue/green antiquarian find without provenance in the Colchester and Essex Museum (Acc. no. 88.98 – see Cool and Price 1995, fig. 13.4 for drawing). The other is colourless and was found during building work in the mid 1990s (information from Philip Crummy 1993). The first is complete, the second lacks the upper part and handle. Their state of preservation suggests that

Fig. 4.3 Photographs of glass vessel 1760.1

both were originally deposited in graves. From the colours and from the rim details preserved on the first, they are likely to have been in use during the 2nd to 3rd centuries and would thus have been in use at least 100 years or so before the example found in Grave 1760. Where pottery *tettines* are found in Britain they too appear to belong to this earlier period. One in a deposit without a body in the eastern cemetery at London belonged to the 3rd century (Barber and Bowsher 2000, 228 B713), while the pair from graves at York were made in Ebor ware so may be dated to the 2nd to later 3rd century (Monaghan 1997, 1021 Form YI). Five examples were recovered from graves at Pepper Hill, Springhead, one from a cremation and four from inhumation burials. These were all in local fabrics and of a type dated broadly from the mid 1st-early 2nd century (Monaghan 1987, 169). In the case of all four inhumations the vessels were apparently associated with children (Biddulph 2006).

Identification of glass *tettines* in domestic assemblages is hampered by the fact that rim, base and handle forms are all shared by jugs without lateral spouts. The spout itself, however, and its junction with the body would be a diagnostic and easily recognisable fragment. The rarity of the form among Romano-British material is demonstrated by the fact that though I have dealt with numerous glass assemblages over a period of more than a quarter of a century and so have seen tens of thousands of fragments, I do not recall ever encountering a fragment I could assign to a *tettine*. The form does not appear to be one that most people in Roman-Britain had any use for. The possibility must be strong that this vessel had some particular significance either for the deceased or the bereaved and may have been a personal possession acquired outside the province. Where it might have been acquired is therefore of some interest.

As already noted the core distribution area for the form is Gaul and the Rhineland. Sennequier (1985, 194) suggested that the distribution in France was limited to the north, but they are also found in the central parts and one is certainly known from Fréjus on the Mediterranean coast. That, however, had been placed in a grave dated to the first half of the 2nd century (Béraud and Gébarra 1990, 162; Foy and Nenna 2001, 191 no. 334), and it certainly appears that during the 4th century the distribution was concentrated further north. Laterally-spouted vessels both with and without handles are noted much less commonly as coming from Italy, and when they have useful contextual information they can be seen to be of 1st- to 2nd-century date (eg Maccabruni 1983, 59). Negative evidence is always fraught with problems of interpretation, but given the links with the Danubian area that have been drawn for some of the burials, it is worth noting that Barkózci's (1988) survey of Roman glass from Pannonia did not include the form, although many other 4th-century forms were present. In summary therefore, this vessel is most likely to have come from northern Gaul or the northern Rhineland. The isotopic evidence for the child, possibly a boy given the other grave goods, indicates that he was local, but one might wonder whether his family had links across the Channel.

In addition to the vessels discussed, three body fragments have also been designated a grave good accompanying a mature adult (**700.1**). The glass shows no sign of granulation that might explain why the rest of the vessel is not present and it might perhaps be suspected that these were inclusions in the fill, like the base fragment in Grave 87.

The depositional pattern of all the glass vessels from inhumations with one body is shown in Table 4.16. There is a distinct pattern based on age, and the vessels from the OA excavations continue the pattern seen from Clarke's excavations. The vessels can be divided into those that could have been used as drinking vessels and the forms which could not have been used in this way (the closed forms). It is also unlikely that the handled cups were used to drink from as they had tubular rims. In all but one case drinking vessels are deposited with adults, the one exception being a young child's grave richly furnished with jewellery. Closed vessels were generally placed in children's graves. Of the two exceptions, one (*35/20*) is perhaps to be explained by the fact that this is an earlier grave than most of those with glass vessels in the cemetery. An interesting feature of the table is that the handled cups were also deposited in children's graves. Perhaps it was the provision of handles that made the various vessels appropriate for young people. If the two graves with the dolphin-handled bottles are excluded from consideration because of their earlier date, a Fisher's Exact test can be carried out on the rest of data belonging to the late 4th to 5th century to see if the pattern has come about by chance. It returns a p-value of 0.005, which is very strong evidence against the hypothesis that all the different types of vessels were thought equally appropriate for children and adults.

At Lankhills, as in the 3rd-century cemetery at Brougham (Cool 2004, 371), glass drinking vessels were the preserve of adults, although unlike at that site they were thought appropriate for both sexes. It appears likely that though all the vessels were made of glass, the different categories served different functions in the grave. In the case of the closed forms it was probably what they contained that was important, whereas for the adults the vessels appear to have been functioning as parts of sets of tablewares. It is noticeable that the glass cups and beakers in Clarke's graves 63, 347, 351, 369, 396 and OA Graves 1373 and 1440 were all accompanied by pottery vessels. This happened in a smaller number of graves with closed glass vessel forms.

Glass vessels were deposited relatively rarely in 4th-century graves in Britain and the number of cemeteries where there are glass vessels and which have good osteological data is not large. The best group probably comes from the Butt Road in

Table 4.16: Glass vessels at Lankhills in inhumation graves with a single body

	Infant	*Young child*	*Child*	*Young adult*	*Prime adult*	*Mature adult*	*Adult*
Drinking		337/385			347/382	81/62	63/51
					351/391		369/530
							396/501
							1373.1
							1440.1
Handled cup		136/117	390/508				
Cup/flask							329/372
Jug	333/310						
One-handled flask		385/472		352/551			
Two-handled flask			236/270				322/450
Dolphin flask		337/411			35/20		
Tettine			**1760.1**				

Colchester. There only six of the 669 graves in the period 2 cemetery were accompanied by glass vessels, but it is clear that the pattern seen at Lankhills was not repeated there, as all but one of the burials were those of adults and most of the vessels were closed forms (Crummy *et al*. 1993, 152-4). This highlights the fact that the Lankhills glass assemblage is unusually large and that patterns of use seen in one community may not be universal. Fourth-century cemeteries have been found elsewhere in Winchester (Rees *et al*. 2008, 202-6) but at these too the deposition of glass vessels was either rare or non-existent. The only possible candidate for a 4th-century glass grave good was a beaker found in a medieval feature at Chester Road (Cool 2008, 95 no. 480), but that would have been in use earlier in the 4th century than the bulk of the Lankhills vessels. At present, therefore, they stand in splendid isolation at Winchester.

Vessel glass fragments were found associated with two cremation burials. Fragment **655.1** was certainly heat-affected and probably comes from a vessel placed on the pyre. In Grave 985 there was the base of a colourless vessel with trailed base ring and 15 body fragments from a second vessel in the typical greenish colourless bubbly glass of the 4th century. None of these show any evidence of having been heat distorted so their status is unknown, but given the rarity of glass vessel fragments on the site other than the vessels deposited as grave goods, it might be suspected they were associated with the funeral in some way.

Equipment

Under equipment Clarke itemised 12 different categories of finds. Items from one of these (locks and keys) were only found in the fill of graves and another (spoons) was obtained from rescue observation. There is no evidence therefore, that these were actually grave goods. Nail-cleaners were represented by one example *(106/127)* which was more likely to have been a strap end, so the category is redundant. In the iron needles and pin category the OA excavations produced one item that might be a much fragmented iron pin (**1355.3**), but as it cannot be further identified it warrants no further discussion. Of the remaining eight categories, the OA excavations produced no examples of weaving-tablets, gaming pieces and sets, whetstones, strike-a-lights or arrowheads. All of these had been represented in two graves at most in Clarke's excavation. The recent excavations have produced examples of combs, spindle whorls and knives, and have added three new categories: shears, a possible loom weight and a stylus.

Combs

All of the combs found during the OA excavations were in extremely poor condition due to the burial conditions and it was not generally possible to identify whether they were made of bone or antler, though the latter is more likely. All were double-sided composite combs of the type that had been the commonest one found during Clarke's excavations (Galloway 1979). Five were found deliberately deposited as grave goods (see Table 4.17) and a sixth (**136.1**) was found in the fill of a grave.

It is generally agreed that this type of comb came into use during the second half of the 4th century, and probably during the last third. Three of the graves with combs from Clarke's excavations also contained coins of 364-75 and a fourth had coins of 388-402. As can be seen from Table 4.15, combs are the only category of find that do not occur in graves with earlier coins. A grave at Butt Road, Colchester which contained one had a coin of 367-75 in the fill (Crummy *et al*. 1993, 146). Where found in domestic contexts a similar late date is indicated. One formed part of a deliberate deposit at a shrine at Great Dunmow which must have taken place in or after the sixth decade of the century (Wickenden 1988, 38 no. 17). Another, from Canterbury, came from a context post-dating AD 370 (Blockley *et al*. 1995, 1167 no. F1186). They were also present in deposits

dating to the very late 4th to 5th century and beyond at Wellington Row, York (Ottaway 1993, 116, fig. 71). There can be no doubt they are an indicator of late 4th- to 5th-century activity which has an interesting implication for the date of Grave 710. The digging of this had destroyed the western end of Grave 810 which contained one of these combs. Three coins of the period 367-75 and 364-78 had been placed in the hand of the body in Grave 710. It has to be assumed that they were old when they were deposited and do not directly date the grave as the comb in the earlier grave indicates the same date at the earliest, and presumably an interval of time would have had to have elapsed before it was disturbed.

Table 4.17 shows that these combs were generally deposited in adult female graves. Four other combs were found in graves that contained two bodies (*297/323, 402/428, 413/521, 438/584*) and each of those included adult females of young, prime and mature age. Where good osteological reports exist for the burials with combs elsewhere the association with adult females is maintained. Seven burials at Poundbury had combs with six accompanying females aged over 25 and the seventh not aged or sexed (Farwell and Molleson 1993, 108-10). Of the seven graves with combs at Butt Road, two accompanied young children, two accompanied adult females, one accompanied a male adult and the other two were with unsexed adults (Crummy *et al.* 1993, 146, table 2.58). At the Bath Gate cemetery at Cirencester one was buried with a female aged 50-60 years (McWhirr *et al.* 1982, 129 burial 175). The burials from other cemeteries in Winchester have not yet been published in full but it is known that combs accompanied burials at Victoria Road, Hyde Street and St Martin's Close Winnall (Rees *et al.* 2008, 64-66 nos 311-7). Information for the age and sex of the three burials from Victoria Road is available (Gowland 2002, 464-8). Two accompanied females of young and prime age. The third accompanied a ?male adult. This is therefore very much an adult female item, only occasionally being felt appropriate for a male.

There are some hints in Table 4.17 that combs were most favoured among older women. The incidence of combs accompanying women of young and prime adult age can be compared to those accompanying older women. When this is done using a Fisher's Exact test the result (a *p*-value of 0.04) does provide support for the belief that in this community combs were indeed seen as more appropriate for older women. This is of some interest as there are grounds for believing that combs may have been prestige items and indicated that their owners came from the wealthier echelons of society. Certainly one of the examples found in the cemetery at St Martin's Close, Winnall had been a treasured rather than utilitarian item as it was kept in an elaborately decorated box (Rees *et al*. 2008, 66 no. 315, 108-11). At Poundbury three of the people with combs had been buried in the mausolea, and one of these was additionally placed in a stone coffin (Farwell and Molleson 1993, 110), a sign of high status. Philpott (1991, 180-81) has noted other associations with lead and stone coffins and with mausolea. The pattern of deposition here could well suggest that at least some older women, past childbearing age, were figures of esteem and were not marginalised. The case is not clear-cut because of the problems over whether **530.1** was or was not associated with the individual in Grave 530. This is considered further below.

The question of why certain individuals were buried with combs can be further explored using the isotope evidence (Evans *et al.* 2006a; Chenery *et al.* below) as two of them were analysed from Clarke's excavations (63 and 333) and four (530, 1270, 1280, 1355) from the OA excavations. All of these individuals were British and all bar possibly 1270 were local; the elderly female in that grave having isotopic values more appropriate for the west or north of Britain. Clearly there is no evidence to suggest that the adoption of combs was influenced by any exotic influence.

Combs such as these have often been found placed close to or in the vicinity of the head and this has sometimes led to the supposition that they were actually worn, though this seems highly unlikely (see Cooke 2000 for two opposing views in this debate). The examples from the OA excavations would strengthen the belief that they were in the graves as personal equipment, not as worn items; **1280.1** was placed vertically beside the skull, **810.1**

Table 4.17: Double-sided composite combs at Lankhills in inhumation graves with a single body

Infant	*Child*	*Young adult*	*Prime adult*	*Mature adult*	*Older adult*	*Much older adult*	*Adult*
290/309	**1355.1**	5/9	365/473	17/19	254/225	**1270.1**	63/64
333/316				30/35	446/610		288/471
				436/583	**530.1***		369/557
							381/479
							423/593
							810.1
							1280.1

*see discussion for a consideration of the attribution of this piece

was above the left shoulder, **1270.1** was by the right humerus and **1355.1** was by the feet. The position of **530.1** is the most interesting. This is a very fragmentary comb and when excavated it was described as a bone and iron pendant, probably because the fragments were found in a 'V'-shape on the chest. In a photograph it can be seen that one of the end plates and one of the tooth plates were lying adjacent to each other in a position that would have been impossible if the comb had been placed on the chest as a complete piece. This grave had been dug directly into the backfill of Grave 535 and the bones of the original occupant had been moved to one side. It seems distinctly possible that the comb had originally been with the occupant of Grave 535, an older adult ?male, and the decayed fragments placed on the chest of the un-coffined woman placed in Grave 530. If this is indeed the case then the correlation of combs with young and old females disappears. It would, however, have interesting implications for the date of Grave 530, as the latter would have to post-date the introduction of these combs by sufficient time to allow for the comb to be deposited in Grave 535 and to decay so that it was in a fragmentary state by the time Grave 530 was dug. A date in the 5th rather than the 4th century is thus indicated.

Spindle whorls

The OA excavations produced five shale spindle whorls deposited as grave goods (see Table 4.18). A sixth was found on the surface of Grave 595 when machining. One bone whorl was found in a cremation burial where it had clearly been a pyre good (**1195.1**).

The new finds bring the total of shale and jet whorls from the cemetery to thirteen. Two of the OA whorls (**1590.1**, **1930.1**) are further examples of the commonest form reported in 1979 which Clarke termed cylindrical, though given the curved outer edges annular might be a better description. Three have a biconical form which was not found before (**1000.1**, **1705.1** and the whorl from **595**). The sixth has a hemispherical shape (**785.1**), again not a form found in the earlier excavation.

The various shapes of the shale whorls recovered now approximate more closely to the pattern seen more generally, in which biconical whorls are the commonest form followed by the annular ones. Hemispherical shale whorls are known, as for example at Catsgore (Leech 1982, 127 no. 4), but are much less frequent finds. Given the uneven flat face on **785.1** it is possible that this had originally had a more globular outline and that part of the piece had sheared off along a natural plane, as had happened in one in a grave at Poundbury (Mills 1993c, 100 no. 1).

Turned shale spindle whorls like these came into use in the 4th century as is well-illustrated at such sites as Greyhound Yard, Dorchester, where shale artefacts occurred in abundance as a result of the proximity of the site to the Kimmeridge shale beds from which the material was derived. There, other shale artefacts were recovered regularly in early to mid Roman contexts, but the spindle whorls first make their appearance in the late Roman ones (Mills and Woodward 1993, table 11). Where the whorls are found in more closely dated contexts they regularly belong to the later 4th century. One in a well fill at Catsgore was accompanied by coinage of 341-8 (Ellis 1984, 39 no. 85). At Winchester one was found in another well fill at Victoria Road, which also contained a coin hoard ending at 364 (Rees *et al.* 2008, 76 no. 361). It is more common, however, to find them in contexts which include Valentinianic coinage post-dating 364, as at Shakenoak (Brodribb *et al*. 1973, 44 nos. 9-10) and Chells (Green 1999, 80 no. 8). They clearly continue in use to the end of the century and beyond. At Cirencester, two were found in the abandonment layers over a large suburban house in an area that was not developed until the mid 4th century (McWhirr 1986, 116 nos 241-2). At Bancroft one was recovered from the basal deposits of a sunken featured building assigned to the early Saxon period (Bird 1994, 370 no. 427). Instances of the occurrence of these whorls in later 4th- and 5th-century contexts could easily be multiplied, but securely stratified examples that can be assigned to the fourth decade of the 4th century or earlier seem to be lacking.

Bone spindle whorls are very rare in assemblages from Romano-British sites. Ones made of modified cattle femur heads are occasionally found in 1st- and 2nd-century contexts, but these appear to be a continuation of a late pre-Roman Iron Age tradition. This died out throughout most of the Roman period, not to be revived until the 4th century when bone whorls start to re-appear in contexts dating to the second half of the century, as for example at Kingscote (Timby 1998, 202 no. 18.4) and Lullingstone (Meates 1987, 151 no. 456). Turned examples occur very occasionally in late 3rd- or early 4th-century contexts, as a truncated conical one from Lullingstone (Meates 1987, 149 no. 454) and a very shallow biconical one from Derby Racecourse (Dool 1985, 214 no. 49) demonstrate. It is difficult to establish when their main period of popularity was thereafter as they continue to be relatively uncommon. This is well-demonstrated in the 4th-century assemblage of finds from Portchester, where shale spindle whorls are four times as common as ones of bone (Webster 1975, 220, 226). What can be said is that the shallow hemispherical form represented by **1195.1** was certainly in use during the later 4th century and into the 5th century. At Shakenoak, for example, one was found in a dump dating to the last third of the 4th century and later (Brodribb *et al*. 1973, 142 no. 129) and at Frocester one made of antler came from a mid to late 4th-century context (Price 2000, 99 no. 57, fig. 6.1 no. 58).

Against this background Clarke's assertion (1979, 248) that the graves with spindle whorls were evenly distributed in both halves of the 4th century

looks distinctly odd. As can be seen from Table 4.15, several of these graves also contained coins. Of Clarke's graves two (329 and 336) had coins of 350-64 and one (396) had one of 364-75. The OA excavations added to this total with Grave **1000** containing an irregular nummus of 350-64 in the fill. The graves that led Clarke to believe that spindle whorls were being deposited in the first half of the century were 89, 98 and 145. Graves 89 and 145 were dated to 310-50/70 on the grounds of vertical stratigraphy; 89 was cut by a grave that contained a coin of 364/78 but the grave that cut 145 had no independent dating evidence. Grave 98 was dated to 310-50 on the grounds of the pottery vessel it contained, though that was given the broader date range of 270-370 in the pottery report (Fulford 1979, 228) and it was noted that the vessel was very worn, suggesting that it was old when placed in the grave. These three graves produce no compelling evidence that they have to date to the first half of the century, and it does seem very likely that graves with shale spindle whorls belong to the second half of the 4th century and most probably to the final third. As already outlined, dating bone spindle whorls is more problematic but their pattern of deposition could well be the same as that of the shale ones. For whorls of either material, deposition in the 5th century is as likely as deposition in the late 4th.

Table 4.18 shows that spindle whorls are overwhelmingly a female artefact. The age distribution looks slightly odd. From Clarke's excavations the data clearly indicate that this was an artefact appropriate for girls and young women. The OA excavations have added two old individuals but there remain no women with spindle whorls of prime or mature age with them. Comparing the incidence of spindle whorl between the two age groupings (adolescent/young adult and prime adult and older) in the total data set females in the lavishly furnished graves shows that this pattern is not statistically significant and so spindle whorls were probably thought appropriate for females of all ages once they began to approach adulthood. Poundbury hints at a similar pattern. There five individuals were accompanied by whorls. Two fall into the older child age bracket used here (ages 10 and 12). The other three were with older women, one aged 50 and the other two 60 (Mills 1993c, 99).

Table 4.18: Spindle whorls at Lankhills in inhumation graves with a single body showing age and sex

Older child	*Adolescent*	*Young adult*	*Older adult*	*Adult*
336/359	250/258	98/77	**785.1**	145/150
		89/78	**1000.1**	329/369
		117/133		396/504
		326/388		**1590.1**
				1705.1
				1930.1

It is of some interest to note that the examples of the less common materials at Lankhills were concentrated among the younger people. That in the grave of the child was jet, and both the material and shape mark it out as unusual among the normal range of black whorls. To the users of these it would have been very apparent that jet stayed black and shiny whereas shale becomes dull and dark grey unless kept oiled. The two bone whorls from Clarke's excavations (*98/77*, *117/133*) both belonged to young adults and the cremated individual in Grave 1180, with the bone whorl as a pyre good, might have been a young adult based on the tooth wear observed.

Philpott (1991, 184) noted that burial with spindle whorls was a distinctly regional trait concentrated in the Dorset/Hampshire/Somerset area, and it is interesting to note that both of the individuals with spindle whorls who have been subject to isotope analysis (117 and 326 from Clarke's excavations – Evans *et al.* 2006a) had a local signature. In the period since Philpott wrote, new work has not produced much evidence to contradict this, although graves from South Shields (Snape 1994, 46, 53-60) and Bantycock near Newark, Nottinghamshire (unpublished excavations by Pre-Construct Archaeology) can now be added. The former is of particular interest as the grave contained a jet distaff as well as a jet spindle whorl and a rich collection of unworn jewellery and equipment indicative of a very late Roman date. At Bantycock the whorl was made of a reused samian sherd, a fashion that seems also to be of late 4th- to 5th-century date (Cool 2000, 52-3). At South Shields the skeleton did not survive, although the jewellery strongly suggests this was a female. At Bantycock the skeleton was that of a woman.

Whorls made out of broken potsherds are a common feature on Roman sites and frequently fulfil all the criteria that enable them to be viewed as spindle whorls (Crummy 1983, 67). Despite their ubiquity Philpott listed only one potsherd whorl as a grave good (Philpott 1991, tables A12 and A33). Clearly for much of the Roman period spindle whorls were not thought appropriate grave goods. In the light of this it is curious that they start to be deposited in the second half of the 4th century, coincidentally with the appearance of turned shale whorls in some numbers on domestic sites and when shiny red pottery was being sought out to make whorls. Given that the Kimmeridge shale industries had been producing turned bracelets and bowls for several centuries before they started making whorls, the impetus for the start of whorl production cannot have been a technological development. Whorls made of reused pottery sherds do not need the craft skills and equipment that turned items require, and presumably turned whorls would have been more expensive. The coming together of various strands of evidence might perhaps suggest that the production of textiles started to be regarded in a different way. Philpott

(1991, 184) drew attention to the fact that a subset of the Dorset burials with whorls were placed in lead coffins or stone cists, and the individual with a spindle whorl and jewellery of precious metals buried at Normangate Field, Castor was the primary burial in a mausoleum (Wilson 1969, 219). Such burials are appropriate for people with status and wealth. Set against this wider background, it is possible that spindles had become an appropriate accoutrement for the mistress of an establishment, whether or not she did the actual work of spinning and weaving. Possibly textile work had come to symbolise the proper activity for a respectable woman, just as it had been associated with Roman republican matrons. It is perhaps for this reason that so many have been found at Lankhills rather than because of the possible presence of a *gynaeceum* at Winchester as suggested by Clarke (1979, 369).

Knives

We turn now from a feminine to a masculine artefact. The OA excavations uncovered seven graves with knives among their grave goods to add to the seven found during Clarke's excavations. One of the OA knives (**3030.5**) was fragmentary and not available for study. As can be seen from Table 4.19 all the associations in cases where the body can be sexed are with males.

All of the knives have a tang set more or less centrally. Clarke (1979, 249-51) categorised the knives as having leaf-shaped blades and sub-divided them according to the proportion of the blade to the tang. Of the OA knives only two, **1175.2** and **1805.1**, fit happily into the earlier typology; they could be assigned to Clarke's Type B with a longer blade. One of these (**1805.1**) preserved its bone handle which had been elaborately inlaid with silver. Two of the three other knives which are preserved in a more or less complete state can be fitted relatively easily into Manning's (1985) typology of domestic knives; **1760.2** is a typical example of Manning's Type 14 and **1310.1** is an example of Manning's Type 16. Both of these are common types. Manning (1985, 114) describes them as the 'everyday, general purpose knives of the period'. These more domestic knives are also characterised by a lack of a metal cap at the end of the handle, a feature that all but one of Clarke's knives had. Knife **1921.3** with a weak S curve to the blade is not a Manning type, nor does it match the earlier knives in either the blade shape or the lack of a metal cap.

The deposition of knives in inhumations took place in the second half of the 4th century at Lankhills judging by those that were accompanied by coins (see Table 4.15), and two of the OA graves with knives (1175 and 1760) could be dated to the end of the 4th century at the earliest as they contained Theodosian coins. The antler handle on **1310.1** is also likely to indicate a late 4th-century date or later as antler becomes a more common material at that point. Throughout much of the Roman period bone had been the preferred material for making handles and other items if skeletal material was required.

All of the different stages of adult age from prime adult onwards have some individuals with knives and the OA excavations produced one child as well. Comparison of the incidence of knives in young male (adolescent and young adult) graves to that in the graves of the older males shows that the difference is not significant, so it would appear that knives were appropriate for adult males of all ages. This is not the pattern seen elsewhere in 4th-century graves where knives are present, though we are hampered by the frequent lack of good osteological evidence. At Poundbury, two knives and a modified shear blade were found, all from young adult female graves (Mills 1993a, 97-8). At Butt Road in Colchester the only knife accompanied a 12 to 15 year old accompanied by beads and bracelets and thus probably female (Crummy *et al*. 1993, 155). A small knife was also found in the South Shields grave with the spindle whorl and distaff together with beads and bracelets which would normally indicate a female burial (Snape 1994). Philpott shows that the deposition of knives is a continuing if not very common trait in Romano-British graves, but it has to be said that at Lankhills it seems more common and more sex specific than normal.

Knife **1175.2** was found by the right knee of an older adult male with worn belt equipment and so fits one of the patterns seen Clarke's excavations, and this is also the pattern seen for the unusual knife **1921.3**. The knife in the latter case lay beside the right femur with the point towards the head and slightly under the femur, suggesting that it was not in a worn sheath. Knife **1805.1**, the other example from the OA excavations that is closest in type to Clarke's knives, lay beneath the lower part of the

Table 4.19: Knives at Lankhills in inhumation graves with a single body showing age and sex

Child	*Prime adult*	*Mature adult*	*Older adult*	*Much older adult*	*Adult*	*Unknown*
1760.2	443/602	37/93	**1175.2**	**1921.3**	55/60	**3030.4**
	1805.1	81/69	**1310.1**		106/130	
		283/476			418/501	
		930.1				

left leg. Both of the domestic style knives do not appear to have been worn. Knife **1760.2** was by the head and knife **1310.1** was laid across the pelvis. Both of these individuals are local on the basis of their isotopes. Of the two OA knife graves that most closely approach the pattern seen in Clarke's excavation, only the body in Grave 1175 was analysed and he proved to be the one individual among all those sampled from the OA excavations for whom a Pannonian origin is quite possible on the basis of the isotopes. It may be noted that the man with the most spectacular knife in the cemetery (**1805.1**) was also possibly local. Of the knife burials with isotopic information from Clarke's excavations, the man in grave 81 came from the south central Europe area and the adult in grave 55 was judged to be not of southern British extraction. Clearly the fact that knives were a male attribute at Lankhills owes little to ethnic origins. Equally, elsewhere in Britain the wearing of crossbow brooches and belt equipment does not automatically mean that knives will be present. One was found in the grave of an individual with a crossbow brooch at Norton (N Yorkshire) (Philpott 1991, 177), but at Scorton no knives were present (Speed forthcoming). There was none in the grave from the Eastern cemetery at London with brooch and belt equipment (Barber and Bowsher 2000, 206), nor with the individual with a crossbow brooch in Normangate Field, Castor (Wilson 1969, 219). They cannot, therefore, be taken as some form of uniform item.

The association of knives and males appears not to have held true for everyone burying their dead in the later 4th to 5th century at Winchester. Another domestic style knife of Manning Type 15 was found possibly deposited as a grave good at Hyde Street with a ?female in grave 27 (Rees *et al*. 2008, 150 no. 671, 202). Until the other Winchester late Roman cemeteries are published in full it is not possible to study this in detail. The Hyde Street burial does, however, flag up the possibility that the pattern of knife deposition at Lankhills may have been unusual, not just within Britain generally, but possibly also at Winchester.

Shears

A set of shears (**730.1**) was recovered from a grave where the fragmentary adult skeleton was probably of a male. Shears have very rarely been recovered from Romano-British graves of any date. The only example listed by Philpott (1991, 186) came from an inhumation of a male aged 25-35 at Cassington, (Oxon).

In antiquity shears fulfilled all the roles that modern scissors do. Manning (1985, 24) divides them into three sizes, and at 130 mm long, the set in 730 falls into the smaller category (less than 150 mm long) useful for domestic and personal use. Shears have also been found in two graves in Oudenburg, a cemetery which to judge from the patterns of deposition had much in common with at least parts of Lankhills (Mertens and van Impe 1971, 140 no. 2 and 150 no. 3). When complete the Oudenburg shears would have measured about 180–200 mm long, which would have placed them at the bottom end of the medium-sized category in Manning's typology. In neither case could the body be sexed, but an age of *c* 30 years was suggested for one of them. One of the graves had a crossbow brooch, belt equipment and a knife. The other had a buckle, knife and axe. In both cases it might be suspected that these were the graves of males, though of course that cannot be proven. The possible association of shears with males in the Lankhills, Cassington and Oudenburg graves opens up the intriguing possibility that these may have been male grooming tools for trimming beards, for even the larger Oudenburg shears are within the size range which would have been useful for this purpose. (My thanks to my partner, a man with a full beard, for his aid in exploring this point!).

Stylus

The most likely identification of object **1940.3** found by the right foot of an adolescent is that it is a stylus. As it is currently preserved it is short but the X-radiograph preserves an indication that the point might have been narrow and distinct from the stem, as in the case of Manning's (1985) types 2 and 3.

Styli are rarely found as grave goods in Britain. Philpott (1991, 185) lists only one late Roman inhumation burial with a stylus, from the Butt Road cemetery at Colchester. That grave contained an identical pair which were exceptional pieces made from copper alloy, not the much more normal iron (Crummy 1983, 104 no. 2534; Crummy *et al.* 1993, 51). In a corroded state, the normal stylus could easily be mistaken for a coffin nail and it might be questioned to what extent, prior to the routine use of X-radiography for all iron finds, styli would have been recognised. At Scorton a pair of iron implements have been plausibly identified as styli from their expanded heads. They were found accompanying an individual of 25 to 35 years who had been buried with an unworn crossbow brooch and belt plate (Speed forthcoming, Grave 5).

Loom weight

A curious stone disc (**1015.1**) was found accompanying a female adult. It is clearly not a spindle whorl given the irregularity and size of perforation, but because of the association of spinning equipment with females it has been tentatively identified as a loom weight, though loom weights are never a common element of Romano-British assemblages. The earlier excavations did not produce anything comparable, nor are such items a regular feature of the grave goods of other Romano-British cemeteries. A pierced chalk disc is recorded as lying by the neck of a male aged 40 in Grave 602 at

Poundbury (Farwell and Molleson 1993, fig. 60) but as no other details are provided in the publication it is unknown whether it was similar to object **1015.1**.

Brooches

Crossbow brooches

Crossbow brooches are the dominant bow brooch form of the 4th century in the western provinces and, like the contemporary elaborate belt sets, appear to have been worn by males in positions of authority (Swift 2000a, 3-4). The OA excavations produced six brooches, five from inhumations and one from a cremation burial. The latter had clearly been placed on the pyre. Eight examples have come from the previous excavations, all in inhumation graves. Up to 2005 the cemetery had therefore produced 14 of these brooches, summarised in Table 4.20, and a further three, not included in the table, were found during the Wessex Archaeology work in 2007. These numbers place Lankhills in the top rank of sites in Britain producing crossbow brooches alongside London and Richborough (Swift 2000a, fig. 13). The number of crossbow brooches deposited as grave goods has always marked Lankhills out as an unusual cemetery in Britain, more akin to continental patterns of deposition. In discussing the earlier finds Clarke (1979, 366) noted three other sites which had produced crossbow brooches, but the total of graves only numbered five. Since then one additional grave has been excavated in the Eastern cemetery in London (Barber and Bowsher 2000, 206 no. B538.3), and four of the graves at Scorton near Catterick had crossbow brooches (Speed forthcoming). The total from all of the other graves with crossbow brooches in Britain, however, is still less than the total from Lankhills.

The typology of crossbow brooches has attracted a great deal of attention. On the continent they have often been found in graves that also contained coins and this has tempted scholars to produce complex typologies showing a progress through time. Most modern typological discussion is based on Keller (1971) who used graves in south Bavaria to propose six basic forms which spanned the period from 290 into the 5th century in a neat progression. Attempts to apply this typology elsewhere in Europe have not always proved easy; and it is not uncommon for workers to use the Keller typology while noting that it is difficult to assign brooches to it. This was the case when Clarke discussed the earlier brooches from Lankhills. There was only one (*81/74*) that he felt could be attributed to a Keller form with certainty. The difficulties have resulted in revisions to the original scheme, most notably by Pröttel (1988). His divisions led to a less linear development both in terms of the features of the brooch and the chronology of the types (Pröttel 1988, Abbn. 10-11).

Broadly speaking the trajectory of the crossbow can be described as starting as a cast form where the bow is longer than the foot and the knobs take on a variety of shapes which are generally longer than they are wide (Keller Types 1-2; Pröttel Types 1 -2). With time the foot lengthens at the expense of the bow so that they are either of approximately equal length or the foot is longer than the bow. The knobs on these regularly have the characteristic onion shape and are wider than they are long (Keller Types 3 and 4; Pröttel Type 3/4). There are also forms which are made of sheet elements and are hollow, unlike the solid cast forms (Keller and Pröttel Types 5 and 6).

Pröttel's broad dating (summarised in his Abb. 11) sees Type 1 coming into use in the last quarter of the 3rd century and continuing into the first quarter of the 4th century. Type 2 belongs to the first half of the 4th century and Type 3/4 to the last two thirds of the 4th century and into the early 5th century. The two sheet forms are typical of the second half of the 4th century and the 5th century. That fully developed crossbows were in existence very early in the 4th century is conveniently demonstrated by gold examples with inscriptions relating to members of the Imperial family. The fragmentary openwork brooch from Erickstanebrie, Dumfriesshire celebrates the *vicennalia* of Diocletian's accession which took place in November 303 (RIB II.3, no. 2421.43); and a gold brooch of Type 2 has an inscription relating to Constantine I as Caesar which dates it to AD 306/7 (Pröttel 1988, 354, Abb. 2 no. 6).

There is little independent dating from British sites. The excavations which have produced large numbers of them such as Richborough (Bayley and Butcher 2004, 109-20), South Shields (Allason-Jones and Miket 1984, 100-106 *passim*) and Corbridge (Snape 1993, 23) were all explored at a time when the stratigraphic context of a find was rarely recorded in a useful manner. Other than at Lankhills and Scorton, crossbow brooches are uncommon as grave goods in British cemeteries, so grave associations are equally rare, though at Scorton one of the burials with a crossbow brooch had a hoard of coins of AD 348-58 in the fill (Speed forthcoming, Grave 5). One thing that may be noted, however, is that

Table 4.20: Crossbow brooches in the Lankhills cemetery showing age and sex of associated individuals

Adolescent	*Mature adult*	*Older adult*	*Adult*	*Unknown*
745.1	81/74	13/13	23/24	**3030.1**
	895.1	373/587	106/121	
			234/278	
			322/477	
			426/532	
			1075.1	
			1846.1	
			1925.1	

there is some evidence that these brooches could have very long lives in Britain. The continental date ranges can thus only indicate the earliest likely dates. At Wroxeter two complete and four fragmentary brooches were recovered from the Baths Basilica excavations (Barker *et al.* 1997, 207, fig. 308). The two complete examples belong to the broad Type 3/4 range for which a mid 4th- into early 5th-century date is conventional, and their state of preservation argues against them being residual. Yet at Wroxeter none of the crossbows were found stratified earlier than Phase Z, dated to the mid 6th to early 7th centuries. The nature of the finds publication at this site makes it impossible to examine the contexts of individual finds, but it does seem possible that at Wroxeter '4th-century' crossbow brooches could still have been being worn in the 5th century and beyond.

Swift's work on regionality in dress accessories in the western empire has demonstrated that, far from showing a pan-European uniformity, regional clusters can be identified (Swift 2000a, 30-88). The situation in Britain that emerges from her work suggests that while continental forms can be identified, there is a noticeable amount of divergence from the mainstream (Swift 2000a, 211). Her comparison of Bayley's metal analysis of the crossbows from Richborough with her own stylistic analysis enabled her to draw a distinction between those made of brass and gunmetal which could be attributed to the Danubian area and those made of bronze which lacked regional stylistic features (Swift 2000a, 81-8). She suggested that some of the brooches from British sites could well have been made in the province. This was a conclusion that Clarke also came to when discussing the earlier brooches from Lankhills (Clarke 1979, 262). A failed casting of a crossbow brooch recovered during the Atkinson excavations at Wroxeter (Atkinson 1942, 203), overlooked until its recent republication (White 2007, fig. 25 left), certainly provides evidence that some were indeed made within the province.

Against this background it is wise to be wary of trying to apply a typology derived from continental dated examples too rigorously to an assemblage from a British site. The assemblage from the earlier excavations shows the pitfalls well. In her survey of over 1000 crossbow brooches from the western empire Swift followed Pröttel's typology but found the need to define seven additional 'hybrid' types (Swift 2000a, 13, table B). In her Appendix 3 slightly more than a quarter (27%) of her corpus falls into these types; six of the eight earlier Lankhills brooches are assigned to these types.

All of the brooches from the OA excavations (Figs 4.4 and 4.5) are cast and have feet that are approximately the same length or slightly longer than the bow. The knobs are normally wider than they are long. The gilded example, brooch **1846.1** has a hexagonal-sectioned cross arm with openwork decoration on the front. All the others have a narrow rectangular cross arm with a stepped front on either side of the bow. Generally the bow width is approximately the same as that of the foot, with the exception of brooch **1925.1** where it is narrower. On the four which preserve the foot in full, brooch **1846.1** and brooch **3030.1** taper very slightly, brooch **1075.**1 maintains a constant width and brooch **1925.1** expands slightly. Most show features that are consistent with them being of Type 3/4 and thus, on continental dating, belong to the last two-thirds of the 4th century and into the 5th century. This contrasts with the earlier examples, of which Swift assigned only one to this category (*81/74*), the others being assigned to Type 1 (*426/532*), her hybrid type 2 forms (*13/13, 23/24, 106/121*) and to hybrid 5 and 5/6 forms (*234/278, 322/447, 373/587*).

The most spectacular example from the cemetery is brooch **1846.1** which was originally gilded all over with an inscription on either side of the bow. It falls readily into Pröttel's Typ 3/4C. The foot and bow of this brooch are identical with that on a brooch from Augst (Riha 1979, 176 no.1487, Taf. 55). Both shared the same security mechanism for holding the pin in place. This consisted of a small bolt inserted into a hole in the back of the upper part of the foot. When the brooch was fastened, this moved forward to cover the outside of the pin which could only be undone if the bolt was shaken back into the foot (see Riha 1979, Abb. 30c for illustration of mechanism). In the Augst brooch the bolt is still present though the pin is lacking. In the Lankhills brooch all that remains is the hole for the bolt. The Augst knobs are faceted onions, whereas those at Lankhills are smooth spheres with the nipples, formed by the internal crossbar which produces the onion shape, neatly trimmed. The openwork decoration on front of the cross arm also differs between the two brooches, but in general they are very close.

Swift (2000a, 62) defines brooches as being identical if they share the same bow decoration, foot decoration, knob base moulding and bow base moulding, and notes that for Type 3/4 such similarity is not common. The Augst and Lankhills brooches share all elements apart from the bow decoration, but given that the Augst brooch only retains traces of gilding this raises the intriguing possibility that it once had more elaborate decoration. Prior to the investigative conservation of brooch **1846.1**, faint traces of gilding could be seen in the corrosion products but there was no indication that the bow was lettered. It is difficult to draw any conclusions about the origin of the pair as Riha noted that the foot pattern was unusual for Augst. The Augst brooch is without contextual information and so cannot be used to help refine the dating within the general range for the type.

The inscription is carried out in black lettering which is normally described as being of niello (copper or silver sulphide). XRF analysis of the lettering on this brooch detected no silver so it is likely that copper sulphide was used as was normal

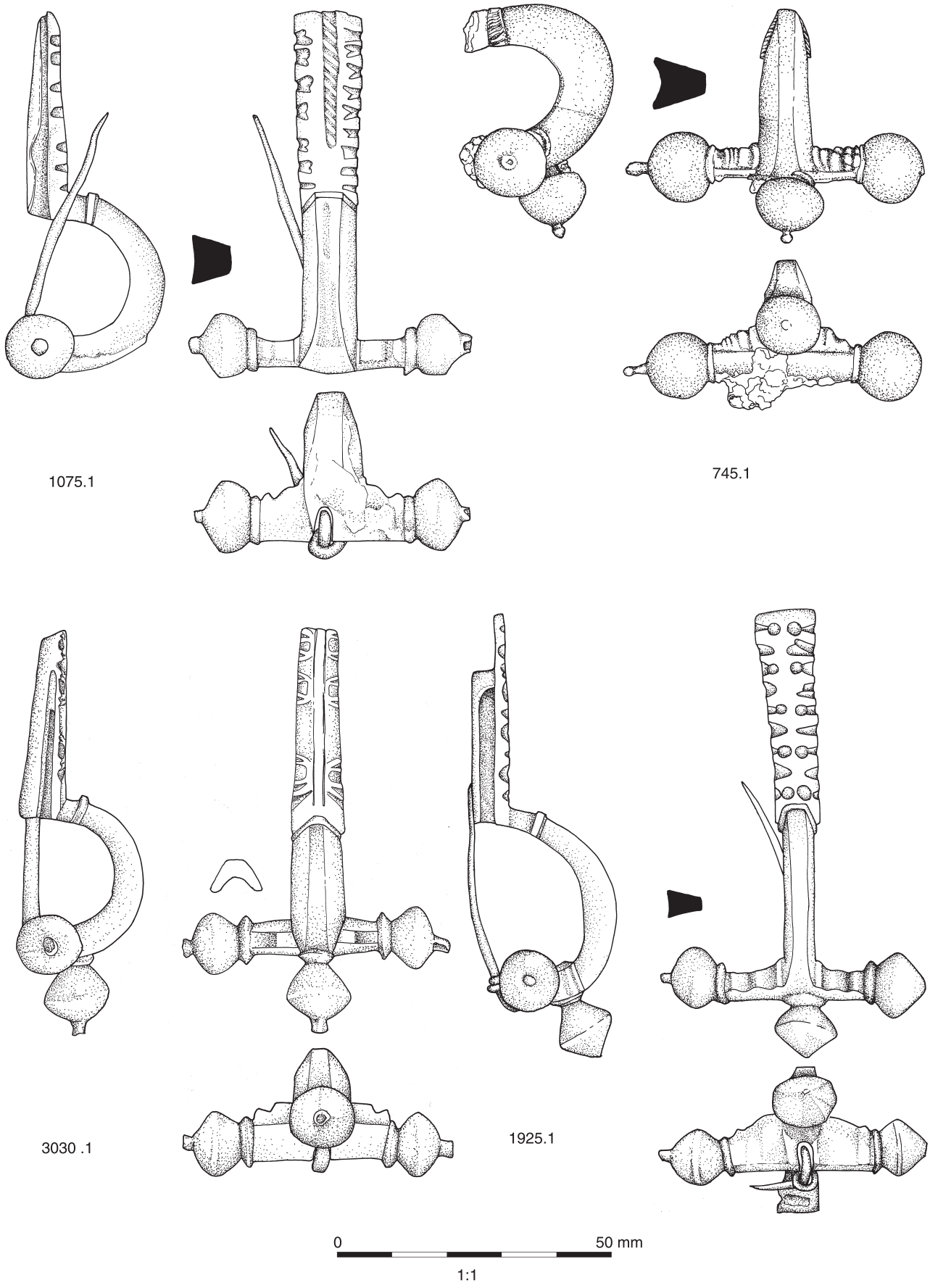


Fig. 4.4 Crossbow brooches 745.1, 1075.1, 1925.1 and 3030.1

on copper alloy objects (Bayley and Butcher 2004, 46). One side of the brooch has the wish VTRE FELIX (for VTERE FELIX, *good luck to the user*). On the other side the inscription reads VENE VIVAS. Dr Roger Tomlin has kindly inspected photographs of the inscription and has suggested that VENE is a mistake for BENE and so the inscription was intended to read BENE VIVAS (*live well*). He notes that the B/V confusion is very widespread, but was not known to have reached Britain, examples such as that in RIB 1 probably occurring on imported pieces.

On the continent there is a small number of gold and gilded copper alloy crossbow brooches with inscriptions. In his survey Behrens (1950, 10-11) listed five where VIVAS was combined with a personal name, two where a name was combined with VTERE FELIX, eight with VTERE FELIX on its own, and one case each of VTERE or FELIX. Of particular interest in regard to the Lankhills brooch are the three which combine both wishes. These are a silver brooch probably of Type 3/4 (Behrens 1950, Abb. 14 no. 2), one whose material is not stated and which combines the wishes with the word SER, and a bronze brooch from an inhumation cemetery at Anières, France, which reads DOMINE MARTI VIVAS VTERE FELEX (Caylus 1752, 256).

Although there is a tendency in the literature to associate the names on these brooches with emperors wherever possible, this should probably be resisted unless it is made explicit by the individual's title (AVG or CAES – see Pröttel 1988, 348 fn. 18 for discussion). The Anières brooch with its use of the term DOMINE (lord) suggests that these brooches may have been gifts for high ranking individuals. A gold bracelet in the Hoxne treasure has the openwork wish VTEREF . ELIX . DOMIN . A . IV . LIANE which Hassall and Tomlin translate as

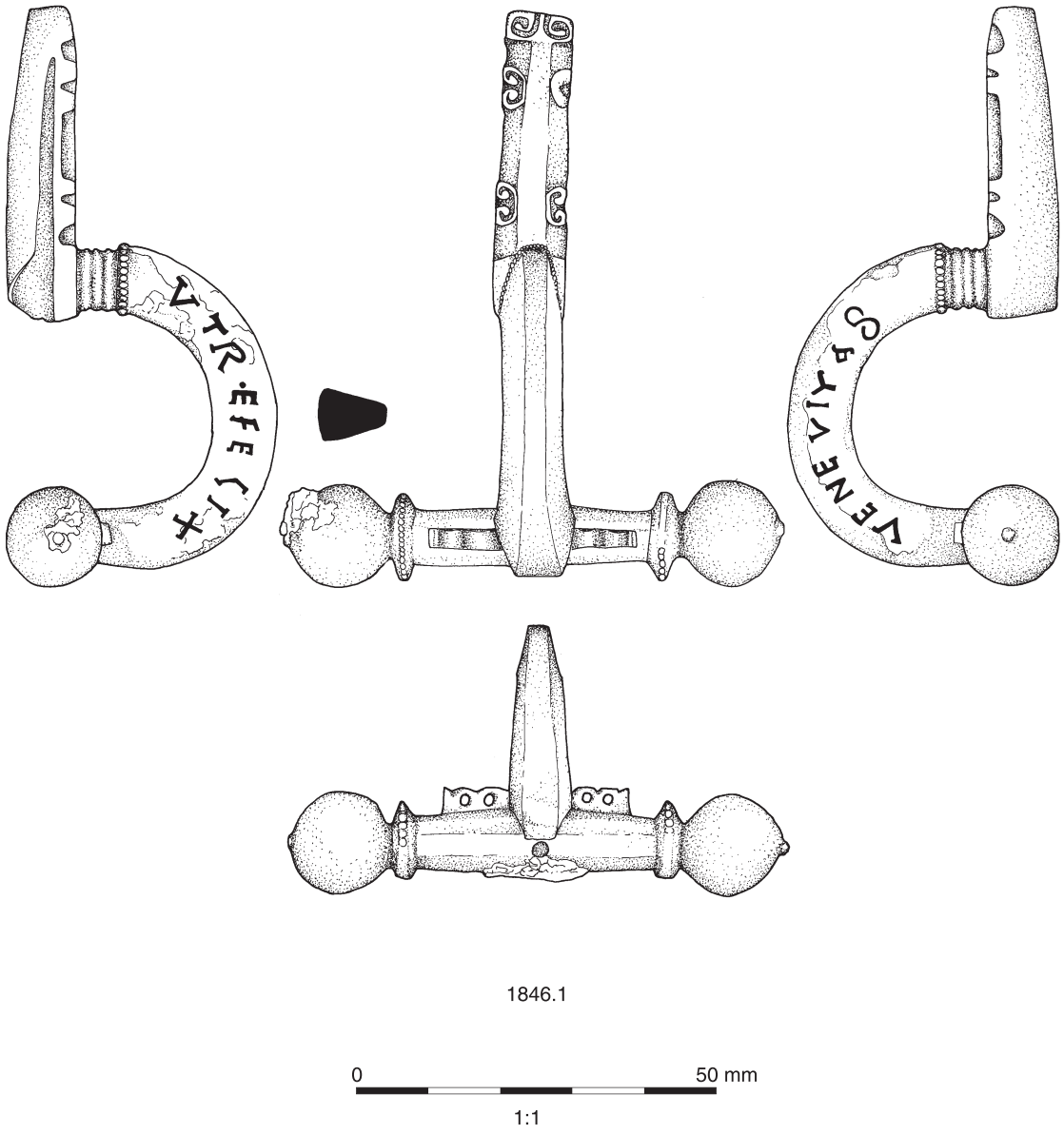


Fig. 4.5 Crossbow brooch 1846.1

'*use (this and be) happy Lady Juliana*' (Hassall and Tomlin 1994, 307 no. 62). Similarly the Anières brooch could be read '*long life to you Lord Martius, use this and be happy*'. The Lankhills brooch was originally presumably a present expressing similar sentiments, though it was not as personalised as these two.

Crossbow brooches with inscriptions were only ever a very tiny proportion of the total numbers made, and those with names were presumably special commissions. Distribution maps can often be misleading, but what is most noticeable about Behrens' list of the VIVAS and VTERE FELIX brooches is that there is a marked concentration in the Danubian provinces. This does not appear to be a product of the literature and museums he surveyed, as the same article includes a listing of first century Aucissa brooches, which are much more widely spread. Dr Swift very kindly informs me that in her survey she had three examples of inscribed brooches from the Rhineland and five from the Danubian areas, but that did not include all the Hungarian material as the von Patek (1942) compilation was not included in her work. It would thus appear possible that brooches with these mottos were more fashionable in the Danubian area than elsewhere.

In summary then, the fact that the brooch can be fitted easily into the Pröttel typology and the fact that it is inscribed together suggest that it was an import. This is further supported by the fact that BENE VIVAS has not previously been noted in Britain and that the unusual form of the A in VIVAS is also one that Dr Tomlin has hardly ever seen in Britain. The fact that an individual had in their possession a foreign item does not necessarily indicate that they themselves were foreign. It is possible, however, to explore what sort of person would have been likely to have owned such a brooch.

The VTERE FELIX wish is not one that seems to have appealed to the native population of Roman Britain to any great extent. It is noticeable that where an origin can be suggested for items decorated with it belonging to the 2nd to 3rd century, this tends to be continental. There are, for example, four knee brooches with this wish spelt out against an enamelled background (RIB II.3, nos 2421.56-58; Tomlin and Hassall 1998, 438 no. 19 = Crummy 2004, 60-61). Discussing the example from Canterbury, Mackreth (1995, 979, no. 111) noted that this variant of knee brooch did not have the characteristics of those made in Britain. A similar observation could be made about the military belt plates where the letters are picked out in red and green enamel (RIB II.3, nos 2429.13-5; Hassall and Tomlin 1995, 383 no. 18) and for those in which it is part of an openwork pattern (RIB II.3, nos 2429.16). It does not appear on jewellery and other personal items that are undoubtedly of British manufacture, suggesting that there was not much of a market for such items among the bulk of the population.

In the late 4th century the same continental association might be suspected. The motto is present on a spoon from the Thetford hoard (Johns and Potter 1983, 113 no. 59) deposited in the 380s at the earliest (Chadburn 1995), and on the Lady Juliana bracelet from the Hoxne treasure mentioned above, deposited in the early years of the 5th century at the earliest (Guest 2005, tables 3-4). The origin of the items in both these hoards cannot be assigned on typological grounds, but it might be suspected that in both cases the people who owned them were part of the Roman international elite. Even if the Lady Juliana was ethnically British, her tastes would have been formed by the mores and fashions prevalent among her class, and the presence of the motto on a bracelet created for her cannot be used to show that it was in common use among the wider population.

Against this background, the person buried in Grave 1846 seems likely to have had tastes more common among continental communities than British ones. The brooch was clearly old when deposited. Virtually all of the gilding had worn off on the back and on the apex of the bow, precisely the areas which would receive most wear through daily use. At some point the upper knob had disappeared and its shank neatly worked flush with the upper surface. The safety bolt had also been lost. The preservation of the skeleton was poor and merely preserved the information that the deceased was adult. Whether he was the original owner is unknown. If he was, he must have been old as it may well have required decades of use to explain the wear and tear, and he may have had his origins in the Danubian area.

All the other crossbow brooches from the OA excavations were smaller than the gilded one just discussed. Brooches **1075.1** and **3030.1** both fit within Pröttel's Typ 3/4D. The notched foot-decoration on brooch **1075.1** is seen as later than the pelta decoration of brooch **3030.1** (Pröttel 1985, 364) which would place it in the latter part of the date range for the type. In this case, however, the typological date can only be taken as a starting point for when the brooch was deposited. At some point in its life it had lost the upper knob leaving the circular void into which this would have fitted. Originally it had also had a safety bolt like brooch **1846.1**, but this too is missing, leaving only the hole in the upper part of the foot. Finally, at some point during its life the original pin had been replaced with a stout piece of pointed wire, twisted around the inner crossbar.

Given that much of the distinction between the different variants of the Pröttel Typ 3/4 relies on the foot decoration, Brooches **895.1** and **745.1** cannot be assigned to a variant as the decoration has been destroyed on the former and the latter was placed in the grave as a broken fragment consisting only of the cross arm and bow. An interesting feature of this brooch is that it was a faulty casting, with major voids visible in the bow. This had been rectified by

cutting back the bow on either side so that it could be inlaid with a carefully fitted sheet that formed both sides. It was possibly another internal void that led to the brooch snapping at the junction of the bow and foot.

The final brooch (**1925.1)** was old when it went into the grave as the pin had been replaced in the same way as on brooch **1075.1**. It does not fit so easily into the Pröttel typology. It has the same stepped rectangular section cross arm as most of the others, but each knob is a different shape with only one being onion-shaped; the other two are biconical, one angular and one rounded. The bow is narrow and the foot decoration is also unusual, combining punched dots with edge notches. This brooch might be a candidate for being of insular rather than continental origin, although its composition might argue against this as it is made of a high tin gunmetal. Unfortunately until the metal of more brooches from the continent is analysed the brass/bronze opposition cannot really be used to assign provenance. Here both this brooch and brooch **1075.1** are zinc-rich alloys, while brooches **745.1** and **1846.1**, for which a continental origin seems most likely, are of leaded bronze.

It is of some interest to compare the typology of the brooches to the origins of the individual as defined by isotope analysis, though data are only available for four individuals from the earlier excavations (Evans *et al.* 2006a, 270-71 – summarised here in Table 4.21). As already noted, only one of the earlier brooches fell readily into the Pröttel typology (*81/74*); the rest were hybrids with the possibility of insular manufacture. The continental brooch was indeed worn by an individual from the continent, possibly from an upland area such as the Austrian/Italian Alps. The hybrid types too, however, were generally associated with people who had spent at least their youth on the continent, with the person in grave 426 coming from an area with the same signature as that of the individual in grave 81, while grave 13 contained someone with a possible Hungarian region signature. Only the person in Grave 322 might have been British. This provides a useful warning that the 'ethnicity' of objects is not always the same as those of their wearers.

It has long been accepted that crossbow brooches were worn by men on their shoulders, fastening cloaks with the foot pointing upwards (Swift 2000a, 3-4 for discussion. This view has been derived from both pictorial and grave evidence. Table 4.20 summarises the evidence for the sex and Table 4.21 that for the position for all the graves with crossbow brooches at Lankhills.

The associations among the sexed individuals are all male, with the possible exception of the individual in Clarke's grave 13 who was assigned by Gowland to the ?female category (but sexed as male in the original publication; Clarke 1979, 24). While not wishing to give artefacts priority over osteological analysis when sexing a skeleton, it has to be said that if this was a woman it would be very surprising. If we accept the distinction that sex is a biological given but gender is a sexual persona adopted by the individual, then if she was a biological woman she was adopting a male persona as the body was buried wearing both the brooch and belt equipment.

Where it has been possible to age the individuals, it is generally adult males who were buried with crossbow brooches. The only young person with one was the adolescent in Grave 745 and interestingly that was the brooch which lacked its foot. Exploring the distribution of the crossbow brooches between the ages via a significance test shows that there is no reason to reject the idea that all adult males could have a crossbow brooch, despite the lack of any associated with the young and prime adult males. An interesting observation is that in one of the cases where a cast brooch was gilded (*13/13*) it accompanied one of the older individuals in the cemetery. The state of the body with the other gilded brooch (**1846.1**) precluded ageing or sexing. In both cases these brooches are by far the largest ones in the assemblage. There are hints here that in this community, the most senior individuals were marked out by the size and showy nature of their brooches. This cannot be explored further using the gilded sheet examples as the bodies which they accompanied could not be aged.

As can be seen from Table 4.21 here crossbow brooches were not all on the shoulder where worn, and in the cases from the earlier excavations, they were the 'wrong way' up. Mineralised remains were found on two of the brooches from OA excavations (**1075.1**, **1925.1**) and on two from Clarke's excavations (*106/121*, *322/447*). A few fibres were also found on the head of the gilded brooch (**1846.1**). In the case of brooch **1925.1** detailed examination of

Table 4.21: Summary of the placing of the crossbow brooches in the Lankhills cemetery with isotopic information where available

Shoulder area	*On torso*	*Not worn*	*Pyre good*
13/13+	23/24	373/587	895.1
81/74+	234//278	745.1	
106/121+	426/532		
322/447+	**1925.1**		
1075.1*	**3030.1**		
1846.1*			

Notes
* - worn with the foot facing downwards
+ - foot facing up, those in 106 and 322 above and to right and left of the skull respectively but with minerally preserved textile so possibly displaced upward during burial)

This colour = Isotope as Hungarian region
This colour = S/C Europe, - Austro/Hungarian alps
This colour = NW provinces including UK but not Winchester

the textile has shown that the brooch was fastening cloth of unknown type. The pin of brooch **3030.1** pierced a leather strap. There was a fine wool cloth on the pin of brooch *106/121* and linen on much of the left side and on the pin of brooch *322/477* (Crowfoot 1979, 330). There are grounds for believing, therefore, that the brooches often pinned clothing when placed in the grave, whatever their position was.

That crossbow brooches were important to the members of the Lankhills community is suggested by the state of the brooches which were deposited. Both of the gilded examples (*13/13* and **1846.1**) were worn, and the latter lacked both the central knob and its safety bolt as did brooch **1075.1** which also had a replacement pin. The pin on brooch **1925.1** had been replaced in an identical manner.

The foot of brooch *426/532* from the earlier excavations had broken and been repaired, while in brooch *106/121* the entire foot had been replaced. In his catalogue entry Mackreth notes

'It is not at all clear that the brooch as deposited was ever intended to function properly: the parts fit ill together and, unless ancient solder has been lost to corrosion, the brooch would surely have fallen apart too readily to have been anything other than an object deliberately made-up for placing in a grave.' (Clarke 1979, 260)

While repairs are sometimes seen in other items placed with the deceased (eg the necklace **1360.11**) no other class of material in the cemetery shows this level of wear, loss and repair, and it points to lengthy curation of the brooches. These are items that may well have had their own biographies, perhaps owned by various individuals before they were placed in the grave. In life they may have provided an immediate marker of who was the most important person in a group, easily picked out because he would have had the largest, brightest brooch. In death they might in, some cases, have marked out those who did not live long enough to achieve the status they might have been expected to take on. The fragmentary brooch placed in the adolescent's grave (**745.1**) might have served this purpose. If they did have this significance for sections of the Lankhills community, then it has important ramifications for using the crossbow brooches as a dating tool, and the continental dating may only be taken as a *terminus post quem.* The full *floruit* of the Pröttel Typ 3/4 brooches lasts for almost a century, so there would be time within it for an individual brooch to have a long life and still be deposited within this range. The case of the Wroxeter brooches noted earlier needs to be born in mind though, and it is not difficult to imagine that some of these brooches were not finally deposited until the 5th century.

The state of crossbow brooches when placed in the grave does not appear to be one that attracts a great deal of attention, though it might well prove quite informative about how these brooches were regarded in the communities where they were used. The community at Lankhills was not alone in thinking that a worn, repaired or damaged crossbow brooch was still an appropriate item to place with the departed. Of the 31 crossbow brooches placed in graves at the Oudenburg cemetery (Mertens and van Impe 1971), twelve lacked the central knob, like brooch **1846.1**. The Anières brooch with its elaborate inscription also appears to have been deposited in this state judged by the original illustration (Caylus 1752, 257, pl. XCIV no. VIII). At Lankhills it would be hard to argue that damaged or repaired examples were being deposited either because of impoverishment or because it was felt that the item was 'good enough', when such a brooch was buried with the individual in Grave 1846. Equally, at Oudenburg a comparison of the grave assemblages between the damaged and the undamaged crossbow graves shows no evidence of impoverishment either. Everything suggests these items kept their power even when not pristine.

Penannular brooches

Two pennanular brooches were recovered, the first to have been recovered from the cemetery. An adult female was buried wearing a penannular brooch (**780.1**). From the textile remains and the position in the grave Walton Rogers (see below) suggests that it was fastening a mantle. The brooch itself belongs to Fowler's (1960) Type D category where the terminal is folded back along the hoop. Those with notched decoration on the terminals as here are placed in either D1 or D2 depending on whether the viewer perceives the notching as approximating to an animal head, which is often a somewhat subjective decision. This is not a chronologically sensitive variant and was in use throughout the Roman period by both native and incomer communities. Examples were certainly present in contexts that predate AD 60 (Mackreth 1995, 982 no. 127) and also occur in ones of the late 4th century and beyond (eg Summerfield 1997, 281 no. 72). This example is unusual in having an iron pin and it might be suspected that this was a repair as the pins are normally of copper alloy.

A poorly preserved iron example (**1440.8**) was found by the right shoulder of an ?adult male in a grave with four coins, the latest of which dated to 388-402. The corrosion products around the pin, though not so well-preserved as those on brooch **780.1**, suggest that this one was also pinning cloth when deposited. It too appears to have been of Fowler (1960) Type D.

These two brooches are most unusual finds, not only for this cemetery but for 4th-century cemeteries generally. Philpott's survey (1991, 137-9) shows that penannular brooches occur intermittently in burials of the 1st-3rd centuries, though they were never common. By the 4th century they were even less common as he noted only two from graves of this date (ibid., 158 fn. 31). One example

came from Kelvedon, Essex where the skeletons did not survive. The brooch, of Fowler (1960) Type C, was found centrally positioned within a small coffin measuring *c* 0.9-1.0 m long judged from the coffin stain (grave 20). There were also four jet spacer beads and pottery vessels dated *c* 280-350+ within the coffin (Rodwell 1988, fig. 27, fig. 45 no. 32, 117, MF1.A6). From the size of the coffin and the presence of the beads it might be suspected that this was the burial of a female child. The brooch from Ancaster and its associated grave remains unpublished in any detail. A small silver example of Fowler Type C with a ribbed hoop and ribbed pin articulation is also known from the Butt Road cemetery where it was found on the right shoulder of an adult (Crummy *et al.* 1993, 135). The individual was not sexed but other grave goods included bracelets and a comb. The grave belonged to the last third of the 4th century or later, as a coin of 367-75 was found in the fill.

In discussing the Butt Road brooch, Fowler (in Crummy 1983, 19) redefined her definition of the Type C brooch, separating out the ones that were clearly late Iron Age-early Roman and those made during the late Roman period. She suggested that the resurgence of the type reflected changing elements in Romano-British society that re-interpreted the penannular brooch. Here both a male and a female wore penannular brooches, but the definite association of brooch **780.1** with a female and the possible examples in the graves at Kelvedon and Colchester is of interest as it would suggest that the penannular brooch may have been coming to be associated with females in the late Roman period. In Anglo-Saxon graves this certainly appears to be the case (Walton Rogers 2007a, 117). This might be seen as part of the trajectory of insular use of various elements of material culture in which the patterns are clearly established by the 5th century but can be seen starting a century or two before (Cool forthcoming).

Belts and belt fittings

For a long time the Lankhills cemetery has been the only one in Britain where late Roman belt equipment has occurred in any quantity. The only other cemetery that approaches the number found is that at Scorton near Catterick, where seven graves had belt equipment (Speed forthcoming). Other large cemeteries such as Butt Road, Colchester (Crummy *et al.* 1993, 145) and the Eastern Cemetery at London (Barber and Bowsher 2000, 206-7) produced only one instance at most, and others like Poundbury produced none at all. Belt equipment is also occasionally found in isolated burials (Philpott 1991, 187-8). The pattern in Britain, however, is very different from that seen in other frontier provinces where it is not uncommon to find individuals equipped in this way. The OA excavations at Lankhills have added a further eight burials to the twelve already known (see Table 4.22) and have thus emphasised the unusual pattern there even more (belt fittings occurred as pyre goods in two further graves, and a single buckle pin used as a pendant is discussed separately below). Swift, studying regionality within belt fittings, assigned some of the earlier Lankhills buckles to the Sommer (1984) typology (Swift 2000a, 186-8) to allow them to be viewed within the wider context of the western empire and that approach will be continued here where possible.

The commonest buckle form recovered was one with an oval plate and oval or 'D'-shaped buckle frame (Sommer's Sorte 1 Form A Typ A). This was present in four of Clarke's graves (*23/27, 106/122, 426/533, 283/481*), and two of the OA graves (**1846.2, 3030.2**). One of the new finds (**1846.2**) was a silver gilt example and is the first silver buckle to have been recovered from the cemetery. Similar buckles where the frame is concave or saddle-shaped constitute Sommer's Sorte 1 Form A Typ B. This was found in one of Clarke's graves (*81/70*) and two of the OA graves (**1921.1** and **1925.2**).

On the continent Sommer Form A is generally dated to the 4th century in the Danubian area and

Table 4.22: Graves with belt equipment at the Lankhills cemetery summarising the age and sex associations

Child	*Adolescent*	*Prime adult*	*Mature adult*	*Old adult*	*Much older adult*	*Adult*	*Unknown*
1760	**745**	443	37	13	**1921**	23	3030
			81	**1175**		106	
			283			234	
			376			322	
						366	
						426	
						1075	
						1846	
						1925	
						895(?)*	
							1180*

* Pyre good

the first half of the 4th-century west of the Rhineland (Swift 2000a, 190). Clarke (1979, 272) suggested a mid 4th-century date for these buckles. This would fit the context of the example with a rounded frame (Typ A) that came from a foundation deposit at Canterbury also containing a coin of 345-8 (Blockley *et al.* 1995, 250, 1028 no. 414; Ager 1988, 27 fig 1e). The presence of buckle *283/481* in a grave containing coins of 388-402 shows that they continued in use until the end of the 4th century at least. This would fit the context of buckle **1846.2** because that was associated with the gilded crossbow brooch **1846.1,** which was old when deposited. Examples of these oval plates have also been found on domestic sites, and at Gestingthorpe one was associated with very late 4th-century pottery (Henig 1985, 29 no. 17). This type of buckle and plate was the one used in the Scorton cemetery (Speed forthcoming) and Clarke (1979, 270) noted that it also occurred with the burials with crossbow brooches at Norton, North Yorkshire, a site that has never been published in detail.

The Sommer Sorte 1 Form C buckles have rectangular plates, with Typ A having a D-shaped buckle and Typ C a rectangular one. One of each type was found in Clarke's excavations – *106/126* (Typ A) and *234/279* (Typ C). From the OA excavations buckle **1921.2** is an example of a Typ C and buckle **1180.1**, damaged from having been on the pyre, is most likely to be of Typ A, though the possibility of it having a saddle-shaped buckle frame and so being of Typ B cannot be entirely excluded. Clarke's review of the dating evidence from the continent suggested that the rectangular plate form became popular towards the end of the 4th century, superseding those with oval plates. As noted above, however, the oval plate form was still in use at the end of the 4th century at least, and one of the graves from the OA excavations (Grave 1921) clearly shows that the types were contemporaneous, because the man was buried wearing a belt with the oval plate buckle and with another belt with a rectangular plate close to the knife by the right thigh.

Since Clarke wrote, some useful additional information about the occurrence of the rectangular plate buckles in Britain has come to light. One with repoussé decoration on the plate and a rectangular frame came from a Phase 4b context at the Alchester Road suburb of Towcester (Brown and Woodfield 1983, 106 no.7). The dating derived from the coins for Phase 4 suggests a *floruit* of *c* 330-70, but the pottery clearly indicates occupation continuing later in the century. At Winchester, one with a narrow repoussé decorated plate and a very unusual rectangular frame decorated with small heads was found in a well fill at Victoria Road, which also contained a coin hoard ending at 364 (Rees *et al.* 2008, 173 no. 936). Lyne's reappraisal of the Richborough assemblage has allowed a closer contextual dating than was hitherto possible. The repoussé decorated rectangular belt plate cited as a parallel for buckle *106/126* and published earlier without provenance (Wilson 1968, 94 no. 107), can now be assigned to a context post-dating 400 (Lyne 1999b, 106 no. 38). At Canterbury a buckle with rectangular frame and plate was recovered from the dark earth deposits assigned to the first half of the 5th century (Blockley *et al*. 1995, 1028 no. 415; Ager 1987, 27 no. 1g). An atypical buckle with a rectangular repoussé plate was also found within the well fill at Dalton Parlours, West Yorkshire dated after *c* 370 (Cool 1990, 86 no. 25). This unusual piece had used a penannular brooch as the buckle frame and clearly would not have fastened in the same way as the other buckles. The new examples definitely suggest that the rectangular plate buckles were in use in the second half of the 4th century and into the 5th century.

Examples from the series of animal-headed belt buckles studied by Hawkes and Dunning (1961) also appear at the cemetery. In Clarke's excavations two examples of Hawkes and Dunning Type IIA (*37/92* and *443/603*) and two of Type IIIA (*283/496* and *376/498*) were recovered. The OA excavations have added the first example of Type IB (buckle **1175.1**), found in a grave where a coin of 388-95 had been placed in the mouth of the deceased. Another example of a Type IIA with very stylised confronted animal heads was found unstratified (SF 3304, Fig. 4.6).

The recovery of buckle **1175.1** in a coin-dated grave is particularly welcome as so many of these items have been recovered from undated contexts. In re-assessing the type in 1974 after the recovery of additional examples, Hawkes argued for manufacture in the last three decades of the 4th century and for them being worn out by the early 5th century (Hawkes 1974, 387). Böhme (1986, 507), on the basis of three in early Anglo-Saxon graves, argued that their main period of use lay in the first half of the 5th century. Certainly at Shakenoak fragmentary examples of the plates were found in 5th-century contexts. One was found as part of the latest occupation deposit in Building A, accompanied by a clipped siliqua of 392-5 (Brodribb *et al.* 1968, 26, 92 no. 58) and the other was found in a ditch fill associated with a small long brooch of mid 5th-century date (Brodribb *et al.*1972, 26, 69 no. 137). The clipping of siliquae appears to take place early in the 5th century and Guest has suggested that it might have continued beyond 409, possibly for several years or even decades (Guest 2005, 114). At Cirencester a Type IB buckle came from the latest street surface at the Verulamium Gate. The coinage associated with that re-surfacing runs up to issues of Honorius of 395-402, but given that similar coinage is associated with the previous re-surfacing as well, the final re-surfacing is likely to have taken place noticeably later than the coinage associated with it (Paddock 1998, 321 no. 62, see also 64). Occurrences such as this hint at a longer lifespan than Hawkes allowed and would support Böhme's view. Buckle **1175.1** is in pristine condition and certainly gives no hint that it was old when it was deposited.

The Type IB buckles can show a wide range of competence in their manufacture. Buckle **1175.1** is

extremely competently made. The careful detailing of the horses' heads and the small pellets dividing the heads from the rest of the frame are very similar to the frames from Stanwick, Mucking, Richborough and Wycomb (conveniently illustrated together on Böhme 1986, Abb. 27 nos 4, 6, 7 and 16). A diagnostic feature also seen on it is the use of confronted triangular punch-marks on both the buckle and plate. Precisely similar marks were seen on the buckle plate from Greta Bridge, North Yorkshire (Hawkes 1974, 386, fig. 3.1). This seems to be a very distinctive decorative technique as many of the plates for these buckles are framed with a running scroll pattern, and it is possible that both were made by the same hand.

The final two buckles recovered during the OA excavations consisted of frames without plates, the straps being connected directly to the frame. Buckle **1760.3** was annular and came from a grave that also contained a coin of 388-92, and buckle **745.6** was D-shaped; both were made of iron. Clarke's excavations produced two buckles that consisted merely of frames, both of copper alloy. Buckle *366/488* was D-shaped and buckle *376/497* had a saddle-shaped frame. Both of these were clearly parts of belts as they were found in positions that indicated they had been worn. Something similar may be suspected for buckle **745.6** as it was found at the feet of the deceased together with a strap end (**745.2**). Buckle **1760.3** was found with other items including a knife at the head of the grave.

Simple buckle frames like this are naturally very difficult to date unless they come from well-dated contexts. This becomes a particular problem on urban sites where Roman material is often found residually in medieval contexts, and medieval assemblages generally include many buckles, some of whose frames are very similar to these. As a result, it is difficult to judge quite how common belts with just a simple frame were in the late Roman period. It is to be suspected that they were commoner than we generally appreciate. In Lyne's reappraisal of the assemblage from Richborough, where residuality is not the problem that it is on urban sites, he noted that belt plates were surprisingly few in number compared with the frames and suggested that the latter were being worn without plates (Lyne 1999b, 103).

In addition to the examples of buckles and belt plates discussed so far, two other pyre good fragments also appear to come from buckle plates. Object **1180.2** is the outer end of a plate from a narrow strap retaining two rivets. Given the presence of buckle **1180.1** this suggests that the young man may have been cremated with two belts. It is possible that object **895.2** might also have come from a belt plate. It consists of a narrow flat strip. One side is original and has notched decoration along it with a groove running along the inside of the notches. The other side is possibly, rather than certainly, broken. The decoration would not be out of place on light bangle bracelets of the type discussed below (see below), but the flatness of the piece and its thickness argue against such an identification and it seems more likely that this is a fragment from the edge of a belt plate. Given the presence of the burnt remains of the crossbow brooch in the same deposit (**895.1**), the possibility that the man might have been cremated wearing a belt is a likely one.

At Lankhills, strap ends were less common than buckles and it is clear that they were only found appropriate for a sub-set of the belts. In Clarke's excavations six graves had strap ends (2, 37, 106, 322, 366, 376). In the OA excavations they were found in only three graves (745, 1075, 1846). The commonest type was the amphora-shaped strap end (Simpson 1976, 198-90) which has now been found in six graves. Clarke's excavations produced four, a fragmentary one of silver (*322/449*) and three of copper alloy (*23/26*, *106/128*, *366/489*). The OA excavations produced one of gilded silver (**1846.3**) and one of copper alloy (**745.2**). All of the Lankhills amphora-shaped strap ends have solid plates and thus belong to Simpson's Type 1b.

Grave 745 is unusual in having two strap-ends in the grave, the only one in the cemetery where this has been observed. The second example (**745.3**) was a heart-shaped strap-end (Simpson 1976, 201-2), a type which was recovered from two graves in Clarke's excavations (*81/75*, *426/534*). Both of the strap ends in Grave 745 are unusual in having a solid bar for the attachment of the strap, whereas all the others in the cemetery have the more normal two-piece construction or the split upper plate to allow the strap to be inserted and riveted in place. Strap end **745.3** was certainly deposited with a strap attached, as minerally preserved leather was observed inside the loop. It has to be assumed that in both cases the strap was sewn in place as no other fittings such as rivets were observed. This type of bar attachment, which was not included in Simpson's original definition of the types, is also found at Richborough on one example of each shape, with the heart-shaped example deposited in a context of 400+ (Lyne 1999b, 108 nos. 44 and 48).

The final strap end from the OA excavations (**1075.2**) has an oval plate and a split attachment plate. It was originally tinned or silvered as white metal was visible on one face. The shape of the plate and the attachment method is similar to that seen on Simpson Type II amphora-shaped strap ends, and in general the shape of the piece approximates to heart-shaped strap ends, lacking only the central indentation on the lower edge. This is an unusual piece in that there was no buckle in the grave, although strap end **1075.2** lay alongside the left femur in a position appropriate for a worn belt.

Simpson (1976, 204) dated these classes of strap ends to the second half of the 4th century. Clarke in discussing the earlier ones from Lankhills followed Keller's coin-based dating, assigning the heart-shaped ones to *c* 340-70 and the amphora-shaped ones to *c* 350-90. There are two graves in the

cemetery itself which are coin-dated. The fragmentary silver amphora-shaped strap end *322/449* was accompanied by a coin of 364-75, and the heart-shaped strap end *81/75* came from a grave where the latest coin was of 350-64. Elsewhere in Britain both types have come from contexts belonging to the second half of the 4th century and into the 5th century. At Richborough the three heart-shaped examples which came from dated contexts belonged either to the late 4th century (two examples) or 400+. For the amphora-shaped ones, one came from a pit of *c* 350, one came from a late 4th-century deposit and two came from ones of 400+ (Lyne 1999b, 108). A heart-shaped example came from the Bypass site at Catterick in a Phase 6b context which indicates a date in the last few years of the 4th century and into the 5th century (Lentowicz 2002, 64 no. 207). At Frocester Court an amphora-shaped strap end came from a 5th-century context (Price 2000, 57 no. 350). The evidence suggests that both shapes were in use contemporaneously, as indeed does the presence of an example of each type (albeit non-standard variants) in Grave 745.

Three of the graves from the OA excavations with belt fittings also had plain metal rings. The metal was frequently the same at that used for the buckle. In no case could the precise relationship to the other metal belt fitting be established as the recording of Grave 3030, the only grave of the three in which the belt may have been worn, was not sufficiently detailed. In two of the cases (Graves 1760 and 3030) knives were also present in the grave. In grave 443 of Clarke's excavations four rings were found with mineralised leather, a buckle and a knife in positions that would be appropriate for them to have been attached to a sheath in which the knife was placed. It seems possible that the rings were fulfilling a similar role in the OA graves. If that is so then the absence of a knife in Grave 745 is of some interest and will be returned to in the final discussion.

As the surveys of Simpson (1976) and Swift (2000a) show, much of the belt equipment from the Lankhills cemetery belongs to broad types that were in use throughout the western empire in the frontier areas from the Danube to the Rhineland and across northern France. It is, therefore, not straightforward to argue from the objects to particular ethnicities. In the past it has been tempting to see much of this material as coming from Pannonia because of the concentration of examples that could be seen in any distribution map. In part, however, this is very much a function of the fact that the people living in that province favoured burying their loved ones clothed and with their brooches, belts and jewellery in place (see Lányi 1972). The perils of distribution maps and what happens when new sites are dug is well illustrated by the maps which Swift (2000a, fig. 231-2) presents, showing the distribution of the buckles with oval plates (Sommer Sorte 1 Form A). The initial data set is coded by numbers present and there is one spot where 11 to 18 examples are present (the Budapest area in Pannonia) and then four of the smaller spots indicating where four to ten are present. These are widely scattered from Pannonia to the Belgian coast at Oudenburg. Were that map to be redrawn today Winchester with its six examples and Scorton with its five would happily provide large dots across the Channel, and it would be easy to add more dots signifying scattered British finds not included in Swift's corpus.

With this in mind it is useful to look at which elements of the belt equipment at Lankhills might have been produced in Britain and which items could have come with incomers from other provinces. The most obvious British product is buckle **1175.1**. This form with its outward facing horse-head motifs on the buckle frame and long narrow plate, is undoubtedly of insular manufacture given its concentration in Britain. The only example of the distinctive frame outside Britain is a fragment from Iruña, Trespuentes, Villados in north-west Spain (Aurrecoechea 2001, 81 no. 41) which was found in a 5th-century context. A plate probably from one of these buckles was also found with a Saxon cremation burial at Westerwanna, Kr. Cuxhaven in the northern German coastal area, and it was suggested that it represented the possession of a soldier in the Roman army who had served in Britain (Böhme 1986, 508 Abb. 29). Given that the type was defined nearly 50 years ago and is very distinctive, it seems reasonable to conclude that if more examples were present on the continent they would have been recognised. Certainly Swift found none in her continental work (Swift 2000a, 185).

Two of the buckles with rectangular plates, *106/126* and **1921.2**, have repoussé decoration, and in discussing the former Clarke was able to cite sufficient British comparanda to suggest it might have been made in Britain. Additional repoussé-decorated plates from Britain can now be cited and those with a useful contextual date have been noted above. A British origin does seem a distinct probability.

Some of the confronted dolphin-head buckles of Hawkes and Dunning (1961) Type IIA were certainly manufactured in Britain as a failed casting of one has been found in Cirencester (Paddock 1998, 321 no. 63). The area around Cirencester has the largest concentration of late 4th-century belt equipment in Britain (ibid., 306) and both amphora- and heart-shaped strap ends are relatively common finds in the area. It would thus be no surprise if some of the ones found at Lankhills were of local manufacture. Until the publication of Corney and Griffiths's corpus (see Swift 2000a, 185), evaluating which of the strap ends are insular and which are continental is not possible; though I am not aware of anything comparable to the gilded silver example **(1846.3)** from elsewhere in Britain.

Table 4.22 shows that where the bodies can be aged and sexed belt equipment was deposited primarily with older adult males, apart from the anomalous occurrence of belt equipment in grave 13 with a possible female. The implications of this have been discussed in connection with the crossbow

brooch found in the same grave (see above). Testing the observed incidence in younger males (prime category and younger) against that in the older ones shows that the pattern is not statistically significant and that males of all ages had an equal chance of being buried with belt equipment. The pattern of deposition is summarised in Table 4.23 where an attempt is made to indicate the number of belts found in each grave.

In the earlier excavations there was one example of a belt with two straps; most of the fittings were attached to the showy wide belt which was then fastened by a narrower strap attached to the end opposite the buckle so that it was the narrow strap that articulated with the buckle frame. This type was not represented among the belt equipment from the OA excavations and all of the belts would have had a single strap.

Among the single strap buckles with strap ends the most common combination is an oval plated buckle (Sommer Form A Typ A) with an amphora strap end. It was found in three graves 23 and 106 from Clarke's excavations and Grave 1846 from the OA excavation. There can be no doubt that the buckle and strap end in Grave 1846 were made as a pair as both are gilded silver. In Grave 366 the strap end is associated with a D-shaped buckle frame without a plate. One of the amphora-shaped strap ends came from Clarke's grave 322 where no buckle

Table 4.23: Summary of the placing of the belt equipment in the Lankhills cemetery with isotopic information where available

	Worn	*Placed on body*	*At head*	*At feet*	*Pyre good*
Two belts	23 (1) 234 (2) (4) 376	106	283(2)	**745** (3)	
One belt	13 81 366 426 (5) 1175 **1921** **1925** **3030**	**1846**	1760	37 443	**895**(?) **1180**
Strap end only	322 **1075**				

(1) one worn, one possibly worn
(2) second belt represented by buckle frame without tongue
(3) Belts represented by strap ends not buckles
(4) one worn 1 placed beside the body
(5) Possibly rather than certainly worn

Colour key
Isotope indicating south-central European origin
Isotope indicating ? Pannonian origin
Isotope indicating local origins

was present. A strap with an oval strap-end but no buckle was found in Grave 1075 and realising that this was a curious pattern, the excavators sieved the spoil carefully to check that no buckle fittings had been overlooked. In both Graves 322 and 1075 the body appears to have been laid out with fittings in place as worn (see Table 4.21), so this opens up the possibility that that some narrow belts might have functioned without buckles, unless the latter had been deliberately removed. Belts are sometimes depicted in late antique art as simply knotted, as can be seen on the diptych of the consul Anicius Petronius Probus dated 406, on which Honorius is shown in military cuirass with sword and shield (Elsner 1998, 84; Ruggini 2008). This might have been how the belts without buckles fastened, though in that case it might seem more logical to have had two strap ends rather than a single one.

The combination of oval-plated buckle and heart-shaped strap end occurs twice, in Clarke's graves 81 and 426. The individuals they accompanied were incomers, as isotope analysis suggested they originated in the south central area of Europe. None of the individuals accompanied by oval-plated buckles and amphora-shaped strap ends has been subject to isotope analysis, but it is possible that belts combining oval-plated buckles with strap ends might have been favoured by incomers. Such belts would certainly have been at home in other frontier provinces on typological grounds. Clarke of course famously used the wearing of personal ornaments as one of the indicators that the individual was of foreign extraction (Clark 1979, 367). If the combination of oval plated buckles and strap ends is an indicator of this as well, then the pattern of deposition would not fit that as in two of the graves where it occurs the belts were placed on or by the body and were not worn. The pattern of what an incoming soldier might choose to wear, however, has been greatly complicated by the case of the man in Grave 1175. This is the only individual from the isotopic analysis of individuals from the OA graves who has isotopes values compatible with those expected for a person with a 'Pannonian' origin, but the belt he was wearing is fastened by an undoubtedly insular type of buckle (**1175.1**).

That the individual in 1846 was an incomer is hinted at by the fact that the belt fittings are made of gilded silver. This marks the belt out as exceptional. Silver belt equipment is extremely rare in Britain. There is only one other individual buried with silver belt fittings and that is a male aged 25 to 30 from Kingsholm near Gloucester (Brown 1975; Hurst 1985, 35). The original publication drew attention to Anglo-Saxon comparanda for the knife with a silver decorated handle that also accompanied him, but Böhme (1986, 503) has shown that the belt fittings are typical of the east German/south Russian areas in the late 4th century and especially in the first half of the 5th century. This person, far from being a native elite Briton as first suggested, could well have been an immigrant Goth. This suggestion is perhaps

supported by the fact that certain skeletal characteristics differed from those of the other individuals buried on the site (Hurst 1985, 95).

The other group of silver belt fittings, some of which were gilded like those in Grave 1846, were found in the silver hoard from Traprain Law (Hartley *et al.* 2006, 244 nos. 257-61). Some of the items are east European, typical of the troops stationed in the Balkans and datable to the mid 5th century. As the treasure also contained a silver brooch of east German type, one interpretation of the hoard that has developed is that it consists of the donatives of another Gothic officer who had served in the Danubian area and had, somehow, ended up at Traprain Law. Whether this is correct or not, what the Kingsholm and Traprain pieces demonstrate is the taste for silver belt fittings among the peoples who lived beyond the Roman frontiers. This was a long-established taste, as can be seen earlier in the spectacular burial dated to the middle third of the 3rd century at Gommern, Sachsen-Anhalt in south-eastern Germany (Becker 2008). Silver belt equipment was not a feature of normal Roman military equipment, so the pieces that do start to appear in the 4th to 5th centuries probably reflect the tastes of the soldiers increasingly recruited from beyond the Roman frontier. This too might perhaps provide us with a clue as to the ethnicity of the individual in Grave 1846.

Spurs

The most remarkable finds from the cemetery are the two spurs (**1846.4-5**) buried with the individual in Grave 1846 who also had the inscribed gilded cross bow brooch and the gilded silver belt equipment. Spur **1846.4** was found at approximately knee level on the right side of the body. Spur **1846.5** was found close to the foot end, also on the right side of the body. The latter was accompanied by some mineralised leather retaining soft folds which Walton Rogers suggests indicates boots rather than straps. Among the intriguing deposit of 4th-century weaponry, shoes and textiles together with a silver gilt helmet recovered from Deurne in the Netherlands there was a spur (Braat 1973, 62, Abb. 7). Reassessing this find, van Driel-Murray showed that the spur had been attached to a soft open-work one-piece shoe (van Driel-Murray 2000, 298). It is probably this general sort of shoe, suitable for a rider, which has to be envisaged in Grave 1846, laid out beside the body.

Though appearing quite similar, the spurs are not an identical pair. Spur **1846.5** is larger than spur **1846.4** and whereas the rivets to hold the straps were clearly inserted in the former, this is not the case with the latter. The shapes of the plates differ, as does the ornament below the prick. The side plates on spur **1846.4** also have the remains of gilded silver rosettes but there is no evidence that spur **1846.5** was similarly decorated.

Both of these spurs belong to the 4th-century provincial Roman tradition as defined by Jahn (1921, 77-81), characterised by riveted attachments. In his 1959 study Shortt was able to show that there was an insular variant of these, characterised by riveted plates at either end of the arm and a forward facing hook above the prick, which in the best preserved cases clearly formed a bird's head. Subsequent finds in Britain have confirmed that this is the dominant British type. In addition to those listed by Shortt, examples can be noted from excavations at Rudston (Stead 1980, 103 no. 47 – albeit with an unusual prick plate), South Shields (Allason and Miket 1984, 206 no. 3.685-6), Caister-on-Sea (Darling and Gurney 1993, 102 no. 430), Beadlam (Neal 1996, 49 no. 20), Filey (Cool 2001, 129 no. 21), Catterick (Lentowicz 2002, 66 no. 213-4) and Piercebridge (Cool and Mason 2008, fig. 11.9; D11.63-4 nos. 501-506). Additional examples have been recovered through metal detecting. These include several from Lincolnshire, at Ludford and Old Winteringham (Leahy 1996), Thimbleby (PAS LIN-0887A7) and Winceby (PAS LIN-D3B115). Two from Hampshire have been recorded from Kimpton (PAS – HAMP567) and Upham (PAS – HAMP3317). One has also been recorded from Milton Keynes (PAS reference no. NARC-D98096). (The PAS numbers relate to the reference numbers on the Portable Antiquities Scheme Database – http://www.findsdatabase.org.uk).

Where these hook spurs are from dated contexts, they consistently indicate that this was a new introduction in the last third or last quarter of the 4th century with use continuing into the 5th century. One of the examples from Southampton came from a context of 370-90 and the other post-dated that (Cotton and Gathercole 1958, 45 nos 6 and 7). The example from the signal station at Filey, founded some time during the final quarter of the 4th century, came from an occupation deposit which also contained a coin of 388-402. The Rudston spur came from a layer in a deep well where the pottery was similar to that found in the signal stations and so a date in the final quarter of the 4th century and later is also appropriate. Most of the Piercebridge spurs came from a ditch fill that did not start to accumulate until the end of the 4th century at the earliest.

The Lankhills spurs differ from this British type in having an additional oval or circular riveted plate above the prick rather than the bird hook. As well as falling within Jahn's provincial grouping this method of attachment is also typical of the 4th-century spurs in his *Mittelgermanien* style in free Germany (Jahn 1921, 83-6). Spurs with three rivets have been much less commonly found in Britain than the hooked spurs, and the only comparable one known to me from an excavated context was found at the Bays Meadow villa, Droitwich, in an occupation layer which accumulated over a cobbled surface which in turn sealed a coin of 355-60 (Lloyd Morgan 2006, 197 no. 3). Another very recent discovery which has been reported to the Portable Antiquity Scheme has been found in Claxby with Moorby parish, Lincolnshire (PAS -NCL-3F8A04).

The fact that the spurs in Grave 1846 are not part of the British group might well add to the evidence of the brooch and buckle to suggest that the individual buried there was an immigrant.

The status of the spurs, whether they should be regarded as items of military equipment or whether civilians were as likely to use them, has long been debated because of the very varied range of site types from which they have been retrieved (see for example Leahy 1996; Cool 2001, 124-5). I have argued elsewhere (Cool forthcoming) that this confusion has probably arisen because not enough attention has been given to the very late date at which these spurs appear. By the late 4th century, of course, the nature of military deployment is very different from what it had been previously and it is not to be expected that military items would have been confined to obvious military sites such as forts. What can be said is that spurs are frequently found on the same sites that produce belt equipment, about the status of which there is also debate, and sometimes on sites where undoubted late military weaponry has been found. The Catterick spurs, for example, though unstratified, came from the area of a building which also produced barbed spearheads (Cool 2002, 33). There are grounds for thinking, therefore, that spurs probably were a military accoutrement.

Their sudden appearance seems likely to have been connected with the growing numbers of tribesmen from free Germany who were being absorbed into the Roman army, as noted in the discussion of the silver belt fittings. Spurs had not been seen as a necessary element of a cavalryman's equipment for most of the Roman period in Britain, or indeed elsewhere. The standard work on Roman military equipment mentions them only twice, once in a Republican and once in a 4th-century context (Bishop and Coulston 2006, 69, 227). In Free Germany, by contrast, they were clearly part of the accoutrements of elite warriors and the range of types was discussed by Jahn (1921, 82-8). They regularly occur in richly furnished princely graves. There were, for example, silver spurs in the Gommern burial noted in connection with the silver belt equipment, while in a burial of three individuals in a tomb at Musov in the Czech Republic dated to the second half of the 2nd century there were no less than 17 spurs (Peska 2008, 108).

While the placing of spurs in elite burials beyond the Roman frontiers is not unusual, placing them in a grave within the empire appears extremely rare. There is certainly no other instance of it in Britain, though that in itself is of little importance given the general paucity of furnishings in 4th-century graves. What perhaps is more telling is the fact that in Pannonia, an area where graves furnished with crossbow brooches and belt fittings are extremely common, Lányi's (1972) survey did not list a single example of a grave furnished with spurs. In the Rhineland, at the enormous cemetery at Krefeld Gellep for example, 79 individuals were furnished with crossbow brooches (Pirling and Siepen 2006, 334-40), but again there was not a single grave with spurs. It has not, of course, been possible to conduct a thorough survey of the continental cemetery literature to look for *comparanda*, but it does appear very likely that for an individual to be buried with spurs probably marks him out as an exceptional person. As discussed elsewhere (Cool forthcoming) it is possible that details seen on the feet of Stilicho in the Stilicho diptych of *c* 400 may indicate that he was wearing spurs as well as a crossbow brooch. In the diptych Stilicho is depicted in military garb with sword, spear and shield. If the identification of the presence of spurs is correct, then they can be regarded as appropriate parts of the costume of soldiers of the highest rank. The spurs that accompanied the individual in grave 1846 may have marked him out as a very high ranking soldier just as much as did the crossbow brooch and the belt with silver fittings.

Beads and necklaces

Four graves from the OA excavations included bead strings among the grave goods, adding to the thirteen graves from the earlier excavations which contained them (summarised in Table 4.24).

Table 4.24: Bead strings at Lankhills in inhumation graves showing the age and sex associations for those with a single body

	Infant	*Young child*	*Older child*	*Adolescent.*	*Young adult*	*Prime adult*	*Adult*	*Multiple*
Worn	333/315	323/436 & 443			117/140 326/424	351/399	40/28 63/52	
Unworn	**110.4**	188/248	336/353, & 363-5	**985.21**	85(1)			183/182 & 192
		337/425	**920.15**	1360.10-13				199/215 438/560 &583

(1) Deposited as part of discrete group of ornaments in fill. Notes for the graves with the remains of multiple persons recorded by Gowland: * indicates the body which the items apparently accompanied. Grave 183: younger child* and neonate. Grave 199: Adult*, infant and child recorded. Grave 438: female young adult and mature male*.

Individual beads were also recovered from Graves 87, 855 and 1235. Although the bead strings need to be considered as a whole it will be useful first of all to summarise the individual types present in the recently excavated graves. For the glass beads the simplest and most useful way of doing this is by colour.

Deep translucent blue glass

This was the colour most frequently used and the majority of the beads were short, ie between 2 and 4 mm long. They came in a variety of shapes; the bulk of string **110.4** consisted of biconical examples and these were also found on strings **920.15** and **985.21**. These short biconical blue beads appear to have been one of the commonest found in the cemetery. They certainly occurred on strings *40/28*, *183/192* and *199/215* and, though the precise shade and degree of transparency is not described, blue short biconical beads are noted on strings *100/85*, *183/182*, *188/248*, *323/443*, *336/353* and *337/425*. Another example came from a soil sample recovered from OA Grave 855 where it was the only bead recovered. One of the strings on which blue beads occur is made up predominantly of small blue annular beads (**920.15**). On two of the other strings (**110.4** and **920.15)** there are also small annular beads and on one (**920.15**) an uneven spherical one. A small spherical bead came from Grave 1235 where it was the only bead recovered. Possibly these annular beads here are best regarded as part of the same continuum of small blue beads as the biconicals.

The short blue biconical type is a common find (Guido 1978, 78), first occurring in the late 2nd-century in Britain. There are examples in the fortress baths drain deposit dated *c* 160-230 at Caerleon (Brewer 1986, 149 no. 62-5) and it is also the bead type used on a necklace with silver wire links found in a late 2nd-century deposit at Kelvedon (Rodwell 1988, 76, fig. 61.1). They regularly form large parts of necklaces from 4th-century graves such as those from Butt Road, Colchester (Crummy 1983, 32 nos. 651-802), Poundbury (Guido and Mills 1993, 102 no. 7) and Ancaster (unpublished grave 218). That they continue to be available into the 5th century is suggested by the necklace in a grave at South Shields where they made up two-thirds of the beads. On the grounds of its other associations this grave is likely to very late in date (Croom 1994, 58).

The beads used on string **1360.10** had a distinctive diamond-shaped section and do not appear to have been recorded in the cemetery previously. This is a much less commonly encountered form and not separately itemised in Guido's (1978) corpus. Where found elsewhere they have a consistently very late dating. They occur on a necklace found in a pit at Gadebridge which also included pottery of the mid 4th century (Neal 1974, 133 no. 75; see also Cool 1983, 1157 no. 14). At Segontium one was recovered from a context of the late 4th century onwards (Allen 1993, 227 no. 60). At Barnsley Park one came from a 5th-century context (Webster and Smith, 1982, 110 no. 126) and at Piercebridge two, of a slightly paler shade of blue, were recovered from a ditch fill that did not start filling until the end of the 4th century (Cool and Mason 2008, database reference 1702-3).

The only other type of small deep translucent blue bead from the OA excavations was a single small cubic bead on string **1360.13**. Similar beads were found on string *438/560* which consisted primarily of these and coral beads. There are some grounds for thinking that these might be a later 4th-century type, but the question is complicated because the shape is made in opaque blue glass and a cloudy deep blue glass as well and catalogue descriptions do not always make the distinction. The three found on a necklace at Poundbury were exactly similar to the ones from Graves 438 and 1360. They were found on a necklace which consisted primarily of opaque green disc cylindrical beads which appear to be a good indicator of very late 4th- to 5th-century activity (Cool 2000, 50; Cool and Mason 2008, 269)

Three types of longer translucent deep blue beads were also found. Two of these, segmented and square-sectioned rectangular beads about 4-6 mm long, were both found on the same bead string (**1360.13**). Blue segmented beads were also found on strings **920.21** and **985.21,** and string *336/364* from Clarke's excavations. Segmented beads are most frequently found in green glass (Guido 1978, 91) and blue ones are noticeably less common on British sites. There are currently insufficient examples accurately recorded with respect to shade of blue and degree of translucency to trace when they start becoming common. The square-sectioned rectangular beads in deep translucent blue are also an uncommon type not recorded from the cemetery before. One example had been placed on a pyre during the late 3rd century (*c* 280/85-300/310) at Brougham (Cool 2004, 386 no. 282.8). Other examples on 4th-century necklaces in graves can be noted at Poundbury (Guido and Mills 1993, 102 no. 7) and at Butt Road, Colchester (Crummy 1983, 226 nos 1387-1413).

Long cylindrical beads were a major element of string **1360.11**. In the earlier excavations a similar bead was found on each of strings *188/248* and *336/363,* and there were three on *333/315*. This combination of colour, shape and length is a moderately common find in Britain. Guido (1978, 94-5) suggested that they occurred throughout the Roman period but it is noticeable that these long ones are primarily a 4th-century form.

Finally a long hexagonal deep blue bead may be noted (**87.3**), found while processing the skull of the body and so perhaps strung around the neck as a single piece. Short examples of the form were found in the earlier excavations on strings *323/436* and *336/363*. It has been asserted that blue hexagonal beads only occur at Lankhills in Britain (Swift 2000b, 72), but while not particularly common, they

are found elsewhere in the province in various shades of blue and various lengths, see for example those from the fortress drain deposit at Caerleon (Brewer 1986, 148-9 nos. 1, 2, 23).

Mid blue opaque glass

In addition to the translucent deep blue cubic bead, string **1360.13** also had a similar cubic bead made of opaque mid blue glass. A small conical bead in the same glass came from the same string. These appear to be the only examples of this colour glass from the cemetery. Small opaque blue cubic beads occur in the fortress baths drain deposit dated to 160-230 at Caerleon, but the precise shade is not stated (Brewer 1986, 151 no. 71-2), a problem that besets many of the ones noted in the literature. Opaque mid blue glass is used to for cubic beads at Vindolanda (Price 1985, 213 nos 70-1) but unfortunately these are unstratified. Square-sectioned opaque mid blue beads were used on a necklace in a 4th-century grave at Butt Road, Colchester (Crummy 1983, 226 nos. 1387-1413). These were of varying lengths but appear to include cubic ones. In my experience this shade of blue is not commonly encountered in beads from Britain.

Green/blue and peacock translucent glass

These colours are very similar, with the peacock shade being more vivid, and so they will be discussed together. In the 1979 report only three beads, on string *188/248,* were described as greenish blue. Whether this was because the colours were otherwise absent or just not distinguished is unclear. Certainly the shades are rarely described in the literature, but that may be because they are subsumed within the general blue and green categories. In my experience, as in the case with the opaque mid blue glass, they are not colours often used for beads.

The commonest form in these colours was the long cylindrical. Beads in peacock glass alternated with deep blue glass on string **1360.11**, and a blue/green one together with a slightly shorter peacock bead formed the terminal of string **110.4**. The three green/blue beads on string *188/248* were of this type and a long peacock cylindrical bead is recorded from a residual context from the Swinegate site at York (Cool *et al.* 1995, 1668 no. 6434).

A long square-sectioned peacock bead formed part of string **920.15**. A similar bead is known from the King Harry Lane site at Verulamium, though not from a dated context (Price 1989, 40 no. 259). The other green/blue beads were three segmented examples, also on string **920.15.**

Turquoise glass

This is another uncommon colour and does not appear to have been recorded from the cemetery before, but that may be for the same reason that the green/blue shades were apparently missing. One long ovoid bead in translucent glass was found on string **1360.11** and I am not aware of a precisely similar bead elsewhere. An opaque hexagonal bead or beads was found on string **985.21**. The only other combination of this colour and shape I know of came from Piercebridge (Cool and Mason 2008, database no. 1663).

Green glass

Green beads of a variety of shapes were common in the necklaces found during Clarke's excavations, as they are generally among site finds. They were less common from the OA excavations. There was one short hexagonal opaque green bead and one small annular translucent mid green bead, both on **985.21**. The hexagonal form has been found before in the cemetery on *351/399*. This is a long-lived and very common type, originally imitating beryl emeralds (Guido 1978, 96).

Yellow translucent glass

Short biconical beads in translucent yellow glass were found on two strings. Those on **1360.10** were yellow/brown and one in that shade, together with one in yellow/green glass, was found on **920.15**. Short biconical beads in yellow translucent glass (shade unspecified) were common in the earlier excavations occurring in strings *40/28*, *100/85*, *183/182* and *192*, *188/248*, *199/215*, *323/443*, *336/353* and *337/425*. Guido (1978, 98) suggested they might represent imports from the Germanic territories but this seems unlikely given they regularly occur in the same bead strings as the short biconical deep translucent blue beads discussed above. The combination is seen on seven of the Lankhills strings, on the Ancaster string, on one of the Colchester Butt Road strings (Crummy *et al.* 1993, grave 16) and on the South Shields necklace. They are admittedly not as common as site finds, but given that the deep blue ones are long-established in Britain, an external source does not really need to be invoked for them. Certainly in her survey Swift (2000a, 90, map 104) saw them as a widespread type rather than one which might provide clues as to ethnicities.

The other yellow/brown bead type was also found on string **1360.10** and was of the same lozenge-sectioned shape as the translucent deep blue beads that made up the bulk of the string. A similar combination was seen on a necklace from the Gadebridge villa (Neal 1974, 133 no. 75).

Opaque terracotta red glass

Red glass is extremely rare among beads that are typical Roman forms and here the rarity is unlikely to be due to inadequacies of reporting given that it is an easily recognisable colour. An irregularly faceted cubic bead in a shade of light opaque terracotta red was found on string **920.15**. Opaque red

beads are very rare on Roman sites and where they occur it is often in very late contexts. Short cylindrical ones, for example, have been noted at Vindolanda (Price 1985, 213 no. 63) and Piercebridge (Cool and Mason 2008, database ref 1700). The former was in a construction deposit of *c* 370 and the latter in a ditch fill that did not start accumulating until the end of the 4th century. Shades of opaque red, including terracotta, are common in 5th- to 7th-century Anglo-Saxon and Anglian assemblages (Guido 1999, 283), and so such evidence as there is would suggest that any 'Roman' beads in opaque red glass are likely to be of late 4th- or 5th-century date.

Colourless glass

There is one oval lentoid bead in colourless glass on string **985.21**. Again colourless glass is very rarely encountered in Roman beads, other than for the gold-in-glass form. Guido (1999, 12) noted it as occurring sometimes in 5th- to 7th-century assemblages.

Beads of other materials

Among the OA bead strings amber was the most frequently encountered material used to make beads other than glass. Amber beads occurred in three of the strings, **110.4**, **920.15** and **1360.13**, and had also been present on one of Clarke's strings, *323/436*. For the examples from the OA excavations only those from string **1360.13** retained their forms, a small annular bead and a dumbbell-shaped pendant. In the other two strings, the amber had decayed and was only recovered as small fragments. The amber bead from string *323/436* was also an annular one.

In discussing the example found during his excavations Clarke (1979, 296) drew his comparanda primarily from the continent, noted that amber beads were common outside of the empire and in Anglo-Saxon graves and raised the question of whether they should be seen as Romano-British. The site finds make it clear that amber beads are found regularly from the 1st century onwards in Britain. Annular beads of the sort recognised at Lankhills occurred on the amber bead string from the Walbrook which can be assigned to the mid 1st to mid 2nd century (Chapman 1974). The type was present in a small group of amber beads in the late 1st- to very early 2nd-century drain deposit in the Caerleon fortress baths, and in discussing those Brewer (1986, 152) noted that others had been part of a necklace associated with a 2nd-century cremation burial at Caerleon. Another example from a dated context can be noted at Watercrook, where it was found in occupation debris of the second half of the 2nd century and into the 3rd century, in a guard house (Potter 1979, 218 no. 89). While never common, amber beads are part of wider Romano-British culture and need not imply that anyone with them in their possession was an incomer. Their occurrence on bead strings found in 4th-century graves is variable. They were present on four of the ten strings recorded at the Butt Road cemetery at Colchester (Crummy *et al*. 1993, 143-3 tables 2.54-5), but absent from the seven strings found at Poundbury. Elsewhere on one of the two strings at Ancaster which only had nine beads, seven were of amber (grave 162 unpublished), and they are also recorded among the beads in a grave at Dunstable, Bedfordshire which appears to have had at least two strings (Matthews 1981, 45 no. 30). This variability may well be connected with the fact that, as Swift (2003, 342-3) has noted, amber seems to have been a material that was thought particularly appropriate for particular age groups, but that appropriateness varied between communities. Here amber was regarded as a young person's possession.

Dumbbell-shaped amber pendants are much less common than the beads but similar ones have been found associated with a bead strings in the 4th-century cemetery at Fordington, Dorset (Henig 1984a, 244 no. 1) and at Colchester (Cool 1983, 1158 no. 17). The latter is unprovenanced but presumably comes from the town. It was associated with a double-strand string where the beads were threaded on copper alloy links and so is certainly of Roman date.

One bead on string **920.15** is almost certainly made of coral. Coral beads were noted on seven of the strings from Clarke's excavations (*117/140*; *183/182*; *336* strings *353, 363, 365; 337/425* and *438/560*). Coral beads are rare in Britain and generally have only been identified on necklaces in 4th-century graves. They were present on a string in one of the few furnished graves at the Bath Gate cemetery at Cirencester (McWhirr *et al.* 1982, 132), and in two bead strings at Poundbury (Guido and Mills 1983, 102 nos. 5 and 7). They did not occur on any of the Butt Road cemetery bead strings, but have been found subsequently in Colchester on one in a richly furnished grave on the site of St Mary's Hospital (Anon 2003, 13). Five are recorded among the Baths Basilica site assemblage at Wroxeter (Barker *et al.* 1997, 250). The evidence would suggest that unlike amber beads, those made in coral were a 4th-century introduction. Given their rarity the number present at Lankhills does seem exceptional.

Finally five beads made from shaped stones are present on two of the OA strings; **920.15** has two cylindrical beads; one (**.15t**) is a light terracotta red with a green streak and the other (**.15w)** is a creamy pink. On string **985.21** there is also a barrel-shaped bead in a cream stone (**.21k**). In these three cases it has not been possible to identify precisely what the stone is. In the case of the other two beads from string **985.21** it is most likely that bead **.21i** is varisite and bead **.21j** is brown chalcedony (following Hutchinson 1996, 6-7). Both are diamond and triangular faceted rectangular beads. A varisite

bead of this shape was identified by Hutchinson from a Roman site in York (1996, 7, pl 9 left – 1981.12, Rougier Street). Three octagonal-sectioned beads of the material were recovered from mid 2nd- to mid 3rd-century contexts at Balkerne Lane, Colchester (Crummy 1983, 34 nos. 1444-6). A varisite bead was also identified in the Baths Basilica assemblage at Wroxeter (Barker *et al.* 1997, 250). Neither the type nor the context can be ascertained from the publication.

Brown chalcedony faceted beads were found during Clarke's excavations where they were described as brown cornelian. Hutchinson has also identified 29 similar beads from Ardleigh (Hutchinson 1996, 6 pl. 6) and a single bead threaded on silver wire from Caerleon (Brewer 1986, 154 no. 11, described as cornelian in the report) as being of this type. The Ardleigh beads came from a from a late 4th-century inhumation, broadly contemporary with the Lankhills examples; but the Caerleon one came from the fortress baths drain deposit dated to *c* AD 160-230.

Varisite is found in Europe in Saxony and southern Brittany, though the Breton material is bluer than normally found (Hutchinson 1996, 7). Clarke (1979, 295) drew attention to the numbers of the brown chalcedony beads of this form from Hungary. Both types are thus likely to originate in central Europe although, as the beads from Caerleon and Colchester show, some entered Britain well before the 4th century. Given that beads can have very long histories if they are restrung, the presence of singletons on a 4th-century string need not indicate that the person stringing the beads, or the person wearing the string, necessarily had any direct contact with that area. The fact that there are two of these rare bead types on string **985.21** does suggest though, that such a contact might be possible in this case, even if only at the level of someone inheriting or finding spare beads in a mother's or grandmother's jewel box.

As well as the deliberately formed beads, there was also the eye terminal of a copper alloy light bangle fastened with a hook and eye of the type discussed in the next section (**920.13**). This was found among the bead string **920.15** and appears to have been threaded as part of it.

The bead strings

The discussion above has set out the problems with deciding whether some beads in the shades of green/blue, peacock, pale blue etc are indeed rare or just apparently rare through non-detailed reporting. If these are ignored for this reason, then it is possible to divide the beads into common types, such as the small translucent deep blue and green beads of various shapes; less common types, such as amber beads and very rare forms such as ones made of opaque red, black and colourless glass, coral, varisite and brown chalcedony. Of the major types that occurred in Clarke's excavations but not in the OA ones, gold-in-glass are counted as common, and diamond and triangular faceted cubic glass beads as less common based on wider site find patterns. Table 4.25 itemises the strings according to this categorisation, arranging the strings according to the proportion of very rare forms they contain. As can be seen, approximately half of the strings from the Lankhills have no rare beads incorporated in them. Of the new strings, those from Graves 110 and 1360 comprise, on the whole, relatively common types and only those in Graves 920 and 985 contain any of the rare types, though at a much lower frequency than in some of Clarke's strings.

Table 4.25: Bead strings from Lankhills showing the proportion of rare types present

String	*Common*	*Less common*	*Rare*	*Peacock etc*	*Total*	*% Rare*
63/52	-	-	9	-	9	100
336/365	-	-	-	-	35	100
333/315	3	6	124	-	133	93
117/140	18	22	43	-	83	52
337/425	36	-	26	-	62	42
323/436	8	1	4	-	13	31
438/560(1)	present	-	present	-	?	?25
336/363	10	3	4	-	17	24
920.15	15	6	4	5	30	13
336/353	22	-	2	-	24	8
985.21	56	1	4	1	64	6
183/182	37	1	1	-	39	3
199/215	108	-	1	-	109	1
110.4	23	1	-	3	27	0
1360.10	2	25	-	-	27	0
1360.11	5	-	-	6	11	0
1360.13	26	2	-	1	29	0
40/28	100	-	-	-	100	0
100/85	165	-	-	-	165	0
183/192	69	-	-	-	69	0
188/248	106	-	-	3	109	0
323/443	56	-	-	-	56	0
326/424	4	2	-	-	6	0
336/364	100	-	-	-	100	0
351/399	66	-	-	-	66	0
438/583	140+	-	-	-	140+	0

(1) the numbers in this string are not stated and the proportion of rare forms is an estimate based on a the description

String **1360.11** is slightly unusual in that it consists of long beads threaded onto copper alloy links and it is much more common to encounter small beads threaded like this, as in the case of string **1360.10**. It is possible that the strings in this grave had been accumulated over some time. String **1360.10** has beads with a diamond-shaped section which have been noted as a type that have regularly seen in later 4th-century contexts. Those on string **1360.11** appear to have been in use earlier as well, and the fastener for the string appears to have been mended with a twist of iron wire.

As can be seen from Table 4.24, where the individual could be sexed, the overwhelming association is with females. In only one case were beads apparently found with a male, in grave 199 in Clarke's excavations, where the bead string appears to have been placed with a mature male though Gowland's re-assessment of the skeletal material has shown that there are also bones from a young adult female associated with this grave, not mentioned in the original report. As the wearing of ornaments was one of the factors that Clarke used to define incomers, the table has been structured according to whether the strings were worn or placed separately in the grave. The pattern seen suggests that it is age that governs how bead strings were placed in a grave. This can be formally tested comparing the incidence between what happens in the adolescent and younger graves and that in graves of young adult and older women. A Fisher's Exact test returns *p*-values of 0.02 if only the graves with a single individual are included and 0.03 if Clarke's graves 183 and 199 are included. This means that there is strong evidence to reject the hypothesis that age does not influence how the strings are deposited.

The information about the presence of rare beads in the strings can be used to explore this pattern further. It could be hypothesised, for example, that the presence of unusual beads, possibly indicative of immigrants, might explain why the strings accompanying the children in graves 333 and 324 were worn. Analysis of the data in Table 4.25 suggests this is not the case. Although string *333/315* has 93% rare beads and *323/436* has 31%, the other string in grave 323 has none. In the graves of children and young girls with unworn ornaments, the strings in Graves 110 and 1360 of the OA excavations and grave 188 of Clarke's excavations have no rare beads, but three of the four strings in grave 336 have many rare ones.

It therefore seems very unlikely that the wearing of bead strings can be taken as a secure identification of foreign extraction at Lankhills. From the isotope evidence the infant in Grave 110 cannot be assigned an origin with confidence because the enhanced oxygen isotope value may be related to breastfeeding rather than place of origin, and the prime adult in Clarke's grave 351 probably came from south central Europe. Both were indeed wearing the bead strings but the beads in the strings were all ones that can easily be paralleled elsewhere in Britain. The other individuals who have been subject to isotope analysis (Clarke's graves 323 and 326 and OA Graves 920, 985 and 1360) were all local. They were predominantly buried with unworn ornaments, but of the seven strings that accompanied them four had rare beads making up 6-31% of the individual strings. It could, and indeed has, been argued that 'local' individuals buried according to 'exotic' customs could be seen as second generation immigrants brought up in Winchester (Evans *et al*. 2006a, 271). Given the demonstrably strong association between age and the burial rite, the data would seem to point more strongly towards a community in which, among those who thought burial with grave goods was appropriate, it was stage of life that governed deposition, not ethnicity. Indeed, given the presence of the varisite and brown chalcedony beads on string **985.21,** where the possibility has been raised that this individual might have had a mother or grandmother from central Europe, it seems more likely that second generation immigrants, if that is what she was, were absorbed into the local pattern of what was felt appropriate.

The deposition of unworn beads with young people and the wearing of necklaces by older ones can be seen elsewhere, but it is not a universal pattern. There were two graves with bead strings in the cemetery at Dunstable. The worn one accompanied a young adult female and the unworn strings were with an older child (Matthews 1981, 44-5, skeletons G and AF). The bead strings from Poundbury were found in four graves. In one case one was worn by a 14-year-old, but in the cases of the other individuals, aged 12, 14 and 25, they were unworn. At Butt Road the bead strings accompanied one infant, four children, one adolescent and three adults. All were unworn apart from those accompanying the infant and an adult (Crummy *et al*. 1993, 142-3, tables 2.54-5). The necklace from Bath Gate, Cirencester was worn by the three-year-old it accompanied.

Clearly across the province there is no one simple reason why some individuals are buried wearing beads strings and some have them placed in the graves. What is noticeable is that they often seem to be thought especially appropriate for children and adolescents.

Bracelets

Bracelets were found deposited as grave goods in 13 of the OA graves as summarised in Table 4.26. A fragment of a shale bracelet came from the fill of Grave 1010 and in Grave 930 there was a copper alloy hoop fragment that could have come from a bracelet. Given the fragmentary nature of the latter and the fact that a knife blade was found in that grave, it might be suspected that these are inclusions in the fill rather than formal grave goods. As with the beads, the individual types represented will be discussed first before the assemblages placed in graves are considered.

Copper alloy bracelets

Writing at a time when no survey of copper alloy bracelets was available, Clarke divided the 94 copper alloy bracelets from his excavations on the basis primarily of section shape (Clarke 1979, 301). Here I will discuss them from the vantage point of my 1983 survey of the bracelets from southern

Table 4.26: Graves at Lankhills with bracelets deposited as grave goods

	Infant	*Young child*	*Older child*	*Child*	*Adolescent*	*Young adult*	*Prime adult*	*Mature adult*	*Adult*
Worn	333	323	336			326	351		40
		1070	**685**			**495**			63
			1866						**87**
									396
Unworn	238	85	**920**	105	139	117	143	168	266
	110	134	**1370**	122	265	137	430	218	369
		183		155	**18**	256		313	**1385**
		188		268	**985**	438			
		327			**1360**				
		337							

Britain, as this allows them to be put more appropriately into context. In that publication the groups were identified by Roman numerals, but here the nomenclature has been translated into Arabic numbers for simplicity.

The most common type of bracelet from Roman Britain is the cable twist made up of two or more strands twisted together, three strands being the commonest number found (Group 1). Generally they are fastened by hook and eye terminals. They appear in Britain by the early 2nd century and, as with so many bracelet types, become most common in the 4th century when bracelet-wearing as at its height. Two examples came from the OA excavations (**1070.1** and **1866.4**), both being of three strands with hook and eye terminals. This is the most common copper alloy bracelet type from Clarke's excavations, occurring in 12 graves (Clarke 1979, type 1).

Another type that has a long lifespan but which is commonest in the 4th century is the form with an expanding joint made by the ends of the wire wrapping around the opposite end of the hoop (Group 3). While not as numerous as the cable twist bracelet, it is common and widespread. My survey catalogued approximately 100 of the type compared to over 400 cable twist bracelets. Examples occurred in three of the OA graves (**495.2**, **920.4-7** and **985.3**) and in five of Clarke's graves (183, 256, 323, 100 and 327 – two examples each, and 336 which had five examples). All of the new finds have plain hoops – the commonest variant found. One (**920.7**) had clearly been broken before deposition in the grave because a make-shift repair had been effected between the joints.

Three bracelets have torc-twisted hoops. This type of bracelet (Group 4) has a long life as a penannular form but the types with a hook-and-eye fastening (Group 4A represented here by **985.6** and **1370.1**) and expanding joint (Group 4B – **1385.1**) nearly all come from late 3rd- or 4th-century contexts. The earlier examples from the cemetery were all of the hook and eye form and came from four graves (40 – two examples, 137, 238 and 328) They are widely spread in southern Britain but not particularly numerous, I recorded approximately 30 of the 4A and 4B type (including those from the earlier Lankhills excavations). Subsequently it has become apparent that torc-twisted bracelets might be more popular in the north than the south (Cool 2002, 26; Cool and Mason 2008, 251)

At the end of the 3rd century there was a surge in bracelet wearing, and to cater for this many new types came onto the market, while long-established types like the torc-twisted bracelets were rejuvenated with new fastening mechanisms. The bulk of the new forms fall into what I have termed light bangles, they tend to be slender and were fastened by a variety of mechanisms including hook and eyes, and overlapped joints. To have been effective several bangles like this would need to have been worn together. This would have been a flashy and noisy fashion as the faceting seen on many caught the light and they rattled against each other. There was a very wide range of decoration used, with the ones that were worn broadest to the wrist naturally providing the most space for this. I divided these into 18 major types with numerous sub-types; Clarke subsumed all the ones from the earlier excavations into his Group D.

From the OA excavations there are two examples of Group 16 in which plain and ribbed units alternate on a wide band. Bangle **1360.4** is a variant as the plain units appear to be decorated with a cross on at least some of them. I did not record this pattern in my survey. Bangle **985.7** belongs to the more standard type, as do the others recorded from the cemetery (*143/163*, *238/220*, *369/555*). It is a widespread group with approximately 50 recorded in my corpus. Wide bangles with transverse grooving (Group 19) had an approximately similar incidence. Here they are represented by bangle **1360.5**. No examples came from the earlier excavations.

Group 20 is a wide form with a band of incised or punched decoration running along the centre of the width. The normal decoration is either an incised line or a punched 'S'-shape. Bangle **920.3** belongs to this type but has a 'C'-shaped punch mark. This has only been found at Woodeaton (Cool 1983, 842 no. 1) and on an example from the Butt Road cemetery

at Colchester (Crummy 1983, 41 no. 1702). It may thus be regarded as rare. Examples of this group have not been found at Lankhills before.

Bangles decorated with a plain zig-zag pattern (Group 22) are one of the most common recovered in Britain. Bangle **985.1** is an example of the variant where the nicks are arranged to produce a blocked pattern (22B), considerably less common than the simple zig-zag (22A) which was the type present in Clarke's excavations (*117/141*, *155/196*). Bangle **985.1** is also slightly unusual in having this pattern applied to a wide band. The zig-zag pattern could also be augmented by the addition of grooves and ring and dots (Group 23) but these were less common than the plain ones (*c* 60 examples compared to *c* 120 in my survey). At Lankhills these decorated zig-zag bangles have been found in three graves, **18.1** and **685.1** from the OA excavations and *268/265* from Clarke's exavations. All belong to the 23D variant, in which a boxed zig-zag is additionally notched. This is the commonest variant among all the decorated zig-zag bangles.

Wide bangles with dotted decoration (Group 25 – single punched dots or ring and dots) are another numerous type with a number of different variants. The two from Grave 920 (**920.1-2** and **18.2**) all have the dots or ring and dots divided by edge notches paired across (Group 25E). The only example from this group from Clarke's excavations (*337/422*) also belonged to this variant, which is the second commonest in the whole group. Bangle **920.1** lacks one of its terminals but is otherwise in very good condition. It seems likely that it was placed in the grave in a damaged state as was bangle **920.7**.

Bangles with wedge-shaped decoration (Group 27) are not particularly numerous. They were found in two of the graves from the OA excavations (**985.4** and **1360.3**) and one of Clarke's graves (*188/251*). All are of the variant where the wedge shapes are paired across (27A). My corpus has about 10 others of these from southern Britain, so it can be regarded as a rare type, though apparently insular. I found no continental *comparanda*, nor did Swift (2000a, fig. 175 – plotting the Group 27B variant where the wedge shapes are staggered).

There are also bracelets that can be regarded as light bangles, being of the same general dimensions and date, but which are distinguished by not having any decoration. There are two examples of Group 33, which consist of simple wire hoops with hooked terminals (**1360.1-2**), also found in one grave of Clarke's excavations (*183/191*). There is an additional example (**1866.5**) that falls into this general category but which is distinguished by an unusual ribbed detail on the interior. There is one example (**87.1**) of a light version of the simple hook and eye bracelet (Group 34A), and one (**985.2**) of the similar type distinguished by grooves behind the terminals (Group 35A). With the exception of **1866.5**, all of these are common forms.

Of the remaining two light bangles from the OA excavations, one cannot be assigned to type as it so corroded (**1370.2**). The other (**1866.1**) is an example of the two-unit decoration type where one pattern of decoration occurs immediately behind the terminals but the bulk of the hoop takes another (Group 32). It is unusual in having the unit behind the terminals consisting of ring and dots, but it combines common motifs from the light bangle repertoire and thus seems similar to all the other examples of this insular type.

During the 4th century there is also a tradition of heavier, more massive cast bracelets. Bracelet **985.5** is of this type. It is an example of the Group 34B variant with blocks behind the terminals, also found in one of Clarke's graves (*326/403* and *406*). The fragment in Grave 930 (**930.1**) would also have belonged to a heavier bracelet form, but because it lacks its terminals it is not possible to identify the variant. An unstratified fragment from a cast multiple unit bracelet (Group 31) came from the OA excavations (SF 522, Fig. 4.6). This popular insular type was relatively common in Clarke's excavations (Clarke Type E), as they are as site finds, but was absent from the grave goods from the most recent excavations.

Finally the unusual hollow bracelet **495.1** may be considered. It is made of repoussé decorated sheet that presumably originally enclosed an organic core to give it stability. Hollow sheet bracelets are extremely uncommon in Britain. Swift notes that they are characteristic of the Pannonian and Danubian Limes though it cannot really be said they are common there (Swift 2000a, 178, 306, fig. 106). She notes their occurrence at three places in Britain; one from Colchester, one from Uley (Woodward and Leach 1993, 164) and three from Rochester (Cool 1981, 130-31, fig. 10.15). As no details are published for the first two, it cannot be judged to what extent they are similar to the European ones, but the Rochester bracelets do not appear to be directly comparable to them as they only have a diameter of 2.5 mm. The Danubian ones have much larger sections of *c* 6 mm or more (see for example Burger 1966, fig. 120 no. 328.4a, fig. 121 no. 330.3), and with a diameter of 6-8 mm bracelet **495.1** fits that range. Since Swift's publication a fourth hollow fragment has been published from Winchester, from a mid-late 4th-century well fill at Victoria Road (Rees *et al.* 2008, 56 no. 226). It has a section of *c* 6 mm and is decorated in a chevron pattern which was impressed from the outside. There are slight indications that the chevron decoration may have been panelled.

Most of the examples noted by Swift in the Danubian area are plain or just have ribbed terminals. They do not have the repoussé decoration of the Lankhills one nor the impressed decoration of the Victoria Road fragment. In his study of the grave goods from southern Bavaria, Keller published one piece from grave 17 at Pfaffenhofen that may have been closely comparable to bracelet **495.1** (Keller 1971, 104, Taf. 18.13). Only approximately one quarter of the circumference is extant

but it clearly retains parts of two units of repoussé decoration, one of which is very similar to the diagonal ribs that divide the different decorative patterns on bracelet **495.1**. Keller distinguished between the plain examples and the decorated ones like this and one with a different pattern from another Bavarian grave at Göggingen, and knew of no direct parallels for the decorated examples. Since then Swift has noted a bracelet broadly similar to the Göggingen example at Chartres and she suggests that this may have come from the Danube region (Swift 2000a, 179, fig. 228).

At one level, therefore, it is extremely tempting to assume that bracelet **495.1** is of Danubian origin. The fact that repoussé bracelets are so rare in that area, however, might give pause for thought. Another possibility is that these bracelets all came from quite a different source. Hollow gold sheet bracelets with repoussé decoration similar to that seen on **495.1** and the fragment from Pfaffenhofen are known from the Rhineland, including two from a hoard that also contained gold coins up to 353 (Hartley *et al*. 2006, 166-7, nos 122-4). A very elaborate gold bracelet in the 5th-century Hoxne hoard also has similar repoussé hollow tubes as part of its construction (ibid. no. 121). Bracelet **495.1** has many more similarities to these gold bracelets than it does with the plain Danubian copper alloy ones, and so could have been imitating a fashion in the more expensive metal. Where it would have been made is an open question. A continental source is possible given the current absence of any other bracelet like this in Britain, but that source could as easily have been in the vicinity of the Rhine as the Danube.

The degree to which bracelet **495.1** was unique within late Roman Britain is an interesting question given the presence of the Victoria Road fragment and the unusual hollow bracelet in a child's grave at the late/sub Roman cemetery at Cannington, Somerset (Rahtz *et al*. 2000, 355, fig. 239). The latter was made of three segments of copper alloy sheet with a slender branch of hazel as the core. It has incised decoration on the exterior consisting of alternating units of vertical and herringbone grooves, possibly the sort of pattern that the Victoria Road example may have had when complete. The Cannington bracelet has always appeared to be a unique piece and the discussion of it cited *comparanda* among 6th- and 7th-century continental ornaments and references in the early Welsh literature to relics of saints. It and the Victoria Road fragment could as easily, given the construction and decorative pattern, be derived from a piece like bracelet **495.1**. It will easily be appreciated that a fragile ornament like the Lankhills bracelet, very probably constructed around an organic core, is only likely to survive in a recognisable form in a grave, or possibly a hoard. As a site find it would be most likely to be recovered as an unusual fragment of repoussé decorated sheet that would not be identified as a bracelet. The extent to which bracelet **495.1** was unique in Roman Britain will only become apparent in the future now that we know how to view fragments of interestingly decorated sheet with new eyes.

Fig. 4.6 Copper alloy bracelets (SF 522 and SF 1990) and buckle (SF 3304) from non-grave contexts

Iron bracelets

Two graves had iron bracelets; **685.2** and **685.3** are both fragmentary and incomplete, but the position they were found in and the fact that the former is plain while the latter has grooved decoration indicates that two bracelets were present. Bracelet **1360.8** is now only represented by iron corrosion products and more than one bracelet may originally have been represented. In Clarke's excavations nine iron bracelets were recognised, including both plain and grooved examples and two with additional copper alloy sleeves. There can be no doubt that iron was used to make light bangle-style bracelets as a number have also been recognised at the Butt Road cemetery in Colchester (Crummy *et al*. 1993, table 2.53), but for obvious reasons they are virtually never identified as site finds and so there is no way of gauging how common they were generally.

Jet and shale bracelets

From visual inspection, all of the bracelets from the OA excavations in this category were made of shale. This is similar to the case for Clarke's excavations where the only one suggested as being of jet was from the fill of grave 100. Shale bracelets were found in three of the OA graves; **920.12** and **985.17** were plain, D-sectioned bracelets. A fragment of another of these was found in the fill of Grave 1010 and a further example was unstratified (SF 1990, Fig. 4.6). Plain bracelets were also present in six of Clarke's graves (85, 105, 183, 256, 323 and 337) with a seventh bracelet being essentially plain but with ridges on either side (*134/124*). The OA excavations also produced one decorated bracelet placed as a grave good (**1070.2**) and a fragment of a second was found unstratified. Both of the decorated bracelets have a herringbone pattern running around the outer circumference in four bands.

Plain shale bracelets always considerably outnumber decorated ones in any site assemblage. From the Winchester suburb excavations, for example, the ratio of decorated to plain bracelets was one to four (Rees *et al*. 2008, 52 nos. 192-206) and in two of the three decorated examples the decoration consisted merely of grooves running around the circumference, with only one having more elaborate decoration in the form of ring and dots. The pattern of deposition at Lankhills thus matches what might be expected with regard to the scarcity of decorated shale bracelets generally. What is unexpected is the nature of the decoration on bracelet **1070.2**. Herringbone or chevron decoration like this is rare, as most decoration consists of edge nicks forming zig-zag patterns, mock cabling or ring and dots (see for example Crummy 1983, fig. 38). The pattern is, however, precisely paralleled on a fragment from Silchester (Lawson 1976, 254 no. 46).

Plain shale bracelets are in use throughout the Roman period. Decorated ones are commoner in the late Roman period but no closer typological dating can be offered.

Ivory and bone bracelets

Bracelets made of slender strips of bone and ivory are common at Lankhills. They were fastened with the aid of sheet metal sleeves and/or small rivets. When these corroded the hoops could spring open and at a site like Lankhills where skeletal material does not always survive well this can cause problems for quantifying how many there were in a particular grave if multiple examples were deposited. For the OA excavations the quantification has been done primarily on the number of terminal fittings that are present with additional information derived from the size and shape of the extant hoop sections being used in some instances.

The OA excavations produced only one bracelet that was probably made of ivory (**313.1**); the rest were of bone. Bracelet **313.1** had clearly been fastened with the aid of copper alloy fittings, indicated by green staining. It did not retain rivet holes in the extant terminal so was probably fastened by a sleeve. Similar ivory bracelets were recorded in Clarke's graves 83, 438 and in the fill of grave 100. OA Grave 313 had been excavated and published by Clarke as grave 115 but no grave goods are recorded as coming from it, so it appears that just this one bracelet was deposited.

Clarke divided the bone bracelets into three types. Type A was fastened with a ribbed sheet sleeve of silver or bronze and no rivets were observed. Type B had a plain sleeve of bronze which was riveted in place with iron rivets. Type C had overlapped ends held together with bronze or iron rivets. In the OA excavations the metal fittings had frequently disappeared, leaving only green staining and corrosion products to show the presence of copper alloy and iron. Allowing for this, it seems likely that three of the bracelets from Grave 985 were of Type A (**985.11-13**). The other examples in that grave were of Type B, as were those in Graves 18, 1360 and 1866. The bracelets in Grave 920 were probably also of Type B but in one case the sleeve appears to have been of iron (**920.10**). No examples of Type C were recovered. Bone bracelets had also been deposited in Graves 110 and 1370 but they were in very poor condition and did not retain any traces of the terminals.

Clarke suggested that the use of Type A and B bone bracelets overlapped during the period 350-370, and that many of the Type A bracelets were deposited prior to 350 with the Type B bracelets continuing to be deposited after 370. Greep, who had conducted a province-wide survey of bone and allied material worked objects, did not consider that the 4th-century dating of these bracelets could be refined on the basis of either the fastening system or the decoration which they very occasionally carry (Greep 1993, 107). The suggestion that this type of bone and ivory bracelet was being regularly

deposited prior to 350 is at odds with the evidence from the site finds. Where the date of the deposit can be further refined within the 4th century, overwhelmingly they come from contexts belonging to the second half of the century, especially late in the century and in the 5th century (Cool 2000, 49). As can be seen from Table 4.15 coin associations for female personal ornaments are confined to those of the middle third of the 4th century with the exception of bone bracelets which also have coins of the Houses of Valentinian and of Theodosius. Judged by the coin associations alone, the deposition patterns in Clarke's excavations do not appear quite so much at odds with the site pattern as his discussion suggests. To this may be added the bracelets in Clarke's grave 438, the grave with the most bracelets from either excavation (see Table 4.27) and in which 75% of the bracelets are of ivory and bone. This grave cut grave 437, the latest coins in which were of AD 361-3. Such a sequence would suggest that grave 438 must date to the final quarter of the 4th century at the earliest. One of the OA graves with bone bracelets (Grave 1370) contained three coins, the latest one dated AD 337-341, and one did have a pottery vessel (**18.12**) which was compared to a type current from *c* 270-350. Given the fact that the presence of bone bracelets elsewhere can normally be regarded as a good indicator of late 4th- to 5th-century occupation, the likely date at Lankhills will be considered further in the next section when the incidence of all the different types of bracelets is compared.

Overview of bracelet deposition

As Table 4.26 makes clear, bracelets are overwhelmingly a female attribute. (In the catalogue of Clarke's excavations, two bone bracelets (nos 457 and 458) were erroneously attributed to grave 427, the grave of a mature male (Clarke 1979, 313). Clarke's figure 86 makes it clear that this was a misprint for grave 327).

It is also clear that there is no simple age-related pattern that determined whether the bracelets were worn or deposited separately within the grave, as there was with the bead strings. The bracelets from Clarke's excavations have attracted a certain amount of attention since they were published. They naturally formed part of Clarke's discussion with regard to the view that worn ornaments were indicative of incomers. Swift took the argument further, pointing out that some of the individuals wearing bracelets were doing so in the same ways that were observed in Pannonia (Swift 2000a, 179; 2000b, 72-4, fig. 30). She suggested a pattern of younger females having multiple bracelets on the left arm and a single one on the right, whereas older females tended to have one or two bracelets on the left wrist and one on the right. Gowland's reappraisal of the age of the skeletons has moved one of Swift's younger females to the adult category (grave 40), although it may be noted that the plan of the grave suggests an individual who was smaller than an adult (Clarke 1979, fig. 62). As a result of her work Gowland (2001, 160) drew attention to the peak in the number of grave goods deposited with younger and older children (ages 4 to 12), and many of these were bracelets. She also drew attention to the peak in similar grave goods for young adult women.

In order to explore these and other patterns, Table 4.27 summarises the bracelet assemblage from each grave and includes Clarke's grave 100 in which a group of bracelets was deliberately inserted into the fill of the grave. The very common cable twist bracelets form one category and the other copper alloy bracelets have been divided into common, less common and rare forms. The criteria for this are based on Cool 1983. Rare bracelets are ones which are either absent from the corpus or where there are four examples or less. The less rare category consists of those variants which I catalogued between 5 and 15 examples. Common variants are those of which there are 15 examples or more, though in many cases there are 50 plus examples. Bracelets that appear to belong to common Romano-British types but which show unusual features have been placed in the less rare category. The table has been arranged from largest number of bracelets to least and the final column provides the age of the individual together with an indication of whether the bracelets were worn or deposited separately. Table 4.28 summarises the content of Table 4.27 still further, presenting four bands based on the quartiles of the bracelet total according to age bands. The quartile boundaries have been adjusted so that graves with the same number of bracelets are not split between different bands and graves where the individual is only broadly aged (child, adult) are ignored.

As can be seen from these tables Gowland's observation about younger girls having large numbers of grave goods continues to hold true with the addition of the data from the OA excavations. Most of the graves with ten or more bracelets contain the body of an adolescent or child. Older women tend only to have one or two bracelets, with the exception of the prime adult in Grave 143 who had the second highest number of bracelets from the entire cemetery.

The use of worn bracelets as an indicator that the individual was either an incomer or a second generation immigrant now appears less secure. In Pannonia itself it is clear that different cemeteries show some variation in placing and the patterns are not reproduced exactly. For example, the very diagnostic snake's head bracelets that are placed on the right arm in Pannonia, are not found at Lankhills (Lányi 1971, 106). Even allowing for the substitution of British bracelet types, it is odd that heavier snake's head types were not acquired for this role if it was seen as important to maintain placing patterns. The nearest equivalent at Lankhills is bracelet *396/502*, but the bracelets in this

Table 4.27: Graves with bracelets at Lankhills showing the different types present

Grave	*Copper alloy*				*Iron*	*Shale*	*Ivory*	*Bone*	*Total*	*Age*
	Cable	*Common*	*Less Common*	*Rare*						
438	-	2	-	1	1	-	11	1	16	*YA*
143	1	4	-	1	-	-	-	8	14	*PA*
183	4	5	-	-	-	1	2	2	14	*YC*(1)
985	-	5	2	-	-	1	-	6	14	*Adol*
920	-	6	-	1	-	1	-	4	12	OC
336	-	7	-	-	-	-	-	4	11	**OC**
18	-	2	-	-	-	-	-	9	11	*Adol*
323	-	4	-	2	2	1	-	1	10	**YC**
337	-	1	-	-	-	2	-	7	10	*YC*
100	1	2	-	-	1	1(2)	2	2	9	YA
139	5	2	-	1	-	-	-	-	8	*Adol*
1360	-	3	1	1	1	-	-	2	8	*Adol*
117	1	3	-	-	-	-	2	-	6	*YA*
256	1	1	-	-	1	2	-	1	6	*YA*
327	-	4	-	-	-	-	-	2	6	*YC*
122	3	-	-	-	-	-	-	2	5	*Child*
1866	1	-	2	-	-	-	-	2	5	**OC**
40	-	2	-	-	1	-	-	1	4	**Adult**
134	-	-	-	-	2	1	-	1	4	*YC*
188	3	-	-	1	-	-	-	-	4	*YC*
238	-	2	-	-	-	-	-	2	4	*Infant*
369	1	3	-	-	-	-	-	-	4	*Adult*
155	1	2	-	-	-	-	-	-	3	*Child*
333	-	2	-	-	-	-	1	-	3	**YC**
110	-	1	-	-	-	-	-	2	3	*Infant*
685	-	1	-	-	2	-	-	-	3	**OC**
1370	-	2	-	-	-	-	-	1	3	*OC*
85	-	-	-	-	-	2	-	-	2	*YC*
105	-	-	-	-	1	1	-	-	2	*Child*
137	-	1	-	-	-	-	-	1	2	*YA*
266	-	1	-	-	-	-	-	1	2	*Adult*
326	-	2	-	-	-	-	-	-	2	**YA**
351	-	2	-	-	-	-	-	-	2	**PA**
396	-	1	-	-	-	-	-	1	2	**Adult**
495	-	1	-	1	-	-	-	-	2	**YA**
1070	1	-	-	-	-	1(3)	-	-	2	**Child**
63	-	-	-	-	-	-	-	1	1	**Adult**
168	1	-	-	-	-	-	-	-	1	*MA*
218	-	-	-	-	-	-	-	1	1	*MA*
265	-	-	-	-	-	-	-	1	1	*Adol*
268	-	-	-	-	-	-	-	1	1	*Child*
430	-	1	-	-	-	-	-	-	1	*PA*
87	-	1	-	-	-	-	-	-	1	**Adult**
313	-	-	-	-	-	-	1	-	1	*MA*
1385	-	-	1	-	-	-	-	-	1	*Adult*

See text for definition of copper alloy types.
Final column key:
YC – Young child, OC – older child, Adol – adolescent, YA – young adult, PA – prime adult; MA Mature adult.
Bold indicates bracelets worn, Italics indicates bracelet deposited separately. Grave 100 – bracelets deposited in fill.

Notes
(1) additional individual recorded
(2) jet rather than shale
(3) rare decorated variant

Table 4.28: The distribution of the bracelets by age of deceased

No. of bracelets	*Infant*	*Young child*	*Older child*	*Adolescent*	*Young adult*	*Prime adult*	*Mature adult*
16-10	-	3	2	2	1	1	-
9-5	-	1	1	2	3	-	-
4-3	2	-	5	-	-	-	-
2-1	-	1	1	1	3	2	3
All	37	30	17	12	41	46	33
%	7	17	53	42	17	7	9

Note: All is the total number of individuals in the age category recorded for the cemetery as a whole ignoring those sexed as male for the adolescent category onwards – (see Table 4.13). The percentage figure shows the number of relevant graves in each category with bracelets.

grave were not worn. Philpott (1991, 144-6) reviewed the evidence for Britain and concluded there was a wide range of habits associated with the wearing of jewellery and that these were encountered at a variety of sites, including ones such as the small town of Dunstable where no evidence for immigration had ever been suspected. The isotope analysis carried out on four of the bodies with worn jewellery from Clarke's excavations (63, 323, 326, 333) also returned signatures suggesting that they were local (Evans *et al*. 2006a). As can be seen from Table 4.26 the types of bracelets associated with three of those individuals are all typical Romano-British forms, with only grave 323 having rare copper alloy forms.

Of the two girls with worn bracelets from the OA excavations who underwent isotopic analysis, one from Grave 1866 was wearing them in what had been suggested as the classic Pannonian pattern with four on the left arm and one on the right. Two of these bracelets fell into the less common category (**1866.1** and **.5**), though the former was clearly an insular type. Both of the girls, however, were local. So the evidence continues to accumulate against the hypothesis that the wearing of jewellery is a useful indicator of immigration.

Finally, to return to the likely date of deposition of the bone and ivory bracelets. On the basis of the evidence from other assemblages I have suggested that one of the diagnostic indicators of whether a site assemblage belongs to the end of the 4th century may be whether there are more light bangles and related bracelets than there are cable twist examples among the copper alloy bracelets (Cool 2000, 49). At Lankhills there are 17 graves which contain five or more bracelets. All contain copper alloy bracelets and all but one contain ivory or bone bracelets. From Table 4.26 it can be seen that nine of these graves have no cable twist bracelets and all of these have bone bracelets. Four (143, 100, 117, and 1866) have fewer cable twist bracelets than other forms. All of these have bone or ivory bracelets, although those in grave 117 are of a different type from those discussed here. One (183) has approximately equal numbers of both types and has bone and ivory bracelets. One has more cable twists than other types (139) but does not have bone bracelets, and one (122) has only cable twist bracelets together with two bone bracelets. Among the graves with four bracelets the only grave where cable twists are in the majority also lacks bone bracelets.

These patterns would certainly be consistent with the suggestion that cable twist bracelets were more popular in the early to mid 4th century and were losing their popularity in the later 4th and into the 5th centuries when bone bracelets became much more common. It is possible to compare the number of graves in the assemblage as a whole with bone bracelets to those with cable twist and to those with the common types of other copper alloy bracelets. Using a Chi-squared test it can be shown that the difference in the pattern between cable twist bracelets and bone ones is statistically significant (*p*-value 0.002) whereas between bone bracelets and common copper alloy ones it is not. Given that the difference in the incidence of the cable twist and bone bracelets is clearly not related to the age of the deceased or whether the bracelets were worn or not worn, a chronological difference seems most likely. This would suggest that the OA graves with a high proportion of bone bracelets (920, 985, 18) are likely to be late 4th century at the earliest. Of the other OA bracelet graves, four more (110, 313, 1360 and 1370) are also likely to be late 4th century in date given the absence of cable twists and presence of bone bracelets.

Other personal ornaments

Hair pins

A maximum of three of the OA graves had hairpins. One of these, a bone pin from Grave 82, has not been available for study. Pin **545.1** has a very unusual copper alloy diamond and triangle faceted head which is hollow centrally. Hairpins with solid heads in this shape are a common late 3rd- and 4th-century type, widespread in Britain and the rest of the western provinces. In metal they form my Type

15 (Cool 1991, 164), in bone Crummy's type 4 and in jet her Type 2 (Crummy 1983, 22, 27). This was the commonest type found during Clarke's excavations being recovered in silver (*336/31*), copper alloy (*351/396*) and jet (*100/89* and *250/267*). None of them have hollow heads, nor did any of the 66 in my survey, nor of the ones I have noted since. Solid heads are also normal for the continental examples. This then is an extremely rare variant for which no parallel is currently known.

Grave 545 also contained two slender copper alloy shank fragments and a similar shank fragment came from another OA grave (**985.20**). These may have come from other hair pins, but it would be unusual in the 4th century to have the heads made separately. The only other type in which that occurs regularly is the glass headed form, belonging to the second half of the 4th century (Cool 1991, Type 16) and the heads of those rarely become detached. At Butt Road, Colchester a silver pin had a repoussé decorated silver sheet head separately soldered on (Crummy 1983, 30 no. 512; Crummy *et al.* 1993, 135). Something similar may have been the case here, but traces at least of the head could have been expected to survive. Pin **985.20** was found under the skull of the skeleton and so may have been worn and effectively complete.

Table 4.29 shows the distribution of hair pins by age and sex. Again this is overwhelmingly a female type and it was young girls and young women who were buried with these hair ornaments. Most have been found directly associated with the skull or close to it and so a role in decorating the hair or fixing some form of head-dress is probable. That they were regarded as practical items as well as jewellery is suggested by the fact that while some of them were worn alongside other items of jewellery, others are the only item worn. In the cases of grave 276 and Grave 545 there were no other items of jewellery and in Grave 985 only the pin was worn, the rest of the ornaments were placed separately from the body.

Finger rings

Clarke described all rings as finger rings (Clarke 1979, 318-21). Some were slender types with overlapped terminals which elsewhere have been described as earrings (see Allason-Jones 1989). However, various of these were found on finger bones or among the hand bones (eg *326/401* and *402*; *336/7*) and so it is clear that they were being used as light decorative trinket rings. The convention of calling all the rings from the OA excavations finger rings will thus be followed here, but it will be indicated which types could be earrings. The graves with these rings are summarised in Table 4.30.

The only finger ring to fall into any of the standard Roman types was **1070.3**. This is a silver ring with scalloped shoulders and an octagonal box bezel worn on the second finger of the left hand of a child who, from isotope analysis, was local. The basic type of ring occurs across the western provinces (see for example Endre undated, pl. 6 c and d; Henkel 1913, Tafn XI.220, L.1320), but it seems very likely it was also being made in Britain. I recorded 15 examples of the type with an octagonal bezel like this (Cool 1983, Group 16A). The setting for ring **1070.3** is missing but it is noticeable that where they survive in the other rings of the sort from southern Britain, they are of the moulded glass type which appears to be an insular development of the 3rd century (Henig 1974, 164).

Table 4.29: Graves with hair pins deposited as grave goods (excluding OA Grave 82)

	Young child	*Older child*	*Child*	*Adolescent*	*Young adult*	*Prime adult*
Worn	323	336	276	545 **985**	326	351
Unworn			102	250		

Table 4.30: Graves at Lankhills with finger rings deposited as grave goods

	Infant	*Young child*	*Older child*	*Child*	*Adolescent*	*Young adult*	*Prime adult*	*Mature adult*	*Adult*
Worn	**1866**	188(1)	336	1070		326	362		**885**(2)
Unworn		337	336	155	139 **985** **1360**	117 438	53	281	

Notes:
(1) in this grave one was below the neck and one near the left hand with bracelets
(2) the arms and hands do not survive but the ring was positioned on pelvis where it would have been appropriate for a worn ring if the hands were placed on the body

Henig has noted that intaglio rings are rarely found in graves, possibly because the signet was needed as evidence for legal matters concerning the heir (Henig 1974, 66-7). By the 4th century intaglios used as personal seals had long since fallen out of use and so it is to be doubted that the setting would have been deliberately removed for this reason, especially as the deceased was a child. The ring thus appears to have been deliberately placed in the grave without the setting, which was also the case for at least one of the rings in Clarke's grave 139. Given that rings like **1070.3** often had 3rd-century intaglios, the absence of one here may just mean that it had long since been lost and the ring was old by the time of the burial.

Three of the rings from the OA graves belong to a type that rarely features in any consideration of Roman finger rings because of its method of construction, involving a butt-jointed hoop with a bezel soldered onto it (Cool 1983, 276 Group 24). This is a 4th-century type, but normally when they occur as site finds the plate has long since become detached and is missing, though differential corrosion products normally indicate its existence. Only environments such as graves normally conserve such rings with their bezel plates intact. At Poundbury, for example, two were found in the grave of a nine-year-old child, one of which retained a repoussé decorated sheet (Cool 1993, 96 nos. 28-9). In ring **885.1** the bezel was a small square plate which had become detached in the grave. It had a hoop of uniform section rather than the expanding shoulders seen on the Poundbury examples, and broadly resembles a very late 4th-century form which was cast in one piece and which has a square bezel with undercut edges. Johns (1996, 53) has termed these rings the Brancaster type. The dated associations in Britain and on the continent indicate they were in use at the end of the 4th century and in the 5th century. The incised intaglio decoration on these have recognisable figurative motifs which can sometimes become almost abstract. Ring **885.1** is not a Brancaster type ring but the general shape and the decoration on the bezel, possibly indicative of two confronted figures, is far closer to that type of ring than to any other in use in Roman Britain, and a similar late date might be suspected.

The second finger ring using the same basic construction technique came from Grave 1360 (**1360.14**). In this case the bezel consisted of two additional metal sheets which, like ring **885.1**, had separated in the grave and indeed had been given three separate small find numbers. The piece was eventually re-assembled by matching features such as differential corrosion on the different elements. It is currently unparalleled, but this is not surprising. Even within the closed assemblage from a grave it was not initially clear that the lower bezel plate belonged to this piece. The upper plate has punched marks which resolve themselves into a design of two confronted figures when an impression is taken. This probably indicates that it was designed as an intaglio ring.

A third example of one of these butt-jointed rings (**1866.5**) was found worn on the left hand of a child aged between six and twelve. Here the bezel has not survived but is indicated by differential corrosion products. This child wore a second finger ring (**1866.6**). Interestingly this consists of just a copper alloy strip bent into a ring with overlapping ends. In an ordinary domestic assemblage there would be no way of identifying such an item as a finger ring, but it probably indicates within the whole Lankhills assemblage that similar simple rings such as *188.250* and *336.362* were also finger rings, even though they were not found worn.

Ring **985.18** is an example of the sort of ring that could be either an earring or a finger ring. It is broken but the hoop appears to tapering towards the sort of joint necessary for an earring. Three-pronged rings such as this are a common type and form Allason-Jones (1989) Type 2a earrings. They were common in the previous excavations both as examples with overlapped terminals and as annular rings (Clarke 1979, 319 Type Bb and c). This example was found in a pile of deposited jewellery and as the only other ring that could have been a pair to it (**985.19**) has expanded oval plate terminals that would not have been suitable for an earring, it is probably best to regard both as trinket finger rings.

Finally ring **920.14** can be noted; this is a small fragment of an iron ring of a size that would be suitable for a finger ring. Given its associations in this grave (bracelets and bead strings) there is a possibility that it might have functioned as a finger ring, unlike the undecorated rings in Graves 745, 1760 and 3030 which were associated with belt equipment and may have been connected with the suspension of knife sheaths.

As Table 4.30 makes clear, this is another category of artefact where nearly all of the sexed associations are female, and which tends to occur in the graves of younger people.

Pendant

There was one example of a pendant worn on its own and not as part of a bead string; **1355.2** was located in the jaw/neck area of a child as if it had been hung around the neck. It is a most unusual piece as it is clearly the pin from a silver buckle. The curved-over faceted tip is a feature regularly seen on 4th-century buckles and in this cemetery occurs on *283/481*, *366/488* and **1921.27**. What marks this pin out as unusual is the material it is made from and the fact that it has a crossbar between the loop and the pin. The rarity of silver belt equipment in Britain and its links with areas beyond the Roman frontiers has already been discussed in connection with buckle **1846.2**. The crossbar seen on the pin separates it out from most of the common buckle forms in use in the 4th-century western empire. It implies a buckle that had a sufficiently wide frame to accommodate it and which did not have internal

detail close to the frame which would have impeded its movement. Oval-framed buckles of the sort common in the cemetery would not have been wide enough and the zoomorphic forms such as Hawkes and Dunning (1961) Type IIA would be ruled out because the involuted tails would not leave space for the crossbar detail. The configuration and size of Hawkes and Dunning Type IIIA, in which the outer part of the frame is plain and the animal heads are either side of the junction with the plate, would be suitable. On some continental examples of the type the pin is embellished with an additional crossbar as here. Those crossbars, however, tend to carry animal head terminals, as for example one from Oudenburg (Mertens and van Impe 1971, pl. XXXVII), and it is unlikely pendant **1355.2** came from one of these. Even closer to what might be thought of as the heartlands of silver belt equipment the crossbar detail appears to be rare. Lányi's survey produced only a single example with expanded pin detail, and that not closely comparable to pendant **1355.2** (Lányi 1972, Abb. 52.14). It is to be suspected that closer comparanda probably lie beyond the frontiers given the popularity of silver belt equipment there. Unfortunately it has not been possible to pursue this line of research further as part of this project.

The child the pendant accompanied has been shown by isotopic evidence to be local, so the presence of this exotic item with him or her is intriguing. The shape of the piece makes it ideal for reuse as a pendant. It is possible that it was perceived as having some amuletic function, just as *bullae* were hung around the necks of young boys. Though it is of cruciform shape and thus to modern eyes possibly a Christian symbol, in antiquity it would not have had this meaning as the cross was yet to become the diagnostic image for the religion.

Miscellaneous

The final item that appears to have been deliberately deposited as a grave good was object **620.1**, a broken strip of bone with the inscription DIVV[which has been expanded as DIV VIVAS, 'May you live long'. This is a puzzling piece as though decorated bone strips were often used in the 3rd and 4th centuries as inlay on boxes and items of furniture, they are not normally inscribed. The only inscribed fragment recovered as a site find came from Richborough but no circumstances are recorded about its discovery. It reads]S VIVAS (Bushe-Fox 1926, 45 no. 12, pl. XII; RIB II.3, no. 2441.18). There are two items from graves which might have been casket inlay and which spell out a message. One is the famous openwork plate spelling out S[OR]OR AVE VIVAS IN DEO from a stone coffin in York which also contained bracelets and beads among other grave goods (RCHME 1962, 73, fig. 58; RIB II.3, no. 2441.11; see also Hartley *et al.* 2006, 155). Several fragments of a strip probably of bone recorded in the 18th century and now lost were found in a stone coffin at Chesterton. They included the message VTERE FELIX and an untranslated word in Greek letters (RIB II.3, no. 2441.12).

In neither case is there sufficient information to make a judgement about whether the strips actually decorated anything or were placed in the grave as stand-alone objects. At Lankhills no item decorated with inlay was deliberately deposited as a grave good, though an undecorated fragment of bone, possibly originally a piece of inlay, was found in the fill of Grave 1610. Given that object **620.1** is broken and was apparently not deposited whole in the grave it seems unlikely that it is the sole surviving element of a decorated organic item such as a wooden box, and so may have been placed in the grave in the state it currently takes. It was presumably the message on the fragment that was important. This certainly seems to have been the case with regard to the bone rectangle found 'on the breast of a corpse' during the building of the Railway Station in York 1879. This read DOMINE VICTOR | VINCAS FELIX (RCHME 1962, 135 no. 149, pl. 65; RIB II.3, no. 2441.7). Both from the position and the fact that it was pierced at one end, this seems very likely to have been a pendant hung around the neck.

Given that the placing of inscribed items in graves is so rare in Britain, it is of some interest that in two of the three cases there are good grounds for thinking that the person they were buried with might be an immigrant. Recent isotope analysis on the body associated with the openwork mount has indicated that she probably grew up in an area that was warmer than Britain (Leach *et al.* 2010). As discussed in connection with brooch **1846.1** the VTERE FELIX sentiment is one that appears not to have had much attraction for the ethnically British and is more often associated with continental artefact types. Whether the inscribed ?pendant from York might be indicative of a foreign origin is an interesting question. The sentiment expressed 'Lord Victor, may you have a lucky win' is one traditionally associated with gladiators and charioteers. If this identification is correct, then there is a possibility that he too was an immigrant. Whether the presence of object **620.1** in the grave, placed between the feet of the woman and her baby, also indicates she is an immigrant would be an interesting question to explore via isotope analysis.

Overview

As the preceding detailed discussion has shown, there are very strong patterns related to the sex and sometimes to the age of the deceased which explain why certain types of artefacts were deposited in particular graves. It has also been possible to show that the sort of finds discussed here often provide good evidence for the date of the burials which is sometimes at odds with that provided by other categories of finds. It is also possible to compare

what we know about a person's origins derived from the isotope analysis with what we can deduce from the items they were buried with. This section seeks to draw all these sources of information together to summarise what we know about the lavishly furnished graves excavated during the OA campaign. Obviously it is only one small aspect of the overall interpretation that must take in all aspects of all the graves, but it may provide some useful insights. The question of who was buried with what will be considered first as that has an impact on the question of chronology. As it has regularly been the sex of the individual that has had the biggest impact on who was buried with which item, this part of the discussion will be structured around female and male graves. There are some ungendered artefacts such as glass vessels which show interesting differences between those used for the young and those used for adults (see above), but generally the differences with regard to age are intimately connected with sex.

Women and girls

Many of the items discussed in this section have been shown to be a female accoutrement. Spindle whorls, bead strings and bracelets only ever occur in female graves where sexed. Testing the incidence between all male and female adult lavishly furnished graves (see Table 4.13) shows that the patterns observed are significantly associated with sex and do not come about by chance. The sex associations of combs are predominantly female but two occur in male and ?male graves, so this pattern cannot be shown to be significant in the same way as that related to the spindle whorls etc.

Some items can be shown to be particularly appropriate for particular age groups. It is clear that it was thought that when combs were placed in female graves, it was most appropriate for older women (mature and older) to be accompanied by them; whereas spindle whorls were appropriate for all ages from the point at which a girl began to approach adulthood onwards. Among the jewellery items, necklaces and bead strings accompanied females from infancy to prime adulthood, but within that span it could be shown that the placing of beads in the graves was very much structured by age. For adolescents and younger the normal pattern was to deposit the beads separately in the grave, whereas for the adult women the normal pattern was for the beads to be worn. Bracelets were another item of jewellery that accompanied females from infancy to mature adulthood, but again there were age-related differences. Children and adolescents were generally buried with many bracelets, older women tended to have only one or two. Hair pins were very much a fashion for girls and very few adult women were buried with them. Given the small number of adults with hairpins, this data set cannot show that hair pins were definitely a female attribute in the same way that spindle whorls etc were, but where sexed all the associations were with females.

In general it was young females up to young adult stage that had the greatest number of different types of jewellery and the most individual pieces. From prime adulthood onwards there is a falling off in the range and quantity of jewellery. A few prime adult females have bead strings and bracelets. By the mature age (36-45) only three females have bracelets and none have bead strings. None of the older and much older women have jewellery. This makes the evidence that combs were more likely to be placed with older women, and that older women also continued to have spindle whorls, of some interest. In the detailed discussion of both types it was possible to demonstrate wider associations which indicated that they might be appropriate accoutrements for high status women. In any 4th-century cemetery it is the range of jewellery that accompanies young girls and women that always attracts attention. It is interesting to reflect that this may be the equivalent of the costume jewellery acquired in large quantities by modern teenagers and reflects nothing more than their age. If we seek the high status women at Lankhills we should probably be looking at the ones who have the spindle whorls and combs.

Men and boys

The male attributes at Lankhills are crossbow brooches, belt equipment and knives. Again, testing the incidence between all male and female adult lavishly furnished graves (see Table 4.13) shows that the pattern observed is significantly associated with sex. This is not surprising for the brooches and belt equipment, but the knife pattern is very marked compared to what is known from other cemeteries. Adult males of all ages could be buried with all of these three artefact types.

It is very noticeable that these male accoutrements are very strongly restricted to adults. Where they occur in the graves of young people they are all concentrated in only two of the OA graves (745 and 1760). There certainly does not appear to be the same pattern for boys as there was for girls. The difference is stark when the incidence by age of the types that are definitely female (spindle whorls, bead strings and bracelets) is compared to those that are definitely male as is

Table 4.31: Distribution of graves with gendered artefacts according to age

Age	*Female types*	*Male types*	*Grave total*
Young (1-17)	25	2	27
Adult (18+)	26	21	47
Total	51	23	74

done in Table 4.31. This is a pattern that is extremely unlikely to come about by chance. A chi-squared test on it returns a *p*-value of 0.002, which means that there is very strong evidence to reject the null hypothesis that the young of both sexes were as likely to receive gendered grave goods. At Lankhills, as generally the case in the rest of the western empire, it was girls who received gendered goods whereas boys tend to be invisible in the burial record.

What then are we to make of Graves 745 and 1760 with their assortment of male gendered artefacts? The child in Grave 1760, who is local judged by the isotopes, has simple iron belt equipment, a knife of domestic type and an extremely unusual, within a British *milieu*, glass vessel. The adolescent in Grave 745 has a more unusual group of items: a fragmentary crossbow brooch that was always a second; the fittings for a belt with a knife (buckle and ring) but no knife; and the only occurrence of two strap-ends in a grave in the whole cemetery. This looks very much like a set of equipment put together to symbolise the manhood that the boy never attained. The explanation of why these two boys received these goods when so many others did not might possibly be found in the ethnic origins of their families. Martin-Kilcher (2000, 73-5) has pointed out the difference in the treatment of boys within the empire and in Free Germany. Beyond the frontier (and in Anglo-Saxon England) boys did receive gendered artefacts and so, if the two Lankhills boys belonged to immigrant families their treatment might be explained. These immigrants might have been German tribesmen absorbed into the army relatively recently, however, rather than ones who had been long established within the empire.

In the cremation burials pyre goods were very rare, but it is noticeable that in the cases where they could be identified they were more likely to be male gendered (Graves 845, 895 and 1180) than female (Grave 1195).

Dating implications

Throughout the detailed discussions the date of the objects as judged by site finds from a wide range of non-sepulchral sites has been considered and it has regularly been found that the objects belong to the second half of the 4th century and later. The categories that are most useful for dating are the shale spindle whorls, the combs and the bone and ivory bracelets. Spindle whorls may be dated to *c* 340 at the earliest, but become much commoner in the final third of the century. Bone bracelets have a similar trajectory, probably starting a little later. Combs belong to the final third of the 4th century. All three types clearly continue in use in the 5th century. Among the bead strings it is possible to isolate various types of beads that indicate a late 4th-century date. Among the ones from the OA excavations strings **920.15** and **1360.10** are good candidates for such a date and both occur in graves with bone bracelets. The belt equipment and the crossbow brooches also include items most likely to have been current in the later 4th century.

There are, therefore, quite a lot of grounds for believing that many of the lavishly furnished graves of the types considered here are late 4th century in date. This contrasts with the pattern of pottery deposition, in which many of the vessels have date ranges that end *c* 350 (see Booth above, Table 4.2). On the whole there are no problems with the different dating because in general the small finds of the type discussed here do not occur in graves which also have pottery vessels, but there are two interesting mismatches. Grave 18 which has a small jar dated to *c* 270-350 has 11 bone bracelets and a date later than that of the pottery vessel is indicated. Grave 745 has a flask or jug dated to ?300-350 but the unusual strap ends belong to the second half of the 4th century and the best parallels for them are dated to the end of the century.

As will be clear, it is the finds associated with females that are the most useful for refining the dating. This has obvious implications for any demographic studies that attempt to use the grave dating as the male graves will be under-represented.

Ethnicity

It is clear that the mere wearing of items cannot be taken as a reliable indication that the person buried was an immigrant or of immigrant stock. Virtually all of the individuals from the OA excavations with finds of the sort discussed here have been shown to have been British as opposed to immigrants when their isotopes have been examined. In some cases it is the age and the sex of the individual that seems to have governed whether an item is worn or not. The concentration of grave goods of jewellery with the bodies of young girls is likely to make the picture that emerges from isotope analysis complicated as it is very likely that the children could have been born in this country and so would appear as local, as indeed they would be even if their parents were immigrants. Among the jewellery there are sometimes bead strings which show a high incidence of exotic items, but they are generally accompanied by items such as bracelets which are typical Romano-British ones and the likelihood of being able to detect the children of immigrants via their jewellery is small. Clarke's graves 333 and 336, and OA Grave 385 illustrate this well.

What can be of help is looking at whether the pattern of deposition cuts across the normal patterns, and whether the objects themselves are unusual within both the cemetery and the British *milieu*. In the case of the two boys with gendered artefacts (Graves 745 and 1760), the mere fact that they had them marked them out as unusual, although in both cases the grave goods had unusual features as well. It may be that it would be easier to spot second generation immigrant boys than girls.

They would of course be as British as their sisters and isotopically invisible.

In the case of the adults the isotope evidence seems set to raise even more questions than it answers when combined with the finds. Three individuals, all clearly immigrants from the south central part of Europe, illustrate this very well. The two from Clarke's excavations (81 and 426) had just the sort of pan-European belt equipment and crossbow brooch which would have made them look quite at home in a Pannonian cemetery, but what are we to make of the individual in the OA Grave 1175 with his insular belt buckle and no brooch? Had he gone native or was his foreignness expressed through quite other ways?

One of the problems probably lies in the very partial subset of data we get from even a lavishly furnished grave, well-excavated with good bone survival. The man buried in Grave 1846 is a good case in point and it will be useful to explore in detail what this burial may be telling us. Everything about the surviving grave goods says that this is an extremely senior officer, very probably of Germanic extraction. He was laid out in his coffin with riding shoes with their spurs beside him. The crossbow brooch was in position to have fastened his cloak, the belt with its gilded silver fitting was folded and laid out between his legs. Walton Rogers has suggested (below) that where belts are not in the appropriate position to be worn, as here, this indicates that the body was shrouded. The question of the extent to which 4th-century bodies were shrouded is a vexed one (see for example Crummy *et al*. 1993, 129), but one element that does not seem to have been considered is the element of display.

The corpse of a man of this seniority would have been displayed so that people could pay their respects. It may well have been carried to the cemetery in an open coffin. The spurred shoes, the brooch and the belt equipment all make the seniority of this man visible to us, but what we do not see are the rich textiles that would have been as much a part of this officer's identity as the metal fittings (for discussion see van Driel-Murray 2000, 298). The crossbow brooch could have clasped a cloak of just such a rich textile. If it did, the belt equipment would not have been easily visible. There has been much debate as to whether belt equipment can reliably be taken to indicate that its wearer was either a military man or a high official. We do know, however, that belt equipment could be the regalia of high office, and there is a vivid illustration of this in one of the illustrations associated with the *Notitia Dignitatum* showing the ceremonial codicil and attributes of the *Comes Sacrarum Largitionum* (Count of the Sacred Largesses) which includes belt buckles (Guest 2005, pl. 10). Laying out the belt on top of the cloak, in the same way that a modern soldier's decorations are placed on his coffin as it is taken to his funeral, would make it visible and signal his authority to all.

The placing of the spurred shoes beside him was probably done partially for practical reasons, as it is difficult to place shoes back on the feet of corpses and in historical times there are records of special shoes open at the back being used on corpses when shoes were required (Quita Mould pers. comm.). Also important, however, would have been the display element that placing them separately allowed. Had it been practical to place them on the feet they would not have been seen. It also has to be remembered that the sort of shoes postulated may themselves have been symbolic of military status (van Driel-Murray 2000, 298).

As can be seen, even with grave goods as spectacular as those in Grave 1846, we are missing a great deal, and it is that missing element that probably most obviously signalled his ethnicity and identity to his contemporaries.

A NOTE ON BLUE CORROSION PRODUCTS

Three copper alloy objects, crossbow brooches SF 2744 and 4402, in Graves 1075 and 1925 respectively, and a buckle plate SF 4363 in Grave 1921, displayed vivid blue surface coloration in parts. Dr Chris Doherty notes that this represents the blue hydrated copper carbonate mineral azurite, along with smaller area of its green hydrated copper carbonate counterpart, malachite.

The survival of some coffin wood and textile indicates that reducing conditions were maintained in these graves, albeit probably just in the immediate vicinity of coffin. This would have probably have led initially to bacterial corrosion of the copper alloy, producing a thin layer of copper sulphide minerals. With the continued loss of the coffin wood, local reducing conditions would have been replaced with mildly oxidising ones, and these early copper sulphides would have been replaced by azurite (and lesser malachite).

TEXTILES AND LEATHER *by Penelope Walton Rogers*

Remains of mineral-preserved textiles and leather were recorded on metalwork from nine inhumations (Table 4.32). Several different textile types were present (Fig. 4.7): a linen tabby with paired yarns in warp and weft (extended tabby or 'basket weave') in Grave 730; a wool tabby with paired yarns in only one system ('half-basket weave') in Grave 780; a linen tabby repp, in which one system lies flat and the other weaves round it in Grave 1075; a fine textile of uncertain weave in Grave 1846; and another relatively fine textile, probably a plain tabby, in Grave 1925. Leather straps were also noted in association with buckles and strap ends in Graves 745 and 1921, and there were other areas of leather in Graves 1846 and 3030.

The textiles are typical of the Roman period. Basket weave occurs in linen textiles throughout the Roman Empire, including Gaul and Britain, and

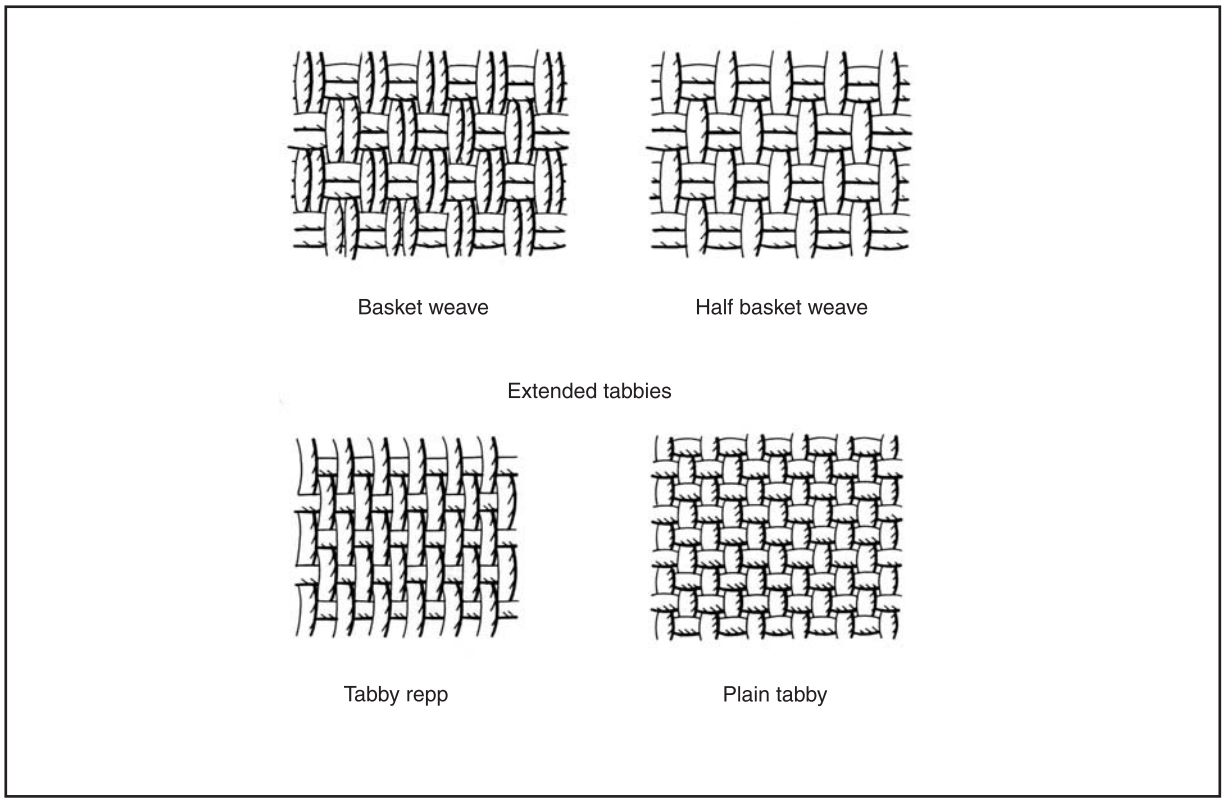


Fig. 4.7 The weave structures of the Lankhills textiles

half-basket weave was particularly popular in Roman Gaul (Wild and Bender Jørgensen 1988, 75-6). Both disappeared at the end of the Roman period in Britain, which suggests that they were either imports or made in state-controlled workshops disrupted by the end of Roman rule. Plain linen tabby and tabby repp were common fabric-types, used in Britain over a wide period of time.

Some of these textiles almost certainly represent shrouding. It was common practice to bury the dead wrapped in linen – mostly domestic sheets and towels – with accessories arranged on and around the body (Wild 1970, 46, 93; RCHME 1962, 67-110; Walton Rogers unpublished). The folds of linen basket weave on the shears beside the body in Grave 730 are likely to represent this kind of fabric (Fig. 4.8). In Grave 745, the position of the leather belt at the foot of the grave implies that the body was shrouded, even though no textile has been identified, and the same is probably true of Graves 1175 and 1921, where artefacts were recovered from the leg area. In Grave 1846, also, the belt was placed between the legs, while the boots represented by areas of soft leather on the spurs, were both on the right side of the body. The crossbow brooch in the region of the neck in Grave 1846 had textile adhering to it, but not in a position that suggested it had been clasped by the brooch.

In Grave 780, however, the woman was probably buried in her clothes. The hobnails are close enough to the feet to suggest that she wore

Fig. 4.8 Folds of linen extended tabby (basket weave) on the tips of the shears 1711 from Grave 730. Photo The Anglo-Saxon Laboratory.

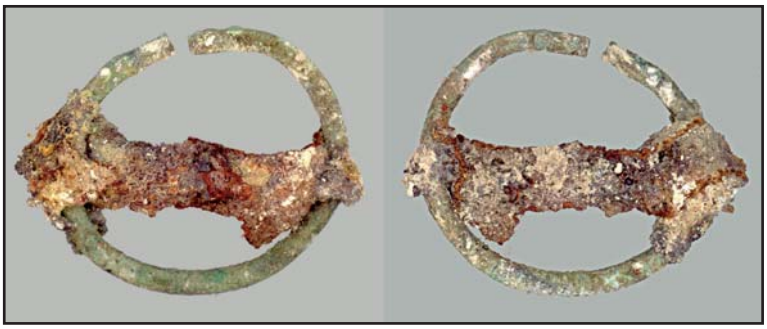


Fig. 4.9 Wool extended tabby (half-basket weave) pierced by pin of penannular brooch 1853 from Grave 780. Left back, right front. Photo The Anglo-Saxon Laboratory.

Fig. 4.10 Linen tabby repp on catch of crossbow brooch 2744 from Grave 1075. Photo Hilary Cool.

sandals, and the small penannular brooch at the lower centre waist clasps folds of wool half-basket weave (Fig. 4.9). The tunic of a woman buried in Tomb D at Les Martres-de-Veyre, near Clermont-Ferrand (Puy de Dôme), in the 2nd or 3rd century was made from this kind of fabric, but a brooch would not have been necessary on this garment. A brooch at the waist might instead represent a clasp for a mantle, as seen in Rhineland sculptures (Wild 1968, 210-2; 1985, 401-2). In Grave 1075 the position of the crossbow brooch at the left shoulder and the strap end directly below at the left thigh perhaps suggest another clothed body, this time a male, although the linen tabby repp on both objects is not necessarily the garment fastened by the brooch (Fig. 4.10).

Burial of bodies fully clothed was not very common within the Roman Empire (Clarke 1979; Swift 2000b, 36-37), although there are occasional examples such as the woman at Les Martres-de-Veyre and a 3rd-century juvenile in a tunic with purple *clavi* at Fordington, Dorchester (Crowfoot 2002). The earlier excavation at Lankhills includes the largest number, with examples of men, women and girls with dress accessories in positions that suggested clothed burial, although textiles do not appear to have been recorded (Clarke 1979, 170-1). Parallels for these have recently emerged in the small late Roman cemetery at Scorton, not far from the fort at Catterick, North Yorkshire (Walton Rogers unpublished). Here the women all appeared to be shrouded, but five of the men were clothed, three with a crossbow brooch at or near the right shoulder, all with a buckle at the waist or hip and one with a strap end at the left thigh. The strap end was heart-shaped and could be matched with two from Lankhills (Clarke 1979, 286). In three instances the fabric of the cloak was wool twill, and it was suggested that this represented the military cloak (ibid.). There is another burial at Norton, North Yorkshire, where a crossbow brooch and belt set seem to have been worn (Clarke 1979, 378), but on the whole clothed burials for women still seem to be rare.

FOOTWEAR: HOBNAILS AND BOOT PLATES

by Kelly Powell

Introduction

A minimum number of 11,133 hobnails (Manning (1985) type 10) and 88 boot plates were recovered from the excavation. The majority of both the hobnail and boot plate assemblages derived from inhumation burials (Table 4.33), but a number were also recovered from cremation deposits, pits, ditches and unstratified contexts.

Hobnails and boot plates (also referred to as cleats in some sources) often constitute the only remains for shoes, and in many cases clothing as a whole, on Roman sites. Hobnails can be distinguished from structural nails through their short shanks and domed or pyramidal heads. Both object types were driven through the sole of shoes primarily to attach the soles to other bottom layers but also to reinforce the heavily used surface of the

Table 4.32: Textiles and related materials from the burials at Lankhills

Grave	*Individual*	*Fibre*	*Structure*	*Thread-count/spin*	*Position*
730	?male adult	flax/hemp, prob. flax	extended tabby (basket weave)	9 pairs/Z+Z x 7-8 pairs/Z+Z	In folds lying against one face of shears (SF 1711) at left waist.
745	?male, c 16 years	leather	strap		Associated with strap end (SF 1804), with buckle by feet
780	female adult	Wool	extended tabby (half-basket)	9/Z x 10 pairs/Z+Z	Pierced by pin of small penannular brooch (SF 1853) at waist. The brooch appears to be face down over the textile.
1075	sex unknown, adult	flax/hemp, prob. flax	tabby repp	13/Z x 26-28/Z	In patches on and around foot of crossbow brooch (SF 2744), on outer face of cross arm and one side knob, at left shoulder. Not necessarily pierced by brooch.
		not identified	?tabby repp	c 12/Z x c 20/Z	On both faces of strap end (SF 2743) at left thigh. Probably same as on brooch.
1175	male, 45+ years	not identified	?	?	Poorly preserved remains of textile on back of buckle (SF 1175) on lower left thigh
1846	sex unknown, adult	not identified	?	fine Z x Z	On gilded crossbow brooch (SF 4190) on outer face of foot and adhering to skin/leather in association; in region of neck/shoulders
		skin/leather	square patch, 10 x 10 mm		Detached from centre cross arm of crossbow brooch (SF 4190), where stain marks its position. Grain surface missing.
		leather			Soft folds of leather on spur fittings (SF 4214) to right of legs.
1921	male 60+years	not identified prob. leather	?tabby	16-20/Z x ?/Z	On front of cu/a buckle (SF 4363) at lower waist. Inside buckle plate (SF 4365) on right thigh and on front of buckle (SF 4363)
1925	sex unknown, adult	not identified	?	fibres prob. remains of textile	Inside pin hinge and back of side knob of crossbow brooch (SF 4402) on lower chest. Probably a textile clasped by the brooch.
3030	no surviving remains	prob. leather	folded strap	8 mm wide	Folded and pierced by pin of crossbow brooch (SF 5040), probably on torso

Table 4.33: Hobnail quantification by feature type

Feature Type	*Minimum no. of hobnails*	*No. boot plates*	*Percentage of overall assemblage*	
Inhumation burials	10500	76	94.5	86
Cremation burials	574	12	5	14
Non funerary features	25	0	0.2	0
Unstratified	34	0	0.3	0
Total	11133	88	100	100

Table 4.34: Number of burials containing hobnails by sex of skeleton

	Male	*?Male*	*Female*	*?Female*	*Unsexed child*	*Unknown*
No of burials	30	17	30	11	17	14

shoe. While the organic uppers rarely survive hobnails and boot plates can sometimes be found in their original formations.

The absence of hobnails does not necessarily imply the absence of footwear, as some shoes were manufactured without the use of hobnails during the Roman period. Van Driel-Murray suggests that many late Roman shoe styles were not nailed (1999, 132). However, it is likely, particularly in this time and location, that most adult shoe soles were studded with nails, as argued by Rhodes (1980, 102).

Hobnails often occur in large groups representative of the original shoe. As a result of the way they corrode, often breaking into heads and shanks, exact numbers can be difficult to establish. Therefore hobnail numbers are referred to in terms of minimum numbers here. Minimum number was calculated on the basis of number of heads in combination with shank tips in each context group and may only represent a proportion of the number of hobnails originally present in shoes.

The hobnails and boot plates were quantified and minimum and maximum lengths and head diameters for hobnails were measured by context group. Dimensions were also recorded for boot plates and the current condition of both was noted, the resulting information was recorded on an Access database available in the site archive. Subsequent analysis was undertaken in the form of basic statistics and distributions. Where possible the results were recorded in an Excel spreadsheet, also in the site archive.

Overall, the hobnails were typical of assemblages found ubiquitously on Roman sites. Corrosion varied from moderate to very heavy, with some assemblages surviving as fragments alone. Some of the hobnails retained adhering mineralised organic material, presumably from the sole of the shoe. The presence of organic material was noted but was not in a good enough condition for further analysis, although in some cases it was clear that shoe soles had been composed of up to four layers. In comparison Clarke recorded up to seven layers of organic material relating to shoe soles (1979, 322). Complete or near-complete examples of all hobnails ranged in length from 12 mm to 24 mm, the majority falling between 14 and 21 mm. Head diameters ranged from 7 to 13 mm with most falling between 9 and 12 mm. The boot plates varied from 19 mm to 52 mm long with an average length of 30 mm, and 6 mm to 20 mm wide, on average 15 mm. Where arms survived these varied from 13 to 23 mm (average 16 mm). The boot plates were generally sub-oval or sub-rectangular, though a number were more unusual and will be discussed below.

Hobnails and boot plates in inhumation burials

In total 119 of the 304 excavated graves (39%, excluding nine graves effectively destroyed by later features) definitely produced hobnails, amounting to a minimum of 10,500 nails. In eight cases (Graves 795, 1175, 1185, 1240, 1302, 1345, 1622 and 1921) it is not clear that the hobnails represented the placement of footwear in the grave; consequently footwear is only listed as a grave good in 111 cases in the catalogue in Chapter 3 above. Twenty graves (7% of the total) also produced a total of 76 boot plates (Table 4.33). An additional 31 graves produced tiny fragments which may have been the remains of hobnails but could not be included with any certainty. Table 4.34 shows that hobnails were found in the graves of both men and women as well as children, with no one sex more significantly represented than the other. Where skeletons could be sexed the majority of boot plates accompanied males (8), although both females and children were represented (4 and 2 respectively).

The minimum number of hobnails per grave ranged from 1 to 272. Dimensions are similar to those of the assemblage as a whole. Lengths and head diameters tended to vary slightly within each grave group but this appears to have no relation to the age or sex of the interred individual and was probably a product of manufacture and post depositional processes. Numbers of boot plates per grave ranged from 1 to 10; these varied considerably in size and shape and may have served different functions within the shoe (see below).

Very small numbers of hobnails, including single examples, which clearly did not constitute whole shoes, were recovered from several graves. This occurrence may be the result of either pre- or post-depositional factors. In cremation deposits it is likely that such small assemblages represent differential collection of pyre material. However, this is less easily explained in inhumation burials where shoes would be interred in one piece. It has been suggested that a handful of hobnails may have been placed in the grave in the Roman period as a symbolic gesture (Salway 1981, 706), but this is not universally accepted. Symbolic inclusion of single hobnails may be seen in Grave 590, in which the deceased appears to have had single hobnails in the hand and on the sternum. However, more mundane post-depositional factors such as differential preservation in burial conditions, stratigraphic confusion or intrusive elements may be more likely explanations for this phenomenon in many cases.

The presence of hobnails and boot plates within a grave can be significant in a number of ways. Firstly it can imply that the individual was interred fully clothed, alternatively it can signify that a pair of shoes was deliberately placed within the grave for another, symbolic, purpose (see below). In general the significance of hobnails is partly ascertained from their position, and therefore that of the original shoes within the grave. In particular, hobnails surrounding the foot indicate (but do not always prove) that shoes were worn by the deceased. Those shown in Figure 4.11, for example, are likely to have been from shoes placed adjacent to the feet, but not worn on them. Those placed next

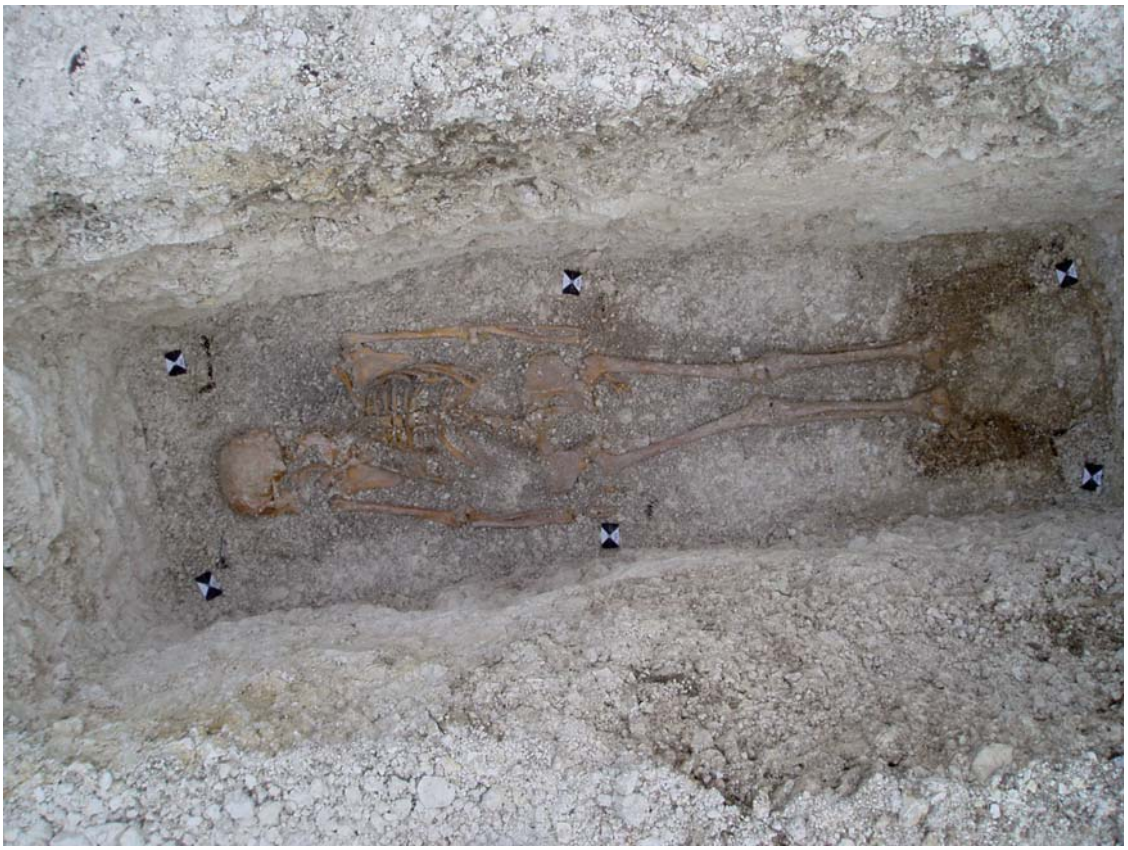


Fig. 4.11 Grave 1295, showing hobnails adjacent to feet

to the body or outside the coffin (Fig. 4.12) suggest that the shoes were a deliberate grave good independent of clothing.

In a number of cases single and multiple pairs of shoes within the grave of a single individual are known from the archaeological record (Philpott 1991, 168). This information is also dependent on the distributions of hobnails and boot plates within the grave as it is usually impossible to discern the number of shoes from the number of hobnails alone. Excavated examples of whole shoes from sites with exceptional preservation indicate that the number of hobnails per shoe can vary considerably. For example the illustrated examples from the Billingsgate Building in London varied from 22 to 100 hobnails per shoe (Rhodes 1980, 103). This figure is often dependent upon particular shoe styles (ibid.). Hobnails could also be used decoratively on shoe soles, arranged in different patterns relating to protection, the persona of the individual and fashion (van Driel-Murray 1999).

The number of hobnails within graves of each sex category is shown in Table 4.35. Males were accompanied by more hobnails on average than females, while children have the least number. This may indicate just a simple correlation with feet of different sizes, more hobnails being required for men and less for children. However, there may also be a relation to the number of shoes per grave. In general it is not usual to find small hobnailed shoes clearly made for a child; many are buried with adult sized shoes. The records from Grave 1336, however, indicate that the shoes would clearly have fitted the (child) inhabitant of the grave.

In many cases preservation of hobnails and boot plates and the effects of post-depositional processes can make identification of the original position of the shoes and patterns of the hobnails difficult. Often little or no organic material survives and both the grave and the corpse collapse over time, leaving incoherent groups of hobnails. However, where possible, location within the grave and discernible

Table 4.35: Number of hobnails by sex of skeleton

	Male or ?male	*Female or ?female*	*Unsexed child*
Overall number of hobnails per grave	1-239	2-184	16-70
Average number of hobnails per grave	123	81	37

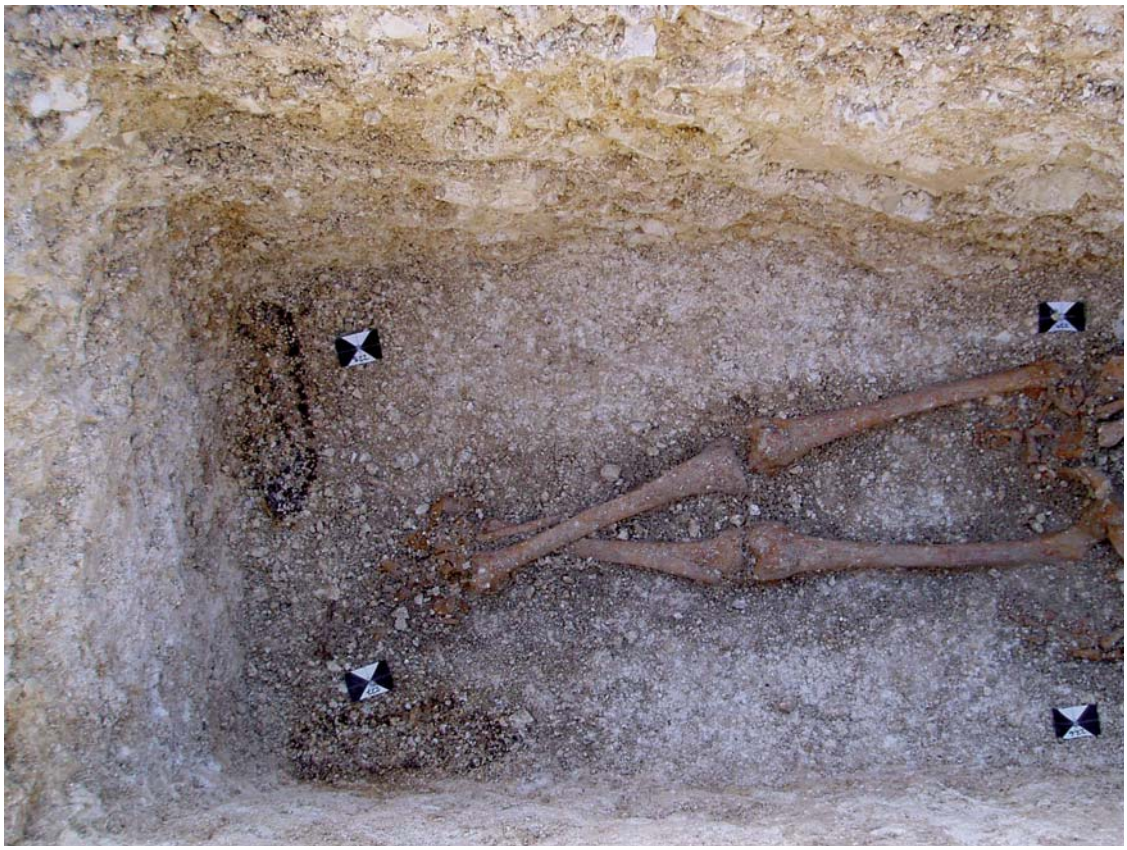


Fig. 4.12 Detail of Grave 635, showing hobnailed shoes outside the coffin

patterns have been recorded. The number of hobnails per shoe has only been recorded where hobnails were specifically collected in separate groups and the distribution indicates that these groups were independent of one another.

Data on shoe position are summarised in Table 4.36 and show that the majority of shoes were worn or placed in the area of the feet. Barber and Bowsher (2000, 137) have pointed out that the number of shoes actually worn is likely to be underestimated where the grave has collapsed and one can only say that shoes were in the foot area. A total of 14 of the examples which are in the feet area were identified as probably worn and it is likely that many more, or possibly all, of these examples were originally worn by the deceased. Relatively frequent positions for shoes which were not worn include beside the legs, beyond the feet and beneath legs or feet, all of which have obvious relationships to the feet. However, more unusual positions were noted at Lankhills, including beside the head and possibly on the torso. Skeleton 451 (Grave 590) appeared to have a single hobnail on the sternum and another clutched in the left hand.

Consequently 82% of shoes were found within the area of the coffin, only 12 pairs were outside or probably outside the coffin, two pairs were split inside and outside, and the location of the rest was unknown. Where it was possible to tell the majority of burials contained two shoes, some appear to have been placed one on top of the other and so it is unclear whether there were one or two shoes. Only one grave (277) definitely contained more than two shoes. Overall these data suggest that the majority of the individuals buried at Lankhills were wearing their shoes and were probably fully clothed on

Table 4.36: Shoe position in inhumation burials

Position	*No. of pairs*
Worn	14
Foot area	53
Beside right leg/foot	11
Beside left leg/foot	10
Beyond feet	5
Beneath legs/feet	4
Beside left arm	1
Worn and next to feet	1
One beside right foot, one beyond left foot	1
Beside head (left)	1
Beside head (right)	1
Foot area and beside right leg	1
Beside each foot	1
Torso?	1
Unknown	14
TOTAL	119

interment. However the unusual position of some of the hobnails and the presence of more than two shoes in one grave seems to indicate an element of ritual symbolism.

Where hobnail and boot plate patterns were discernible from original records, the majority of shoes, if not all, were manufactured with hobnails closely spaced around the periphery of the shoe. Evidence from other well-preserved Roman assemblages indicates that this is typical of nailed shoe construction in Roman Britain, regardless of shoe type (eg see Rhodes 1980; MacConnoran 1986). Further detail could be seen in a number of shoes. For example SF1010 from Grave 535 had clusters of internal hobnails at the heel and ball of the foot, and occasional internal hobnails were also found in shoes from Graves 1210 and 1270, all of which would fall into Rhodes' Type A category. In addition one of the shoes from Grave 635 seems to have had an internal S pattern, commonly used in Roman hobnailed shoes (see MacConnoran 1986; van Driel-Murray 1999). Many other shoes seem to have had a dense cluster of hobnails across the sole, as in Rhodes Type C. Where it was possible to determine the number of surviving hobnails per shoe varied from 8 to 131 with no real peaks in distribution illustrating this variation in hobnail patterning.

The boot plates were mostly oval, sub oval or sub rectangular (Fig. 4.13, no. 1 and Fig 4.14), as seen in most other assemblages including Clarke's original excavation. However, a number of the boot plates took unusual forms (Fig 4.13, nos 2-5). These are roughly semi-circular with the curved edge folded up and the arms on the straight edge. The latter is up to 5 mm thick. It is probable that these objects functioned as toe or heel plates, folding upwards to protect the foot as well as securing the sole. The numbers of boot plates retrieved from each context suggests that these objects probably functioned differently from shoe to shoe. Where several were present the boot plates were typically spaced around the periphery of the shoe, as seen in Graves 755 and 1140. Other shoes seem to have only had

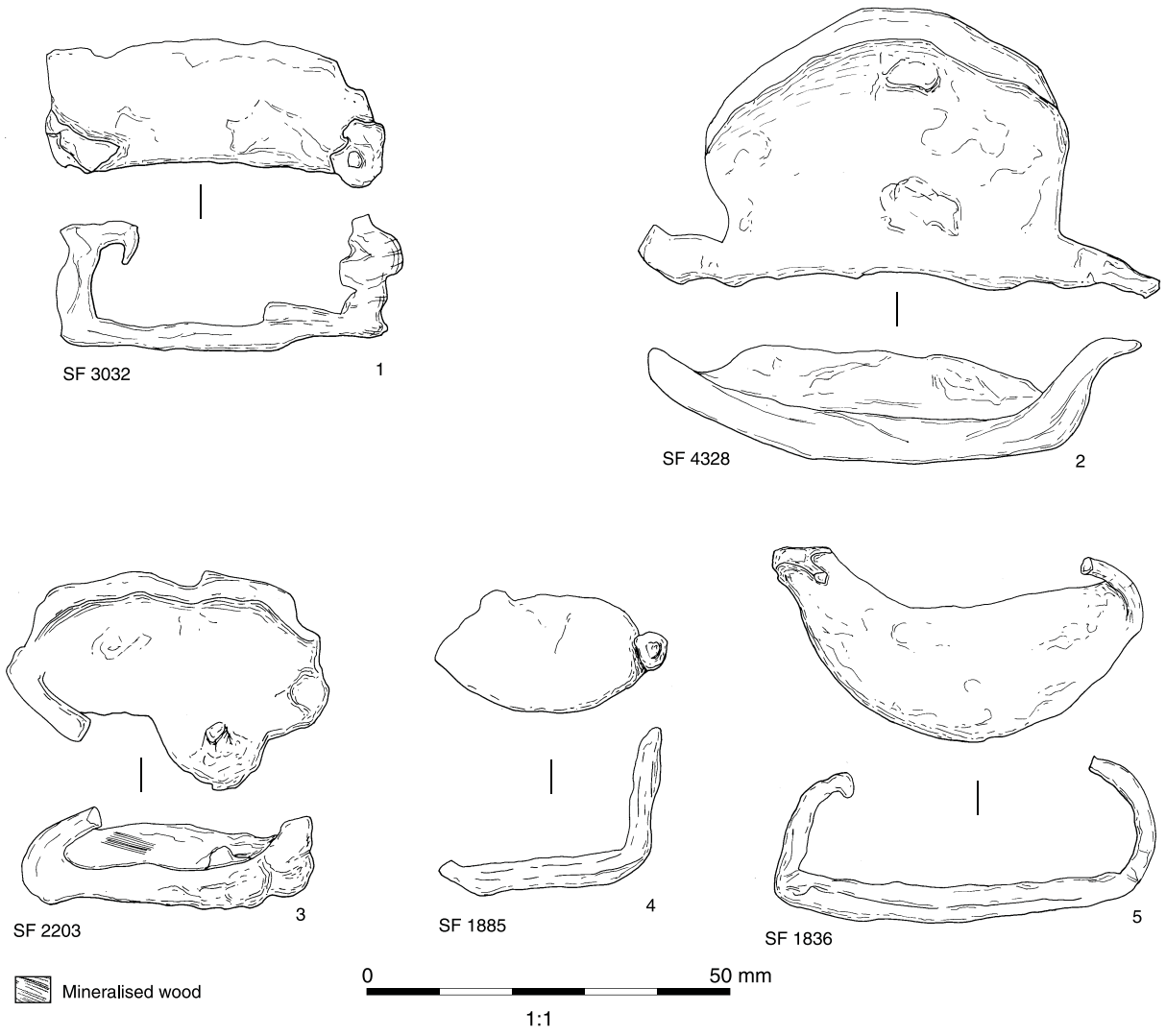


Fig. 4.13 Boot plates from Graves 1200, 1900, 885, 795 and 665

Fig. 4.14 Photograph of boot plates from Grave 1092 and boot plates and hobnails from sample 505 in Grave 645

one or two boot plates, possibly placed at the heel and toe for reinforcement.

Discussion

Lankhills is remarkable in terms of the overall provision of grave goods and the hobnails are no exception. While most or all of the contemporary cemeteries produced hobnails the figures involved are very different. For example only one grave in the main cemetery at Poundbury, one from Atlantic House and seven graves from Butt Road produced hobnails. In contrast hobnails were found in 144 graves from the earlier Lankhills excavation and a minimum of 119 from this phase. As a rule nailed shoes are relatively rare in cemeteries associated with major towns and forts but abundant in rural cemeteries. This is possibly a result of the type of terrain traversed and work undertaken in these different areas (Philpott 1991, 171) and makes Lankhills all the more exceptional.

In general, patterns have been recognised in placement of hobnails. Philpott (1991, 169) suggests that 'globally' men are more likely to be buried with hobnailed shoes and children rarely, although he cites Lankhills as an exception to this. Distinctions may be due to the type of shoes worn; Barber and Bowsher (2000, 137) suggest that the lighter indoor shoes and sandals were not nailed and that these were particularly worn by women and children. In this phase of excavation at Lankhills there appears to be no distinctions relating to age or sex or indeed distribution or chronology, where known. At its simplest it appears that burial with shoes on (and probably fully clothed) was the predominant funerary rite in late Roman Winchester. It is possible that all the individuals were buried with shoes but not all were nailed. Rhodes (1980, 113-4) infers from Diocletian's *De Pretiis* that there was a movement towards widespread adoption of nailed footwear of the military *caliga* type in civilian populations by the early 4th century, although there is no obvious reason why this should apparently have been more rigorously adopted in Winchester than elsewhere.

The inclusion of hobnails has been associated with the use of coffins on some, but not all sites (Philpott 1991, 170). Philpott (ibid.) uses Lankhills as a key example of this correlation, but while the fact that at Lankhills most of the excavated inhumation burials were coffined and over one third produced hobnails makes the relationship obvious it is less clear that it has significance beyond this site. Hobnails have also been linked to status, in this case inversely. Philpott (ibid., 172) suggests that hobnailed shoes are often rare or absent from inhumations of higher status individuals and associates them, inter alia, with 'a middle-ranking rural population'. The negative correlation with higher status burials may receive slight support from the absence of hobnails in Grave 1846.

It is necessary to consider the symbolism of including shoes in inhumation burials. The custom of ritual deposition of shoes dates back to the Neolithic and may be identified with the persona of an individual (van Driel-Murray 1999, 135). The Roman practice of including shoes in inhumation graves is traditionally seen as a pagan feature thought to reflect the belief that the dead needed equipment for their journey to the underworld or activities therein. This interpretation is to some extent reinforced by contemporary literature and may explain their abundance at Lankhills. Therefore, the position of shoes in the grave may offer an insight into these ideas, although in the context of the earlier Lankhills excavation Macdonald (1979, 406-7) argued that shoes were intended for the use of the dead regardless of whether they were worn or unworn. At Lankhills as at many other cemetery sites most hobnailed shoes appear to be worn, but the presence of unworn and unusually placed shoes may be easier to explain in the light of beliefs about the journey to the underworld. Van Driel-Murray suggests that the direction in which the shoe is pointing is significant (ibid., 131). She suggests that the norm is to have the toe pointing towards the head and where possible this is observed at Lankhills, although one set of shoes from Grave 635 was set at right angles to the body, possibly indicating deviance of some kind.

Van Driel-Murray (1999, 132) has also argued, however, that the idea of the 'journey to the underworld' may be a modern perception and inclusion of shoes may represent other beliefs such as provision for a return home. As with all funerary rituals it can be argued that this practise is for the benefit of the living alone and may not even be a conscious form of ritual behaviour. In the earlier Roman period when cremation was the predominant funerary rite, unworn pairs of shoes were sometimes placed on the funerary pyre (eg Philpott 1991, 172; Dawson 2004, 55). It is possible that their inclusion in later inhumation graves is simply a continuation of this practice (ibid.), its original purpose forgotten.

In conclusion, the evidence at Lankhills suggests that most people, if not all, were interred fully clothed, the clothing including shoes. The symbolic significance of inclusion of shoes is illustrated by the placement of unworn shoes in the grave, though it is unclear what this significance truly is. The symbolic nature of the presence of shoes in inhumations is often argued on the basis of the common inclusion of adult shoes in childrens' graves. At Lankhills, however, where it is possible to discern, children were buried in or with child-size shoes, reinforcing the idea that this was simply the accepted form of dress for burial.

Hobnails and boot plates from cremation burials

A minimum of 574 hobnails and 12 boot plates were recovered from 16 of the 24 (67%) cremation burials including urned, un-urned and *bustum* burials and one cremation-related deposit (Table 4.37). The number of nails per cremation varied

Table 4.37: Hobnails from cremation deposits

Cremation type	*Group number*	*Minimum number of hobnails*	*Length range*
Urned	510	9	16-18
Un-urned	895	5?	frag
	915	16	16-17
	945	3	16
	1060	131	14-24
	1160	12	17-19
	1527	1	15
	1724	9	15-16
	1786	11	13-16
Bustum	655	24	13-19
	1180	7	17
	1195	168	13-21
	1215	87	13-19
	1806	72	15-20
	1845	9	
Cremation-related deposit	1798	15	15-18
Total		574	

from 1 to 168 and overall dimensions ranged from 13-24 mm long with a head diameter of 7-12 mm. Dimensions varied considerably within each grave group, possibly in part as a result of the burning process. The condition of the hobnail assemblage from cremations was not unlike that of the inhumations, although there were occasional collections of well-preserved hobnails, also with traces of red, presumably again related to the cremation process.

Hobnails from simple urned and un-urned cremations

A single urned cremation (510) produced a relatively well-preserved assemblage of nine hobnails, measuring 16-18 mm long and 9-11 mm in head diameter. In addition, a minimum number of 183 hobnails was recovered from eight un-urned cremation burials, these measuring 13-24 mm long with a head diameter of 8-12 mm; dimensions were variable within grave assemblages. Numbers of hobnails per grave ranged from 1 to 131. In both the urned and un-urned cremations hobnails are likely to have been interred in the burial along with the human remains as part of a collection of material from the pyre, the varying number of hobnails undoubtedly the result of irregular collection. This indicates that even in the late Roman period shoes were burned on the pyre, either worn by the individual or placed as an unworn deposit.

Burial 1060 produced 5 boot plates measuring 26-52 mm long and 13-20 mm wide, examples being both oval and sub-rectangular in shape. This variation may indicate differing functions or simply that boot plates did not necessarily have to match. Based on the fact that this burial also produced 131 hobnails it is possible that more than one pair of shoes was included on the pyre, or possibly within the burial pit.

An additional assemblage of 16 hobnails was recovered from two cremation-related deposits from pits 847 and 1695, also probably representing collection of pyre material with incidental hobnails. Overall, little other information can be obtained from such assemblages owing to their inherently disturbed nature.

Hobnails from grave-shaped **(bustum)** *cremations*

A minimum of 367 hobnails were recovered from six *bustum* burials. The hobnails measured 13-21 mm long, with head diameters of 7-12 mm and were found in assemblages numbering 7 to 168; dimensions varied between and within grave groups. Due to the 'in situ' nature of this group of cremation burials there is potential to obtain more information from the hobnails as shoes may remain in positions associated with their original placement on the pyre. The majority of the hobnails were retrieved from samples, although the assemblage from Grave 1195 is recorded as being found in two discrete collections at the very eastern end of the grave cut. This suggests that if the corpse was wearing shoes at the time of cremation or if shoes were otherwise associated with the feet, the body was laid out in a west-east alignment.

Hobnails from Graves 655, 1180 and 1806 were collected from samples which can be related to body position. The hobnails were generally evenly distributed between the samples. Remarkably in Grave 655 only the sample from the foot area failed to produce hobnails. In Grave 1180 the few hobnails were evenly distributed and in Grave 1806 most came from the torso area. Overall this suggests that the bodies in these burials were not wearing shoes, but that the shoes were placed separately on the pyre. However, it is also possibility that these deposits have been disturbed and may not reflect the original shoe positions.

Grave1806 also produced nine boot plates. These were standard Roman boot plates, all were sub-rectangular with one oval example.

Discussion

The nature of cremation deposits, which are mostly disturbed and removed from their original pyre site, makes interpretation of hobnails as the remains of shoes difficult. In addition, few contemporary examples exist to compare with Lankhills. However, the inclusion of shoes in cremation burials has many of the same associations as inclusion in inhumations. In both cases shoes can be worn or unworn, although this is much more difficult to discern in cremation deposits. In addition, shoes can be either placed or worn on the pyre or added to the burial pit as a grave good.

In general it is difficult to tell whether hobnails have been burnt or not. However, with the exception of Grave 1060, the numbers of hobnails recovered from simple urned or un-urned cremation burials were relatively small, suggesting that these were nails randomly collected from the pyre with the ashes of the individual. The pyre, rather than secondary interment is thought to be the main focus in cremation rituals in the Roman period (Barber and Bowsher 2000, 80), therefore pyre goods are likely to have been more common than later additions to the burial pit. Noticeably more hobnails were recovered from the *bustum* cremations. This is not unusual since, owing to their more stationary nature, these deposits should be less disturbed and more indicative of funerary ritual. This is clearly illustrated by the discovery of a two discrete groups of hobnails at one end of the pit in Grave 1195, presumably the location of the feet of the deceased.

In general the considerations of patterns relating to age, sex and status are also more confused when it comes to cremation burial as these characteristics are more difficult to ascertain. However, the potential symbolic nature of shoe inclusion as opposed to the straightforward explanation that the corpse was burnt fully clothed remains an unknown factor, as discussed above in relation to inhumation burials. It is generally acknowledged that unworn pairs of shoes were placed on the funerary pyre in earlier Roman rituals (see Philpott 1991, 172; Dawson 2004, 55), although whether this tradition continued into the later Roman period is unknown.

Hobnails from non-funerary features

A minimum of 25 hobnails were found in two pits (1671 and 1680). The hobnails measured 13-20 mm long and 8-12 mm in head diameter. The groups of hobnails numbered 19 and 6 respectively. These assemblages may represent discarded or deliberately placed shoes, often found on Roman sites. However, at least one of these features truncated a burial and it is possible that many or all of these hobnails were redeposited or disturbed from funerary features. The same is probably true of the 34 unstratified hobnails, most of which come from topsoil.

STRUCTURAL NAILS AND COFFIN FITTINGS *by Kelly Powell*

Introduction

A minimum number of 4125 structural nails or similar fastenings were recovered from the excavation. As shown in Table 4.38 the majority of the nails (90%) derived from inhumation burials, although a number were also recovered from cremation deposits, pits, ditches and unstratified contexts.

The minimum number of nails was calculated on the basis of number of heads remaining in addition to inspection of site records. All the nails were x-radiographed to form a basic, durable record. They were quantified, measured where appropriate and their current condition was noted; the resulting information was recorded on an access database available in the site archive. Subsequent analysis was undertaken in the form of basic statistics and distributions in addition to examination of digital three-dimensional locational data. Where possible, results of these analyses were recorded in an Excel spreadsheet. Further analysis excluded large groups of clearly modern nails collected during the course of the excavation, many of which are likely to have derived from Clarke's excavations conducted between 1967 and 1972.

As an overall assemblage the nails were unusually complete, although groups varied from grave to grave. Corrosion was generally heavy, but varied in scale from moderate to very heavy. The majority retained adhering mineralised wood, and this was also recorded in terms of approximate quantifica-

Table 4.38: Nail quantification by feature type

Feature type	*Minimum no of nails*	*Percentage of overall assemblage*
Inhumation burials	3706	90
Cremation burials	133	3
Non-funerary features	20	0.5
Unstratified	266	6.5
Total	4125	100

Table 4.40: Analysis of nail types by length

Nail Type	*Length range (mm)*	*Average length (mm)*
Type 1b	18-147	75
Type 1a	148-250	166
Type 2	76-275	133

Table 4.39: Quantification of nail types from stratified features

Nail type (after Manning 1985)	*1b*	*1b?*	*1a*	*1 (length unclear)*	*1b/3*	*1b/2*	*1/5*	*2*	*2?*	*5?*	*4?*	*Unknown*
No.	3093	128	28	22	3	2	2	130	5	1	1	444
%	80	3	1	1	<1	<1	<1	3	<1	<1	<1	11.5

tion. Many of the nails had a coating of chalk which appears to have aided preservation. Conversely those that were entirely encased in mineralised wood had lost much of their integrity and remained only as products of mineralisation.

The nails were classified using Manning's (1985) typology incorporating Types 1 to 10, on the basis of head types and shank sections. (Type 10 refers to hobnails which are discussed separately below). The majority of the identifiable nails in this assemblage were classified as Type 1 or 2 (Table 4.39), both are rectangular sectioned nails, the former with a flat or pyramidal circular head, perpendicular to the shank, the latter with a triangular head on the same alignment. Of these, the vast majority could be classified as Type 1b (according to Manning less than 150 mm long; Fig.4.15). This nail type was ubiquitous in Roman Britain and is found in large quantities from a range of sites. The fact that Type1a and Type 2 nails are the next most numerous nail type at this site is also not unusual, although potentially remarkable in this context (see below).

Complete or near-complete examples of all nail types ranged in length from 18 mm to 275 mm, with an overall average of 79 mm and the majority falling between 50 and 100 mm (Fig. 4.15). Analysis of nail lengths when divided into types is shown in Figures 4.16-4.18 and Table 4.40. These data are similar to those published by Clarke, who found nail lengths ranging from 20 mm to 220 mm, most falling between 40 and 110 mm (1979, 332).

It is clear that the Type 1b nails form the most significant element of the assemblage and the average length reflects this. However, the presence of much larger Type 1a and Type 2 nails is remarkable on a cemetery site where coffins are the most likely origin. In particular, Figure 4.18 shows that the Type 2 nails fall into two groups including a cluster measuring between 230 mm and 280 mm, which would logically be assumed to be unwieldy in coffin construction. This is discussed in more detail below. It is notable that these nails far exceed the size of nails found in the earlier excavation.

It should be noted that Manning places the division between Type 1a and Type 1b nails on the basis of length at 150 mm. The current analysis has followed this classification as standard (the slightly lower cut off point of 147 mm shown in Table 4.40 is based on collections of nails per context, clearly manufactured as a group), however, the recording

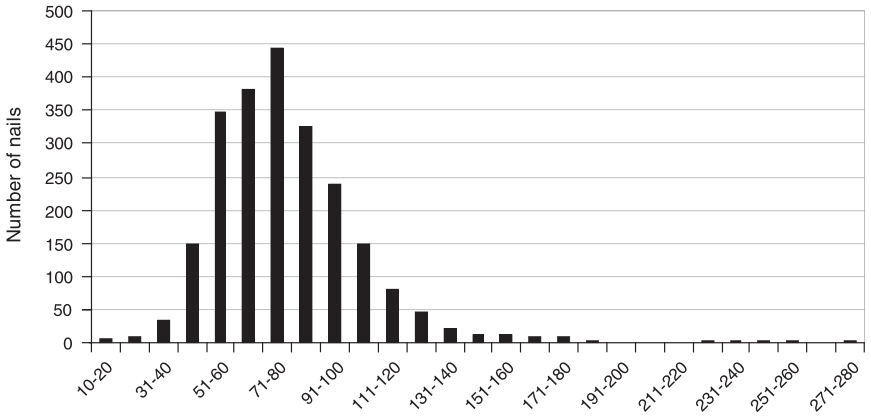


Fig. 4.15 Numbers of nails by length (10 mm units)

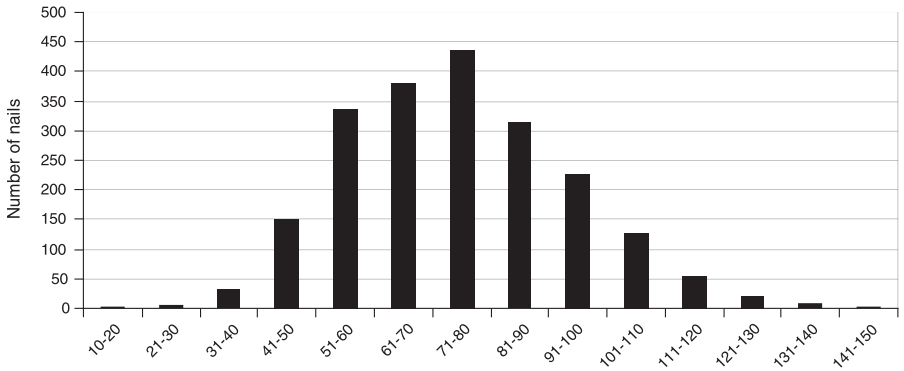


Fig. 4.16 Length of Type 1b nails

and analysis has suggested that this distinction is quite arbitrary. In fact the division between the two nail sizes (effectively small-medium and large) may be more accurately placed in this assemblage at around 120 mm. This separation at 120 mm was also identified by Clarke (1979, 332) prior to the publication of Manning's classification and may be specific to Lankhills or Winchester more generally. In addition, it is clear that the classification of Type 1 nails could be further refined; for example, some have thick or square heads while some have the shank set to the side. It is doubtful, however, whether these subdivisions would be meaningful and all could result from variation in manufacturing or (less likely here) post-depositional processes. Head diameter has often been used as an indicator of nail type based on size. The results from the current assemblage indicate that while this may be true of averages, it cannot always be used with certainty (Table 4.41).

Table 4.41: Head diameters by nail type

Nail Type	*Diameter range (mm)*	*Average diameter (mm)*
Type 1b	9-44	18
Type 1a	24-45	35
Type 2	13-32	21

Nails from inhumations – coffins

On a cemetery site such as Lankhills, one of the main considerations and assumptions when dealing with the nail assemblage is that nails and accompanying metal fittings are often the only remains of wooden coffins which survive post-depositional processes. These artefacts can also be accompanied by coffin stains and mineralised wood, as was often the case at Lankhills. A total of 3706 nails or fastenings were recovered from 268 of the 313 excavated inhumation burials (85.6%, or 88% if the graves effectively destroyed by later features are excluded), only three of which also contained coffin fittings. Of these 268 individual or groups of nails and fittings, 245 appear to represent the remains of coffins. Fifteen of the graves which produced nails were so badly truncated that it is unclear whether they originally contained coffins. Nails collected from the remaining eight graves were considered to be intrusive or not to have belonged to coffins, and 44 graves produced no nails.

It is possible that graves which did not produce nails may have originally contained coffins which employed an alternative form of construction less

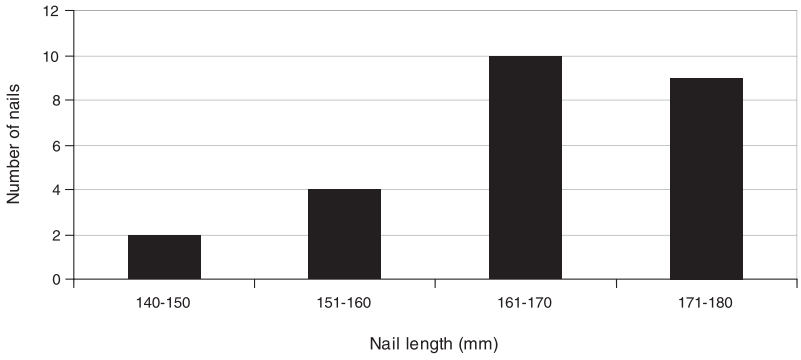


Fig. 4.17 Length of Type 1a nails

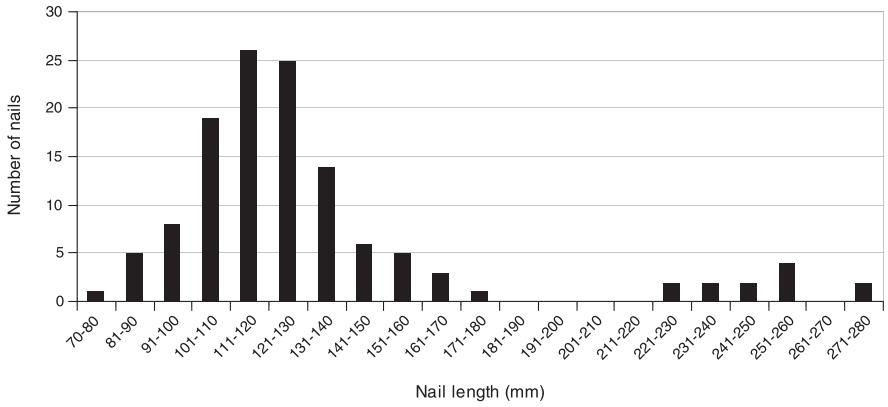


Fig. 4.18 Length of Type 2 nails

Table 4.42: Quantification of nails from inhumation burials by type

Nail type	*1b*	*1b?*	*1a*	*1 (length unclear)*	*1b/3*	*1b/2*	*1/5*	*2*	*2?*	*5?*	*4?*	*Unknown*
No.	2963	128	28	22	3	2	2	130	5	1	1	425

likely to survive, for example, using joints or wooden pegs or even using a single hollowed out piece of wood. However, no coffin stains were identified or mineralised wood recovered from graves which did not produce nails, as in the earlier Lankhills excavation and at contemporary cemeteries such as Butt Road, Colchester and Kempston, Bedfordshire. Consequently only those graves which contain nails or fittings will be considered here.

Nails from inhumation burials made up 90% of the overall nail assemblage and were the only group to include nails other than of Type 1b (Table 4.42). As such the percentages shown in Table 4.39 are also representative of the inhumation assemblage in isolation.

The number of nails per grave varied from 1 to 62 suggesting that coffin construction was by no means uniform. In many cases the occurrence of very low numbers of nails was a result of truncation or lack of preservation, but there are genuine examples of coffins which on the basis of their plans appear to have been constructed using very small numbers of nails. For example Graves 430 and 237 produced 6 and 7 nails respectively and were in no way disturbed or truncated. Because of this variation there has been no use of minimum numbers of nails to identify the presence of coffins as has been done elsewhere (eg McWhirr *et al*. 1982, 88).

In contrast, a number of graves had much larger nail assemblages; the majority of the 62 nails from Grave 73 seem to have been incorporated into the coffin structure. However, Grave 99 produced 46 nails, a large proportion of which were recovered from backfill. Several authors have suggested that graves which produced a large nail assemblage may have had an additional wood lining (for example Farwell and Molleson 1993, 33; Rodwell 1988, 37-41), although in these instances the distinction between the coffin and an outer chamber or 'vault' is clear in plan. It is therefore the case that large assemblages of nails may not simply be representative of coffin construction, and could include for example non-structural nails, intrusive or residual finds. For this reason each grave was considered individually when assessing coffin construction.

As an overall indicator, where relevant information was available from the accompanying skeleton, number of nails per grave were compared to broad age/sex categories as shown in Table 4.43. This illustrates that overall the average number of nails for children's graves was smaller, which would be expected if individual size equates to coffin size. However, some of the largest assemblages of nails from single graves came from children's coffins. The average number of nails from coffins of males and females are not only similar, they are the reverse of what may be expected on the basis of size (and potentially status within the community) with female graves having more nails on average. It is therefore likely that the number of nails used in coffin construction was not dependent on who was buried within, although it is possible that the sample of sexed individuals may not be representative of the population as a whole.

Lengths of complete or near-complete nails found in inhumations ranged from 18 mm to 275 mm overall and tended to vary from grave to grave. In many cases this variation was not very large within a single grave, at around 20 mm, for example groups with size ranges of 49-62 mm, 67-84 mm and 81-102 mm. However, in some cases the ranges were far larger (65-105 mm in Grave 28; 44-122 mm in Grave 277). It is possible that this disparity may indicate different functions of nails within a single grave, for example nails for securing a coffin lid or fitting and those for the main coffin structure. These data in combination with sexing data (Table 4.44) do show a more typical pattern of bias, although average nail lengths in male and female coffins are again very similar.

Coffin construction

Overall, analysis indicated that the standard technique of coffin construction at Lankhills exemplified the Roman approach to woodworking, using sawn oak planks and iron nails (see eg Watson 2003,

Table 4.43: Number of nails per grave by sex

Sex	*Male*	*Female*	*Unsexed child*
No of nails (range)	1-43	2-55	2-56
Average no of nails	14	16	12

Table 4.44: Coffin nail lengths (mm) by sex

Sex	*Male*	*Female*	*Unsexed child*
Nail length (range)	49-165	49-119	43-96
Average nail length	79	76	64

33). The coffins comprised opposing end boards usually placed on the base board(s) and attached by nails hammered from the base upwards, although some seem to have been placed beside the base boards and were therefore nailed to the base with horizontally-driven nails. The two side boards were generally attached to the base board from each side (often at the corners) and measured the full length of the coffin. Many of the coffins seem to have been reinforced at different heights at the corner. It is likely, if suitable wood was available, that both side and base boards consisted of single large planks of wood. However, two planks attached by means of joints may have been an option if timber was in short supply. A similar method was suggested by Rodwell for the structures at Kelvedon (1988, 31) and for a number of coffins from Butt Road. At least one of the Lankhills coffins (Grave 550) appears to have a line of nails along the centre of the base consistent with the use of two planks joined using a third overlapping piece.

Coffins were subject to a number of post-depositional processes within the ground such as compression and collapse, therefore the positions of nails recorded in excavation may not be firm indicators of coffin dimensions. However, coffin measurements were estimated on the basis of coffin stains and nail placement to give a general idea of the range of coffin sizes. Coffin lengths varied from *c* 0.6 m to 2.16 m and widths from 0.17 m to 0.65 m. The latter dimension, some records of which seem extraordinarily narrow, is particularly likely to have been influenced by collapse of the coffin as a result of decomposition (figures for coffin height given in the grave catalogue will also have been affected by these processes and should be regarded as minima). In fact only 12 coffins had a fairly confidently-recorded width of less than 0.30 m; seven of these belonged to infants, and the other five contained children (one an adolescent). The only three coffins apparently less than 0.25 m wide were in Graves 1205 (0.17 m), 1410 (0.19 m) and 1030 (0.23 m), this last containing the poorly-preserved remains of a child of uncertain age. The records indicate that most coffins were parallel-sided, although a number may have tapered, as suggested by Clarke (1979, 337). Opinion on coffin shape in Romano-British cemeteries varies (eg Barber and Bowsher 2000, 93; Clarke 1979, 337; McWhirr *et al*. 1982, 88) but in many cases it is simply not possible to tell.

Evidence from the Butt Road cemetery indicated that in some cases coffins were not made for specific individuals, some corpses appear to have been "stuffed in", whereas some children were buried in long coffins (Crummy 1993, 120). Comparison of skeleton stature and coffin length from Lankhills suggests that the majority of coffins do appear to have been constructed for the associated individual, with a few possible exceptions. A small number of corpses were placed in positions which may have saved room in relatively small coffins, such as that from Grave 640 which lay on its side with bent legs. However, this is as likely to represent a preferred form of burial rite. A number of Lankhills coffins seem to be quite long for the interred individual; examples include Graves 22, 52 and 1220 which have observable gaps at the feet. However, several other coffins contain grave goods such as pots in the foot area (eg Grave 1362) and it is possible that these examples originally contained organic grave goods which did not survive, as was also suggested for the East London cemetery (Barber and Bowsher 2000, 93). Notably none of the children were buried in adult-sized coffins, which certainly suggests that their coffins were custom-made. Similar observations at other contemporary cemeteries such as Kelvedon indicate that the phenomenon of 'off-the-peg' coffins may be confined to Butt Road alone.

Where adhering mineralised wood was extensively preserved it was sometimes possible to determine the thickness of the boards. This appeared to vary from *c* 20 mm to a remarkable 75 mm. The majority of the measurable boards fell within the range of 20-40 mm, with a small number of apparently very substantial coffins consisting of boards measuring 60 to 75 mm thick, which are discussed below. The common thickness range of 20 to 40 mm is exactly the same as that noted by Clarke (1979, 337), although his lower and upper limits were 10 mm and 56 mm respectively. Coffin board thickness may have varied from cemetery to cemetery. The average thickness of oak coffin boards at Butt Road was about 44 mm (Crummy and Crossan 1993, 120), while those from Radley, Barrow Hills were 20-27 mm (Chambers and Boyle 2007, 30). In the East London cemetery boards were between 15 mm and 50 mm thick, though an average figure is not given (Barber and Bowsher 2000, 94), while surviving timbers from Atlantic House, London, were 40 mm, 42 mm and 45 mm thick (Goodburn 2003). Coffin board thickness generally falls between 20 mm and 50 mm, making the Lankhills examples, and some of those from Butt Road, which were up to *c* 64 mm thick (Crummy and Crossan 1993, 120), notably large.

A number of samples from different coffins were submitted for species analysis of the adhering wood. All of the samples were identified as definitely or probably oak (Challinor below) and it is likely that oak was used extensively, if not exclusively in the manufacture of coffins at Lankhills. Similar dominance of oak is also seen at other cemeteries across southern Britain including Alington Avenue, Dorchester (Walker and Heaton 2002, 160) and in the Period 2 cemetery at Butt Road, where all but one of the examined samples (from a coffin with thin boards probably of willow or poplar) were of oak (Crummy and Crossan 1993, 120). The surviving timbers from Atlantic House, London were all of oak, although some of these were reused (Goodburn 2003), while single identified instances from Poundbury (Mills 1993b, 114) and Trentholme Drive, York (Wenham 1968, 39) were also of oak.

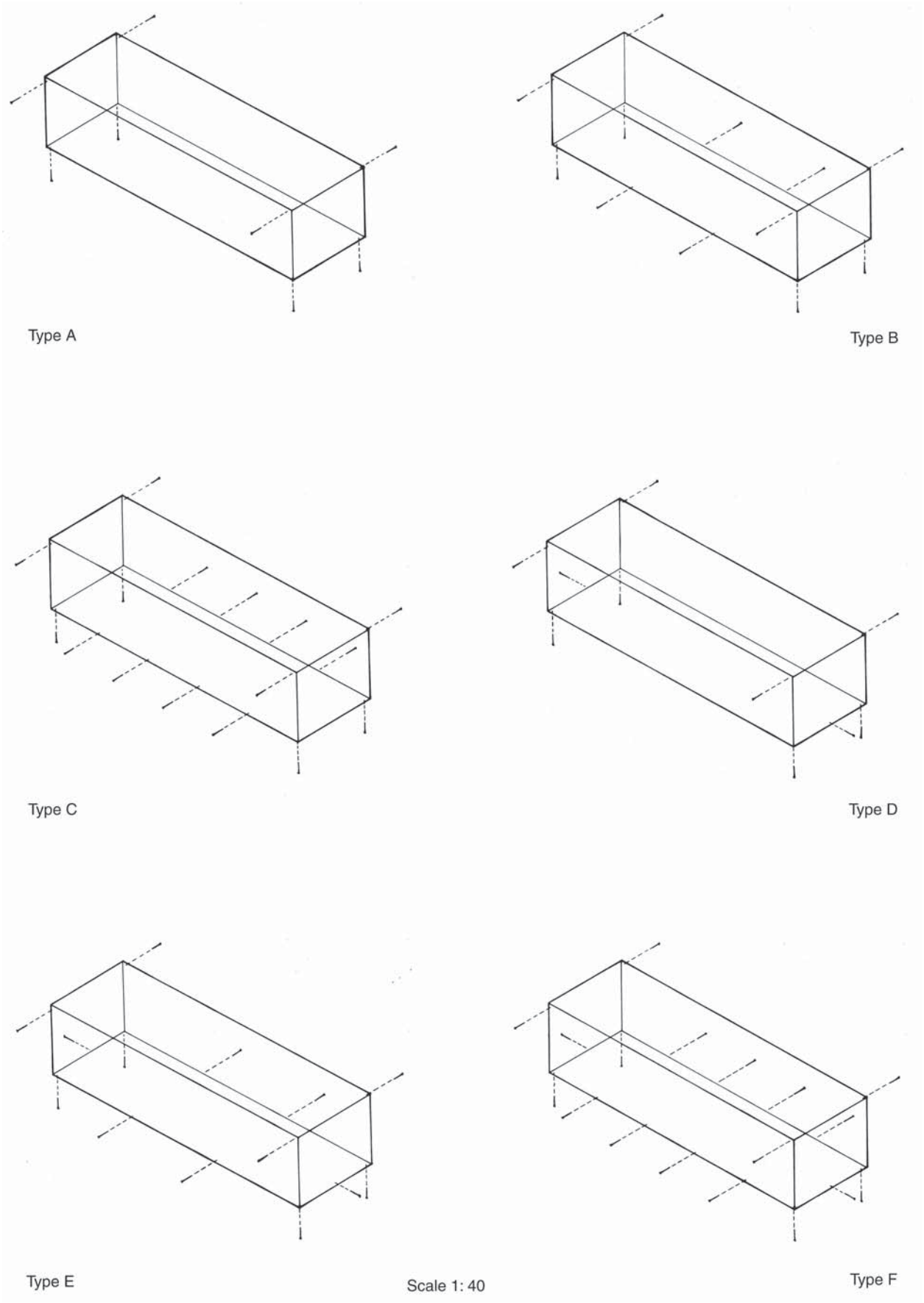


Fig. 4.19 Classification of coffin types

Examination of numbers and lengths of nails per grave, in combination with grave plans indicated that potential patterns were recognisable in coffin construction from the cemetery. The greatest variable appears to have been the placement of the fastenings. Nails tended to cluster around the corners of the coffin, and more generally at the coffin ends. Recognisable patterns were also noted in nailing at the sides of the coffin. Consequently a coffin classification system was established for the cemetery as outlined below (Table 4.45) and illustrated in Figure 4.19. The classification was quite broad to account for movement of nails within the ground, particularly those nails which may have originally secured the coffin lid. Notably similar clusters and patterns were recognised at Poundbury, Kelvedon, Atlantic House, Alington Avenue and Bath Gate, Cirencester and a similar classification system was devised for the latter cemetery (McWhirr *et al*. 1982, 88). This suggests that similar methods of coffin manufacture were commonly used over wide areas.

Three-dimensional plots of the Lankhills coffin nails were examined using GIS to elucidate these classifications and the presence of a lid was posited where a series of nails remained some distance above the other coffin nails. These were cross checked with plans and photographs where possible to ascertain the direction of the nails *in situ*. However, it must be borne in mind that some coffins may have had lids which were not attached using nails but were simply placed on top of the coffin.

As one would expect, not all coffins could be classified in this way owing to factors such as truncation or disturbance; some could only be classified to one of a number of types and one or two fell outside this general classification and will be discussed below. Of the 249 posited coffins, 141 could be classified to a single type (Fig. 4.20), with a further 91 classified to a possible type or range of types. Figure 4.20 shows that a large proportion of the classified coffins were of types A or B. A further 17 examples were considered to be A? or B? These are coffins either fastened only at the corners (Type A) or with a few additional nails on each side (Type B) suggesting that most coffins were constructed using the most efficient and practical method in terms of nail use.

Rodwell (1988, 31) has pointed out that at Kelvedon, coffins which were only fastened at the corners (Type A) would leave the full length of an adult coffin unsupported and suggests that this structural weakness may have been resolved with the use of jointing or wooden pegging. However such evidence does not survive at either site and it has been argued that wooden pegging for fixing timbers in coffins was rare in the Roman period (Watson 2003, 34). The very small numbers of Type D coffins suggest that it was not often deemed necessary to fasten the ends when the corners were otherwise secured. Additionally the smaller numbers of Type E and F coffins suggest that nails were generally used sparingly and elaborate or numerous fastenings were not the norm in coffin construction.

Comparison of the coffin types with other aspects of evidence from the cemetery shows a disappointing lack of patterns. Coffins of all construction types seem to have been used or created for men, women and children of all ages. No male burials were found within Type D coffins, although the tiny number of coffins of this type probably makes the observation meaningless. Only one Type C coffin burial was of a child, though this is likely to relate to practical issues – fewer nails would be required for smaller coffins. Where dating evidence existed it indicated that most of the coffin types were used throughout the 4th century. No particular spatial distribution patterns were found with reference to coffin type, although a cluster of Type A coffins existed on the eastern side of the cemetery, around the area of ditch 450, a grouping which might have had chronological significance. Clarke argued that the earlier Lankhills evidence showed that coffin use declined over time and nail lengths were reduced (1979, 341), but the dating scheme for the OA excavation is not detailed enough to either confirm or contradict this observation.

Table 4.45: Coffin classification

Type	*Features*
A	Fastened at the corners only
B	Fastened at the corners with a few nails on the side (maximum 2 per side)
C	Fastened at the corners with many nails on the side (more than 2 per side)
D	Fastened at the corners and ends
E	Fastened at corners and ends with a few nails on the side (maximum 2 per side)
F	Fastened at corners and ends with many nails on the side (more than 2 per side)

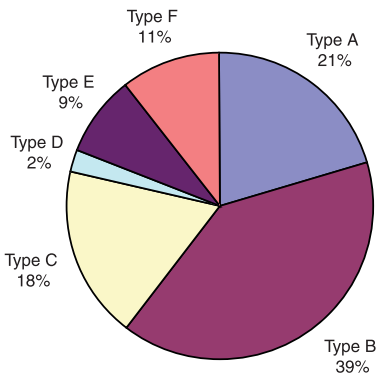


Fig. 4.20 Chart showing percentages of coffin types where classifiable (n = 141)

In terms of coffin construction alone, the evidence for presence or absence of a nailed lid was split almost evenly within each coffin type, suggesting that this was a matter of preference, although as mentioned above, it is possible that coffin lids were not always secured with nails. The number of nails by coffin type was somewhat more predictable, with most Type A coffins containing 1-15 nails, most Type B and E coffins containing 10-20 nails, Type C coffins produced 10-30 nails and most Type F coffins had 20 or more nails. As outlined above the majority of nails used in coffin construction were of Type 1b. Coffins in which Type 2 or Type 1a nails were used predominantly were generally of Type A or B, suggesting that the larger nails were used more sparingly. Where these nail types

Fig. 4.21 Nails from Graves 870 and 1638

were used in combination with the more common Type 1b nails a range of coffin types was observed. Similarly, coffin dimensions do not appear to have been particularly influenced by coffin type (or vice versa), although those constructed using predominantly Type 1a or Type 2 nails were often around or over 2 m long.

Most coffins for which information was complete fell into one of the above classifications, but two coffins in particular may have been different. One of these was the coffin from Grave 550, mentioned above, which seemed to have a central row of nails along the base, many of which had their tips turned over to secure them. This may have been a Type F coffin with two planks along the base, rather than one, and therefore has not been classified separately; alternatively it may represent an entirely different and unrecognisable construction technique. In addition, the coffin from Grave 3026 appears to have had no nails at the corners, only one at each end and a few on each side. If this is so it might constitute a separate type (?G), but there is the danger that potentially unrecognised truncation or disturbance altered nail distribution patterns.

Special coffins?

Possibly the most interesting phenomenon highlighted by the analysis is the presence of a small number of very large coffins made using abnormally large nails (Type 1a and the larger Type 2) albeit sparingly, to secure boards up to 75 mm thick. Overall, around 20 graves produced relatively large nails, for example Graves 1170 and 1440 contained coffins constructed from predominantly Type 2 nails measuring 106-132 mm and 104-125 mm respectively. Groups of larger Type 1b nails were recovered from several graves including 1846 (90-140 mm) and 1403 (106-138 mm). While these may be slightly oversized for coffin construction they can be considered to be within a normal length range for a large assemblage of nails.

The coffins which stand out noticeably are those from Grave 870 (Fig. 4.21) and Graves 1349, 1250 and 1638 (Fig. 4.21). The last two coffins were constructed using Type 1a nails measuring 142-180 mm and 147-180 mm, on average 165 and 166 mm long respectively, with large thick heads up to 45 mm in diameter. Grave 1349 had a coffin constructed predominantly from Type 2 nails measuring 120-160 mm long, on average 142 mm, while Grave 870 produced a group of Type 2 nails measuring 223-275 mm, an average of 248 mm long. Mineralised wood on nails from Grave 1250 showed the boards to be up to 75 mm thick, which would explain the large size of the nails. However, it is difficult to imagine how enormous nails such as those from Grave 870 could have been used to fasten coffins efficiently. No board thickness data survive for this coffin, although nail 1981 appears to have a horizontal grain for its entire length. It is possible that these nails may have been used to fasten a number of thick boards diagonally.

All four coffins were at the larger end of the scale, measuring 1.81-2.04 m long and 0.49-0.6 m wide, although larger coffins were found (such as that from Grave 1200 which was 2.15-2.16 m long and was constructed using Type 1b nails, the longest of which measured 104 mm). Philip Crummy has estimated that a large empty coffin made from boards 45 mm thick could have weighed 200 kg (Crummy and Crossan 1993, 34-5). Therefore such coffins would be extremely heavy, particularly once they contained a corpse and perhaps grave goods as well. No particular pattern could be discerned in the distribution of these large coffins.

A total of 19 graves also contained small numbers of larger Type 2 or Type 1a nails within an assemblage of predominantly unremarkable Type 1b nails. These graves included a range of coffin types, some with lids, some without, and contained a mix of both male and female individuals, with one unsexed child. Occasionally these appear to have performed a specific function. For example, the four possible Type 2 nails in Grave 1230 (coffin type A/D) seem to have been used to reinforce the corners of the coffin and the two in Grave 1805 (coffin type A) may have secured the coffin lid. However, the majority of these occurrences have no obvious purpose and probably represent opportunistic use of nails which were available at the time of manufacture. For example, Grave 710 contained a mixture of Type 1b, 1a and 2 nails. The coffin was probably of type B, fastened at the corners and with one nail in each side. On the northern side the corners were fastened with Type 2 nails and on the southern side with Type 1a nails, Type 1b nails appear to have been used for the sides and lid.

Coffin fittings

Iron coffin fittings were recovered from a minimum of three graves, in contrast for example to Poundbury, where 40 graves had iron fittings (Mills 1993b, 117-127). At Lankhills, Grave 545, which

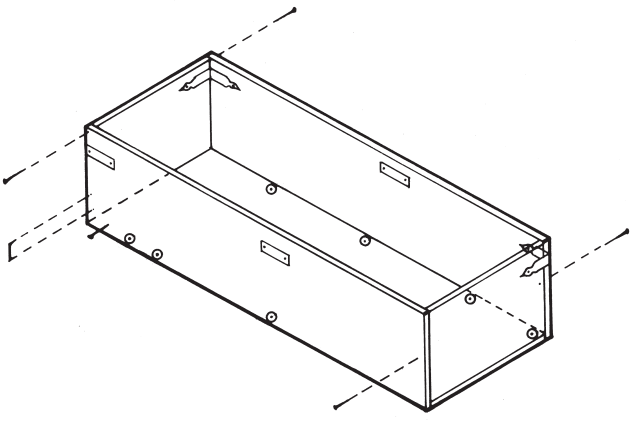


Fig. 4.22 Coffin in Grave 1370

housed the remains of an adolescent female, produced an unidentified iron fitting, 29 mm long and 12 mm wide, broken at one end with a D-shaped section, flaring to form a sub-rounded and more flattened end. This may have been part of a handle but was too fragmentary to tell. Grave 660 also produced a potential fragmentary iron handle or decorative fitting *c* 105 mm long. This had a square shank similar to a nail which had been driven into the wood but was bent at a right angle

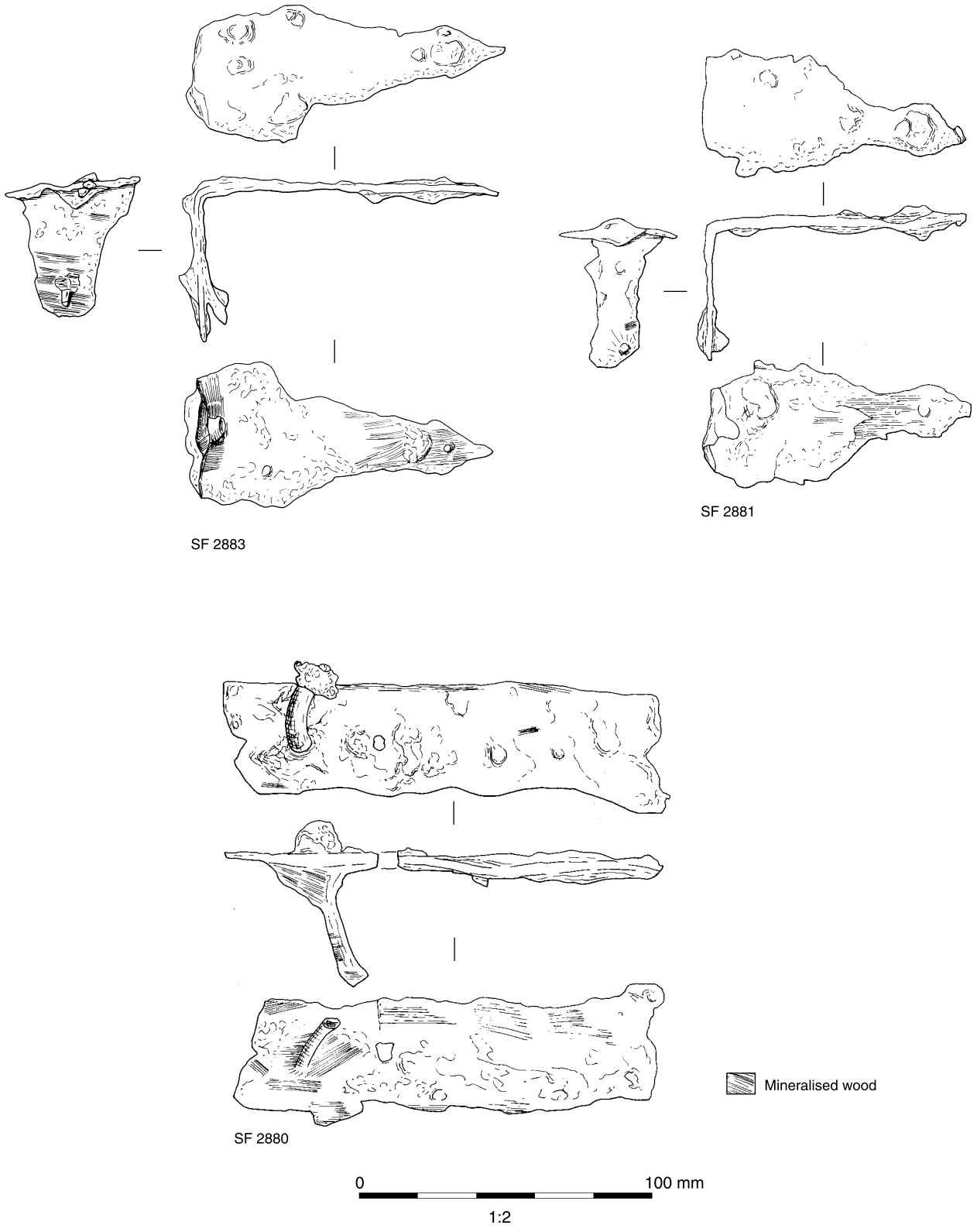


Fig. 4.23 Coffin furniture from Grave 1370

and flattened into a sub-oval 'head'. A small triangular fragment of iron with mineralised wood recovered from Grave 1941 may have been part of a plate but was too fragmentary to be identified.

The only grave which produced notable coffin fittings was Grave 1370, which contained the remains of a child about 10 years old, probably female on the basis of associated bracelets. The coffin shape was defined by a rectangular area of dark fill, and the position of nails and fittings (Fig. 4.22). Six small finds from this grave were identified as definite or possible coffin fittings (Fig. 4.23). In particular two ornate brackets (SF 2881 and SF 2883) were recovered from the corners on the northern side of the coffin. These objects were almost identical, measuring 147 mm and 150 mm in total and still bent at right angles at a broader, sub-oval central part, 40 mm and 45 mm wide respectively. These tapered into narrower arms with ornate 'ace of spades' terminals. SF 2883 clearly has an elongated point but SF 2881 is less complete, and each terminal is pierced by a single nail. These are similar to the ornate brackets from Poundbury (Mills 1993b, 124-5), although the Poundbury examples lack the wider central element.

In addition, a parallel-sided strip, SF 2880 (Fig. 4.23), either broken at both ends or terminating in slightly scalloped ends, came from the south-western corner of the coffin. The strip measured 153 mm long and 38 mm wide with three possible holes, one still pierced by a Type 1 nail, bent over on the outside. SFs 2792 and 2882 from the centre of the sides of the coffin probably also represented a similar plate or plates but had deteriorated leaving only irregular fragments, some pierced by nails and all with mineralised wood one on side. Finally SF 2886, a sheet fragment 21 mm long and 12 mm wide may either be the remains of a joiner's dog or similar or a rectangular boot plate (see below). With the exception of the possible joiner's dog it is likely that these fittings were decorative rather than functional and Clarke suggests that coffins with such fittings were of high status (1979, 336). Such a coffin could have been appropriate for the adolescent girl within, as such children were often buried with extravagant goods or furniture (Hilary Cool, pers. comm.).

Other grave structures

In notable contrast to contemporary cemeteries such as Cirencester Bath Gate, Poundbury and Butt Road, no stone, lead or lead-lined coffins were found at Lankhills. Instead four stepped graves were recorded (Graves 82, 635, 1349 and 1907). These are in addition to the possible 17 stepped graves found by Clarke in the earlier Lankhills excavation. It is presumed that the coffin would have been lowered into the grave and a plank-built platform would have been erected at the level of the step, creating a void in which the coffin remained. Grave goods seem to have been placed on the platform in some cases (Philpott 1991, 69) before the upper grave was backfilled. Nails were recovered at the level of the step from all of the graves except Grave 635. These ranged in number from one (1349) to 14 (82), but none formed coherent patterns and it is difficult to envisage what the planks would have been attached to, other than perhaps to one another. This may indicate the reuse of wood which already contained nails or, perhaps less likely, the presence of other grave goods which had nails attached.

Discussion

A large percentage of the excavated graves from Lankhills contained coffins (88%) illustrating that extended burial within wooden nailed coffins was a significant part of the predominant funerary ritual. Although other large contemporary cemeteries such as Poundbury and Butt Road also had large numbers of coffins, Lankhills contrasts with these sites in terms of the relatively large quantities of other grave furniture.

Regrettably few observable patterns in age, sex and distribution can be identified in relation to the Lankhills coffins. In addition, the dating for this part of the site is not robust enough to allow any clear chronological patterns relating to coffin use to be determined. Although a predominance of males buried in coffins has been observed occasionally (eg at Kempston; Dawson 2004, 55), this lack of patterns is echoed in other cemeteries and seems to suggest that coffin construction and use were not dictated by most social factors.

One factor which may be more influential is the status of the individual or the family left behind. It has often been suggested that those individuals buried without coffins may be lower in status. This may be supported by isotope analysis from Lankhills (see Cummings and Hedges below), which suggests that those individuals who were less well nourished were not buried in coffins. However, it is always possible that burial in coffins was dictated by tradition or fashion, expense, availability of materials or ritual significance, not always recognisable in the archaeological record.

Whatever the impetus for coffin manufacture, it is clear that coffins from Lankhills were generally custom-made for the individual. Relatively little evidence survives for the wood used to construct them, but what there is suggests the widespread and possibly exclusive use of oak. The wide availability of oak may explain its excessive use and the sometimes remarkable size of planks used. The most obvious aspect of coffin manufacture is usually the nails used, and a number of conclusions can be drawn about these. The large proportion of type 1b nails suggests that in most cases typical rather than special nails were used in coffin construction. The nail sizes recorded within each grave suggest that in some cases nails were specially made in batches while in others they were used more opportunistically.

This may also be true of the timber used. Excavations at Atlantic House, London uncovered

two complete coffins preserved through waterlogging. These were constructed using similar techniques to those hypothesised for Lankhillls, but were shown to be quite crudely constructed from reused timber with no evidence of more sophisticated woodwork techniques such as dovetailing; instead they were loosely fastened with nails (Goodburn 2003). Barber and Bowsher have suggested that coffin construction overall was probably determined by what materials were available in the workshop and by the thickness of the planks (2000, 94). 'Tide marks' discovered on some of the bones from Lankhills (see Clough, this volume) may suggest that the Lankhills coffins were better constructed than this as they appear to have retained fluid for some time.

Unusual coffins were clearly present at Lankhills. These may indicate either the status or wealth of the individual or their family, or opportunistic use or reuse of materials. This is especially noticeable in the coffins constructed using very large nails. Construction of coffins the size of that in Grave 870 must have been a significant undertaking and could have been a statement indicating wealth or status. However, the grave goods which accompany these burials do not suggest that they were particularly unusual individuals. Grave 870 produced a coin and animal bone, Grave 1349 a pot and Grave 1638 four coins held in the left hand, none of which was remarkable within the assemblage (see Cool this volume). The only individual in this group (from Grave 1349, also notable as one of the stepped graves) to have been subject to strontium and oxygen isotope analysis proved to be 'local', so intrusive burial ritual is not likely to have been a factor influencing coffin construction directly.

The large coffin size may simply represent the size of the interred individual. The older male from grave 1638 has been calculated to have been *c* 1.88 m tall and correspondingly broad, but the individuals within Graves 1250 and 1349 were female. A further possibility is that, as posited above, the coffins were constructed using reused wood and nails, possibly from larger structures such as buildings.

Nails from cremation burials and related deposits

A total of 123 nails was recovered from 16 of the 24 cremation burials (67%; Table 4.46), including urned, un-urned and *bustum* burials. All were classified as Type 1b or possible Type 1b nails with the exception of those which were not identifiable (Table 4.47). An additional 18 nails came from cremation-related deposits. The number of nails per cremation varied from 1 to 22 and overall the complete or near-complete nails within the cremation assemblage

Table 4.47: Nail types within cremation burials

Nail type	*Type 1b*	*Type1b?*	*Unknown*	*Total*
No	105	3	15	123
% of the total	85.2	2.5	12.3	100

Table 4.46: Nails from cremation burials

Cremation type	*Group no.*	*Number*	*Type 1b*	*Type 1b?*	*Unknown*	*Length range (mm)*	*Length average (mm)*
Urned	510	5	3		2	70	70
	845	6	5		1	45-52	49
	1055	2	1		1	min 35	min 35
Un-urned	895	3			3	min 28	min 28
	1060	22	19		3	39-83	54
	1160	2	1		1	65	65
	1320	7	7			47-85	64
	1527	3	3			55	55
	1724	6	6			59-68	62
	1786	4	4			67-76	72
	1904	3	2		1	84-104	93
Bustum	655	8	8			75-99	87
	1180	11	10	1		63-72	68
	1195	9	8	1		35-71	58
	1806	11	10		1	43-63	55
	1845	19	16	1	2	35-66	57
Cremation-related deposit	847	6	5		1	45-70	57
	1798	11	9		2	54-84	73
	1123	1	1			77	77
Totals		139	118	3	18		

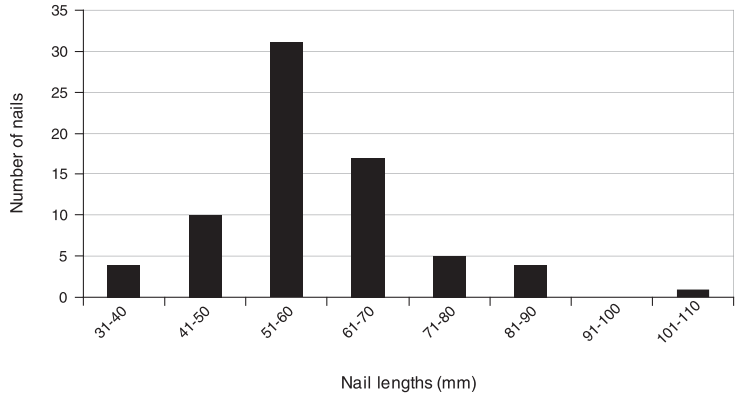


Fig. 4.24 Lengths of nails in cremation graves

ranged in length from 35 mm to 104 mm with an average length of 59 mm (Fig. 4.24). A large number of these nails fell within the range of 50-60 mm. Therefore the assemblage from cremation deposits clearly contained generally smaller nails than those from inhumations. In most cases length ranges within each cremation were relatively consistent, again bordering on the 20 mm range. However, a number of cremations produced nails with a wide range of lengths. For example deposit 1060 produced nails ranging from 39 mm to 83 mm. This may indicate inclusion within the cremation of nails with differing functions, for example deriving from a number of objects fastened with nails.

The nails from cremations were generally better preserved than those from inhumations. Several of the better preserved nails exhibited traces of red staining, also seen from cremation assemblages at the Ryknield Street cemetery, Wall, Staffordshire (Powell 2008). It is likely that both of these phenomena result from the burning process.

Nails from urned cremations

Three urned cremations produced nails ranging from two to six in number (Table 4.46) and 45 to 70 mm long. The nails presumably represented the remains of items included on the pyre which were collected with the remains of the individual for placement in the urn. These items are likely to be biers used to carry the corpse to the pyre but may include boxes or caskets placed on the pyre as grave goods.

Nails from un-urned cremations

Nails were recovered from eight un-urned cremations (Table 4.46). The assemblages varied in number from 1 to 22 and the nails were 39 mm to 104 mm long. These nails are likely to be similar in nature to those from urned cremations and represent items buried on the pyre and collected together with the body for interment. It is notable that these nails have a higher upper size limit, possibly indicating the presence of significant pyre furniture. Both Graves 1060 and 1724 were truncated or cut inhumation graves, therefore the nails may be residual or intrusive. However, it is notable that the nails from Grave 1060 were partly recovered from a small area at one end of the burial pit and may be the remains of an item such as a small box placed in the pit with the cremated remains, also seen in the cemetery of Eastern London (Barber and Bowsher 2000, 107).

Nails from **bustum** *burials*

Nails from grave-shaped cremations were particularly interesting as they may give a good illustration of the grave furniture and by extension the rites associated with this type of cremation. As a result of the cremation process the nails are likely to have fallen from the pyre into the pit below and therefore become displaced, although possibly not too far from their original positions. Nails were recovered from five in situ cremations, ranging from 9 to 19 in number and 35-99 mm in length; they are therefore similar to those from urned and un-urned cremations. In many cases the nails appear to form two approximate lines, occasionally with an isolated nail at each end, suggestive of a bier. However, child cremation 1845 appears to have had some form of wooden lining or possibly a coffin, with nails distributed around the edges of the cut at varying heights. Although the oxidisation of the bone makes cremation in a coffin unlikely this may indicate an unusual form of burial rite.

Nails from cremation-related deposits

A total of 18 nails were also recovered from three cremation-related deposits which did not form part of formal cremation burials. These included deposit 1628 from pit 1695 (11 nails), deposits from pit 847 (6 nails) and deposit 1124 from feature 1123 (1 nail). The nails ranged in length from 45 to 84 mm and are also likely to form the remains of grave goods and furniture from funeral pyres which has been redeposited or disturbed.

Discussion

Few contemporary comparisons exist for the Lankhills cremation burials as this form of

disposal of the dead had ceased to be the predominant burial ritual throughout most of Roman Britain by the 3rd and 4th century. In addition, where nails have been recovered from cremations elsewhere they have often been ignored due to their unremarkable nature. Nails included within cremation deposits can represent a number of objects. These include biers to carry the deceased to the pyre, or even coffins burnt on the pyre with the deceased inside. They can also represent boxes and caskets burnt on the pyre as grave goods or buried containing or alongside the collected ashes. The latter are less likely to occur as the pyre rather than the burial was generally the focus of the cremation ritual (Barber and Bowsher 2000, 80). It should also be noted that nails from cremations could result from reuse of wood in the funeral pyre. A number of the nails from Lankhills cremations were bent at the tip or bent at varying angles indicating structural use. A more extensive discussion of the type of structures likely to be included in cremation burials throughout the Roman period can be found in the report from Brougham (Cool 2004, 439-440).

At the Roman cemetery of East London it was noted that the presence of nails was more common in un-urned cremations than urned deposits, suggesting that they were associated with containers for the collected ashes (Barber and Bowsher 2000, 106). This observation is also true of Lankhills and it is noticeable that the nails from Grave 1060 form a coherent box-like pattern indicating the presence of such a container. Other un-urned cremations from Lankhills, as well as the urned cremations, overall produced small numbers of nails which may have been pyre goods or even intrusive from nearby inhumation graves.

It is the *bustum* burials that are perhaps the most interesting category, appearing to show the remains of biers or possibly coffins. Burial 1845 is particularly unusual as it was noted during excavation that the cremation appeared to have been placed and presumably burnt within a wood-lined pit. This type of funerary ritual is potentially extremely rare, though perhaps paralleled at Brougham (Cool 2004, 465).

Overall, the nails from cremation burials at Lankhills are noticeably abundant compared to contemporary cemeteries and may represent a variety of cremation practice hitherto ignored or unknown. However, the nature of the cremation ritual with potential scattering of pyre goods and furniture, and the poor survival of a number of the Lankhills burials as a result of truncation, means that relatively little can be said about these practices.

Nails from non-funerary features

A minimum of 14 possible nails were recovered from five features considered to be non-funerary including pits and a ditch (Table 4.48). Like the assemblage from cremation deposits all the identifiable nails were of Type 1b or Type 1b? The nails ranged in length from 52 to 78 mm, with an overall average of 62 mm, therefore falling within a standard range for Roman nail assemblages. The number of nails within each feature varied from 1 to 6 and most were consistently of similar lengths.

Table 4.48: Nails from non-funerary features

Feature	*No of nails*	*Length range (mm)*	*Length average (mm)*	*Head diameter range (mm)*	*Head diameter average (mm)*
Pit 306	1		min 57		min 10
Ditch 450	1/2		min 39		17
Pit 1261	1		frag		
Pit 1645	6	52-77	61	13-21	16
Pit 1671	5	60-78	65	12-22	15

On a site which is predominantly funerary in nature it is likely that a number, if not all, of these nails are re-deposited from funerary features, therefore a discussion of their significance would have little value. It is notable that the assemblage is very similar to that recovered from cremation graves and it is possible that many of these groups originated from such features or that the pits were in some way associated with cremation-related activity.

An additional 266 nails were found in unstratified contexts, the majority of which were from topsoil and often in large groups. In most cases these nails tended to be a mixture of potentially Roman and modern nails (some probably left by Clarke's excavations in the 1960s and 1970s). Due to their uncertain date and origin these nails were excluded from the overall analysis and are considered to be of little archaeological significance, although some may have been redeposited from funerary features. The nails were recorded and the data are available in the site archive. Typically the majority of those which were not clearly modern were of Type1b and all fell within the normal size ranges for this site.

A NOTE ON THE IDENTIFICATION OF COFFIN WOOD *by Dana Challinor*

Mineralised wood was frequently preserved through attachment to iron coffin nails. One nail per grave from a random selection of 23 graves was examined at low magnification (x7 to x45) to provide a species identification. The preservation was good, although anatomical structure was visible in transverse section only. All of the wood exhibited large pores characteristic of ring porous species. Oak (*Quercus* sp.) was identified on the basis of wide rays and flame-like patterning of the late wood. Where only one of these characteristics was apparent, the identification was given as cf. *Quercus* sp., although it is highly likely that all of the wood was oak. Wood attached to 17 nails was

identified as *Quercus* sp., while there were six identifications of cf. *Quercus* sp.

Fragments of coffin wood recovered in 15 samples from the fills of 11 graves (Groups 10, 14, 47, 73, 89, 120, 129, 141, 150, 256 and 291, all from the 2000 excavation) were also examined. The quantities present were very variable, ranging from 2 g in Group 73 to 250 g in Group 14 (only two graves had less than 10 g, however). This material was dessicated rather than minerally preserved and had lost most of its anatomical structure. A random selection of pieces from 10 samples was examined. The presence of large pores in some fragments indicates ring-porous species, and occasional large rays suggest that the wood was *Quercus* sp.

CERAMIC AND STONE BUILDING MATERIAL *by Cynthia Poole*

Introduction

The assemblage of ceramic building material totalled 181 fragments weighing 17,622 g, of which 56 fragments (4638 g) were post-Roman in date. The assemblage is small, though this is unsurprising for a cemetery with no evidence of buildings or structures. The material is well preserved with little or no abrasion on much of the tile and despite the fact that the overall mean fragment weight (MFW) of 88 g is rather low, more so for the post-Roman (MFW: 77.5 g), than the Roman (MFW: 94.5 g). The latter includes two complete imbrices and a large part of a tegula. The assemblage has been has been fully recorded on an Excel spreadsheet, which forms part of the archive.

Fabrics

The fabrics have been characterised using a stereomicroscope at x15 – x25 magnification. The Roman and later tile fabrics have been identified according to the fabric series developed for the Northgate House/Cultural Centre Roman, medieval and post-medieval assemblages (Poole and Shaffrey in prep). No detailed descriptions have been made of the post-Roman fabrics, but brief notes have been made in the archive record. The Roman fabrics have been compared to the Winchester Museums fabric type series (prefixed here Wincm) for ceramic building material, but this does not include post-Roman fabrics although some of the later types are similar to the Roman ones.

The Roman fabrics

Fabric C: defined by common medium-coarse quartz sand content. Similar to fabrics Wincm 15/31, 23 and Group 1 fabrics 13, 14, 15, 22 and 27

Fabric C1: characterised by a high density of medium quartz sand. Equivalent to Wincm 26

Fabric C2: frequent coarse quartz sand. Equivalent to Wincm 46

Fabric D: fine sandy micaceous clay. Similar to fabrics Wincm 6, 29, 31, 38 or 41

Group E fabrics: sandy laminated fabrics with varying quantities of buff and ferruginous red clay pellets. Equivalent to Foot's (1994) Group 1 and 2

Fabric E1.5: characterised by angular unwedged buff silty clay or siltstone. These pieces are noticeably smaller in the imbrex found at Lankhills compared to the very coarse examples found in brick from other Winchester sites. Equivalent to Wincm 5 (Group 2)

Fabric E2: laminated sandy clay with fine-medium quartz sand and frequent rounded buff silty clay and/or red ferruginous clay pellets. Equivalent to Group 1 fabrics 6, 7, 10, 16, 24 and fabric 19

E2.1: sandy clay with fine cream clay pellets and red ferruginous grits 1-2 mm Equivalent to fabrics 6 (Group 1), 29 and 33 (Micaceous group)

E2.2: similar to E2, but dominated by red ferruginous clay pellets

E3.3: pale cream – pink laminated clay. Equivalent to Wincm 3 (Group 2)

The variety of fabrics is limited when compared to other assemblages from Winchester, which reflects the assemblage size, limited forms and the period of activity relating to the character of the site, rather than production and sources. The fabrics are a mix of earlier and later varieties according to evidence from The Brooks (Foot 1994) and the Northgate House/Cultural Centre sites (Poole and Shaffrey in prep.). Foot has linked his Group 1 fabrics to tileries in the Bishops Waltham area close to the Winchester-Chichester road and one kiln site excavated at Shedfield (Holmes 1989) produced fabrics which fall within Group 1. Group 2 fabrics come from the same general area, and Foot has linked these with the Braxells Farm kiln. Fabric C is mainly equivalent to early fabric types relating to the Group 1 fabrics at The Brooks, though fabrics C1 and C2 are identified with late types Wincm 26 and 46, which may both have been produced close to Winchester. Fabric D equates with both early and late fabrics in the Winchester type series and occurred throughout all phases at the Northgate House/Cultural Centre site. The Group E fabrics are equivalent to Groups 1 and 2 at The Brooks, where they were identified as early and late respectively. Fabric E1.5 and E3.3 are later types, as are fabrics E2.1 and E2.2, which both occurred only in the later 3rd- to 4th-century deposits at the Northgate House/Cultural Centre site. Fabric E2 is equivalent to Winchester Group 1 fabrics and fabric 19, which are all early.

The Roman tile

The Roman tile is fully quantified by form in Table 4.49. The majority of this material was ceramic,

Table 4.49: Quantification of Roman ceramic and stone building materials

Forms	*Count*	*% count*	*Weight (g)*	*% wt*
Imbrex	67	52%	9198	59%
Tegula	10	8.5%	2063	13.3%
Brick	9	7%	1063	7%
Flue/tessera	1	0.8%	28	0.2%
Flat	14	11%	396	2.6%
Unidentified	24	18.75%	276	1.8%
Stone roofing	3	2.3%	2460	16%
Total	128		15484	

apart from three pieces of stone roofing. Abrasion of fragments was generally low or moderate and a number of large pieces of ceramic tile were present, including two complete imbrices from the same grave. The variety of identifiable types is very low, comprising mainly tegulae and imbrices, and a tessera made from flue tile. The remainder is classified as unidentified or flat, most of which was of a similar thickness to the tegulae and imbrices and is likely to derive from the same forms, though some of the thicker pieces may be from bricks.

Tile types

Imbrex

Imbrices formed just over two thirds of the Roman tile and include two complete tiles from Grave 256 (Fig. 4.25, Nos 1 and 2). They both measured 14-15 mm thick and were made in fabric C1. One (SF724) measured 330 mm long by 117-168 mm wide by 80 (top)-84 mm (base) high and weighed 1705 g. The second (SF725) measured 394 mm long by 134-168 mm wide by 64-98 mm high and weighed 2130 g. Both had areas of white mortar adhering. SF724 has a band of combing across one end. SF725 has two incised lines on the top by the lower corner forming a cross, which may be a tally mark or possibly a type of signature.

All the remaining pieces are partial, measuring between 10 and 19 mm thick. Sufficient profile survived on several to obtain width estimates and height measurements. Widths measured 130 mm, 140-150 mm, 150-160 mm, 160 mm and 180 mm and heights 73, 80, 85 and over 90 mm. Many of the tiles were quite roughly finished with irregularities to the surfaces and edges. A majority have a fairly curving semi-circular profile, while a more angular profile with flat splayed sides was also recorded but was less common..

Mortar was present on several tiles, some clearly around the top edge indicating an overlap of *c* 70 mm. A few were burnt. A few small plain fragments that measured 15 and 18 mm thick probably come from imbrex.

Tegula

Three contexts produced tegula and there were joining fragments across two of these. In fact all the pieces from all three contexts are so similar they could represent a single tile. Certainly no more that two tiles are represented. All are in fabric C and measured 20-21 mm in thickness. The largest example from layer 194 had an estimated width at the tile top of 290 mm, assuming the nail hole to be symmetrical, and a length in excess of 245 mm. The flange was of rectangular form (type A) with a slightly rounded inner top angle and with a double finger groove running alongside the base of the flange.

The flange clearly tapered, measuring 16->22 mm wide by 44 mm external height. A second piece had a flange with the same profile measuring 22-24 mm wide by 42 mm external height. One upper cutaway survived of simple rectangular form (C/A: type A2), where a section of flange has been blocked out by the mould, measuring 40 mm long by 22 mm deep. A finger had been pressed along the angle at the inner end of the cutaway forming an undercutting groove. The tiles were even and well finished, though not knife trimmed. The base was striated. Foot (1994) found these characteristics on the earlier tile from phases 1 and 2 in Group 1 fabrics at The Brooks.

Most of the plain flat fragments measuring 20-24 mm thick are likely to derive from tegulae. They were made in fabrics C, D and E2 and one had a wide knife cut margin on the base.

Brick and flat tile

Most of the flat tile was greater than *c* 20 mm thick and probably derived from tegulae, while a few thinner pieces may have been from imbrices. A few thicker fragments measuring 30-33 mm thick may be brick, though this is not certain as this size can overlap with other tile forms.

Flue/tessera

A single small fragment of flue tile, the surviving area of surface covered in combing, had apparently been chipped to shape for use as a tessera. It was orange in colour, trapezoidal in shape and measured 37 mm long by 27-31 mm wide by 20 mm thick. The inner surface of the original flue tile was used uppermost in the floor, based on the presence of wear on this surface.

Signatures

A signature mark in the form of an 'S'-shaped finger groove with a long tail was found on the top surface of an imbrex (Fig. 4.25, no. 3). Similar signature marks have been recorded on tile from the Isle of Wight (Tomalin 1987, fig. 21), from the bath house at Beauport Park (Brodribb 1979) and Foot (1994) has noted them on imbrices in his Group 2 fabrics from The Brooks, Winchester.

A signature or a tally mark in the form of an incised cross X was found on the top of one of the

complete imbrices (SF275) from Grave 256. Both lines measured 90 mm long and had been cut close to the lower right corner, just off the tile apex. Large incised marks such as this are not common and have variously been interpreted as tally marks or signatures. Similar crosses, which were certainly tally marks, occurred on tiles from Northfleet Villa, Kent (Poole 2010). A similar incised cross has been found on an imbrex from Building 5 (second half of 4th century) of the villa at Abbotts Ann (Durham 2008), together with other varieties of incised lines on imbrices, which could all form Roman numerals and so are more likely to be tally marks than signatures.

Combing

Two pieces had combing. One of the complete imbrices (SF274) had a band of combing measuring 130 mm long running horizontally across the upper surface 25-35 mm from lower end. The combing was 30 mm wide with ten or possibly more teeth. Though combing is occasionally noted on imbrices for keying this is not a logical position as this part of the tile would remain exposed and it may therefore be a combed signature or a decorative feature (Brodribb 1987, 24-5. Foot (1994) noted combing across imbrices in the late Group 2 fabrics from The Brooks site and also observed that combed signatures were confined to this group. Similar combing was found on imbrices at Grateley villa (Cunliffe and Poole 2008) from the late 3rd- to late 4th-century phase. There it was interpreted as keying, though it was unclear whether the combing occurred at the top or lower end of the tiles.

A small fragment of flue tile, re-used as a tessera had parts of two bands of combing at an acute angle of 54 degrees, possibly part of a saltire, a commonly found pattern in Winchester (Foot 1994). The comb used was 30 mm+ wide with 5+ narrow teeth, each 1-2 mm wide and widely spaced (5 mm apart).

Discussion

This assemblage is not large, but it is clear that the material must have been deliberately brought to the cemetery. The low levels of abrasion indicate it had not been introduced into the soil as a result of agriculture or other activity prior to the development of the cemetery. It is also clear from the evidence of mortar or wear that the material had been previously used and had been recycled from elsewhere.

The notable feature of this collection of tile is the unusually high proportion of imbrices, which account for approximately two thirds of the Roman ceramic building material, and the virtual absence of non-roofing material. The proportion of imbrices to tegulae is not that normally found in situations where tile can be related to buildings. There is a distinct contrast between this cemetery and areas of habitation within Winchester and elsewhere. Brodribb (1987, 21-22) records the use of both tegulae and imbrices in the construction of graves, but such constructions were not found in the Lankhills cemetery and the tile that was found does not suggest that any ever existed. This is not surprising as tile cists are generally of 2nd- to 3rd-century date (Phillpott 1991, 66-7).

Other functions must therefore be considered. Where buildings or structures present a ready source of material, tile was used in conjunction with stone as packing around burials or coffins. At the eastern cemetery of Roman London (Barber and Bowsher 2000, 109) there is some evidence that tile may have been used as covers or grave markers with pieces of tile placed over some of the cremations or fragments used to outline the grave. Some form of grave marker may be the most likely function of some of the tiles found at Lankhills. The large piece of tegula (194) found on the surface of an unexcavated grave (possibly Grave 277) and the large pieces of limestone roof slab (Graves 790 and 1310) may fall into this category.

The same may apply to the imbrices. Nearly two thirds (60%) of imbrex fragments were found in the fills, usually the upper fill or backfill of graves. The material is clearly reused having originally served as roofing from the pattern of mortar adhering to some tiles, but in the absence of any evidence for funerary structures it is unlikely that these came from structures or mausolea (imbrices can be used alone in the Laconian system of roofing) within the cemetery.

Most of the fragmentary imbrices were found in the backfill of graves, together with a few in a pit and the fill of ditch 450. The imbrex fragments are distributed across the site and there is no particular concentration to suggest that their use was preferred by a particular group. A possible interpretation is that the imbrices were set up on the surface or set slightly into the fill of graves as a grave marker. An alternative more prosaic explanation of their use might be that they were set on end in the cemetery to mark the alignment of rows or the position of the next grave. In either case the fragmentary character of most imbrices is not surprising, and the expectation that any would survive in situ is minimal. The likelihood of breakage would account for fragments being incorporated in the backfill of graves.

The two complete imbrices found in Grave 256, which is dated to AD 300-350, provide the only firm evidence on which to assess function. These were lying flat in the centre of the grave close to the north edge at a slight angle to each other (Fig. 4.25, nos 1 and 2). They were *c* 0.3-0.35 m below the top of the grave, which might be consistent with slumping when the coffin rotted and caved in. SF 724 was lying on its top surface and SF 725 with its top uppermost. The impression gained is that they may both have originally stood on end edge-to-edge together to form a tube, which may have been a simple grave marker or seen as a means of communication or for pouring libations to the underworld, or a combination of all these.

Roman stone roofing material

Three pieces of Purbeck limestone slabs had the appearance of the lower ends of roof slates of hexagonal or pentagonal form. One with some wear on the surface may have been reused as paving. Stone roofing became more prevalent in the 3rd and 4th centuries.

The post-Roman assemblage

The majority of the later material is of 19th- to 20th-century date (Table 4.50). A range of bricks occurred, mostly quite fragmentary, in Victorian and modern fabrics. They ranged in thickness from 60-68 mm and included one yellow London stock type with a shallow frog, which measured 65 mm thick by 106 mm wide.

Table 4.50: Quantification of post-Roman building materials

Forms	*Count*	*% count*	*Weight (g)*	*% wt*
Brick	28	46.6%	2827	57%
Floor: quarry tile	3	5%	512	10%
Floor: stone tile	1	1.3%	205	4%
Roof: peg	5	8.3%	106	2%
Roof: peg/nib	1	1.3%	73	1.5%
Roof: flat	17	28.3%	483	10 %
Roof: pantile	1	1.3%	612	12.4%
Roof: slate	3	5%	82	1.6%
Sewer pipe	1	1.3%	25	0.5%
Total	60		4925	

Fig. 4.25 Tiles from Grave 256 (Nos 1 and 2) and tile signature from Grave 790 (No 3)

Roofing was predominantly flat tile, which included pieces with circular and square peg/nail holes, a modern nib tile with blind nail hole and a fragment of 19th-early 20th-century pantile. A few pieces of the peg tile were thicker and more abraded than the other roof tile and the fabric was closer to medieval fabrics. These are possibly medieval tile incorporated into the soil though agricultural activities, before the 19th-century development of the area. There were also a few pieces of Welsh grey roof slate of 19th- to 20th-century date. A ceramic quarry tile, a stone floor tile and a fragment of glazed stoneware sewer pipe were also found.

The majority of the post-Roman material was found in the overburden (1), the original topsoil layer (4) and Clarke's excavation backfill (100) and clearly represent building materials relating to the construction of Lankhills House and later alterations and provision of services. Two of the bricks and the stone floor tile had been used to pack posthole 1458.

Illustrated tile (Figure 4.25)

1. Imbrex. Complete tile with incised cross, probably a tally mark, close to lower right corner. Length: 330 mm; width (top): 117 mm; width (base): 168 mm; height (top): 84 mm; height (base): 80 mm; thickness 15 mm; fabric C1. Phase: AD 300-350, Grave 256, fill 258, SF 724
2. Imbrex. Complete tile with band of combing, possibly a signature mark, across the lower end. Length: 394 mm; width (top): 134 mm; width (base): 168 mm; height (top): 64 mm; height (base): 98 mm; thickness14-15 mm; fabric C1. Phase: AD 300-350, Grave 256, fill 258, SF 725
3. Imbrex. Fragment of imbrex with signature mark in the form of an elongated S. Length: >110 mm; width: >60 mm; thickness 13 mm; fabric C. Phase: AD 364-380+, Grave 790, fill 752

STRUCK FLINT *by Hugo Lamdin-Whymark and Kate Cramp*

A total of 113 struck flints and 15 pieces (309 g) of burnt unworked flint were recovered from the excavation (Table 4.51). The struck flint was recovered from numerous archaeological contexts and usually occurred as single finds; no deposit contained more than four pieces. The flintwork is in variable condition. Several pieces are relatively fresh, suggesting they have been minimally disturbed, while other pieces are rolled and damaged, and have clearly been redeposited. Most flints display some cortication, which ranges from a light incipient speckling to a dense white discoloration. Calcium carbonate concretion is present on several pieces. The raw material exploited was a good quality chalk flint, which is available locally in the middle and upper chalk. The cortex was generally fresh and unweathered, measuring up to 10 mm thick.

Table 4.51: Quantification of the struck flint assemblage

Category	*Total*
Flake	45
Blade	4
Bladelet	1
Bladelike flake	5
Unclassifiable waste	5
Chip	48
Core on a flake	1
Partially-worked nodule	1
Retouched flake	1
Notch	1
Backed knife	1
Total	113
No. of burnt struck flints	3
No. of broken struck flints	52
No. of retouched flints	3

The assemblage is dominated by flakes (45 pieces) and chips (48 pieces). A small number of blades, bladelets and blade-like flakes are also present. The blade debitage frequently exhibits platform-edge abrasion and dorsal blade scars, and appears to have been detached using a soft hammer percussor, such as antler. This blade debitage is typical of Mesolithic and early Neolithic blade-orientated industries; the flake debitage is not chronologically diagnostic.

Three retouched pieces were recovered from the site. A heavily rolled backed knife from context 4 has abrupt retouch along the left hand side and an unretouched cutting edge on the right hand side; this tool dates from the Neolithic or early Bronze Age. An edge-retouched flake (context 195) and notched flake (context 265) have retouch on the ventral surface at the bulbar end; in the case of the notched piece, this creates a shallow, concave edge. Neither piece can be closely dated.

The struck flint assemblage reflects the presence of some earlier prehistoric activity in the landscape, although no contemporary features or deposits were identified in these excavations. Mesolithic/early Neolithic and Neolithic/early Bronze Age activity is well documented on the chalklands of southern Britain, and recent excavations in Winchester – on the Northgate House/Staple Gardens and Winchester Discovery Centre sites – yielded a comparable low-density flint scatter.

Chapter 5: Human remains

SUMMARY

This chapter presents the results of specialist analyses of the human remains which were recovered during the excavations by Oxford Archaeology (OA) at Lankhills. The main body of OA material is represented by the remains of 284 discrete inhumation burials. In addition, 89 deposits of disarticulated human bone were recovered from grave fills, with 11 deposits from other contexts (four pits, two ditches, two deposits of overburden, two pottery concentrations and a 'turf line'). Remains of a total of 29 cremation burials and three deposits of undiagnostic burnt bone were also excavated (see Boston and Marquez-Grant below). Samples from 124 skeletons were submitted for carbon and nitrogen analysis (see Cummings and Hedges below). Analysis of strontium and oxygen isotopes was carried out on samples from 40 skeletons (see Chenery *et al.* below). The results of all the work on human remains are presented in this chapter.

INHUMATIONS AND DISARTICULATED HUMAN BONE *by Sharon Clough and Angela Boyle*

Introduction

The assemblage comprised 284 discrete skeletons, 89 deposits of disarticulated bone from grave fills and a further 11 from other contexts. The period of use of the cemetery spanned the whole of the 4th century AD (see chronological discussion in Chapter 7).

The first phase of archaeological investigation of the cemetery was carried out from 1967 to 1972 and revealed 451 graves (Clarke 1979). The skeletons from Clarke's excavations were assessed largely in order to determine age and sex (Harman 1979, 123, 342) with limited analysis of additional data relating to decapitation (Watt 1979) and subsequently as part of an ongoing programme of analysis and reporting of material from the Winchester Excavation Committee excavations (Stuckert forthcoming). More recently, the material from Clarke's excavation was re-examined as part of a doctoral thesis (Gowland 2002). This work focussed on age as an aspect of social identity and therefore did not include full analysis of all aspects of the assemblage. Assessment of pathology was undertaken, however (Gowland 2004), and elements of this work are touched upon in this chapter. Detailed analysis of OA Lankhills material comprised the establishment of demographic parameters (age, sex and stature), analysis of skeletal and dental pathology, recording of metric and non-metric variation and congenital anomalies. Wherever possible the present group will be compared with that from Clarke's excavations. Henceforward, the material from the first phase of work will be referred to as 'Clarke's Lankhills'; the assemblage excavated by Oxford Archaeology will be referred to as 'OA Lankhills'. Where specific reference is made (in the text or figures) to Gowland's results, the term 'Gowland's Lankhills' is used. Provisional data on 52 individuals recovered in the Wessex Archaeology work of 2007-8 (Wessex Archaeology 2009) are also referred to.

Methodology

All skeletal material was examined in accordance with national guidelines (Hillson 1996a; Brickley and McKinley 2004; Mays *et al*. 2004). During the initial assessment of the assemblage (Clough and Loe 2006) the condition of each skeleton was classified as poor (most bone surfaces considerably eroded), fair (most bone surfaces moderately eroded), good (most bone surfaces slightly eroded) or excellent (most bone surfaces not eroded). At this stage considerable variation in the condition of skeletons was observed, both within individual skeletal elements and across the group, therefore the condition of each skeleton was further scored at the detailed recording stage with reference to different anatomical areas (skull, arms, hands, legs and feet) after McKinley (2004b, 16) and according to the criteria defined in Table 5.1 (ibid.; score 9 was added by the authors).

The degree to which each skeleton was fragmented (or complete) was assessed visually and recorded as 'excellent' (virtually no fragmentation); 'good' (slight fragmentation); 'fair' (moderate fragmentation), 'poor' (most bones are fragmented) or 'destroyed' (considerable fragmentation).

The biological sex of all adult skeletons was based on examination of standard characteristics of the skull and pelvis (Ferembach *et al*. 1980; Schwartz 1995), with greater emphasis on features of the latter as they are known to be more reliable (Cox and Mays 2000). Measurements of the femoral and humeral heads were employed as secondary indicators (Giles 1970). Adult skeletons were recorded as male, female, probable male (?male), probable female (?female), or indeterminate depending on the degree of sexual dimorphism of features. No attempt was made to sex subadults defined as individuals below 18 years of age (though see Discussion below) for whom there are no accepted methods (Cox 2000), with the exception of adolescent skeletons whose innominate bones had fused and where preservation was adequate.

Table 5.1: Scoring criteria for skeletal condition

Score	*Scoring criteria*
0	Surface morphology clearly visible with fresh appearance to bone and no modification
1	Slight and patchy surface erosion
2	More extensive erosion of surface
3	Most of the bone surface affected by some degree of erosion, general morphology maintained but detail of parts of surface masked by erosive action
4	All of bone surface affected by erosive action; general profile maintained and depth of modification not uniform across the whole surface
5	Heavy erosion across whole surface, completely masking normal surface morphology with some modification of profile.
5+	As for Grade 5 with extensive penetrating erosion resulting in modification of profile (includes near-destroyed bone)
9	In the grave catalogue this is used to indicate a complete absence of the anatomical area concerned

Subadults were aged by examination of stage of the formation and eruption of teeth (Moorees *et al.* 1963), epiphyseal fusion (Schwartz 1995; Scheuer and Black 2000) and diaphyseal length (Maresh 1970; Scheuer *et al*. 1980; Hoppa 1992; Black and Scheuer 1996). Adults were aged by examination of late fusing epiphyses (Scheuer and Black 2000), dental attrition (Miles 1963; Brothwell 1981), the pubic symphysis (Brooks and Suchey 1990) and the auricular surface (Lovejoy *et al*. 1985; Buckberry and Chamberlain 2002). Cranial suture closure (Meindl and Lovejoy 1985) was only used as a secondary indicator of age because it is widely considered to be unreliable (for example, see Key *et al.* 1994; Cox 2000; Lynnerup and Jacobsen 2003). Where suture closure was the only indicator present individuals were classified as adult only. Observations of rib end morphology (Iscan and Loth 1986) were employed with caution because they have large margins of error (Loth 1995). Few sternal rib ends survived, and where they did were employed only as a secondary indicator, never as a sole criterion.

Final determination of age used the multiple indicators method, based on the indications provided by all the methods used, balancing these against the accepted reliability of the method concerned. The resulting 'average' figure also involved the judgement of the specialists examining the material. Ageing using dental attrition indicators was considered particularly problematic, and the implications of this are considered below (see Demographic composition below). Skeletons were assigned to one of the age categories in Table 5.2.

Table 5.2: Age categories applied to the assemblage

Age range	*Age category*
36 weeks – 1 month	Neonate
1.1 month–3 years	Infant
4–7 years	Young child
8-12 years	Older child
13–17 years	Adolescent
18–25 years	Young adult
26-35 years	Prime adult
36-45 years	Mature adult
45+ years	Older adult
60+ years	Much older adult
< 18 years (not further defined)	Subadult
> 18 years (not further defined)	Adult

Where possible, adult stature was estimated by taking the maximum length of any available complete long bone and applying to it the appropriate regression formula devised by Trotter (1970). Measurements of the femur were employed in preference, followed by those for the tibia, humerus, radius and ulna (in that order). Stature could not be calculated for adults of unknown sex. All possible males and possible females were, however, included in the measured sample.

Measurements of other long bones and skulls were taken (where appropriate) and used in the calculation of indices to explore variation in the physical attributes of the population, while the presence or absence of frequently recorded non-metrical traits was scored (Berry and Berry 1967; Schwartz 1995; Hillson 1996a).

Skeletal pathology and/or bony abnormality is described and differential diagnoses explored with reference to standard texts (Ortner and Putschar 1981; Resnick 1995; Aufderheide and Rodriguez-Martin 1998). In a small number of cases radiology was also employed. The extent and range of pathology was explored by calculating crude prevalence rates - the number of individuals with a condition out of the total number of individuals observed - (CPR) and true prevalence rates - the number of elements or teeth with a particular condition out of the number of elements or teeth observed - (TPR). These rates were compared with those recorded for contemporary assemblages (where appropriate), depending on the availability of data. In particular, comparisons were made with the assemblages from Poundbury, Dorset (Molleson 1993); Cirencester (Wells 1982) and Butt Road, Colchester (Pinter-Bellows 1993), summary details of which appear below (Table 5.3). The corpus of data synthesised for 52 Romano-British assemblages (5,716 individuals) dating between

AD 43-410 by Roberts and Cox (2003, 107-163) was also employed in comparisons, though it should be noted that this synthesis also includes the key individual sites mentioned above.

Disarticulated human bone is discussed in this chapter. An inventory of all material was made and this can be found in the site archive. For each context, the minimum number of individuals was estimated based on repeated elements and taking into account age and sex. Methods employed to estimate age and sex and record pathology were as described for the articulated remains.

Condition and completeness

Data on condition and completeness are presented below. While the full range of variation was represented, more than half of the skeletons were upwards of 75% complete (161/284, 56.7%) and over half (161/284; 56.7%) were judged to be in excellent condition (Figs 5.1-5.2). No skeletons were classified as poor overall.

The majority of skeletons had bones that were only moderately or slightly fragmented, therefore a total of 171 adults and 23 subadults (68%) were

Table 5.3: Contemporary cemetery sites used for comparison

Site name	*Date range*	*Number of skeletons*	*Location*	*Reference*
Poundbury	Mostly 3rd-4th century	1074*	Dorchester (Dorset)	Molleson 1993
Cirencester North	3rd-5th century	45	Cirencester	Wells 1982
Cirencester South		362		
Butt Road, Colchester	1st-4th century, though most from 3rd-4th century	575	Colchester	Pinter-Bellows 1993

* The total number of individuals referred to by Roberts and Cox (2003) is 1131, which include early Roman burials.

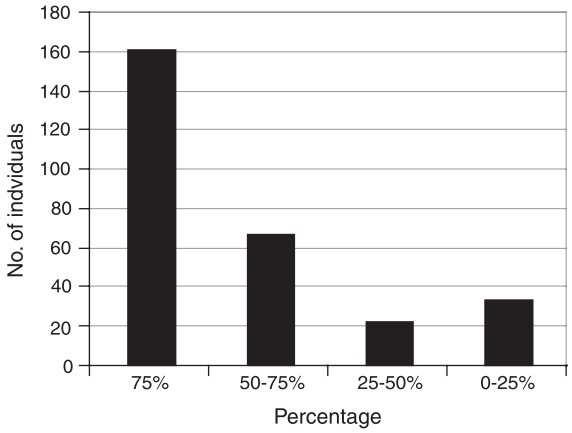


Fig. 5.1 Completeness of skeletons at OA Lankhills (n=284)

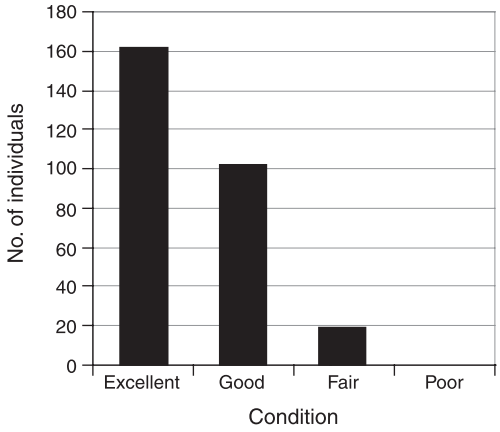


Fig. 5.2 Condition of skeletons at OA Lankhills (n=284)

Table 5.4 Bone condition by skeletal region at OA Lankhills (n=284)

Grade	*Skull*	*Arms*	*Hands*	*Torso*	*Legs*	*Feet*	*Total*
0	19 (6.7%)	20 (7%)	25 (8.8%)	20 (7%)	17 (6%)	19 (6.7%)	120/1704 (7%)
1	77 (27.1%)	47 (16.5%)	55 (19.4%)	63 (22.2%)	61 (21.5%)	92 (32.4%)	395/1704 (23.2%)
2	66 (23.2%)	58 (20%)	31 (10.9%)	32 (11.3%)	67 (23.6%)	45 (15.8%)	299/1704 (17.6%)
3	36 (12.7%)	38 (13.4%)	17 (6%)	23 (8.1%)	49 (17.3%)	14 (4.9%)	177/1704 (10.4%)
4	13 (4.6%)	20 (7%)	9 (3.2%)	12 (4.2%)	17 (6%)	17 (6%)	88/1704 (5.2%)
5	11 (3.9%)	17 (6%)	8 (2.8%)	5 (1.8%)	14 (4.9%)	8 (2.8%)	63/1704 (3.7%)
5+	24 (8.5%)	19 (6.7%)	9 (3.2%)	21 (7.4%)	11 (3.9%)	6 (2.1%)	90/1704 (5.3%)
9 = not present	38 (13.4%)	65 (22.9%)	130 (45.8%)	108 (38%)	48 (16.9%)	83 (29.2%)	472/1704 (27.7%)
Total number	284	284	284	284	284	284	1704/1704

Note: 0 = good; 5+ = very poor

subject to some level of metrical analysis. The assessment of bone condition in relation to body part is shown below (Table 5.4; Fig. 5.3) and this gives a more detailed and specific indication of variation in condition.

Analysis by skeletal region shows that almost half of the skeletons were without hands (130/284; 45.8%) while more than a third were without torsos (108/284; 38%), yet comparable numbers for both skeletal regions fell into the better preserved categories: 111 or 39.1% of hands and 115 or 40.5% of torsos fell within grades 0-2. Similarly, just under a third of skeletons were missing feet (115/284; 29.2%) while 156 or 54.9% of feet fell within grades 0-2.

Intercutting of graves was limited at Lankhills and therefore only accounts for a small proportion of the missing elements. There is a clear variation in preservation of skeletal elements across the site with no clearly identifiable factors involved. Some effort seems to have been made to avoid disturbing existing burial remains, with the result that the majority of the graves were dug into previously undisturbed ground.

The bone condition data were also examined in relation to the age and sex of individuals within the assemblage. The results are presented below for males (Table 5.5; Fig. 5.4), females (Table 5.6; Fig. 5.5) and subadults (Table 5.7; Fig. 5.6).

In general, the data for males and females reflect the patterns seen in the assemblage overall. Hands are the most poorly preserved region with a third of male hands (31/94; 33%) and just under a third of female hands (28/94; 29.8%) completely absent.

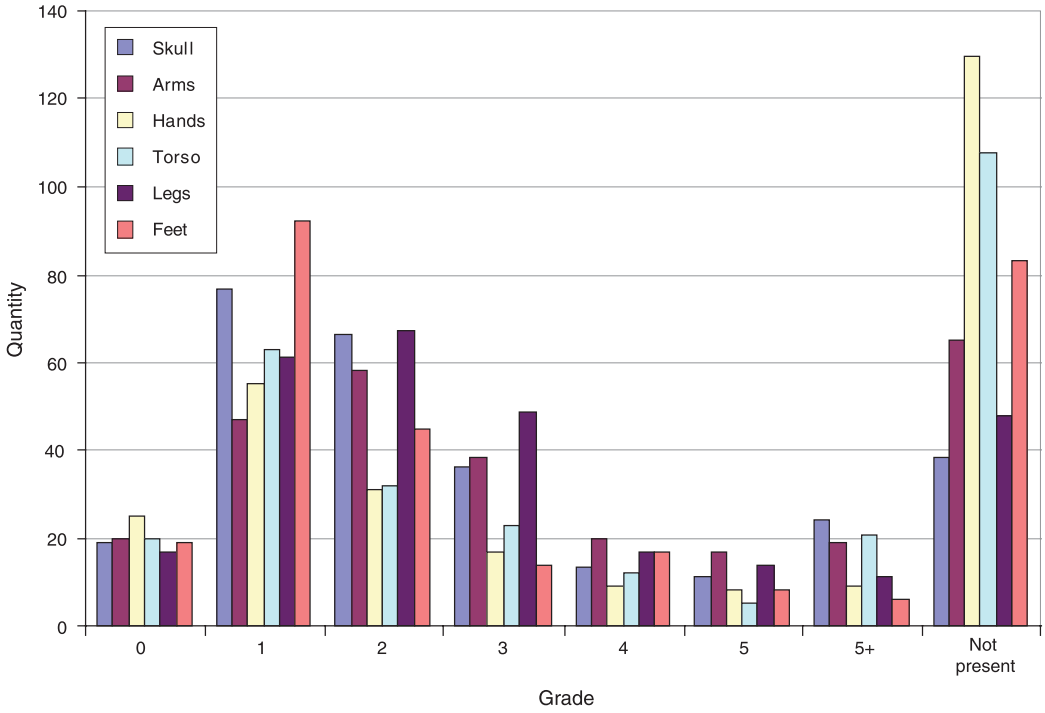


Fig. 5.3 Bone condition by skeletal region at OA Lankhills (n=284)

Table 5.5: Bone condition by skeletal region, adult males only (n=94)

Grade	*Skull*	*Arms*	*Hands*	*Torso*	*Legs*	*Feet*	*Total*
0	10 (10.7%)	9 (9.6%)	12 (12.8%)	8 (8.5%)	8 (8.5%)	7 (7.5%)	54/564 (9.6%)
1	27 (28.7%)	15 (16%)	20 (21.3%)	24 (25.5%)	24 (25.5%)	37 (39.4%)	147/564 (26.1%)
2	29 (30.9%)	28 (29.8%)	17 (18.1%)	15 (16%)	29 (30.9%)	19 (20.2%)	137/564 (24.3%)
3	12 (12.8%)	14 (14.9%)	4 (4.3%)	8 (8.5%)	17 (18.1%)	6 (6.4%)	61/564 (10.8%)
4	3 (3.2%)	9 (9.6%)	5 (5.3%)	5 (5.3%)	6 (6.4%)	7 (7.5%)	35/564 (6.2%)
5	4 (4.3%)	7 (7.5%)	2 (2.1%)	2 (2.1%)	4 (4.3%)	4 (4.3%)	23/564 (4.1%)
5+	5 (5.3%)	6 (6.4%)	3 (3.2%)	7 (7.5%)	2 (2.1%)	1 (1.1%)	24/564 (4.3%)
9 = not present	4 (4.3%)	6 (6.4%)	31 (33%)	25 (26.6%)	4 (4.3%)	13 (13.8%)	83/564 (14.6%)
Total number	94	94	94	94	94	94	564/564 (100%)

Notes: 0 = good; 5+ = very poor; probable males are included in totals

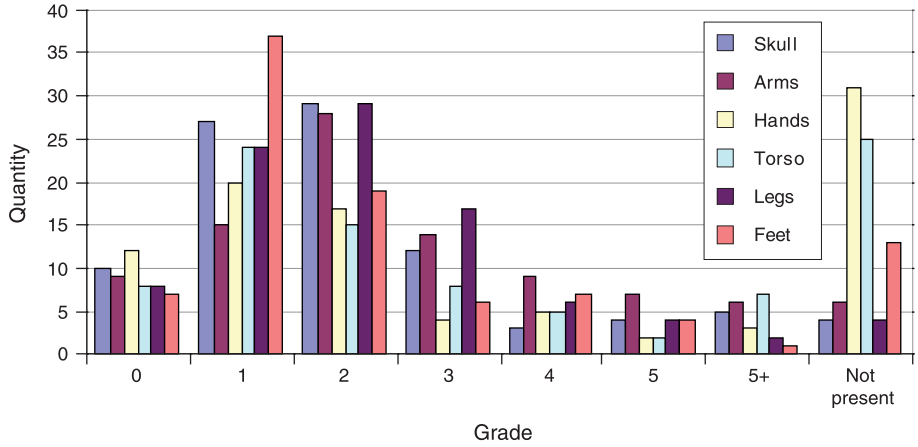


Fig. 5.4 Bone condition by skeletal region for males only (n=94)

Table 5.6: Bone condition by skeletal region, females only (n=94)

Grade	*Skull*	*Arms*	*Hands*	*Torso*	*Legs*	*Feet*	*Total*
0	6 (6.4%)	7 (7.5%)	8 (8.5%)	6 (6.4%)	6 (6.4%)	10 (10.6%)	43/564 (7.6%)
1	28 (29.8%)	18 (19.1%)	24 (25.5%)	23 (24.5%)	24 (25.6%)	40 (42.6%)	157/564 (27.8%)
2	26 (27.7%)	19 (20.2%)	9 (9.6%)	9 (9.6%)	24 (25.6%)	18 (19.1%)	105/564 (18.6%)
3	13 (13.8%)	19 (20.2%)	12 (12.8%)	14 (14.9%)	19 (20.2%)	3 (3.2%)	80/564 (14.2%)
4	8 (8.5%)	10 (10.6%)	3 (3.2%)	5 (5.3%)	7 (7.5%)	7 (7.5%)	40/564 (7.1%)
5	5 (5.3%)	8 (8.5%)	4 (4.3%)	2 (2.1%)	3 (3.2%)	2 (2.1%)	24/564 (4.3%)
5+	3 (3.2%)	5 (5.3%)	6 (6.4%)	9 (9.6%)	2 (2.1%)	0	25/564 (4.4%)
9 = not present	5 (5.3%)	8 (8.5%)	28 (29.8%)	26 (27.7%)	9 (9.6%)	14 (14.9%)	90/564 (16%)
Total number	94	94	94	94	94	94	564/564 (100%)

Notes: 0 = good; 5+ = very poor; probable females are included in totals

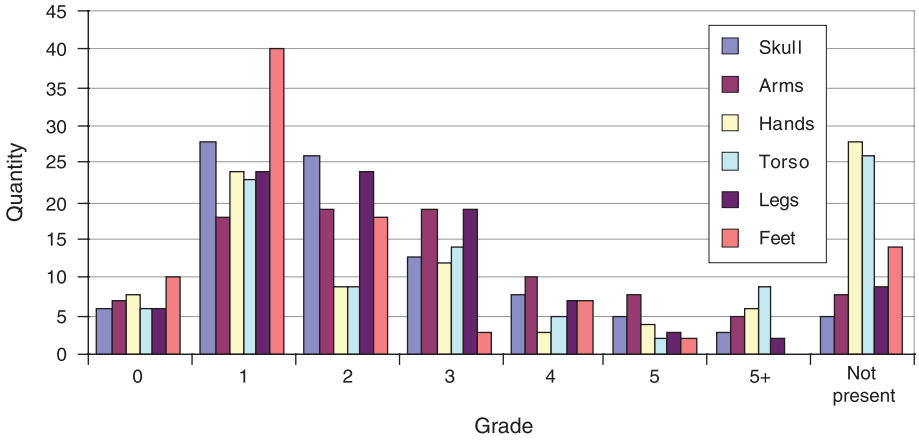


Fig. 5.5 Bone condition by skeletal region, females only (n=94)

This is followed by torsos with just over a quarter absent for both females (26/94; 27.7%) and males (25/94; 26.6%). Feet are absent in 13 male graves (13.8%) and 14 female graves (14.9%).

Overall, males are slightly better preserved, with 60% of skeletal elements assigned to grades 0-2 compared with 54% of females and 36.2% of subadults. This is mostly accounted for by variation in the preservation of the legs: four males were without legs (4.3%) which is less than half the figure for females (9; 9.6%). Across the skeleton the figures for absence of skeletal parts were slightly better for males (83; 14.6%) than those for females (90; 16%). In marked contrast the figure for subadults was

48.4% with hands and feet the most commonly missing skeletal elements (64.1%).

This pattern is broadly reflected by Clarke's Lankhills. He carried out a detailed analysis of preservation by skeleton and variation according to age and sex though *not* by skeletal region (Clarke 1979, 137-138, table 9). He defined six categories of skeletal preservation which appear below (Table 5.8).

These results are broadly comparable with the data for OA Lankhills: preservation for males is better than for females and preservation of subadults is much poorer (see below). Clarke suggested a possible link between poorer preservation and burial within coffins and wearing of clothing or shrouds: '…in graves where personal ornaments worn at burial suggest that the corpse

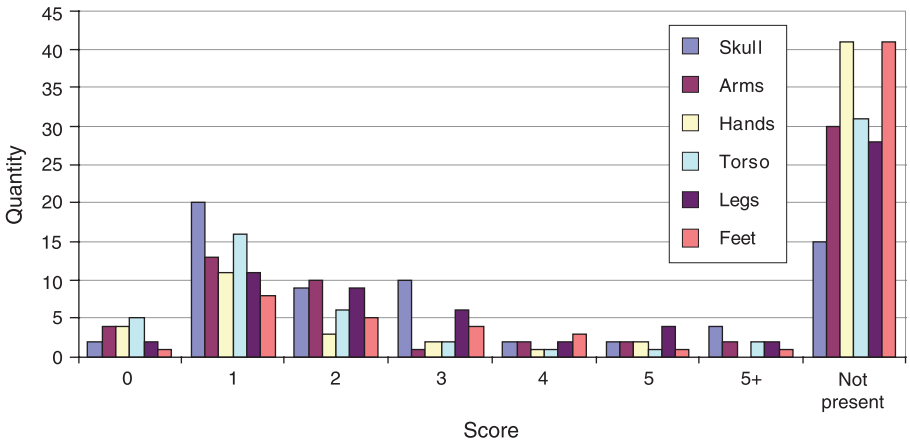


Fig. 5.6 Bone condition by skeletal region, subadults only (n-64)

Table 5.7: Bone condition by skeletal region, subadults only (n=64)

Grade	*Skull*	*Arms*	*Hands*	*Torso*	*Legs*	*Feet*	*Total*
0	2 (3.1%)	4 (6.3%)	4 (6.3%)	5 (7.8%)	2 (3.1%)	1 (1.6%)	18/384 (4.7%)
1	20 (31.3%)	13 (20.3%)	11 (17.2%)	16 (25%)	11 (17.2%)	8 (12.5%)	79/384 (20.6%)
2	9 (14.1%)	10 (15.6%)	3 (4.7%)	6 (9.4%)	9 (14.1%)	5 (7.8%)	42/384 (10.9%)
3	10 (15.6%)	1 (1.6%)	2 (3.1%)	2 (3.1%)	6 (9.4%)	4 (6.3%)	25/384 (6.5%)
4	2 (3.1%)	2 (3.1%)	1 (1.6%)	1 (1.6%)	2 (3.1%)	3 (4.7%)	11/384 (2.9%)
5	2 (3.1%)	2 (3.1%)	2 (3.1%)	1 (1.6%)	4 (6.3%)	1 (1.6%)	12/384 (3.1%)
5+	4 (6.3%)	2 (3.1%)	0	2 (3.1%)	2 (3.1%)	1 (1.6%)	11/384 (2.9%)
9 = not present	15 (23.4%)	30 (46.9%)	41 (64.1%)	31 (48.4%)	28 (43.8%)	41 (64.1%)	186/384 (48.4%)
Total number	64	64	64	64	64	64	384/384 (100%)

Notes: 0 = good; 5+ = very poor

Table 5.8: Skeletal preservation by age and sex for Clarke's Lankhills (n=408)

State of preservation	*Overall incidence*	*Incidence among men*	*Incidence among women*	*Incidence among all adults*	*Incidence among subadults*
A almost perfect	33 (8%)	17 (15%)	4 (6%)	29 (10%)	4 (4%)
B slight decomposition	96 (24%)	36 (32%)	12 (17%)	71 (24%)	25 (23%)
C smaller bones decayed	84 (21%)	27 (24%)	23 (32%)	71 (24%)	13 (12%)
D only major bones left	101 (25%)	26 (23%)	26 (37%)	87 (29%)	14 (13%)
E only skull and legs left	52 (13%)	6 (5%)	6 (8%)	34 (11%)	18 (17%)
F little or nothing left	42 (10%)	0 (0%)	0 (0%)	8 (3%)	34 (31%)
Total	408 (100%)	112 (100%)	71 (100%)	300 (100%)	108 (100%)

Note: It should be emphasised that the data on age and sex provided by Harman for this table were revised by Gowland, although even allowing for this there is still significant variation between the sexes.

was indeed fully clothed, the skeleton was almost invariably badly preserved. The poor preservation of female skeletons could thus indicate that women were generally buried with heavier clothing or shrouds than men' (Clarke 1979, 138). However, in more recent research on the taphonomy of human remains it has been observed that there is 'significant retardation of decomposition in clothed bodies buried directly in the soil without a coffin. Clothing will partially negate the effects of the general soil environment and delay the process of decay' (quoted in Janaway 1996, 69). Certainly in the OA assemblage there does not appear to be an obvious link between poor preservation and burial in coffins. There was evidence to indicate that virtually all the dead had been buried in coffins. Where evidence for coffins was not recovered the graves were often extremely truncated. There is some evidence for the preservation of textiles in association with objects though in only three graves could the material be identified. In two cases the material was probably linen and in the third it was wool. However, the way in which it was associated with the objects does not necessarily suggest garments which were worn (see Chapter 7).

A further explanation for variable decomposition could be in the observation that vegetable matter (eg straw, pine branches) when placed into the burial environment. introduces additional bacteria and surrounds the body with a layer of air. It may then act as an insulator and generate heat in its breakdown, speeding up decomposition of the body (Janaway 1996, 69). It has been observed that remains of Box (*Buxus sempervirens*) leaves have been found in Roman burials, as they were believed to keep the grave sweet and perhaps served as a symbol of eternal life. No evidence for such coffin packing was present at Lankhills, however, though Box has been recorded, for example, in the cemetery at Roden Downs, Berkshire (Hood and Walton 1948, 47).

Preservation of subadults is much poorer than that of males or females, with nearly half of skeletal elements being completely absent (186/384; 48.4%). Once again, however, the general assemblage-wide trends are broadly reflected within this group. Considerably more than half of hands are absent (41/64; 64.1%) with equal numbers of feet, followed by torso (31/64; 48.4%), legs (28/64; 43.8%), arms (30/64; 46.9%) and skull (15/64; 23.4%). Just over one third of the assemblage is graded 0-2 (139/384; 36.2%). There was no obvious correlation between grave depth and preservation/completeness.

Demographic composition

Quantification of the assemblage

There were 64 subadults and 220 adults in the total of 284 articulated skeletons from OA Lankhills. The adults comprised 64 males, 30 probable males, 68 females, 26 probable females and 32 unsexed individuals. Five adolescents in whom pelvic development was complete exhibited sexually dimorphic characteristics; there were two females (skeletons 20 (Grave 18) and 507 (Grave 545)), two probable females (skeletons 926 (Grave 985) and 1244 (Grave 1360)) and one probable male (skeleton 712 (Grave 745)). The 'probable' adolescents had slightly less complete pelves with slightly more fragmentation.

Sex

The number of males and females, 94 of each, gives an equal ratio of 1:1. In some aspects, sexual dimorphism was quite marked among the adult population. The females were significantly smaller and more gracile than the males. In contrast, however, it was notable that the skulls had more mixed characteristics, particularly in the angle and gonial flaring of the mandible, which was commonly masculine in nature even in individuals sexed as female. In addition, it was observed that the sciatic notch of the pelvis of males was wider than in other populations (this comment is based on a general observation; the width of the sciatic notch was not measured). Where there was significant difference between the indications presented by the skull and pelvis the latter was given more weight.

The majority of the 32 unsexed skeletons were missing the skull and pelvis and preservation was generally poor. It was possible to take measurements on only two of these skeletons. Skeleton 1474 (Grave 1455) had both male and female measurements while the measurements for skeleton 1926 (Grave 1925) were indeterminate.

Skeletons aged less than 18 years of age were examined for sexually dimorphic traits and only included where these were well-defined. Caution was exercised, as it is known that young adult males tend to have less well defined supraorbital ridges and generally less robust features than older males, which can lead to a reduction in the numbers of males identified in the younger adult age categories. In all, five individuals in the adolescent category (13-17 years) were assigned a definite or

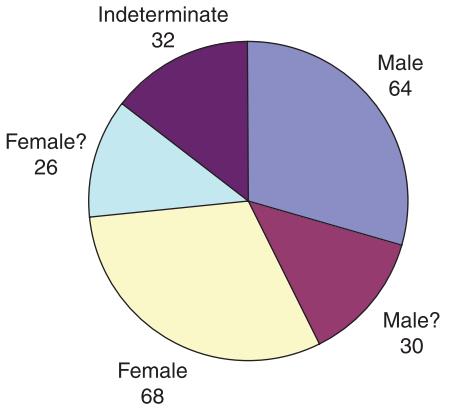


Fig. 5.7 Male, female and unsexed adult distribution at OA Lankhills (n=220)

probable sex and are included in the analysis. Of these, four were female and only one was male (see above).

The original assessment of Clarke's Lankhills identified a preponderance of males over females (112: 71) out of a total of 439 inhumations: 'All these [adult] burials were of people over 17: 111 men, 70 women and one double grave with both a man and a woman' (Harman 1979, 123). Gowland (2001, 154) re-aged and re-sexed all skeletons from Clarke's Lankhills as the original report represented an assessment only and was conducted prior to the development of some of the more recent ageing techniques, for example assessment of the auricular surface (Lovejoy *et al.* 1985) and pubic symphysis (Brooks and Suchey 1990). She identified 112 males and probable males with 119 females and probable females while the remaining 94 adults could not be sexed (Fig. 5.8; Table 5.9). The skeletal material excavated by Clarke was a little more fragmented and less well-preserved than the OA assemblage, with 19.5% of skeletons not assigned to sex (94/481) compared to 11.3% (32/284) in the OA assemblage. A total of 18 out of 481 individuals (3.7%) were unaged and unsexed. Gowland's age and sex determinations are used for all further comparisons in this report. Table 5.9 also summarises the evidence from the Wessex Archaeology excavations of 2007-8.

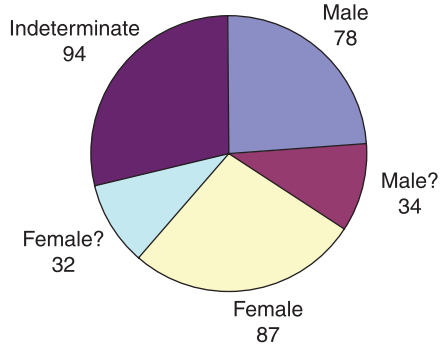


Fig. 5.8 Male, female and unsexed adult distribution at Gowland's Lankhills (n=325)

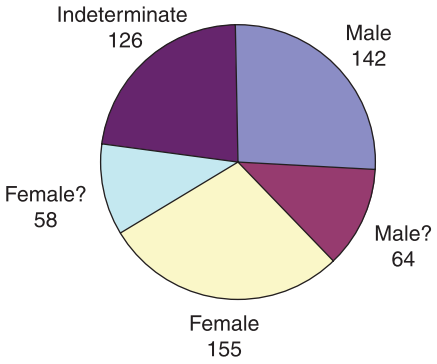


Fig. 5.9 Male, female and unsexed adult distribution for combined Lankhills (n=545)

Age at death

In this section the age distribution of the OA Lankhills individuals is considered. These data are then combined, as far as possible, with Gowland's reassessment of Clarke's Lankhills, to facilitate discussion of the complete assemblage. Gowland used slightly different age categories. In particular this has implications for the older adult categories: her mature adult category 35-49 years is followed by older adult at 50+ years, categories which contrast with the 35-44 years, 45+ years and 60+ years age brackets used at OA Lankhills. The value of dental attrition as an ageing method in this context is also commented upon. Finally the assemblage is compared with other contemporary groups.

Adult age estimation at OA Lankhills was based on multiple indicators both with and without dental attrition. When attrition was excluded the assemblage contained a higher proportion of older adults than other contemporary groups. The variation in age distribution both with and without attrition is illustrated in Fig. 5.11. Partly to facilitate comparisons the final age estimates did incorporate dental attrition as an indicator. Dental attrition was also examined for its value as a sole ageing indicator and the results are discussed below.

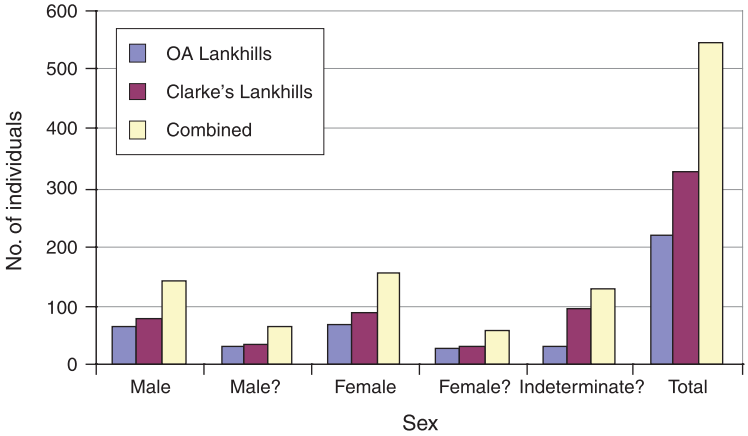


Fig. 5.10 Comparison of data on sex of adult individuals at Lankhills

When attrition was excluded from the process of age estimation the profile showed an aged population with 60 and 20 individuals dying in the older adult (45+ years) and much older (60+ years) categories respectively, with fewer in the young adult (18-25 years) and prime adult categories (26-35 years) - 9 and 20 individuals respectively. This population profile was at odds with that of Gowland and also with those from other contemporary cemeteries. When attrition was incorporated the numbers in the older and much older categories decreased to 48 and 15 with a corresponding increase in the young adult and prime adult categories to 13 and 28. Numbers in the mature adult category increased from 34 to 39.

Among the subadults, most deaths are recorded in the infant (23) and young child (21) age categories. There were seven neonates and foetuses

Table 5.9: Numbers of males, females, unsexed adults and subadults at Lankhills (OA and Clarke (Gowland) combined; n=765), with assessment data from Wessex Archaeology excavation

	M	*M?*	*F*	*F?*	*?*	*SA*	*UU*	*Total*
OA	64 (8.4%)	30 (3.9%)	68 (8.9%)	26 (3.4%)	32 (4.2%)	64 (8.4%)	0	284 (62.9%)
Clarke (Gowland)	78 (10.2%)	34 (4.4%)	87 (11.4%)	32 (4.2%)	94 (12.3%)	138 (18%)	18 (2.4%)	481 (37.1%)
Combined	142 (18.6%)	64 (8.4%)	155 (20.3%)	58 (7.6%)	126 (16.5%)	202 (26.4%)	18 (2.4%)	765
Wessex Archaeology	14*		20*		5	13		52

Note: UU=unaged and unsexed; SA=subadult; *= includes uncertainly sexed individuals

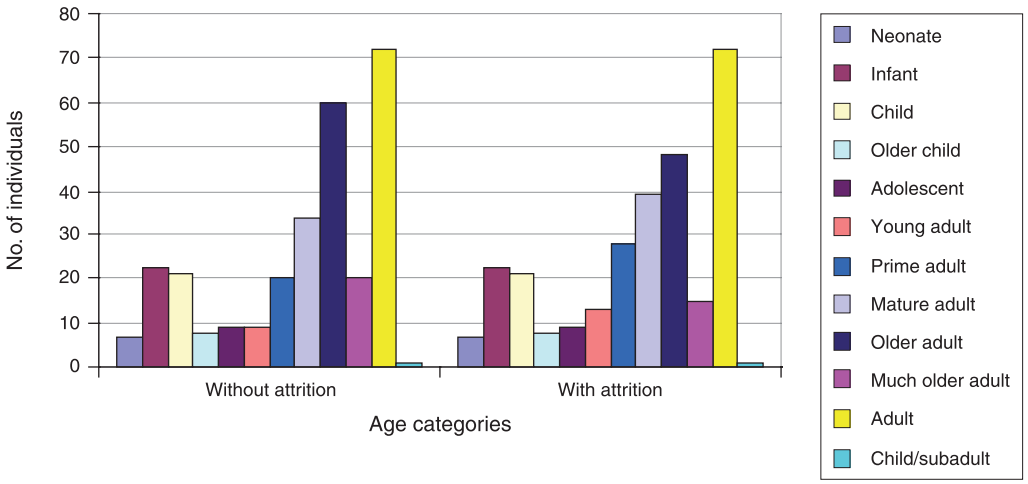


Fig. 5.11 Comparison of age categories at OA Lankhills, both with and without dental attrition as one of the multiple age indicators

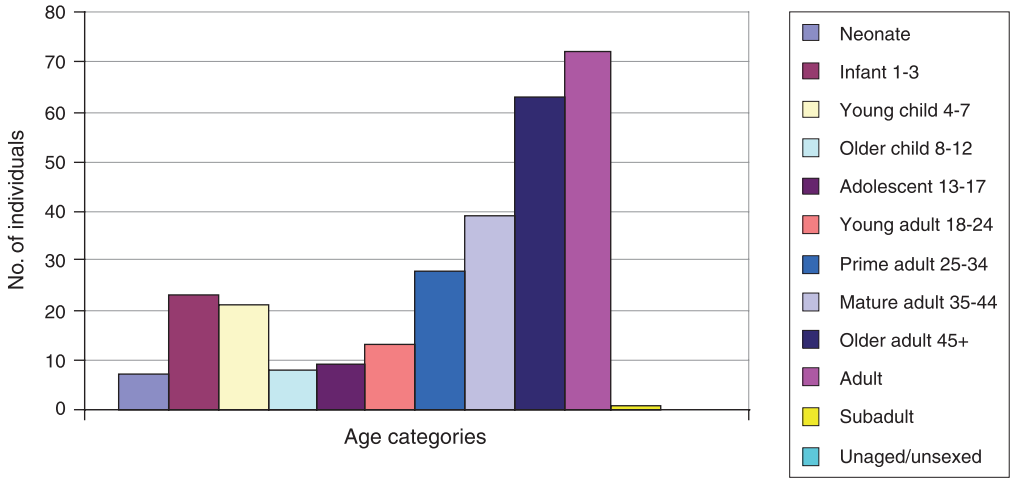


Fig. 5.12 Age distribution at OA Lankhills (n=284)

were absent. The numbers of subadults dying in the older child and adolescent age categories were virtually the same, totalling eight and nine individuals respectively. A single poorly preserved skeleton was assigned to the broad subadult category.

Adults show a marked increase in the number of deaths with the advancement of age. Thus, only 13 individuals died in young adulthood (18-25 years), but this number doubles by the next age category, prime adulthood (26-35 years), and continues to increase with 39 adults in the mature category (36-45 years) until the 45 years + age category. This latter age category accounts for 48 individuals, or 22.8% of all aged adults. A further 15 individuals (7.1%) died over the age of 60 years. Even with the application of dental attrition as one of a number of ageing indicators, the group still appears 'older' when compared with the data recorded by Gowland. This may hint at some form of zoning within the cemetery. A significant number of individuals (72; 32.7%) could not be assigned to an age more specific than 'adult'. These skeletons were poorly preserved and in most cases the skull and pelvis did not survive.

The expected age at death distribution for a pre-industrial population would produce a U-shaped curve, with deaths peaking in infancy and older adulthood, which is the pattern reflected here. In contrast, in modern industrialised countries the number of deaths in infancy and childhood decreases and the distribution becomes skewed to the older age ranges with very few deaths under 45 years. It has been estimated that infant mortality in

Table 5.10: Age distribution at OA Lankhills (n=284)

Age category	*Number of individuals*	*% of aged population*	*% of subadults*	*% of adults*
Neonate 0-1mth	7	3.3	10.3	
Infant 1-3	23	10.9	33.8	
Young child 4-7	21	10	30.9	
Older child 8-12	8	3.8	11.8	
Adolescent 13-17	9	4.3	13.2	
Young Adult 18-25	13	6.2		9.1
Prime Adult 26-35	28	13.3		19.6
Mature Adult 36-45	39	18.5		27.3
Older Adult 45+	48	22.8		33.6
Much Older Adult 60+	15	7.1		10.5
Adult	72			
Subadult	1			
Total	284			

Note: adult and subadult categories are excluded from the % calculations.

Table 5.11: Age distribution at Clarke's Lankhills (n=481)

Age category	*Number of individuals*	*% of aged population*	*% of subadults*	*% of adults*
Neonate 0-1	37	11.6%	33%	
Infant 1-3	23	7.2%	20.5%	
Young child 4-7	30	9.4%	26.8%	
Older child 8-12	8	2.5%	7.1%	
Adolescent 13-17	14	4.4%	12.5%	
Young Adult 18-24	65	20.4%		31.5%
Prime Adult 25-34	63	19.8%		30.6%
Mature Adult 35-49	54	16.9%		26.2%
Older Adult 50+	24	7.5%		11.6%
Adult	114			
Subadult	31			
Unaged/unsexed	18			
Total	481			

Note: adults, subadults, unaged/unsexed are excluded from the % calculations.

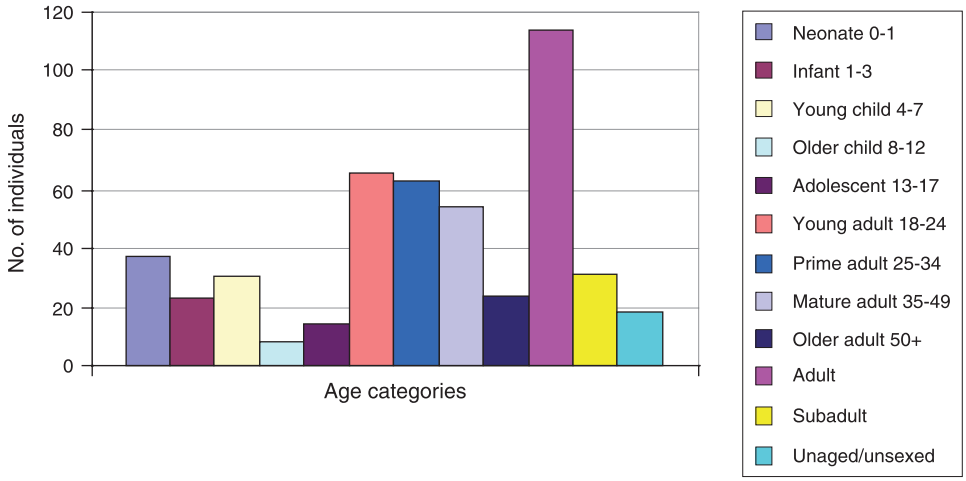


Fig. 5.13 Age distribution at Clarke's Lankhills (n=481)

Table 5.12: Comparison of a range of subadult ageing methods at OA Lankhills

Skeleton number	*Dental age*	*Epiphyseal fusion age*	*Long bone length age*
280	2-4 years	1 year	1.5 years
611	5-7 years	3-6 years	4 years
767	4-7 years	6-9 years	6-7 years
1287	2-4 years	3-6 years	1.5-2 years
1314	0-1 months		38-48 weeks
1339	3-7 years	3+ years	3.5-4 years
1467		?1 year	7 months-1 year
1565	1.75-3.5 years		1 year
1723	0-1 month		42-48 weeks
1731	1-2 years	1-2 years	2 years
1879	4-12 months	C1 year	1-4 months

pre-industrial Europe was approximately 20-30% (Shahar 1990, 149). At OA Lankhills neonates represent 3.3% of the population, which in common with many other contemporary assemblages falls short of the expected number.

Where possible, subadult remains were aged using dental development and epiphyseal fusion; long bone length was also recorded and for two skeletons was the only ageing method available. Where dental age and long bone age could be compared the difference was found to be minimal with the possible exception of skeleton 1287 (Grave 1351) (Table 5.12). This suggests that stunted growth due to malnutrition and ill health among the children was not widespread, and that where deficiencies have been observed these are in fact the rare cases and not the norm.

When estimating subadult age dental development is considered to be most reliable. It must be borne in mind, however, that subadult females are on average 1-6 months ahead of males in development and there are currently no reliable methods to determine sex in subadults (other than DNA analysis, which can still be problematic because of contamination issues), so variation in either dental or long bone age may be determined by sex of the individual.

Subadult growth curves were not established, since the material was more fragmentary and poorly preserved than had been hoped. Tooth dimensions were recorded as a means of establishing a base line for males and females in order to investigate the sex of subadults using discriminant function analysis of the tooth crown dimensions, but the analysis of the data and comparison with the occurrence of grave goods was eventually considered beyond the scope of this current report.

Probable high mortality rates and the under-representation of infants at Romano-British cemetery sites have been alluded to above. Lankhills is atypical to an extent because children are relatively well-represented and the cemetery also has a relatively high frequency of burials with grave goods (Gowland 2001, 153; this chapter; Chapter 7). The levels of infant and child mortality throughout the various periods in the past are unknown. Estimated infant (defined as less than 1 year) mortality figures from modern pre-industrial populations have been found to vary widely, up to approximately 200 per 1000 live births (Hobbs and Kigguridu 1992). Mortality figures remain high for children up until the age of about five years, before gradually decreasing (Weiss 1973). Estimates of infant mortality during the Roman period are usually placed between *c* 25-35% (Frier 1982). Despite the degree of uncertainty surrounding infant and child mortality statistics from Roman Britain, the proportion of children buried at Lankhills still falls short of the numbers one might expect (see Site comparisons below).

The examination of condition and completeness of the subadults at OA Lankhills (see above) did indicate that both were poorer than for males and females. Taphonomic processes, perhaps related to variation in grave depth, are therefore likely to have been a factor contributing to the absence of some younger children, but they cannot be the only explanation. The average depth of subadult graves was 0.60 m while the deepest was 1.30 m. The likely cultural factors responsible for the exclusion of infants from cemeteries are discussed in relation to Clarke's Lankhills (Gowland 2001, 156-157). Literary evidence relating to Rome indicates that an infant only attained an individual social identity on the day that it was named (the *lustratio*), a ceremony that took place on the eighth day after birth for females and the ninth day for males (Weidemann 1989; Rawson 1991). Further evidence indicates that infants were not perceived to have attained true personhood prior to teething and possibly walking and talking (Watts 1989; Philpott 1991).

Among Clarke's Lankhills none of the neonates were buried with grave goods and only a small percentage of infants under one year of age were buried with any good at all (Gowland 2001, 159). This is contrasted by the evidence at OA Lankhills. Two neonates, skeletons 574 and 1554 (Graves 620 and 1547), were buried in coffins with associated grave goods: a carved bone plaque in the former case and a coin and a horse skull in the latter. Seven of the infants also had associated grave goods (skeletons 44, 118, 280, 589, 1143, 1287 and 1485 - Graves 41, 110, 277, 575, 1205, 1351 and 1490 respectively).

When OA Lankhills and Clarke's Lankhills are combined there are 44 neonates or 5.8% of the total assemblage (7 and 37) and 46 infants or 6.1% of the total assemblage (23 and 23). A further 12 neonates and 1 infant were identified among the disarticulated material at OA Lankhills, suggesting the presence of some unmarked or shallow graves (see also Chapter 7 below)

Some variation is apparent when the data for adult age at death for OA Lankhills are compared with those for Clarke's Lankhills. Male deaths

exceeded female deaths in the 18-25 years, 45+ years, and 60+ years categories (Fig. 5.13). There were more female deaths in the adolescent (13-17 years) and prime adult (26-35 years) age categories, although the absolute numbers in the former category were insufficient to be meaningful, and the difference may be a reflection of sexual development at that age. More females than males were assigned to the unspecific age category 'adult' (more than 18 years) so the differences could balance out.

The OA assemblage comprised individuals from all age categories and even numbers of males and females although there was some sexual variation within certain age categories (see above). There were significant numbers of mature and older age adults. Most of the subadults were from the infant and young child age groups; neonates (as at many sites) were under-represented and no foetal remains were recovered. Adult females were dying in the younger age categories. These are the prime childbearing years and in view of the inherent risks associated with pregnancy and birth it is very probable that this had an effect on the age at death of the females. It is possible that males aged upwards of 45 years are slightly over-represented because females gain more robust features with increasing age and for this reason a small number of older females may have been identified as male. This does, however, seem unlikely given the marked sexual dimorphism seen in the assemblage as a whole.

When the data from OA Lankhills and Gowland's Lankhills are considered together (Table 5.13, Figs 5.14 and 5.15) the profile changes. Considerably more females died in the young adult category (18-25 years) while the ratio in the prime adult category becomes much more balanced. There are slightly more females (47) than males (37) in the broad adult category. The remaining age categories are not directly comparable; this is also true of the Wessex Archaeology (2009, 28) assessment data, also summarised in Table 5.13, which are of course only provisional. Although small, it may be significant that this group contained more adult females (20) than males (14).

The combined data show an almost even split between males and females which presumably reflected the pattern within the population (Table 5.13). When divided into age groups the combined

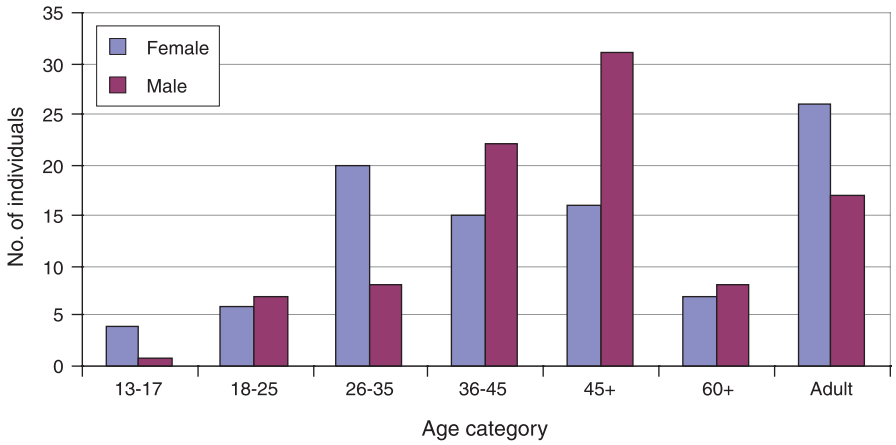


Fig. 5.14 Age at death for males and females at OA Lankhills (n=188)

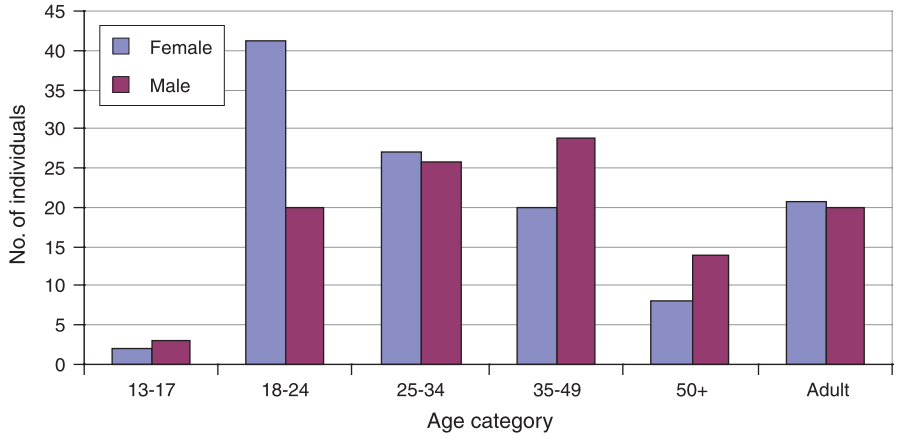


Fig. 5.15 Age at death for males and females at Clarke's Lankhills (n=231)

age and sex data show a clear difference between the males and females. The females predominate in the younger age categories, while the males gradually increase in number, to dominate the 45+ age category.

At Poundbury there were 346 female, 326 male and 24 unsexed skeletons (Farwell and Molleson 1993). This indicates a similar pattern to that seen at Lankhills, and it might be expected that a municipal cemetery, serving a wide area and with no particular dominant population (such as a local army garrison) would contain even numbers of males and females. The Period 2 cemetery at Butt Road, Colchester, however, contained 170 males and 140 females (Pinter-Bellows 1993, 63; the sex of 129 adults was undetermined), giving a ratio of 1.2 males: 1 female. The balance may have been redressed among the adults of undetermined sex. There was a very marked imbalance between males and females at Cirencester South (207 males, 93 females, 62 unsexed individuals). Wells suggested this was most probably because the town was largely given over to retired legionaries and to various Roman officials, many of whom were unmarried (1982, 135), but this interpretation is based upon a view of Roman urbanism that would not be widely accepted today. Male deaths increased with age while female deaths were distributed fairly evenly across the age categories from 18 years onwards. There were only 63 subadults and Wells further suggested that this may have been due to the low number of females in the population (ibid.) although this is perhaps contradicted by the presence of nineteen children below the age of 2 years, 16 (25.4%) of whom were neonates.

Dental attrition ageing

The degree of dental attrition at OA Lankhills was low. Molars were often lightly worn even into the older age ranges with dentine exposure confined to individual cusps. This was also found to be the case at Poundbury (Molleson 1993, 207-9), where a 'within-population' grading system was developed. At Cannington, variation in tooth wear was observed, but severe wear was 'fairly uncommon' (Rahtz *et al*. 2000, 243). In the course of her work Gowland (2002) developed a Bayesian attritional grading system across several Romano-British populations in an attempt to counter the apparent skewing of age profiles on the basis of low levels of tooth wear, but it was not possible to use this for the present assemblage.

The dental attrition method assumes that there was continual erosion of the enamel exposing the dentine during an individual's lifetime. This has been variously attributed to the effects of fibrous or coarse food, sand or grit particles in the diet. Ageing of the adults using dental attrition alone (Miles 1963) produced a peak of incidence in the 18-24 year old group, closely followed by the 26-34 year old group with significant drops in the 35-44 year and

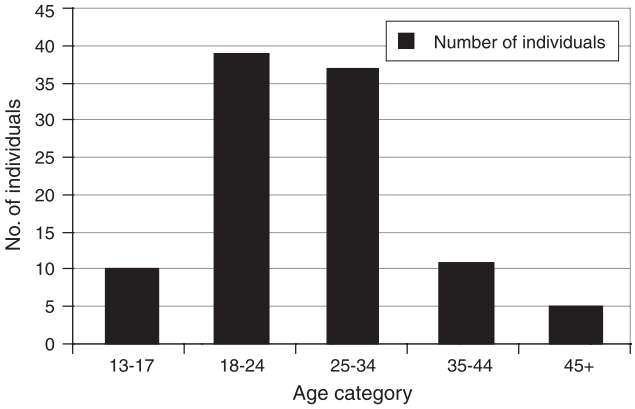


Fig. 5.16 Age ranges based solely on dental attrition at OA Lankhills (n=102)

45+ year categories (Fig. 5.16). The method is known to tend to produce a peak age-at-death between 35-40 years (Miles 2001) but this is not the case at Lankhills.

It is desirable that an age grading system is developed within each population where possible, based on the known age eruption timing of the 1st and 2nd molars. This requires the presence of a minimum number of subadults (32) with the appropriate teeth to allow the creation of baseline data, but there were insufficient skeletons surviving in this category. In order to maximise the multiple indicators methodology (see above) for ageing adults, and to facilitate comparisons with other assemblages, dental attrition was used except where this was the only method. Where dental attrition ageing was more than one category lower than the average of the multiple indicators, the final age, based on the range of the other indicators, was taken to be from the lower end of that range.

Site comparisons

In this section the population profile for Lankhills (OA and Gowland combined) is compared with contemporary populations. Gowland's results suggest a population dying young, with decreasing numbers in the age categories after young adult, whereas the OA results suggest a population living into old age with fewer dying in the younger adult categories. Obviously it is not meaningful to discuss the two groups of material separately as there is no archaeological evidence to suggest that they represent significantly different populations using the same cemetery.

It is possible to combine the data for all age categories up to and including prime adult (25-34 years) and these figures appear in Table 5.13. All categories above 35 years are combined, which is far from satisfactory.

At Poundbury (Table 5.14) while there are fewer neonates (6.3%) the infant peak is much more marked (15.5%). Other notable differences occur in

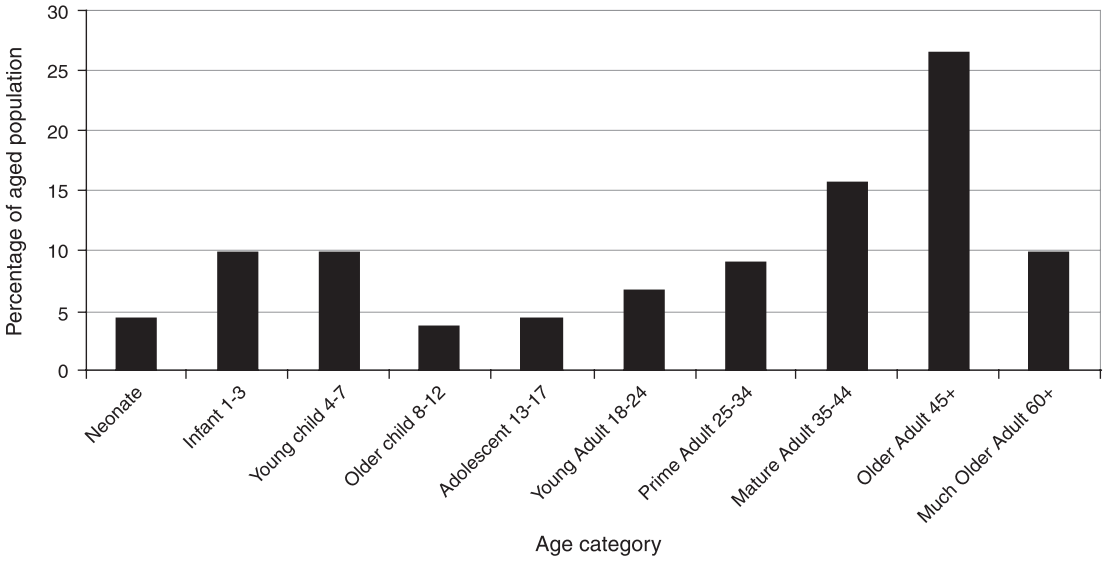


Fig. 5.17 Age distribution at OA Lankhills, shown as a percentage of the population (n=284)

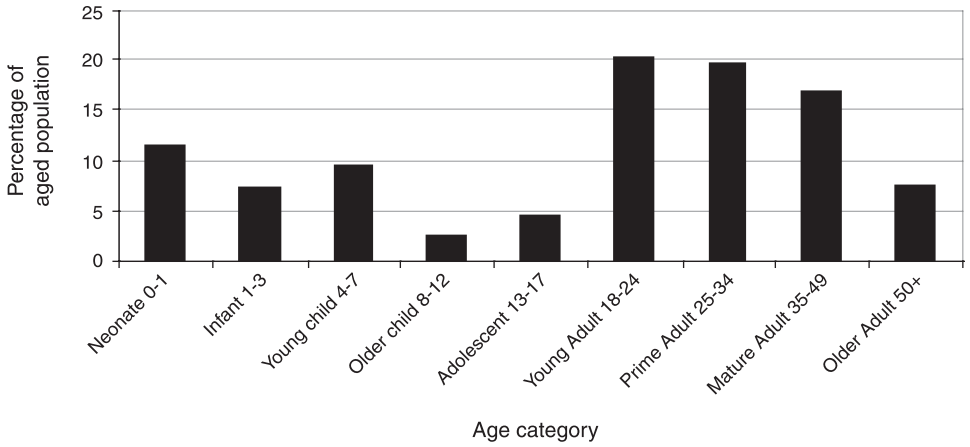


Fig. 5.18 Age distribution at Clarke's Lankhills (n=481)

Table 5.13: OA Lankhills and Clarke's Lankhills, age categories combined (n=765)

Age category	*OA Lankhills*	*Clarke's Lankhills*	*OA and Clarke combined*	*Wessex Archaeology*
Neonate	7 (3.3%)	37 (11.6%)	44 (8.3%)	2
Infant	23 (10.9%)	23 (7.2%)	46 (8.7%)	8
Young child	21 (10%)	30 (9.4%)	51 (9.6%)	
Older child	8 (3.8%)	8 (2.5%)	16 (3%)	2
Adolescent	9 (4.3%)	14 (4.4%)	23 (4.3%)	1
Young adult	13 (6.2%)	65 (20.4%)	78 (14.7%)	7 (18-30 years)
Prime adult (25-34 years)	28 (13.3%)	63 (19.8%)	91 (17.2%)	18 (30-45 years)
35+ years	102 (48.3%)	78 (24.5%)	180 (34%)	9 (45+ years)
Adult	72	114	186	5
Subadult	1	31	32	
Unaged/unsexed	0	18	18	
Total	284	481	765	52

Table 5.14: Age distribution at Poundbury (n=1074)

Age category	*Number of individuals*	*% of aged population*	*% of subadults*	*% of adults*
Neonate 0-1 months	65	6.3	17.7	
Infant 1-3	160	15.5	43.5	
Young child 4-7	54	5.2	14.7	
Older child 8-12	43	4.2	11.7	
Adolescent 13-17	46	4.4	12.5	
Young Adult 18-24	94	9.1		14.2
Prime Adult 25-34	174	16.9		26.2
Mature Adult 35-44	165	16		24.9
Older Adult 45+	192	18.6		29
Much Older Adult 65+	37	3.5		5.6
Adult	44			
Subadult	0			
Total	1074			

Note: adult and subadult categories are excluded from % calculations; the total figure of 1074 comprises late Roman burials only (Roberts and Cox 2003 quote a figure of 1131 for the whole of the Roman period.

Table 5.15: Age distribution at Butt Road (n=575)

Age category	*Number of individuals*	*% of aged population*	*% of subadults*	*% of adults*
Neonate 0-1mth	6	1.5	5	
Infant 1-2	13	3.4	10.7	
Young child 2-4	27	6.9	22.3	
Mid child 5-9	33	8.4	27.3	
Older child 10-14	27	6.9	22.3	
Adolescent 15-19	15	3.8	12.4	
Young Adult 20-30	76	19.3		27.9
Prime Adult 30-50	153	38.9		56.2
Mature Adult 50+	43	10.9		15.8
Adult	152			
Unknown	30			
Total	575			

Note: adult and unknown categories are excluded from % calculations

the young adult category with 9.1% at Poundbury compared to 14.7% at combined Lankhills.

Different age categories were employed at Butt Road (Table 5.15; Pinter-Bellows 1993, 32) which makes comparison difficult, but it is clear that the age distribution is very different, with fairly even numbers of subadults across each category and a peak in the prime adult category. This may suggest that the population were dying young, although the 30-50 years age category is very wide, and makes assessment of this aspect very difficult. There was no peak in the infant (1-2 years) category as seen at the combined Lankhills and Poundbury.

The age distribution at Lankhills reflects relatively high child mortality; those who survived early childhood had a good chance of living into older adulthood which might suggest a relatively healthy and well-nourished population.

Physical appearance of the population

Stature

It was possible to estimate the stature of 69 adults (31.4% of the adult population) from OA Lankhills based on the maximum length of the left femur only. Of these, 53 adults had further long bone measurements (femur, tibia and humerus) which could be combined to determine stature.

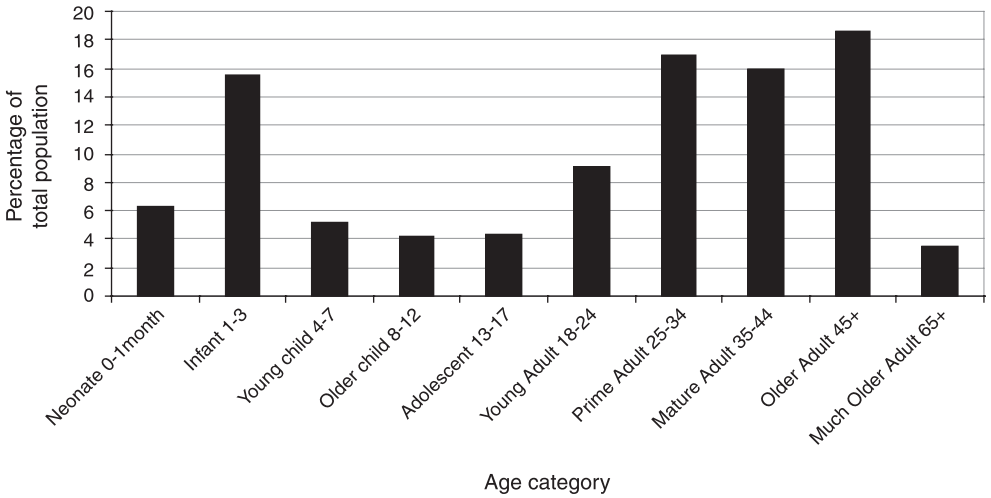


Fig. 5.19 Age distribution at Poundbury, shown as a percentage of the total population (n=1074)

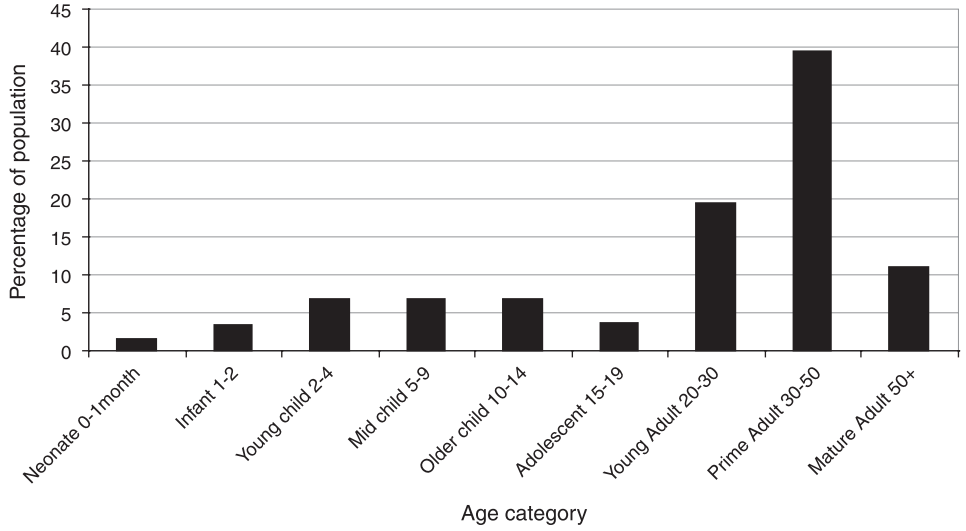


Fig. 5.20 Age distribution at Butt Road, shown as a percentage of the population (n=575)

Measurements using the lower limbs have been shown to be most reliable (Wells 1982, 139), thus only results employing the maximum length of the left femur are presented. However, for comparative purposes those employing any long bone are also given. Male statures ranged from 156.84 cm (5′ 1 7/10″) to 186.83 cm (6′ 1 3/5″) and for females, they ranged from 147.96 cm (4′ 10 3/10″) to 172.16 cm (5′ 7 4/5″).

The difference between the mean heights of males at 168.99 and females at 157.13 was just under 12 cm. The range and means from the OA assemblage are comparable to those for other late Roman sites in Britain (Table 5.16). Data on stature and other metrics are not available for Clarke's Lankhills.

At Poundbury the men were in general taller than the women, most being 1.62-1.72 m (5′4″-5′8″) while most women were 1.58-1.64 m (5′2″-5′5″). Exceptions included three very tall men: grave 40 (1.80 m – 5′11″), skeleton 755 (1.81 m - 5′11″) and skeleton 798 (1.85 m – 6′ 1″). The shortest male skeletons were 159 (1.48 m – 4′10″) and 949 (1.51 m – 4′ 11″). The tallest woman was 1.70 m (5′7″) and the shortest female skeletons 753, 865 and 1353 at 1.51 m (4′11″). It is noteworthy that the distribution for female stature was normal, with low variance, while the male distribution exhibited much higher variance. Molleson (1993, 168) suggested that this may be an indication that males buried in the cemetery were drawn from a wider area than the females, although males are more sensitive to environmental stresses and generally show greater variability than females.

In contrast, at Lankhills the distribution for both males and females was normal (see Fig. 5.21). The smallest man was 1.57 m (skeleton 852, Grave 935) while the tallest was 1.87 m (skeleton 1640, Grave 1638). This man would have looked striking in comparison to the majority of the population. He had been buried with four coins in his left hand. The smallest female was skeleton 1197 (Grave 1270, 1.48 m) while the tallest, skeleton 212 (Grave 210), was 1.73 m. The figures for Cirencester can also be described as normal and are comparable with many early groups (Wells 1982, 140). The same can broadly be said of the skeletons from Butt Road (Pinter-Bellows 1993, 64).

Estimated stature based on measurements of other long bones from individual skeletons (38 male and 30 female) were compared with the estimates based only on left femur measurements in order to see if there were significant differences. The two sets of data compared closely (see Figs 5.21-22). In partic-

Table 5.16: Comparison of estimated statures (cm, rounded) for males and females

Site	*Mean stature Male (no. skeletons)*	*Range male*	*Mean stature Female (no. skeletons)*	*Range female*	*Date*	*Source*
OA Lankhills	169 (38)	157-187	157 (31)	148-172	4th century	
Poundbury	166 (341)	148-185	161 (360)	151-171	Mainly late Roman	Molleson 1993, 167-168
Cirencester	169 (107)	160-182	158 (44)	148-170	4th century	Wells 1982, 139-140
Butt Road (Period 2)	167 (85)	154-190	156 (59)	141-171	Late Roman	Pinter-Bellows 1993, 64, tab. 2.22
Multiple sites	169		159		Roman period	Roberts and Cox 2003, 163

ular the means of the two groups of measurements (eg left femur male mean 168.99 cm, combined male mean 168.01 cm) were very similar. However, the range of stature indicated by the femur lengths alone was greater than that derived from the combined measurements, and the peaks of incidence occurred in different places. The latter characteristic, in particular, could be a consequence of the relatively small sample of measurements.

Craniometry

Skull form is influenced by both genetic and non-genetic factors, the latter including diet, nutrition and climate (Mays 2000, 278). In spite of this, however, there is a strong demonstrable genetic component in cranial variability. The standard range of measurements was taken where possible to calculate indices for adult skulls. Although many

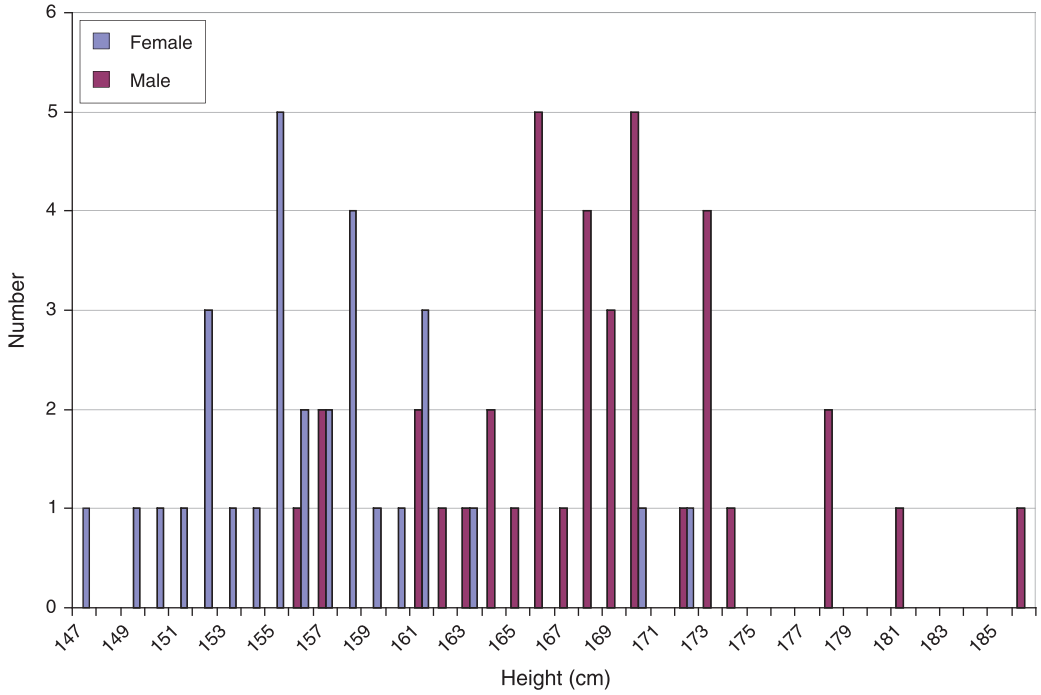


Fig. 5.21 Male and female stature based on left femur measurements only

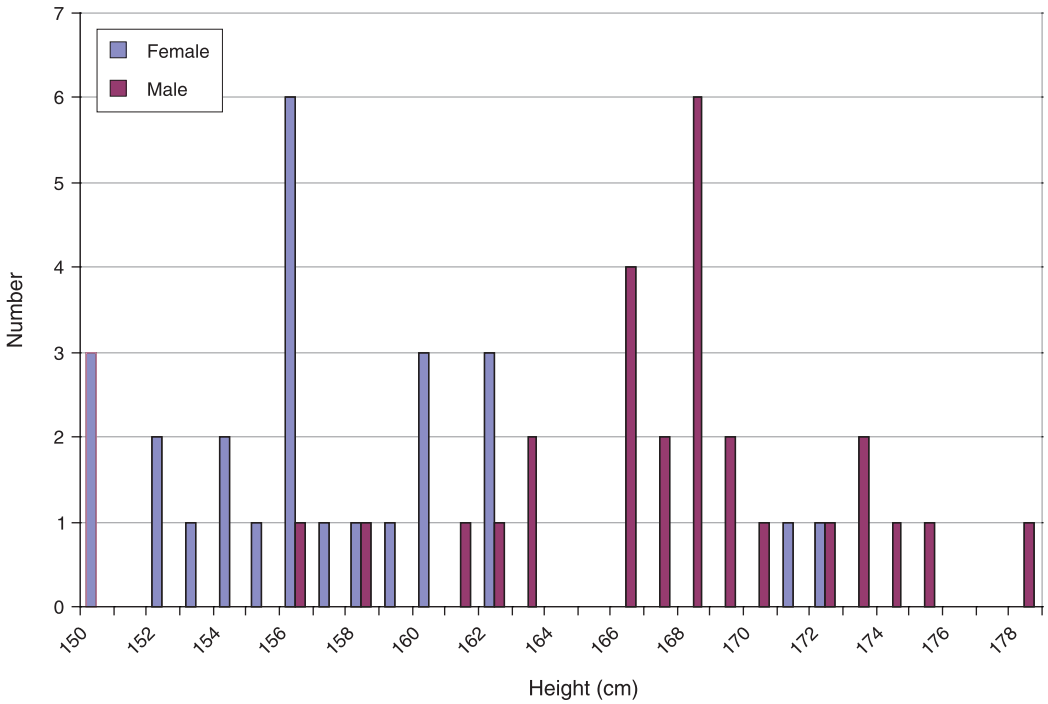


Fig. 5.22 Male and female stature based on multiple long bone measurements

survived they were frequently fragmented and skull reconstruction was beyond the scope of this report. It was possible to calculate indices for 55 skulls (30 males and 25 females).

Where possible the cranial data are compared with those from other contemporary cemeteries. Very few skulls at Cirencester had survived in a good enough condition to be measured without extensive reconstruction (Wells 1982, 137, tables 38-47): it was possible to take measurements on only 66 (45 males and 21 females) out of a total of 293 adult burials.

The cranial index giving the general shape of the skull for 55 adult skeletons at Lankhills is shown in Table 5.17. A range of skull shapes was observed, although most were either mesocranic (medium or average; n=24) or dolicranic (narrow headed; n=21) and fell within the range commonly observed for the Roman period in Britain as represented by a small sample of contemporary late Roman cemeteries (Table 5.18).

It can be seen from Table 5.18 that the ranges are broadly similar across the sites. The apparent divergence within the male range at Lankhills can be attributed to a single outlier with a hyperbrachycranic or very broad headed skull (skeleton 1247, Grave 1325). The people of all these cemeteries had smaller heads than modern British populations (Molleson 1993, 165).

The upper facial index was calculated for 11 males and 7 females (Table 5.19) and showed that the majority had medium (9 individuals) or narrow (7 individuals) faces. The exceptions were a male (skeleton 32, Grave 28) who had a broad face and a female (skeleton 271) who had a very narrow face. Skeleton 32 also had a broad cranial index (brachycranic). Other distinctive combinations of craniofacial indices were observed for skeleton 271 (Grave 272) who had very narrow facial and nasal indices (75 and 41 respectively), but a very broad cranial index (80). The isotope results for this individual suggest a childhood in a warmer climate, although more specific localisation is not possible at present (see Chenery *et al*. below). Indices were also calculated for individuals from Butt Road, Colchester (Pinter-Bellows 1993, 64-7). These suggest a broadly similar distribution of facial types to that of the Lankhills population.

Nasal indices were calculated for 23 males and 17 females at Lankhills using the standards of Broca (Stewart 1942), and are set out in Table 5.20. Most were narrow or average, but three were broad:

Table 5.17: Cranial indices for OA Lankhills

Skull shape	*Cranial index*	*Male*	*Female*	*Total*
Doliocranic (narrow or long headed)	<75	10	11	21
Mesocranic (average or medium)	75-79.9	14	10	24
Brachycranic (broad or round headed)	80-84.9	5	4	9
Hyperbrachycranic (very broad headed)	>84.9	1	0	1
Total		30	25	55

Table 5.18: Comparison of cranial indices

Site	*Male mean (number of skeletons)*	*Male range*	*Female mean (number of skeletons)*	*Female range*
Lankhills	79.48 (30)	70.05-109.44	75.95 (25)	67.67-84.26
Poundbury	76.4 (260)	67.5-84.3	77.1 (279)	68.4-85.3
Cirencester	? (45)	Dolicranic - 19 Mesocranic - 17 Brachycranic – 4	? (21)	Dolicranic - 5 Mesocranic - 10 Brachycranic - 3
Butt Road	75.18 (?)	61.35-89.56	75.94 (?)	54.59-85.63

Key: ?=number or value not known

Table 5.19: Comparison of the upper facial index for OA Lankhills and Butt Road

Upper facial shape	*Upper facial range*	*Lankhills*		*Butt Road*	
		Male	*Female*	*Male*	*Female*
Hypereuryeny (very wide or broad face)	<44.99	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Euryeny (wide or broad face)	45-49.99	1 (9.1%)	0 (0%)	2 (5%)	2 (5.6%)
Meseny (average or medium face)	50-54.99	5 (45.45%)	4 (57.1%)	16 (40%)	11 (30.6%)
Lepteny (slender or narrow face)	55-59.99	5 (45.45%)	2 (28.6%)	19 (47.5%)	17 (47.3%)
Hyperlepteny (very slender or narrow face)	>60	0 (0%)	1 (14.3%)	3 (7.5%)	6 (16.5%)
Total		11	7	40	36

skeletons 134 (Grave 106), 1022 (Grave 1145) and 1894 (Grave 1895, Fig. 5.23). A broad nasal aperture is a feature which can be characteristic of skulls of Negroid populations (Bass 1987, 87) although other Negroid characteristics were absent.

Certainly, in the case of skeleton 1894, the strontium and oxygen isotope analysis points towards an origin in western (eg Wales, the Malverns, Devon or Cornwall) or northern Britain (see Chenery *et al.* below).

The cranial-height index (Table 5.21), used to assess the height of the skull, indicates that most individuals had a medium height skull, although a significant number had low skulls. Out of 34 skulls examined only two individuals had high skulls; skeleton 1289 (Grave 1329, 75.65) and skeleton 55 (Grave 52, 75.8). Comparative figures for the Cirencester Bath Gate assemblage (Wells 1982, 138-9) show similar proportions of individuals in these three groups.

Fig. 5.23 Wide nasal apertures in skeletons 1022 and 1894, the coronal and occipital remain open

Table 5.20: Comparison of nasal indices for OA Lankhills and Butt Road

Nasal index	*Broca Index*	*Lankhills males*	*Lankhills females*	*Butt Road males*	*Butt Road females*
Leptorrhine (narrow)	X-47.9	9 (39.1%)	13 (76.5%)	41 (77.4%)	26 (61.9%)
Mesorrhine (average)	48-52.9	11 (47.8%)	4 (23.5%)	10 (18.9%)	13 (31.0%)
Platyrrhine (broad)	53-X	3 (13.1%)	0 (0%)	2 (3.8%)	3 (7.1%)
Total		23	17	53	42
Mean		48.1	46	44.96	46.04
Range		42.1-54.9	41.4-53	45.99-67.59	34.55-59.34

Table 5.21: Comparison of cranial-height index at OA Lankhills and Cirencester

Skull shape	*Range*	*Lankhills male*	*Lankhills female*	*Cirencester male*	*Cirencester female*
Chamaecranic (low skull)	<70	8	6	13	9
Orthocranic (medium height)	70-74.9	10	7	15	8
Hypsicranic (high skull)	>74.9	1	2	4	0
Total		19	15	32	17
Mean		70.3	72.9		
Range		63.6-75.7	67.2-105.9		

Meric index

It was possible to calculate the meric index for 46 (48.9%) males and 35 (37.2%) females. The meric index is used to measure the degree of anterior-posterior flattening of the femur and bones fall into one of three ranges: platymeric (X-84.9 – broad or flat – from front to back); eurymeric (85.0-99.9) and stenomeric (100.0-X). Bones which fall into the stenomeric range are usually associated with pathology (Bass 1987, 214). Two of the male skeletons within the stenomeric range at Lankhills exhibited pathology in the form of femoral head necrosis (skeleton 434, Grave 535) and rickets (skeleton 451, Grave 590). Female skeleton 1281 (Grave 1350), which also fell within the stenomeric range, exhibited abnormal sacral curvature which could be congenital or metabolic in origin. The remainder exhibited no associated pathology. The measurements are presented separately for males and females (Table 5.22) and are compared with the data from Cirencester and Poundbury (Table 5.23).

Various authors have claimed that platymeria is more common in females than in males and that there is a tendency for it to be more pronounced in the left femur than the right (Brothwell 1981, 89). This is not borne out at Lankhills. At Poundbury the majority of male and female femora were platymeric; a small number were stenomeric (Molleson 1993, 167). This was also the case at Lankhills (see Table 5.22 above). At Cirencester, the majority of individuals were platymeric (132), followed by hyperplatymeric (112) and eurymeric (20).

Cnemic index

It was possible to calculate the cnemic index for 25 (26.6%) males and 27 (28.7%) females. The cnemic index is used to measure the degree of medio-lateral flattening of the tibia and bones fall into one of four ranges: hyperplatycnemic (X-54.9); platycnemic (55.0-62.9); mesocnemic (63.0-69.9) and eurycnemic (70.0-X). The measurements are presented separately here for males and females (Table 5.24).

At Poundbury platycnemia was unusual: 21 (6%) of the females and 34 (11%) of the males had an index of less than 63 (Table 5.26). Half of this group also had squatting facets and these two features can be

Table 5.22: Measurements for male and female left and right femora

	Left femur male (n=39)	*Right femur male (n=46)*	*Left femur female (n=33)*	*Right femur female (n=35)*
Platymeric	68.57143-84.84848 (n=22; 56.4%)	67.5-84.9711 (n=28; 60.9%)	69.11765-82.75862 (n=24; 72.7%)	67.64706-84.93151 (n=27; 77.1%)
Eurymeric	85.71429-97.14286 (n=14; 35.9%)	85.15152-96.875 (n=13; 28.3%)	85.71429-96.66667 (n=8; 24.2%)	85.71429-99.37317 (n=8; 22.9%)
Stenomeric	104.3342-109.375 (n=3; 7.7%)	100-104.8387 (n=5; 10.9%)	127.907 (n=1; 3%)	(n=0)

Table 5.23: Comparison of meric indices with contemporary sites

	Mean			
	Left	*Right*	*Left + Right*	*Range*
Lankhills Male	84.6 (n=39)	84.3 (n=46)	84.5 (n=85)	67.5-109.4
Lankhills Female	82.0 (n=33)	79.8 (n-35)	80.9 (n=68)	67.7-127.9
Cirencester Male	76.6 (n=92)	77.4 (95)	77.0 (n=187)	61.3-92.9
Cirencester Female	74.4 (n=32)	72.6 (n=39)	73.5 (n=77)	62.6-86.7
Poundbury Male			80.7 (n=269)	62.2-100.0
Poundbury Female			78.3 (n=289)	62.5-104.0

Table 5.24: Measurements for male and female left and right tibiae

	Left tibia male (n=21)	*Right tibia male (n=25)*	*Left tibia female (n=21)*	*Right tibia female (n=27)*
Hyperplatycnemic	(n=0)	(n=0)	(n=0)	(n=0)
Platycnemic	62.16216 (n=1; 4.8%)	60.98552 (n=1; 4%)	57.14286-62.85714 (n=4; 19%)	(n=0)
Mesocnemic	67.60563-69.44444 (n=4; 19%)	66.66667-69.44444 (n=4; 16%)	64.61538-68.96552 (n=4; 19%)	64.53523-68.84079 (n=4; 14.8%)
Eurycnemic	72.41379-89.28571 (n=16; 76.2%)	70.58824-80 (n=20; 80%)	70.96774-88 (n=13; 62%)	70-100 (n=23; 85.2%)

Table 5.25: Comparison of cnemic indices with contemporary sites

	Mean			
	Left	*Right*	*Left + Right*	*Range*
Lankhills Male	75.4 (n=21)	84 (n=25)	79.7 (n=46)	61-89.3
Lankhills Female	72.2 (n=20)	64 (n=27)	68.1 9N=47)	57.1-100
Cirencester Male	69.5 (n=86)	69.8 (n=87)	69.7 (n=173)	56.7-89.1
Cirencester Female	67.5 (37)	70.1 (n=35)	68.8 (n=72)	58.9-78.6
Poundbury Male			69.5 (313)	55.0-83.3
Poundbury Female				56.3-87.0

causally linked since retroversion of the knee, as in squatting, may lead to medio-lateral flattening of the tibia (Cameron 1934; Walker 1986). Other possible factors include a response to mechanical stresses on the bone, as a physiological device to economise in the use of minerals for bone formation and as the result of various pathological conditions, though none are wholly satisfactory (Wells 1982, 141). Few individuals at Lankhills were platycnemic, with the majority falling within the eurycnemic range (see Table 5.25). At Cirencester 24 individuals (9.75%) were platycnemic, 90 (36.5%) were mesocnemic and 131 (53.7%), the majority, were eurycnemic.

Handedness

It is well established that muscle mass tends to be greater in the arm on the dominant side in right handed adolescents and adults, and also that the right humerus and right radius tend to be slightly longer and heavier than their counterparts on the left (Steele 2000, 310). During analysis it was observed that the left and right humeri from individuals with both surviving were frequently not the same length.

Table 5.26: Humeral asymmetry

Skeleton No.	*Sex*	*Max. length left humerus*	*Max. length right humerus*	*Divergence (mm)*
119	F	285	289	4
212	F	342	349	7
489	M	311	318	7
566	M	331	342	11
593	M	311	320	9
702	M	309	322	13
717	M	304	314	10
806	F	295	303	8
908	F	308	323	15
932	M	336	349	13
1103	F	288	297	9
1134	F	295	306	11
1137	M	322	330	8
1281	F	288	294	6
1512	F	273	284	11
1852	M	314	328	14
1882	M	324	333	9

Steele and Mays (1995) concluded that the left humerus undergoes more accelerated growth during later foetal development and therefore that the right hand bias observed must be from mechanical loading in life. In a population left handedness can vary from 2-23% with a male prevalence of 1.27:1 (Steele 2000). The radial length has also been found to be affected and the sum of humeral and radial lengths (arm length) have often been used to determine handedness. The shoulder girdle (humeral head, scapula and clavicle) is also considered to denote side preference (Byers and Myster 2005).

Only 17 pairs of complete humeri (7.7% of adults) were available for study as a consequence of preservation, fragmentation and pathology (see Table 5.26). In all instances the right side was longer than the left (by less than 5 mm in one case, 5-10 mm in 8 cases and more than 10 mm in 8 cases). The mean difference was 9 mm and in one instance the difference was 15 mm (skeleton 908, Grave 960). There was no evidence of variation in muscle attachment sites of these humeri.

It was also possible to examine the left and right radial lengths of six of these individuals (119, 212, 566, 908, 932 and 1882, Graves 99, 210, 610, 960, 965 and 1884 respectively). Four (212, 566, 908 and 932) of the six had a right side bias, ranging from 2 to 8 mm. When the humeral and radial lengths are combined the difference (right side longer) varies from 7 to 19 mm, with a mean of 12.5 mm (Table 5.27). Inglemark (quoted in Steele 2000) found a correlation with side preference for the arm length. The preliminary results of the humeral length analysis therefore suggest that these 17 individuals had a right hand dominance, which is further supported for four of them by the results from measurement of the radial lengths.

Table 5.27: Radial asymmetry

Skeleton No.	*Sex*	*Max. length left radius*	*Max. length right radius*	*Divergence (mm)*
119	F	207	215	8
566	M	253	255	2
908	F	219	223	4
932	M	257	259	2

Non-metric traits

A range of frequently-recorded cranial and post-cranial non-metric traits was recorded for adult individuals from Lankhills. The traits and their prevalence are presented in Tables 5.28-29. Two cranial traits, the metopic suture and the inca bone, may possibly have run in families (Pinter-Bellows 1993, 65). At Lankhills, the metopic suture was observed in 9.2% of the population (23 out of 250), a similar prevalence to Butt Road (8.6% - 19 individuals) and Cirencester (8.2% - 16 individuals), but rather lower than at Poundbury (43 females - 12.1%, 37 males - 12.1%). None of the skeletons from Lankhills with metopic sutures were buried close to each other.

At Poundbury 14 women (4.3%) and 8 men (2.7%) had an inca bone; at Butt Road this was recorded in 19 individuals (8.6%), and at Cirencester in 16 individuals (8.2%). At Lankhills six out of 239 (2.5%) individuals had an expression of this trait but, as with the incidence of metopic sutures, they are not located in proximity, and occurred across the whole date range of the cemetery. Analysis of strontium and oxygen isotopes from two of these individuals (1227 (Grave 1349) and 1091 (Grave 1135)) suggested that they were local to the Winchester area.

Overall, all non-metric traits had low frequencies in the Lankhills population. For example, while lambdoid wormian bones were the most common of these traits present, their occurrence was much less frequent compared with other sites. At Cirencester 149/239 (62.3%) had lambdoid wormians (Wells 1982, 142, table 51); at Butt Road 69/206 or 33.5% (Pinter-Bellows 1993, 64-5, table 2.25). The frequencies were provided for males and females at Poundbury (Molleson 1993, 168, table 30) and were 150/270 or 55.6% for males and 124/291 or 42.6% for females.

Table 5.28: Cranial non-metrical traits

Trait	*Left n/N*	*%*	*Right n/N*	*%*	*Unsidedn/N*	*%*
Lambdoid wormians	27/239	11.3	39/239	16.3		
Squamo-parietal wormians	0		0			
Occipito-mastoid wormians	1/224	0.5	1/223	0.4		
Coronal wormians	0/247		1/248	0.4		
Anterior condylar canal	2/212	0.9	1/211	0.5		
Bregmatic bone					1/244	0.4
Highest nuchal line					2/245	0.8
Sagittal wormians					2/247	0.8
Metopism					23/251	9.2
Palatine torus					4/231	1.7
Ossicle at lambda					9/242	3.7
Ethmoid foramen anterior	1/212	0.5	0/212	0		
Ethmoid foramen posterior	1/212	0.5	1/212	0.5		
Mastoid foramen	10/238	4.2	10/238	4.2		
Condylar facet	4/219	1.8	3/216	1.4		
Posterior condylar canal	7/210	3.3	6/210	2.9		
Foramen spinosum	4/213	1.9	5/214	2.3		
Posterior condylar facet	1/213	0.5	1/214	0.5		
Supra-orbital foramen	18/243	7.4	15/242	6.2		
Foramen ovale	1/217	0.5	4/217	1.8		
Precondylar tubercle	2/218	0.9	2/218	0.9		
Torus maxillaries	7/234	3	4/233	1.7		
Mandibular torus	3/239	1.3	3/228	1.3		
Auditory torus	3/246	1.2	3/244	1.2		
Foramen huschke	5/229	2.2	3/227	1.3		
Frontal foramen	2/250	0.8	3/250	1.2		
Zygomatic foramen	6/231	2.6	5/231	2.2		
Parietal foramen	19/245	7.8	28/247	11.3		
Fronto-temporal articulation	0/215		1/217	0.5		
Parietal notch	7/217	3.2	3/214	1.4		
Ossicle at asterion	5/217	2.3	3/217	1.4		
Epipteric bone	4/214	1.9	5/214	2.3		
Accessory lesser palatine foramen	6/216	2.8	5/216	2.3		
Acccessory infra orbital foramen	4/235	1.7	3/235	1.3		
Inca bone				6/239	2.5	

Table 5.29: Post-cranial non-metrical traits

Trait	*Left n/N*	*%*	*Right n/N*	*%*	*Unsidedn/N*
Double calcaneal facet	47/250	18.8	44/253	17.4	
Vastus notch	14/228	6.1	15/236	6.4	
Exostosis in trochanteric fossa	17/205	8.3	17/209	8.1	
Hypotrochanteric fossa	2/213	0.9	3/217	1.4	
Third trochanter	6/217	2.8	8/217	3.7	
Plaque	7/215	3.3	8/217	3.7	
Poirier's facet	1/214	0.5	1/218	0.5	
Allen's fossa	0/211	0	1/215	0.5	
Sacral accessory facets	0/194	0	1/194	0.5	
Acromial articular facet	6/190	3.2	5/186	2.7	
Supra-scapular notch/foramen	9/176	5.1	6/166	3.6	
Septal aperture	5/203	2.5	2/203	1	
Acetabular crease	2/212	0.9	2/211	1	
Atlas double facet	6/222	2.7	8/205	3.9	
Lateral bridge	1/225	0.4	0/225	0	
Squatting facet medial	4/247	1.6	1/242	0.4	
Squatting facet lateral	14/246	5.7	18/242	7.4	
Supracondylar process	1/215	0.5	2/215	0.9	
Os trigonum	1		Not formally scored		

A child from Poundbury had blocked ears (auditory tori or bone formation in the 'ear holes') and must have been deaf. The child may have been disabled by the condition, and was buried in a prone position (Farwell and Molleson 1993, 187). All the auditory tori seen at Lankhills were extremely small so are unlikely to have impacted upon the hearing of the individuals concerned.

A note on ancestry *by Louise Loe*

Ancestry may be defined as '...the biogeographic population to which a particular individual belongs, by virtue of their genetic heritage' (Barker *et al*. 2008a, 322). Traditional methods for assessing ancestry in human skeletal remains involve the visual assessment of morphological characteristics, primarily in the cranium, to categorise them as either 'whites', 'blacks', 'asians' or of 'mixed' ancestry (Byers 2005). Although this approach oversimplifies the relationship between biological expression and genetic affinity - no distinct skeletal characteristics correspond perfectly to a specific ancestral group - it is a useful method for broadly classifying individuals and characterising a population in terms of its degree of homogeneity.

Recent studies that have combined analyses of skeletal morphology, osteometrics, multivariate statistics and isotopes have highlighted the diversity, rather than the uniformity of Romano-British populations (Leach *et al*. 2009). It was therefore not surprising to observe atypical cranial morphologies among the Lankhills individuals. Routine assessment of ancestry was not undertaken as part of the present work, but during the course of analysis, the skull of one individual (skeleton 566 (Grave 610)) in particular was noted as possessing unusual characteristics compared with the rest of the population (Fig. 5.24).

The individual was an adult male aged 26-35 years. His skull exhibited a low-bridged nose with wide zygomatic bones, a slightly projecting jaw and rounded palate. He also had relatively small brow ridges, a slight concavity in the area behind the bregma on the top of the skull and, in terms of muscle markings, was generally not rugeous.

These features are more consistent with Black and Asian groups than with Caucasians (Byers 2005; Gill and Rhine 1990). They are in marked contrast to the longer, narrower, and high bridged, rugged skulls, also observed in the assemblage and consistent with Caucasoid ancestry.

There were no other individuals whose cranial morphology stood out as markedly as that of skeleton 566, but this may be because a more focused analysis of the assemblage is required. For example, isotope analysis has suggested that skeleton 119 (Grave 99), an adult female, originated from the southern Mediterranean (see Chenery *et al*. below). Interestingly, a preliminary CRANID analysis on measurements taken from this individual's skull has concluded that she may have had Egyptian ancestry (Richard Wright pers. comm.). While her cranial features were, on the whole, consistent with Caucasoid ancestry, she did possess very small, especially gracile features in comparison with the rest of the assemblage (Sharon Clough pers. comm.).

Attribution of ancestry based on skeletal morphology is highly subjective because the range of expression of features means that considerable overlap exists between different ancestral groups.

Fig. 5.24 Skeleton 566. Face and cranium displaying the varied features

Only broad classifications may therefore be achieved. The application of other methods, for example, using metrical data in discriminant function analysis programs, such as CRANID and FORDISC, are required to explore the observations presented here. The observations do, however, serve to highlight the potential of the assemblage to contribute to current thinking on diversity in Romano-Britain through future detailed, systematic assessment of ancestry of the assemblage.

Palaeopathology

Many of the comparative data referred to in this section are derived from Roberts and Cox (2003, 107-63). While those authors acknowledge that in terms of historical records describing much of the Roman Empire there is relatively little that is useful for understanding health and disease at this time (ibid., 107), they attempt to consider evidence from other sources which do potentially provide some insight. The extensive road system, allowing for more communication and contact, would potentially have predisposed people to developing diseases of contact; while southern and eastern Britain were in close contact with Gaul for much of the Roman period, facilitating the appearance of new diseases as a result of exposure of the population to previously unencountered micro-organisms. Furthermore, agricultural intensification may have led to a possible increase in the workload of the population and susceptibility to stress, through

infection and/or under-nutrition (ibid., 109). In the present context, the consequences of relatively large populations living in close proximity in an urban setting could also have been considerable, particularly for those members of that population drawn originally from very different, rural settings.

Trauma

The term 'trauma' covers a wide range of injuries and conditions, only a fraction of which will affect the skeleton. Trauma is nonetheless important as the types suffered will relate to lifestyle, occupation and the underlying health of individuals as fractures can also have a pathological cause. Trauma, along with joint disease, may perhaps tell us something about the wear and tear inflicted on the body, although we can never be certain that the changes were caused by a specific occupation or a particular activity. Roberts and Cox (2003, 145) list some of the many activities that people would have undertaken in Roman Britain, some of which could have had consequences for their health which were reflected in the osteological evidence.

Fractures

A fracture is defined as a complete or partial break in the continuity of bone (Roberts 1991, 226). Fractures may result from underlying pathology, repeated stress or acute injury (Roberts and Manchester 2005, 88-91). The majority of fractures that are observed in archaeological human bone are healed. They provide enormous scope for furthering knowledge of the lives of past populations, including their social interactions, activities and socio-economic status. For example, certain types of fracture are indicative of inter-personal violence, others, probably the majority in this context, are the result of accidents (Crawford Adams 1983; Galloway 1999; Walker 1997). Furthermore, the alignment of a fracture and evidence for secondary pathology (among other changes) may indicate quality of diet and treatment (Grauer and Roberts 1996).

The identification of fractures at OA Lankhills was based on macroscopic examination for discontinuity in the normal alignment of bones. Fractures were then classified according to location and recorded with reference to healing status, alignment and evidence for secondary pathology. Fourteen fractures (in skeletons 55, 61, 271, 281, 459, 661, 683, 826, 852, 861, 862, 897, 1127 and 1757) were also examined radiographically.

A total of 39 (13.7%; 39/284 CPR) individuals, all adults, had one or more fractures (Table 5.30). There were more males (25.5%; 24/94) than females (13.8%; 13/94) with fractures, and a further two unsexed adults (6.3%; 2/32). All of the fractures were healed and involved a total of 50 elements. The most frequently fractured element was the rib. Nine individuals (skeletons 212, 522, 623, 683, 939, 1103, 1209, 1361 and 1393, in Graves 210, 570, 695, 790, 995, 1155, 1285, 1437 and 1394 respectively) exhibited 20 separate fractures. Five were adult females and four were adult males. The worst affected was adult male skeleton 683 (Grave 790), who had five left and three right rib fractures. This individual also had a broken nose, two breaks of his right radius and one to his left radius with secondary infection (Fig. 5.25).

Further fractures with associated secondary pathology affected six males and two females, with a total of eight elements. One fractured element had osteoarthritis in an associated joint and three had osteophytes in associated joints. In addition, the left tibia and fibula of skeleton 1327 (Grave 1324) had associated non-specific bone inflammation while skeleton 862 (Grave 930) had osteomyelitis. In 19 individuals (and 19 fracture sites), fractures were mal-aligned; most commonly this affected the nasal bone. Almost half of the fractures were well-aligned.

Fig. 5.25 Skeleton 683. Fractures of the left and right radii, with active infection at the distal end fracture site

Fig. 5.26 Skeleton 1084. Healed depressed cranial fracture, posterior parietal bone

Reduction in long bone length occurred in four instances (skeletons 459, 281, 661, 862 (Graves 475, 263, 665 and 930)), not including two epiphyseal childhood fractures discussed below.

Nasal fractures were the second most common after those affecting the ribs. Seven individuals (skeletons 61, 232, 636, 683, 1274, 1289 and 1852, in Graves 58, 226, 645, 790, 1340, 1329 and 1790 respectively) had broken noses, and in three cases both left and right sides were broken (636, 1274, and 1852). All were males with the exception of female skeleton 61. Nasal fractures can occur as the result of many accidents, but as Wells notes '…this lesion is also one of the most typical results of violent bickering…' (1982, 163) and broken noses are usually the result of interpersonal violence from punches or kicks (Galloway 1999). There were six males with broken noses and one female. With the exception of the three parietal depressed fractures, skeletons 441 (Grave 480, male), 1084 (Grave 1150, female; Fig. 5.26) and 1919 (Grave 1920, female), this is the only possible evidence for violence at Lankhills. There were no weapon injuries or other wounds that could be interpreted as having been caused by direct violence.

Fractures to the tibia were the next most common, affecting six individuals (skeletons 271, 429, 459, 636, 862 and 1327 (Graves 272, 430, 475, 645, 930 and 1324 respectively)).

Six individuals had more than one fracture. Skeleton 61 (Grave 58) had a broken nose (right side) and a fractured right humerus. Skeleton 271 (Grave 272) had a fractured left metacarpal and left tibia. In three cases of multiple fracture it is possible that they were caused by a single event; the left tibia, left fibula and left talus of skeleton 1327 (Grave 1324); left calcaneus and left talus of skeleton 255 (Grave 73); second and third metacarpal of skeleton 1640 (Grave 1638).

Fig. 5.27 Skeleton 861. Ankylosis of the right elbow phalanges

Skeleton 861 (Grave 905), an adult male aged upwards of 60 years, had a completely ankylosed elbow joint at approximately 100-110 degrees with pronation of the lower arm (Fig. 5.27).

The distal radius and ulna were not fused and continued to articulate, but the ulna head and styloid were flattened, porous and with osteophytic lipping. This created an irregular articular surface, the radial surface of which was still smooth and unaffected. Radiography revealed that the area had been impacted, with the ulna head displaced superiorly; no fracture site was visible. This man also had spinal degeneration, osteoarthritis of the right hip and had lost most of the little finger of the right hand, evidenced by apparent amputation of the fifth metacarpal head and inferred loss of the proximal, mesial and distal phalanges (whether deliberate or accidental). It is perhaps noteworthy that this individual had been buried in a prone position without a coffin. Adult male inhumation M from Cirencester (Wells 1982, 161) had a grossly arthritic elbow joint (distal humerus, proximal radius and ulna were all involved with extensive remodelling of articular surfaces). Wells suggested (ibid.) that this may have been a consequence of falling on the elbow and fracturing the distal humerus, which may also have been the case for OA Lankhills skeleton 861.

Fractures which occurred in childhood and involved the epiphyseal plates were possibly the cause of two of the right humeral fractures (skeletons 61 (Grave 58) and 1289 (Grave 1329)). The distal humerus is relatively fragile and fractures occur more frequently in young people, but relatively rarely in adults (Galloway 1999). In skeleton 61 (Grave 58), a 26-35 year old female, the right distal epicondyles of the humerus were malformed (Fig. 5.28). The entire articular surface was at a 45 degree angle and rotated medially 20 degrees with the lateral epicondyle extended. As a

Table 5.30: Fractures observed amongst the adult population (TPR)

	male		*Total male*	*female*		*Total female*	*?*	*?*	*Total ?*	*total*	*total*
	left	*right*		*left*	*right*		*left*	*right*		*left*	*right*
Parietal	1		1/166	1	1	2/166			0/11	2/171	1/172
			0.6%			1.2%				1.2%	0.5%
Mandible			0/125	1		1/133			0/10	1/136	0/132
						0.8%				0.7%	0.7%
Nasal	4	5	8/95		1	1/62			0/12	4/78	6/77
			8.4%			1.6%				5.1%	7.8%
Clavicle	1		1/53			0/59			0/3	1/54	0/61
			1.8%							1.9%	
Rib	3	2	6/806	3	2	4/633			0/20	6/730	4/729
			0.7%			0.6%				0.8%	0.5%
Humerus		3	3/153		1	1/155			0/13	0/165	4/156
			1.9%			0.6%					2.6%
Radius	1	1	2/147		1	1/124			0/7	1/149	2/129
			1.4%			0.8%				0.7%	1.6%
Ulna		2	2/147		1	1/124			0/7	0/136	3/142
			1.4%			0.8%					2.1%
1st metacarpal			0/90	1		1/66			0	1/71	0/75
						1.5%				1.4%	
proximal phalanx hand		1	1/253			0/240				0/247	1/246
			0.4%								0.4%
sacrum S5			0/18	1		1/18					1/36
						5.5%					2.7%
Femur			0/175		1	1/161			0/41	0/189	1/188
						0.6%					0.5%
Tibia	1	3	4/168	1		1/155	1		1/41	3/183	3/183
			2.4%			0.6%			2.4%	1.6%	1.6%
Fibula	1	2	4/131			0/132	1	1	2/21	2/142	3/142
			3.1%						9.5%	1.4%	2.1%
calcaneus & talus	1		1/295			0/304			0/42	1/351	0/350
			0.3%							0.3%	
2nd metatarsal		1	1/129			0/131			0/17	0/140	1/137
			0.8%								0.7%
3rd metatarsal		1	1/129								
			0.8%								

Fig. 5.28 Skeleton 61. Abnormal morphology of the distal end of the right humerus, with left humerus for comparison

result the right humerus was 14 mm longer than the left. The corresponding olecranon fossa was malformed. It is notable that this individual lacked muscle definition in the upper limbs that has been observed on other females in this site. Further skeletal changes in upper limbs may be a result of biomechanical adaptation to the deformity. The shaft of the ulna had an exaggerated curve and the head of the ulna was larger than normal. This individual also had a healed broken nose. Similarly, skeleton 1289 (Grave 1329), a male aged 36-45, had a right humeral shaft which was 62 mm shorter in length compared to the left. The proximal and distal epiphyses were the same size as the left, as were the radius and ulna. There was significantly more muscular activity on the shortened limb in the form of large insertion points and cortical defects.

At Poundbury (Molleson 1993, 200, table 47) the clavicle was the most common fracture site affecting 21 males and 8 females (CPR 15%), followed by ribs at 13% (6 females, 17 males and 1 subadult). True prevalence rates at Poundbury were provided for a sample of 506 skeletons (Molleson 1993, table 55). The overall fracture rate was low at 0.6% (16/2439 bones) for females and 2.2% (63/2916 bones for males) giving a combined TPR of 1.5% (79/5355 bones). In this sample the fibula was most affected (3.5%; 21/603) followed by the clavicle (2.1%; 16/770) and the tibia (1.7%; 14/811).

Compared to Cirencester and Poundbury, fractures were less frequent at Lankhills. Cut marks and injuries were strikingly rare at Poundbury and it was concluded that the people living there during the period of use of the cemetery were at peace and did not indulge in any warfare (Molleson 1993, 203). It was further noted that although those killed in battle might not have been returned home for burial, the injured would have come back, eventually to die and be buried in the cemetery (ibid.).

At Poundbury there was very little evidence for possible domestic violence, although fractures to the forearm, including parry fractures to the ulna, were common. Some of these injuries could have been sustained in warding off blows in a physical attack (ibid.). Twice as many healed fractures were detected on the male skeletons. This was the pattern for all fracture sites except the hand and the femur and for all age groups except the oldest, when the greatest susceptibility to fractures of women over 65 years was apparent.

The most common fractures at Poundbury (Molleson 1993, 204, fig. 118) affected the lower leg and the forearm, a pattern that is seen in recent rural populations (Hamilton 1853). The clavicle and ribs were also frequent sites of fracture, all suggesting that injuries were most often incurred as a consequence of a bad fall. Four females and nine males had multiple fractures; in most cases from the stages of healing and callus remodelling it could be assumed that the injuries had occurred on the same occasion. All the fractures had healed well except one, an impact fracture of the ulna, which had not united and become infected. Most fractures were well aligned and splints must normally have been used to ensure that the limb was straight when it healed, although there were three exceptions where considerable deformity was apparent. At Lankhills and Cirencester some fractures were well healed, while others were not.

Very few fractures were seen at Butt Road (Pinter-Bellows 1993, table 2.28). They comprised two rib, one clavicle, one humerus, six radius, five ulna, five tibia, three fibula and three skull fractures. Skeletons with cranial fractures were all adult females.

The picture at Cirencester was a very different one (Wells 1982, 161). A total of 55 out of 206 males (CPR 26.7%) and 6 out of 91 females (CPR 6.6%) had fractures. Rib fractures were most common: 25 males had a minimum of 77 fractures, 2 or 3 females had 8 or 9 fractures. Adult male skeleton 212 had at least 15 and probably 17 fractured ribs while female 223 had 7 well healed examples. Wells (ibid.) noted that 'Ribs are, of course, often broken accidentally in falls … but direct deliberate violence is also a common cause'.

Soft tissue trauma (myositis ossificans traumatica)

The skeletal evidence for trauma is only a very small proportion of the total range of injury that would have affected the population, such as cuts, abrasions and bruises. For the recognition of soft-tissue injury in skeletal remains, it is necessary for calcification or new bone formation to have occurred within the soft tissue (Roberts and Manchester 1995, 66-67). Tendons and muscle attachments to the bones may occasionally ossify as a result of trauma, for example where a haematoma has been generated in the proximity of the injured periosteum (Aufderheide and Rodriguez-Martin 1998, 26). The resulting mass of woven bone is known as myositis ossificans traumatica. It may occur without obvious skeletal injury and after only minor muscle trauma.

Three individuals, all adult males, displayed evidence for soft tissue trauma. Skeleton 1209 (Grave 1285), a 36-45 year old male, had ossified tissue in the form of an outgrowth at the site of the muscle insertion for the coraco-clavicular ligament, deltoid and trapezius on the inferior surface of the left clavicle. This individual also had several fractured left ribs. A possible ossified haematoma was observed on skeleton 1137 (Grave 1210), a probable male aged 26-35 years. This took the form of raised bone near the soleal crest of the left tibia. In addition, the right tibia had an exostosis measuring 30 x 5 x 4 mm along the interosseous crest on the lateral distal third. These features have been interpreted as soft tissue trauma to the posterior lower legs. Skeleton 1517 (Grave 1515), an adult male aged upwards of 45 years, had an ossified subperiosteal haematoma which had created a pseudo-joint between the distal left tibia and fibula. Periostitis was present on both bones.

Fig. 5.29 Skeleton 1517. Distal tibia and fibula with ossified haematoma

Avulsion Injury

One avulsion injury was observed and involved the left talus bone of skeleton 1488 (Grave 1491), an adult male aged upwards of 45 years. As a result of the injury a small piece of bone (9 x 4 mm) had become separated in life from the concave surface that articulates with the calcaneus. An exostosis in the region of the rectus femoris muscle (a muscle that is located on the anterior aspect of the pelvis) is suggestive of muscle tear in this region.

Amputation

Two individuals showed evidence for amputation of a part of the hand. Whether this was accidental or intentional is uncertain, however, for surgical amputation is very rare in the archaeological record until the 18th century (Waldron 2001, 111). A single male amputee (of a total of 109 individuals – 0.9%) is known from Alington Avenue, Dorchester (Waldron 1989). At Lankhills, skeleton 861 (Grave 905) had lost the right fifth metacarpal head. The remaining shaft of the bone was thinned, with the distal end angled medially. The bone had completely remodelled and bony nodules had formed on the lateral side of the distal end of the shaft. It is unlikely that joint disease was the cause of these changes, as it does not tend to resorb bone in this way. Leprosy is a possible diagnosis, but is extremely unlikely as the rest of the hand is completely unaffected. This individual also had complete ankylosis of the right elbow with pronation of the lower arm, osteoarthritis of the right hip joint and osteophytic growth around the right fourth metacarpal head and proximal phalanx.

Skeleton 134 (Grave 106), a mature adult male, had lost the head/distal end from the fifth proximal phalanx of the left hand. The bone had lost the most distal part straight across (horizontally). The area had remodelled presenting an uneven surface over the stump. The loss is approximately 5 mm when compared with the right side (plus the inferred loss of the mid and distal phalanges). The shaft of the phalanx is thinner when compared with the right, which suggests muscle wastage due to lack of use of the remaining finger.

Evidence for decapitation

The remains of five decapitated individuals were recorded. Two skeletons (1084 (Grave 1150) and 1517 (Grave 1515)) showed unequivocal skeletal

Fig. 5.30 Skeleton 134. Amputation of the left 5th phalanx head, with normal phalanx for comparison

Fig. 5.31 Skeleton 1084. Decapitation cut on cervical vertebrae

evidence for decapitation. A third, 2064 (no grave number), exhibited less convincing skeletal evidence which is discussed in detail below. The cervical vertebrae of skeletons 118 (Grave 110) and 1289 (Grave 1329) did not survive, but the former had the head located over the lower legs (Fig. 2.33) and the head of the latter was placed between the feet (Fig. 2.31).

Adult (26-35 years) female 1084 (Grave 1150) lay in a supine position with the head placed between the knees (Fig. 2.32). The superior portion of the fifth cervical vertebra had been removed by a diagonal cut. The arch was absent, as was the transverse process (Fig. 5.31). The cut could have been made from front or back, though more likely from the front, as the spinous process of the fourth cervical vertebra is unaffected. The bodies of the fourth and sixth cervical vertebrae were damaged anteriorly, but it is uncertain whether this had occurred post-mortem or ante-mortem. This individual had also suffered a blow to the head, evidenced by a healed depressed fracture of the right parietal (Fig. 5.28).

The skull of crouched skeleton 1517 (Grave 1515), an adult male aged upwards of 45 years, had been placed between the legs, near the feet. The possible significance of the association between crouched burial and decapitation is explored in Chapter 7. The fifth cervical vertebral body had been sliced through the inferior surface at 45 degrees (Fig. 5.32); the superior portion was absent from the recovered bones. This occurred peri-mortem, as the compact bone of the body had been bent over and squashed into the spongy bone of the internal part of the body. In addition the third cervical vertebra had a cut mark on the left inferior articular process. The superior portion of this process had been sliced off in an inferior to superior direction, as the surface is bent over, exposing the internal trabecular bone. This indicates that the process of decapitation involved more than one cut through the vertebrae. The spinous processes of the fourth and fifth cervical vertebrae were damaged post-mortem.

Skeleton 2064, a child aged approximately 4-6 years, was identified during post-excavation analysis of disarticulated material associated with adjacent skeletons 1734 (Grave 1735) and 1738 (Grave 1740). The anterior mandible displayed a narrow straight cut mark, measuring 53 mm in the transverse plane, which completely separated the lower margin of the mandible (Fig. 5.33).

The left side of the mandible was most affected, with the cut mark extending from the left side of the mandibular body in line with the first to the second

Fig. 5.32 Skeleton 1517. Decapitation cut on 5th cervical vertebra

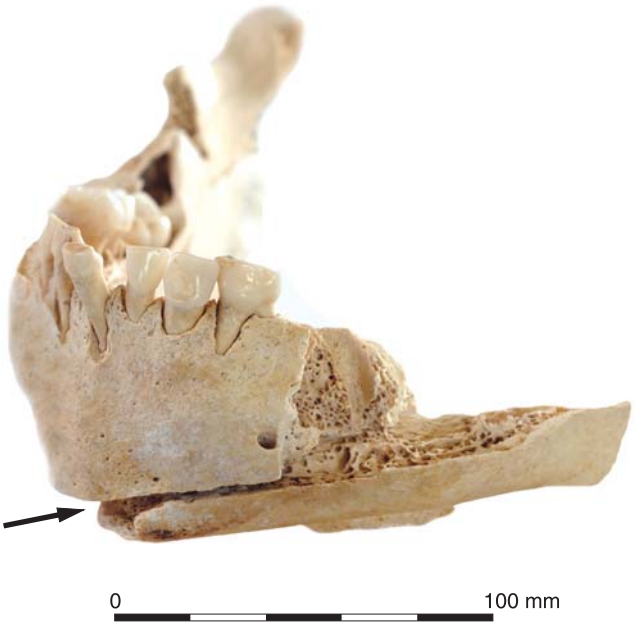


Fig. 5.33 Skeleton 2064. Cut mark to mandible

molar, past the mental eminence to the right side of the mandible, ending abruptly in line with the second deciduous molar. The cut penetrated the full thickness of the anterior mandible, but on the left did not extend all the way to the mandibular angle, stopping 10 mm anterior to it. A small fracture line extends posteriorly from the cut mark. On the right side of the mandible, the most posterior extent of the cut ends abruptly. It suggests that a narrow blade cut into the bone, and was wrenched out breaking the bone in this manner. The injury was peri-mortem as there is inward 'bending' or folding of the margins of the cut. There is a possibility that this injury was inflicted during the process of decapitation, but given that the mandible is not commonly involved this seems unlikely. There is strong evidence to suggest that decapitation was usually carried out after death and with almost surgical precision, most commonly at the level of the third, fourth or fifth cervical vertebra (Harman *et al*. 1981, 166). A probable female adolescent from Baldock in Hertfordshire had six cuts on the anterior aspect of the axis including two on the odontoid process, and this vertebra had eventually been severed through the body (McKinley 1993). The skeleton in grave 379 from Clarke's Lankhills had a horizontal cut to the mandible along the inferior body on the right side, directly below the socket for the canine which had completely removed a portion of bone at the base of the symphysis (Watt 1979, 343). In contrast to skeleton 2064 from OA Lankhills, the skeleton from grave 379 had all surviving cervical vertebrae, the third of which exhibited a cut mark (ibid.)

Occasionally other bones do show evidence of cut marks, for example, the clavicle of inhumation 77 in a Romano-British group from Kempston, Bedfordshire (Boylston *et al*. 2000). Skeleton 1425 at Poundbury exhibited distinct cuts on the proximal surface of the first thoracic vertebra and on the upper surface of the first rib which is the lowest recorded position for any British decapitation (Harman *et al.* 1981). The cuts suggest that the head was removed with one cut taken from front to back (Molleson 1993, 152). The vertebrae of the only other decapitation at Poundbury, skeleton 1425, did not survive. At Cirencester 6 out of 362 individuals (1.7% - 5 males and 1 female) were decapitated (Wells 1982, 194).

Examination of five individuals from Kempston, Bedfordshire (Boylston *et al*. 2000) suggested that cuts on the cervical vertebrae occurred from front to back. The incised nature of the marks suggested careful removal of the head peri-mortem, rather than execution, which was commonly from behind and resulted in a chop mark rather than a cut (ibid.).

Seven individuals from Clarke's excavation were found with their heads by the legs or feet. In addition all exhibited skeletal evidence for decapitation; in four it was located between the third and fourth vertebrae and in one it was on the third vertebra and the mandible (Watt 1979, 343). It was concluded that decapitation took place from the front. These findings are consistent with those for the OA assemblage.

Decapitation was a predominantly rural cemetery phenomenon which was practiced throughout the Romano-British period, although small numbers are also known from urban contexts (Philpott 1991, 77-89). Recent excavations at Little Keep, Dorchester revealed five decapitated individuals among a small group of 29 (17%) inhumations (McKinley 2009, 32). A general distinction can be made between those burials which exhibit skeletal evidence of the practice and those which are identified by the disposition of the head alone. For example, in their recent survey of the skeletal evidence for decapitation Roberts and Cox listed 58 examples (2003, 153, table 3.29) while Philpott (1991, 77) cites more than 70 sites in England. Possible interpretations of the practice of decapitation are discussed in some detail in Chapter 7.

Spondylolysis

Spondylolysis, a failure of the laminae to fuse to the pedicle producing a floating vertebral arch that bears the inferior articular processes, is usually a lumbar trait, particularly affecting the fifth vertebra (Waldron 1992, 177). While the fourth lumbar vertebra can also be affected it is rarely seen elsewhere in the spine. The condition affects 4-8% of modern populations and may be slightly more common in males than females (Aufderheide and Rodriguez-Martin 1998, 63). It may result from a combination of a congenital weakness in the bone and repeated trauma from bending and lifting (Roberts and Cox 2003, 80). There is a considerable body of evidence to show that there is at least a familial tendency to the condition and there is also much to support the traumatic origin. Thus modern opinion supports an intermediate view, that the condition results from a combination of a hereditary dysplasia of the *pars interarticularis* and the stresses imposed upon the lower lumbar spine by the load on it consequent upon assuming an upright posture (Waldron 1993a, 180).

Five skeletons at OA Lankhills had this condition (CPR 5/284; 1.8%; Table 5.31). In three skeletons the changes involved the fifth lumbar vertebra, while in the other two the sixth lumbar vertebra was involved. The majority of skeletons have only five lumbar vertebrae; the occurrence of a sixth is a relatively uncommon skeletal variant. The true prevalence rate for spondylolysis of the fifth lumbar vertebrae is 3.5% (3/85), while for the sixth lumbar vertebrae it is 60% (3/5 vertebrae).

At Poundbury the condition was observed in 16 females and 11 males (Molleson 1993, 187). Six males and one female at Cirencester exhibited the condition, mostly in the fifth lumbar, though in skeleton 320 the fourth and fifth were affected while in skeleton J it was the third and fourth (Wells 1982, 145). The condition was not present at Butt Road. Spondylolysis was seen in 49 individuals (0.9% of

Table 5.31: Skeletons with spondylolysis

Skeleton number	*Site of spondylolysis*	*Sex*
93 (Grave 89)	L5 bilateral	Female
661 (Grave 665)	L6 bilateral	Female
861 (Grave 905)	L6 left transverse process	Male
1223 (Grave 1300)	L5 bilateral	Male?
1232 (Grave 1080)	L5 bilateral	Male

Table 5.32: Prevalence of os acromiale

Skeleton number	*Os acromiale affected side*	*Sex and age*	*Age*
77 (Grave 69)	L & R	Female	18+ y
93 (Grave 89)	L only	Female	26-35 y
593 (Grave 675)	L & R	Male?	18-25 y
661 (Grave 665)	L, R not observable	Female	36-45 y
852 (Grave 935)	R only	Male?	60+ y
1022 (Grave 1145)	R only	Male	45+ y
1156 (Grave 1220)	R only	Male	45+ y
1223 (Grave 1300)	R, L not observable	Male?	36-45 y

the total) within the samples for the whole of the Roman period reported by Roberts and Cox (2003, 151, table 3.26).

Os acromiale

Os acromiale is a condition of the scapula where the acromion does not fuse at the normal time (18-20 years) and remains separate (Scheuer and Black 2000). Eight skeletons (3.6%; 8/220; Table 5.32) from Lankhills had os acromiale: three females (3.1%; 3/94) and five males or probable males (5.3%; 5/94).

In two skeletons the condition was bilateral (skeletons 77 (Grave 69) and 661 (Grave 665)) so the possibility of a repetitive activity involving both shoulders is raised. Os acromiale is reported in 10 individuals out of 308 (3.3%) during the Roman period (Roberts and Cox 2003, 152, table 3.29) though none are from the late urban cemeteries used for comparison here. There has been a suggestion that it can occur when people perform a particular action involving the shoulder and arm respectively from an early age, which prevents fusion. For example, many cases were observed among males thought to have been archers from an early age, who drowned aboard the Tudor warship *Mary Rose*. Archery is just the sort of activity that may lead to the condition as it involves a particular action of the arm and shoulder in a repetitive manner. In modern populations the prevalence of os acromiale ranges from approximately 2-6% (ibid.).

Congenital and developmental anomalies

Congenital diseases are conditions that originated during prenatal growth and development. They can be caused by genetic defects or by factors which affect the foetus during its development, such as malnutrition. It has been estimated that around 40% of congenital conditions affect the skeleton (Aufderheide and Rodriguez-Martin 1998, 51). The full range of diseases that could be placed under this heading is very large, ranging from very slight skeletal changes that are not detrimental and may not be noticed by the affected individual, to serious defects that are incompatible with life (Brickley *et al.* 2006, 103). At the less serious end of the spectrum it is difficult to draw a clear distinction between conditions that might be classified as non-metric traits and those that might be considered congenital diseases or conditions. All congenital and developmental conditions recorded that were not on the list of non-metric traits selected for systematic recording are considered here.

Abnormalities involving the axial skeleton

The lumbo-sacral border, at the bottom of the spinal column, is the most frequent and variable site for abnormalities. There were three examples of sacralisation of the fifth lumbar vertebra. This is when the lumbo-sacral border shifts in a caudal (downwards) direction, which means that the fifth lumbar vertebra becomes assimilated with the sacrum by either complete or incomplete fusion. The condition was identified in skeletons 559 (Grave 560) 917 (Grave 1035) and 1219 (Grave 1295); in all cases the assimilation was partial. Shifting of the lumbo-sacral border in the form of lumbarisation was observed on a further five skeletons (12 (Grave 10), 212 (Grave 210), 522 (Grave 570), 566 (Grave 610) and 1156 (Grave 1220)). This occurs when the border shifts cranially and the first sacral segment becomes detached or partly detached to become more like a lumbar vertebra. In all cases the lumbarisation was partial. Minor segmental shifts in the spinal column are relatively common and would have had little impact on the affected individual (Brickley *et al.* 2006, 103).

Both conditions increase in frequency in the Roman period compared to the preceding Iron Age. Roberts and Cox recorded 15 cases of lumbarisation out of 1785 (0.3%) and 72 cases of sacralisation out of 2939 (1.2%). In these cases 13 (0.2%) and 55 (1.0%) respectively of the total sexed adults were affected. This increase 'is probably, however, purely the result of more burials producing the evidence and not an increase in factors that may lead to congenital disease' (Roberts and Cox 2003, 115, tables 3.5-6).

Bifid (or cleft) neural arches were also observed in the OA assemblage, in the second cervical vertebra of skeleton 451 (Grave 590). Shifting of the lumbosacral border and bifid neural arches are common variations and would have had no consequence for the health of individuals involved (Barnes 1994, 119; Scheuer and Black 2000, 200).

Another axial abnormality was developmental delay of the left spinous process of the second cervical vertebra in skeleton 1532 (Grave 1528).

Although the left and right sides of the process had fused at the base, the left process was significantly shorter. Bifid neural arches represent a minor delay in the development of the neural arch and occur when the two halves come together but fail to coalesce (Barnes 1994, 119). These low levels of spinal abnormalities suggest a population with low genetic susceptibility to such abnormalities and with access to a diet sufficient in folic acid and zinc, deficiencies in which can be related to these abnormalities (ibid.).

Spina bifida occulta

Spina bifida occulta is not to be confused with spina bifida where the spinal cord is exposed and death follows rapidly after birth. Spina bifida occulta is commonly a defect of one or more pieces of the sacrum but may occur at other points of the spine, and, although the spinal cord is exposed, in life it would have been bridged by cartilage or membrane. The condition is of no significance to the affected individual who would have functioned normally (Roberts and Manchester 1995, 36). Two posterior neural arches of the sacral segments (S1 and 2) of skeleton 1481 (Grave 1479) were bifid, or incompletely fused (spina bifida occulta), constituting a single case out of 86 sacra that were observed (1.2%; Table 5.33). The modern incidence is between 5% and 25%. At Butt Road there were seven cases of spina bifida occulta (2.2%); most involved S1 only (5 individuals), but involvement of S1 and S2 (one individual) and S1-S5 (one individual) was also noted (Pinter-Bellows 1993, 66). At Poundbury there were 18 examples (six juvenile, five female, seven male) where all the sacral vertebrae or the first and last three were cleft (Molleson 1993, 187). There were five examples (four males and one female) at Cirencester (Wells 1982, 144). Roberts and Cox reported 58 cases or 1% (47 or 0.8% of the total number of sexed adults) for the whole of Roman Britain (2003, 115, table 3.7). They suggest that, along with trends in sacralisation and lumbarisation, the apparent increase in the incidence of spina bifida occulta in the Roman period results from the availability of a larger sample, in which these conditions are more readily detected, rather than that there was an increase in factors that may have led to congenital disease (ibid.).

Table 5.33: Incidence of spina bifida occulta in the late Roman period

Site name	*Total no.*	*Affected*	*M*	*F*	*?*	*J*	*CPR%*
Lankhills	284	1	1	0	0	0	0.4%
Cirencester	362	5	4	1	0	0	0.3%
Butt Road	575	7	4	3	0	0	1.2%
Poundbury	1131	18	7	5	0	6	1.6%
Total	2352	31	16	9	0	6	1.3%

Other abnormalities

The hooks of the left and right hamate bones of skeletons 661 (Grave 665) and 1156 (Grave 1220) were absent (hypoplastic hamulus). This is a rare congenital variant (Anderson 2000).

The left and right navicular bones of skeleton 566 (Grave 610) in the region of the tuberosity had an epiphysis which is the attachment site of the tibialis posterior tendon. This had remained as a separate ossicle (os tibiale externum), a feature found in 5-10% of the modern population (Scheuer and Black 2000, 462). The persistence of the separate bone usually leads to inflammation of the overlying skin due to pressure from shoes. The articulating surface of the distal head of the right first metatarsal had a small patch of new bone growth measuring 6 x 2 mm on the medial ridge of the inferior (plantar) articular surface. This may represent bony response to soft tissue damage, perhaps involving a sesamoid bone.

The left and right navicular of skeleton 1219 (Grave 1295) had an extra facet for the calcaneus, which lacked the anterior facet, thereby creating articulations along lines that are not normally present. In addition, the left distal tibia of this skeleton had a large exostosis where the fibula articulated.

The left calcaneus of skeleton 616 (Grave 690) on the anterior superior articular surface for the cuboid had a crescent-shaped defect in the most anterior border. The surface of the defect looked like a possible pseudo-articulation, as it was porous with smooth edges to the holes. This is most likely a developmental anomaly.

Scaphocephaly

Skeleton 1026 (Grave 1070) was of a young child aged approximately 4-7 years who had suffered from scaphocephaly, which is characterised by premature fusion of the sagittal suture. In this case the sagittal suture was completely obliterated, the lambdoid suture was partially open and the coronal suture was completely closed (Fig. 5.34). The condition creates an abnormally long and narrow skull with a cephalic index below 70 combined with widening and elevation of the frontal, prominent bosses, also exhibited by this skeleton. This is the most common form of premature fusion affecting the skull, with a male predilection (Aufderheide and Rodriguez-Martin 1998, 52). The head would have appeared misshapen, perhaps with a sagittal ridge running from front to back and the face may have appeared slightly lopsided. It is noteworthy that this child, presumably a girl as she was buried with two bracelets and a ring, had been placed in a prone position in the grave.

Four cases of scaphocephaly were observed at Poundbury: two were adult females, one an adult male and one a subadult (Molleson 1993, 187).

Fig. 5.34 Skeleton 1026. Scaphocephaly, note the absence of the sagittal suture whilst the coronal and occipital remain open

Familial cases of the condition do occur but the role of genetic factors is not clear (Aufderheide and Rodriguez-Martin 1998, 52).

Circulatory disorders

Perthes' disease

This is a condition of the femur, usually affecting one side, seen predominantly in male children aged 3 to 10 years of age. It is caused by blockage of the blood supply to the femur head which leads to death of the bone structure (Aufderheide and Rodriguez-Martin 1998, 84). The femur head develops a characteristic mushroom shape with a corresponding shallow acetabulum and a shortened and widened femoral neck. It may produce pain and later joint disease as a complication. Changes that involved the right hip joint of skeleton 109 (Grave 35), a probable male aged upwards of 45 years, were consistent with Perthes' disease (Fig. 5.35). There was also a large amount of degeneration of the joint in the form of osteoarthritis, which is secondary to the necrosis of the epiphyses.

Femoral head necrosis

This condition occurs when the blood supply to the femoral head is limited or cut off, often a consequence of fracture or dislocation. The result is necrosis or bone death and with continued pressure the head morphology becomes flattened into a mushroom shape. Skeleton 434 (Grave 535), a probable male aged upwards of 45 years, had possible necrosis of the left hip with secondary osteoarthritis (Fig. 5.36). The bones were examined radiologically to determine the depth and extent of the lesions. The results were consistent with the macroscopic examination, showing extensive destruction of the femoral head and acetabulum. The eburnation and osteophytes are indicative of long standing osteoarthritis secondary to the infec-

Fig. 5.35 Skeleton 109. Perthes' disease of the right femoral head

Fig. 5.36 Skeleton 434. Necrosis of the left femoral head

tion. Possible alternative diagnoses are septic arthritis or tuberculosis.

Scheuermann's disease

Scheuermann's disease (juvenile kyphosis) is a deformity which develops in adolescents and particularly favours males (Scheuermann 1921). The apex of the curvature usually falls in the area of the eight to tenth thoracic vertebrae. The underlying cause is probably extrusion of disc (nucleus pulposus) material, mostly into the adjacent vertebral bodies (Schmorl's nodes), followed by anterior narrowing of the disc space and subsequent growth disturbance in this area of the end-plate, resulting in some degree of wedging. The location of the wedge vertebrae usually coincides with the apex of the curvature. Since, of course the curvature cannot be appreciated on the skeleton, the presence of one or several adjacent wedge vertebrae and of round or oblong defects near the centre of the vertebral end-plate, corresponding to the location of the disc herniation, would be the main findings (Ortner and Putschar 1981, 323).

This condition is characterised by osteochondritic erosion of the anterior-superior aspects of the vertebral bodies, which results in loss of height often leading to curvature of the spine (Aufderheide and Rodriguez-Martin 1998, 87). The onset usually occurs between 12 and 18 years. Skeleton 616 (Grave 690), a male aged 26-35, had a depression 23 x 10 mm on the superior anterior body of the fourth lumbar vertebra. The depression was 5 mm deep and had an irregular surface. The annular ring was not affected. This feature may indicate Scheuermann's disease, though it is unusually low down in the lumbar vertebrae. In skeleton 614 (Grave 640), estimated to be about 13 years old, there was a marked indentation on the anterior aspect of the superior surface of the first lumbar vertebra. The annular rings had not yet formed. This may indicate Scheurmann's disease as the individual was in the appropriate age range for onset and the feature is located in the right area. Few vertebrae survived and the diagnosis is a tentative one. Neither skeleton showed signs of wedging of vertebrae. A single example is mentioned by Roberts and Cox (2003, 151) but no details are given.

Fig. 5.37 Vertebral defects, perhaps Scheurmann's disease, in skeletons 614 and 616

Osteochondritis dissecans

Osteochondritis dissecans is classified along with other, so-called osteochondroses, such as Scheuermann's disease of the spine, Osgood-Schlatter's disease of the knee and Perthes' disease of the hip. They all involve fragmentation and collapse of the joints and all affect young individuals, especially males in the first year of their life (Roberts and Manchester 1995, 87). Osteochondritis dissecans has both a traumatic and circulatory disturbance aetiology. It is seen in increasing frequency during the Roman period in knee joints (11 individuals out of 2721 or 0.4% of the total) and may be related to trauma during work (Roberts and Cox 2003, 151, table 3.27).

In this condition necrosis occurs in a small focal area of diarthrodial joints and results in partial or complete detachment of a segment of the subchondral bone and articular cartilage. The condition is common in adolescents and young adults and the knee is the most commonly affected area. Osteochondritis dissecans was present on the anterior surface of the left and right lateral condyles of the femora of skeleton 1232 (Grave 1080), an adult male aged upwards of 45 years. The lesions were oval in shape, 20 x 12 mm, and in both femora occurred on the lateral side. There were two definite cases (out of 575 – CPR 0.3%) at Colchester (Pinter-Bellows 1993, 91, fig. 2.44b) and one adult male (out of 1131 – CPR 0.1%) at Poundbury (Molleson 1993, 188). The only symptom of the condition would have been slight discomfort.

Small ovoid depressed lesions which look similar to osteochondritis dissecans are commonly found on the first proximal phalanx articular surface for the first metatarsal. These were identified on three individuals (skeletons 741 (Grave 770), 917 (Grave 1035) and 1557 (Grave 1555)). A further lesion occurred on the second metatarsal proximal articular surface of skeleton 1094 (Grave 1140). Other lesions which looked like osteochondritis dissecans were found on the left talus of skeleton 776 (Grave 805) and the left distal tibia articulating surface of skeleton 1902 (Grave 1900).

Joint disease

Diseases affecting the joints and their surrounding structures are often the most frequently recorded conditions in both archaeological bone and the modern population (Rogers 2000, 163). A wide range of different conditions was recorded and these are considered below.

In all 822 individuals had evidence of joint disease for the Roman period (14.4% of the total and an increase from the 5.3% rate of the Iron Age) in the sample analysed by Roberts and Cox (2003, 145). Spinal osteoarthritis was seen in 405 individuals (7.1% or in 311 sexed adults of 3620 – 8.6%) which is a decrease on the Iron Age rate of 23.2%. However, 479 individuals had extra-spinal joint disease, or 8.4% of the total (or 459 of 3620 sexed adults – 12.8%), which is an increase from 4.6% in the Iron Age. In all 256 upper joints and 279 lower joints were also affected (Roberts and Cox 2003, tables 3.22-23), with 17 and 16 individuals suffering respectively from rib and tempero-mandibular joint disease (Roberts and Cox 2003, tables 3.24-25).

Degenerative joint disease

This refers to bone formation (osteophytosis) and resorption (porosity and subchondral cysts) on and around joint surfaces. It also encompasses new bone formation around the margins of the vertebral bodies. These changes are a normal accompaniment to age; in addition they may occur in response to pathology, for example, osteoarthritis and ankylosing spondylitis or trauma.

Osteophytosis or porosity was observed around at least one joint margin in 21 individuals (summarised in Table 5.34). Some of these individuals also had osteoarthritis on other joints (see below). The degenerative joint disease mainly affected the upper body, particularly the shoulder joint (involving the humeral head, clavicle and scapula). There were two instances of degeneration at the temporo-mandibular joint (TMJ); this joint involvement is usually secondary to extreme lateral extension of the mandible in an effort to approximate several teeth during mastication where there has been extensive tooth loss (Aufderheide and Rodriguez-Martin 1998).

A total of 48 (45.3%; 48/106) individuals had vertebral osteophytosis. Table 5.35 below details the distribution along the spine and by sex, which shows that it was much more prevalent in males than females in all vertebrae but markedly so in the thoracic vertebrae. It seems likely that adult males were regularly involved in an activity/activities which predisposed them to the development of osteophytosis.

Intervertebral disc disease (degenerative disc disease)

This condition is characterised by coarse pitting on the superior and inferior surfaces of the vertebral bodies (Rogers and Waldron 1995), changes which are presumed to reflect degeneration of the intervertebral disc reflecting age-related wear and tear. This pitting is commonly associated with marginal osteophytes and is mostly found in the mid and lower cervical, upper thoracic and lower lumbar vertebral regions. This was observed on 31 individuals; 16 males, 14 females and 1 unsexed adult. The cervical vertebrae were the most affected (61/411; 14.8%), in particular the fifth and sixth. Smaller quantities of thoracic (39/319; 12.2%) and lumbar vertebrae (32/497; 6.4%) were affected, involving the mid thoracic region and all of the lumbar. The superior surface of the first sacral body was also affected (7/69; 10.1%). Broadly equal numbers of men and women were affected (see Table 5.36) although a preponderance of male cervical vertebrae were involved. Severity of the condition is detailed in Table 5.37.

Table 5.34: Skeletons affected by degenerative joint disease

Skeleton number	*Sex*	*Age*	*Area affected by Osteophytosis (OP) or Porosity (PO)*
25 (Grave 22)	M	36-45 y	Left sterno-clavicular joint (OP)
95 (Grave 97)	M	45+ y	Left and right glenoid fossa (OP) and right sesamoid (OP)
212 (Grave 210)	M	60+ y	Right humerus rotator cuff (OP). Left TMJ (PO).
232 (Grave 226)	M	36-45 y	Calcaneal/talar joint (OP)
244 (Grave 243)	M	45+ y	Left and right TMJ (PO)
271 (Grave 272)	F	26-35 y	Carpal metacarpal joint (trapezius and metacarpal 1) (OP).
284 (Grave 242)	F	60+ y	Left wrist joint (distal radius and ulna) (OP)
489 (Grave 550)	M	45+ y	Wrist joint (left metatarsal 1 and 2) (OP)
661 (Grave 665)	F	36-45 y	Right glenoid fossa (OP). Right hip (acetabulum (PO) and femoral head (OP))
683 (Grave 790)	M	36-45 y	Left knee (OP).
812 (Grave 855)	M?	45+ y	Right hip joint (acetabulum) (OP)
852 (Grave 935)	M?	60+ y	Right elbow joint (ulna trochlear notch) (OP)
1084 (Grave 1150)	F	26-35 y	Right knee (distal femur) (OP)
1119 (Grave 1175)	M	45+ y	Left and right rotator cuff (OP)
1137 (Grave 1210)	M?	26-35 y	Glenoid cavity L & R (OP). Right hip (femoral head and acetabulum) (OP). L and R knee (patellae) (OP). R ribs x4 facets (OP), L rib x1 (OP)
1173 (Grave 1240)	F	60+ y	Right shoulder (humeral head) OP)
1247 (Grave 1325)	M	36-45 y	Left shoulder (OP)
1621 (Grave 1619)	F	26-35 y	Left and right medial clavicles (PO). Left and right TMJ (mandibular condyles PO). Rib (OP)
1697 (Grave 1805)	M	26-35 y	Left and right shoulder (glenoid cavity) (OP). Rib (OP)
1802 (Grave 1810)	M	36-45 y	L & R shoulder (scapula glenoid fossa and humeral head) (OP)
1852 (Grave 1790)	M	60+ y	Right humeral head (OP)

PO=porosity OP=osteophytes TMJ= tempero-mandibular joint, L=left, R=right

Table 5.35: True prevalence rate of spinal osteophytosis for males and females

	No. with osteophytosis Cervical vertebrae n/N	*Thoracic vertebrae*	*Lumbar vertebrae*	*Sacral S1*	*Total*
Male	68/207 (32.9%)	122/174 (70.1%)	82/329 (24.9%)	8/34 (23.5%)	280/744 (37.6%)
Female	26/191 (13.6%)	58/134 (43.3%)	40/258 (15.5%)	4/34 (11.8%)	128/617 (20.7%)
Total	94/398 (23.6%)	180/308 (58.4%)	122/587 (20.8%)	12/68 (17.6%)	408/1361 (30%)

Table 5.36: True prevalence rate of intervertebral disc disease

	No. with intervertebral disc disease Cervical vertebrae n/N	*Thoracic vertebrae*	*Lumbar vertebrae*	*Sacral S1*	*Total*
Male	36/207 (17.4%)	23/174 (13.2%)	14/239 (5.9%)	3/34 (8.8%)	76/710 (10.3%)
Female	23/191 (12%)	16/134 (11.9%)	18/258 (7%)	4/34 (11.8%)	61/583 (9.8%)
Unsexed	2/13 (15.4%)	0/11	0/0	0/1	2/25 (8%)
Total	61/411 (14.8%)	39/319 (12.2%)	32/497 (6.4%)	7/69 (10.1%)	139/1318 (10.5%)

Table 5.37: Severity of intervertebral disease

	Cervical			*Thoracic*			*Lumbar*			*Sacral S1*			
Grade	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*1*	*2*	*3*	*Total*
Male	12	10	14	8	11	4	8	4	2	0	1	2	76
Female	5	11	7	8	4	4	9	6	3	0	2	2	61
Unsexed	1	1	0	0	0	0	0	0	0	0	0	0	2
Total	18	22	21	16	15	8	17	10	5	0	3	4	139

Schmorl's nodes

Schmorl's nodes are depressions observed in the end plates of vertebrae. The exact cause of the lesions is unclear and there is some debate as to whether they are caused by a herniation of material from the intervertebral disc (Rogers and Waldron 1995, 27) or whether the herniation of material is secondary to necrosis beneath the end-plate (Peng *et al.* 2003, 879). However, whatever the exact pattern of events in disruption of the vertebral end-plates and herniation of disc material, such nodes have been linked to physical activities, such as contact sports (Resnick and Niwayama 1988, 1530) and to acute trauma (Fahey *et al.* 1998). The lower thoracic and upper lumbar vertebrae are most commonly affected in archaeological bone (Rogers and Waldron 1995, 27) and this pattern is reflected at Lankhills (Table 5.38).

Schmorl's nodes were observed on the vertebrae of 37 adults (TPR 35%; 37/106); 23 males (TPR 62.2%; 23/37), 12 females (TPR 32.4%; 12/37) and two unsexed adults (TPR 66%; 2/3). They were most common on the thoracic vertebrae. No less than 78.7% of male thoracic vertebrae were affected in comparison with 38.1% of those in females. Similarly 29.5% of male lumbar vertebrae were affected, compared to 8.9% of female lumbar vertebrae.

Schmorl's nodes are very common in both modern and archaeological populations. Clinically, they usually present no symptoms, affect males more than females and typically appear in adolescence when bone is relatively supple (Hilton *et al.* 1976; Kelley 1982). Their cause may be multi-factorial, but in the palaeopathological literature greater emphasis is placed on their association with repetitive trauma to the spine, usually occurring over a long period of time (Waldron 2007, 94).

The incidence of Schmorl's nodes recorded in Roberts and Cox's survey increases from 1% in the Iron Age to 4.8% (272 individuals, or 179 of 3620 sexed individuals – 4.6%) in the Roman period. A total of 495 out of 2793 vertebrae (17.7%) from four sites of this period were affected with Schmorl's nodes (Roberts and Cox 2003, table 3.21). If the association with repetitive trauma is correct these figures, and those from Lankhills, suggest an increase in the intensity of physical labour for some individuals, with a consequent increase in the predisposition of joints to degeneration.

Vertebral ankylosis

Vertebral ankylosis is the fusion of at least two vertebrae at the centrum, or at the transverse/superior/inferior processes. This can be caused by significant osteophytic growth in a superior and inferior direction, because of a congenital predisposition or as a result of trauma. The examples listed here in Table 5.39 are considered to be caused by osteophytic growth and not as a result of ankylosing spondylitis or other conditions.

Osteoarthritis

Osteoarthritis is almost certainly the most commonly observed of all the joint diseases recorded in the archaeological record. It is primarily a disease of the cartilage which affects the synovial joints. When the cartilage has disintegrated the underlying bone at the joint surface can come into contact and joint movement will eventually result in polishing of the bone surface (eburnation).

Table 5.38: True prevalence of Schmorl's nodes for males and females

	Number with Schmorl's nodes		
	Cervical vertebrae	*Thoracic vertebrae*	*Lumbar vertebrae*
Male number of vertebrae	1/207 (0.5%) Superior 0 Inferior 1	137/174 (78.7%) Superior 62 Inferior 75	97/329 (29.5%) Superior 57 Inferior 40
Female number of vertebrae	0/191 (0%) Superior 0 Inferior 1	51/134 (38.1%) Superior 12 Inferior 39	23/258 (8.9%) Superior 11 Inferior 12
Total	1/398 (0.25%)	188/308 (61%)	120/587 (20.5%)

Table 5.39: Details of ankylosed vertebrae

Skeleton number	*Ankylosed vertebrae*
281 (Grave 263)	T6-7, T8-9
434 (Grave 535)	T11/12 across the entire centrum
812 (Grave 855)	T12/L1, L1/2 across entire centrum
861 (Grave 905)	C2/3- across right centrum and right inferior/superior processes, C6/7 - centrum only
1137 (Grave 1210)	T10/11 – right centrum
1271 (Grave 1310)	C2/3 transverse processes
1640 (Grave 1638)	L5/S1 centrum left side
1697 (Grave 1805)	T11/12 centrum left side
1882 (Grave 1884)	C2/3 - transverse processes only, C3/4 - centrum and transverse processes

C= cervical vertebrae, T=thoracic vertebrae, L=lumbar vertebrae

Osteoarthritis is very strongly age-related, but there are other contributory factors which include activity patterns and trauma as well as a genetic predisposition to the condition. It is frequently observed in the spine. The changes associated with osteoarthritis include eburnation, pitting of the joint surface and bone growth which occurs around joint margins. At least two of the changes (porosity, bony contour change and/or osteophytes) need to be present in order to diagnose osteoarthritis unless eburnation, which is pathognomic of the disease, is present. The criteria used in the diagnosis of osteoarthritis for this assemblage are those defined by Rogers and Waldron (1995, 43-44).

In modern populations there is a tendency for women rather than men to display a higher prevalence of osteoarthritis (Waldron 1993b, 67). Sites with individuals in the much older age category might be expected to have a higher prevalence of osteoarthritis. Modern investigations of the prevalence of osteoarthritis reported by Waldron (ibid., 68) have produced results that are significantly

Table 5.40: Summary of skeletons with extraspinal osteoarthritis

Skeleton number	*Sex*	*Age*	*Joint affected*	*Changes*
212 (Grave 210)	?Female	60+	Left IPJ	OP, PO
232 (Grave 226)	Male	36-45	Sterno-clavicular joint	OP, PO
271 (Grave 272)	Female	26-35	Talar-calcaneal joint	OP, PO
284 (Grave 242)	Female	60+	Left IC joint	EB
451 (Grave 590)	Male	45+	Left shoulder	EB, PO, OP
489 (Grave 550)	?Male	45+	Left IC	EB, PO, OP
522 (Grave 570)	Male	60+	Left and right elbow	EB, PO
623 (Grave 695)	?Female	45+	Right elbow joint	EB, PO
661 (Grave 665)	Female	36-45	Left and right knee	EB, PO
683 (Grave 790)	Male	36-45	Left hip	OP, PO
852 (Grave 935)	?Male	60+	Right elbow	EB, OP
861 (Grave 905)	Male	60+	Right Hip. Right elbow	EB, PO; OP
1119 (Grave 1175)	Male	45+	Right hip. Left hip	PO; EB, OP
1137 (Grave 1210)	?Male	26-35	Rib-vertebral joint	OP, PO
1209 (Grave 1285)	Male	36-45	Right distal IP	EB, OP
1232 (Grave 1080)	Male	45+	Left and right knee	EB, OP
1247 (Grave 1235)	Male	36-45	Left shoulder	OP, PO
1258 (Grave 1335)	Male	60+	Right 1st CMC	EB, PO, OP
1274 (Grave 1340)	Male	45+	Left and right 1st CMC	EB, PO; OP
1304 (Grave 1302)	Female	60+	Left shoulder	EB, OP
			Right elbow	EB, OP
1598 (Grave 1599)	Female	45+	Right hip. Right MCP	EB, PO; OP
1621 (Grave 1622)	Female	26-35	Right 1st MTP joint	EB, OP
			Right 1st CMC Joint	OP, PO
1882 (Grave 1884)	Male	45+	Right TMJ	OP, PO, & new facet
1934 (Grave 1930)	?	Adult	Left hand IP	OP, EB

PO=porosity, OP=osteophytes, EB=eburnation, IPJ=interphalangeal joint, IC=intercarpal joint, CMC=carpal-metacarpal joint, MCP=metacarpal-phalangeal joint, TMJ=tempero-mandibular joint

higher than those obtained from previous analyses of archaeological bone.

Extraspinal osteoarthritis

Twenty-four skeletons (CPR 10.9%; 24/220 adults) showed evidence for extraspinal osteoarthritis and among them 11 different sites were affected: one sterno-clavicular, one talar-calcaneal, three wrist joints, three shoulder joints, four finger joints (two interphalangeal and two carpo-metacarpal), one toe joint (metatarsal phalangeal), four hip joints, two knee joints and four elbow joints. All probably involved individuals who were over the age of at least 30 years, while 15 of the 24 individuals were aged upwards of 45 years (Table 5.40). The disease was observed in 15 males (62.5%; 15/24), 8 females (33.3%; 8/24) and one unsexed individual (1/24 4.1%). The CPR for the assemblage was 8.5% for females (8/94), 15.9% for males (15/94), and 3.1% for unsexed adults (1/32). True prevalence rates for individual joints appear in Table 5.41. Due to the small size of the group affected no attempt has been made to assess age/sex related associations.

Adult female skeleton 661 (Grave 665) had bilateral osteoarthritis affecting both knees, a condition that Molleson (1993, 200) suggested was due to prolonged kneeling or squatting. Skeleton 661 also had a lateral squatting facet.

Table 5.41: True prevalence rate of osteoarthritis by joint

Joint	*No. observed/ observable (N/n) Left*	*No. observed/ observable (N/n) Right*	*TPR left*	*TPR right*
TMJ	0/153	1/158		0.6%
Sterno/clavicular	1/37	2.7%		
Shoulder	3/98	0/98	3.1%	0%
Rib/Vertebra	1/115	0.9%		
Hip	2/77	3/75	2.6%	4.0%
Knee	2/137	2/141	1.5%	1.4%
Elbow	1/82	5/84	1.2%	6.0%
Wrist	3/86	3/88	3.5%	3.4%
Hand	2/117	2/119	1.7%	1.7%
Ankle	0/161	0/160	0%	0%
Foot	0/175	1/172	0%	0.6%

The prevalence of osteoarthritis increases markedly with age (Rogers and Waldron 1995). It is therefore not surprising that, given the number of individuals from Lankhills who were over the age of 45 years, 23.8% (15/63) of these were diagnosed as having the disease. Where degenerative joint disease was identified it is possible that this might have developed into osteoarthritis, but the joint observations were not consistent with the characteristics laid out by Rogers and Waldron (1995).

Spinal osteoarthritis

Spinal osteoarthritis was observed on the apophyseal joints (facet joints) and was more common in the cervical spine than elsewhere. Its occurrence was nearly evenly divided between females and males (seven females, eight males) (Table 5.42). Several skeletons had osteoarthritis at more than one place on the spine, for example in skeleton 1137 (Grave 1210) it occurred at C7-T1 and L5-S1. The true prevalence rate for vertebrae with osteoarthritis (number observed to have osteoarthritis against the number of vertebrae available for observation) was 1.7% (TPR 28/398) for cervical vertebrae, 4.6% (TPR 14/308) for thoracic and 1.2% (TPR 7/587) for lumbar vertebrae. A total of 49/398 (3.8%) of vertebrae were affected. Nearly twice as many female cervical vertebrae were affected. Conversely nearly three times as many male thoracic vertebrae and over four times as many male lumbar vertebrae were affected. This is strongly suggestive of different activity patterns. These men may have been engaged in more physically strenuous activities.

Diffuse idiopathic skeletal hyperostosis (DISH)

DISH is a systemic disorder in which additional bone is deposited around a number of joints of the body, largely due to the ossification of surrounding ligaments. Its specific aetiology is unknown, but it appears to be associated with obesity and Type 2 diabetes (Rogers and Waldron 1995, 48), so the condition is most frequently observed in populations that had access to rich food and experienced low levels of physical exercise (Roberts and Cox 2003, 311). Clinical analysis has demonstrated that the condition is often painless and frequently no symptoms are apparent during the life of the

Table 5.42: True prevalence of spinal osteoarthritis for males and females

	No. with spinal osteoarthritis			
	Cervical Vertebrae	*Thoracic Vertebrae*	*Lumbar Vertebrae*	*Total*
Number of males	4	3	4	
No of vertebrae involved male	11/207 (5.3%)	11/174 (6.3%)	6/329 (1.8%)	28/710 (3.9%)
Number of females	6	2	1	
No. of vertebrae involved female	17/191 (8.9%)	3/134 (2.2%)	1/258 (0.4%)	21/583 (3.6%)
Total	28/398 (7%)	14/308 (4.6%)	7/587 (1.2%)	49/1293 (3.8%)

affected individual (Aufderheide and Rodriguez-Martin 1998, 97). Where symptoms do occur these can include pain, aching and stiffness (Roberts and Manchester 2005, 160). In modern populations the condition is widely reported to have an incidence of between 6% and 12% although many studies are based on individuals in hospitals. It is normally found in those over the age of 50 and men are more often affected than women (Rogers and Waldron 1995, 48). Typically, DISH begins with ankylosis of the mid-thoracic spine, due to ossification of the anterior longitudinal ligament and paraspinal tissues. This produces a dripping candle-wax appearance along the right side of the vertebral bodies (Roberts and Manchester 2005, 159-60). Ossification at tendon and ligament attachment sites may be seen at many locations in the body, and ossification of cartilage in the neck and ribs is also commonly seen in the disease (ibid., 160).

For the Roman period as a whole Roberts and Cox (2003, 138, table 3.15) record 23 cases (0.4% of the total burials). The presence of DISH may indicate that some people had access to a rich diet that predisposed them to this condition. A total of 11 males out of 1131 individuals (CPR 1%) at Poundbury had DISH (Molleson 1993, 194). All were mature or old males; typically there was ankylosis of the sacro-iliac joint and some whiskering of the iliac crest as well as well as significant spondylitic changes in the lumbar spine with fringe osteophytes, spurs and osteoarthritis in the posterior joints. Molleson notes that although DISH is presumed to be a metabolic disorder and might be expected to 'run in families' the cases at Poundbury were not grouped in the cemetery.

At Lankhills three skeletons (out of 85, or 3.5%) had thoracic vertebrae with the characteristic 'candle-wax' appearance. Survival of torsos was poor (see above) so the condition may well be under-represented. As at Poundbury, these burials were widely separated spatially.

In skeleton 281 (Grave 263), an adult male originally assigned to the older (45+) age category but placed in the mature adult (36-45 year old) group on the basis of dental attrition ageing, the fifth through to the eleventh thoracic vertebrae were affected. However, the ninth thoracic vertebra had osteophytic growth inferiorly from the inferior body at the costal facet, extending 15 mm on the left side. Extensive osteophytes were present on the third, fourth and fifth lumbar vertebrae as well as the vertebral ends of the left and right ribs (Fig. 5.38).

In skeleton 812 (Grave 855), a probable male aged over 45, DISH was evident in the twelfth thoracic and first and second lumbar vertebrae. The twelfth thoracic vertebra was broken and was the only surviving thoracic. The 'candle-wax' effect covered the entire ?surviving body of the twelfth thoracic vertebra. To conform to the clinical description of DISH, at least four adjacent thoracic vertebrae should be fused, but it is common in skeletal material to find skeletons which obviously have DISH in which less than four vertebrae are fused (Rogers and Waldron 1995, 51).

A further male over 45 years, skeleton 1271 (Grave 1310), also had DISH. This affected four thoracic bodies with the candle-wax-like deposit completely bridging from one to another. There was osteophytosis on the other surviving vertebral bodies and ankylosis of the second and third cervical vertebrae. Fusion can also occur in the cervical and lumbar regions though it is not limited to the right hand side (Rogers and Waldron 1995, 47). The spine of this individual was extremely poorly preserved and individual vertebrae were difficult to identify. None of the skeletons at Lankhills exhibited involvement of the sacro-iliac joint.

Samples from two of the three individuals afflicted with DISH (skeletons 281 (Grave 263) and 1271 (Grave 1310)) were submitted for isotope analysis. The existence of DISH has been used in

Fig. 5.38 Skeleton 281. Diffuse idiopathic skeletal hyperostosis (DISH)

palaeopathological studies to suggest the presence of higher status groups within certain populations (Waldron 1985; Rogers and Waldron 2001; Jankauskas 2003; Müldner and Richards 2007a). Because of the link between this condition and diabetes and obesity, it is interesting to examine whether these two people had a different diet from the other individuals at the site. It was noted that they are enriched in both carbon and nitrogen compared to the majority of the population which could indicate that they consumed a higher proportion of animal protein, perhaps particularly marine fish, than other people. It may be noteworthy that at *c* 181.8 cm (*c* 5′ 11.5″) skeleton 281 was close to the upper end of the range for male stature at Lankhills.

Skeleton 281 also has a markedly lower oxygen isotope signature than the others sampled. It is at the very edge of the UK range and which makes an origin in western Britain very unlikely and origins elsewhere in Europe are suggested including certain regions of Belgium (Ardennes) or Western Germany (Rheinisches Schiefergebirge), which are dominated by Palaeozoic terrains (Lecolle 1985; Asch 2005). The isotope analysis of skeleton 1271 is suggestive of an upbringing in Britain, which is interesting as application of Clarke's terminology in relation to grave goods identified this individual as potentially 'Pannonian'.

Other joint disease

Skeleton 903 (Grave 955), a probable female aged upwards of 18 years, has erosive lesions all over the heads of all five metatarsals in both left and right feet (Fig. 5.39). The proximal phalanges are affected to a lesser extent as are the sesamoids. Other joints of this skeleton, of which only the lower half survived, are not involved, but osteophytoses around joint margins and large enthesophytes were observed. These erosive lesions were radiographed to determine their depth and extent. The lesions are

Fig. 5.39 Skeleton 903. Erosive lesions at the joint surfaces of the right metatarsals

bilateral and all the metatarsals are involved, which would appear to rule out gout or hallux valgus. Equally, there is very little osteophytic growth accompanying the lesions, so osteoarthritis or psoriatic arthritis can also be discounted. Rheumatoid arthritis may be considered as a possibility, but since there were no hands or hips to examine, this cannot be confirmed. The fact that the lesions were both marginal and central makes rheumatoid arthritis unlikely. Rheumatoid arthritis would have caused stiffness of the joints, particularly in the mornings, swelling and pain around the affected joints (Gupta 2004). Septic arthritis is also a possibility, but this usually results in joint fusion and is rarely bilateral. In conclusion this is a seronegative osteoarthropathy.

Two individuals had ankylosis of all or part of the sacro-iliac joint. Skeleton 1197 (Grave 1270), a female over 60 years, had bilateral fusion of the sacro-iliac, though other joints throughout the body are devoid of any degeneration. As the spine was available for examination and there was no ossification of the annulus fibrosa, ankylosing spondylitis was discounted as a possible interpretation. The fact that the femora were of distinctly different lengths (11 mm) may have resulted in the anterior-posterior orientated tibial condyles and the thickening observed on the right tibia shaft. Muscle adaptation was observed on the leg and the femoral heads were more superior and laterally orientated. This has possibly caused the sacro-iliac joint to ankylose to support the unusual gait.

Skeleton 1277 (Grave 1345), a male aged 36-45, had complete ankylosis of the right sacro-iliac joint. There was complete fusion of the sacral ala and the auricular surface (Fig. 5.40). The left pelvis was not fused but the auricular surface was degraded with macroporosity and osteophytosis on the superior margin. No vertebrae survived. Further erosive lesions which were observed on the tarsal bones (but not on the metatarsals) correspond with an unidentified seronegative arthropathy (Fig. 5.41).

In summary, the levels of osteoarthritis and degeneration of the joints observed among the individuals at Lankhills was relatively minor, perhaps reflecting a population experiencing low levels of physical demand. No less than 77 females and 109 males at Poundbury had *severe* degenerative joint disease (Molleson 1993, 201, table 51). Indeed, given the number of older individuals in the Lankhills population a higher level would have been expected. Where changes were seen they were mostly in adults in the mature and older age categories. It was not uncommon for individuals in the older age range to have joint surfaces that were completely unaffected by degeneration. The causes of osteoarthritis and joint degeneration are multifactorial, a combination of genetic predisposition, activity levels, diet and age. Age is considered a dominant factor in degeneration of joints but in

Fig. 5.40 Skeleton 1277. Fusion of the sacroiliac joint, the right side is shown

Fig. 5.41 Skeleton 1277. Cortical defects on the tarsals

contrast there are also people known as 'bone formers', whose joints respond to stress by forming bone. All these factors mean that it is impossible to determine that a particular activity is responsible for the pattern and levels of osteoarthritis seen, although there are clear male and female differences suggesting that some activities may be linked to gender.

It should be noted that the bony changes observed by the osteologist do not necessarily give an indication of the pain, swelling and limited use of the joint felt by the individual. The modern clinician diagnoses osteoarthritis on the basis of symptoms and is unable to examine the dry bone changes. The correlation between the severity of bony change observed in an individual and the pain or range/limit of movement felt in life therefore remains uncertain.

Non-specific infection

Non-specific infections include periostitis, osteitis and osteomyelitis. Periostitis refers to a new layer of bone that is laid down under an inflamed periosteum (the fibrous sheath that covers bone in life). It is identified on the surface of dry bone as porous, layered, new bone. When the cortical bone (bone just below the surface) becomes inflamed, the condition is referred to as osteitis, and when a cloaca or sinus is present to allow the drainage of infective material from the marrow cavity, the changes are classified as osteomyelitis. It is not possible to determine, from dry bone, the micro-organism responsible for osteomyelitis, which is why it is classified as non-specific infection. The most common cause of osteomyelitis is secondary infection, which spreads from the primary infection focus to the bone via the bloodstream. It may also result from direct infection of a bone penetrating injury, in which infection enters the bone from the skin surface. Osteomyelitis can be fatal, but it can also be longstanding and heal. Symptoms include fever, pain and immobility.

Periostitis and osteitis may arise not only as a consequence of non-specific infection, but also from other conditions of a metabolic, neoplastic or traumatic nature (Resnick and Niwayama 1995). Diagnosing osteitis in dry bone involves demonstrating the involvement of the cortical bone and thus radiology is required for this. This also applies to osteomyelitis if a sinus is not visible. For the present analysis routine radiography was not undertaken and therefore lesions were classified as periostitis, unless a sinus was identified, in which case osteomyelitis was diagnosed.

Periostitis was observed on one or more bones of 10 males out of 94 (CPR 10.6%), eight females out of 94 (CPR 8.5%) and two adults of undetermined sex out of 32 (CPR 6.3%) with a total adult CPR of 9.1% (20 out of 220 adults; for TPR figures see Table 5.42), and four subadults out of 64 (CPR 6.3%). In common with other archaeological populations the most frequently affected bone at Lankhills is the tibia, probably because its anterior aspect is prone to recurrent mild trauma, being close to the skin's surface. Varicose veins and consequent ulceration of the lower leg causing low-grade inflammation are also a common cause of tibial periostitis among older individuals. This and mild trauma are the most likely explanations for the cases observed here.

In two individuals periostitis was secondary to trauma. Skeleton 683 (Grave 790), a 36-45 year old male, had periosteal new bone associated with a fracture involving the left radius (Fig. 5.25). Periostitis was also present on the head of the left ulna. In skeleton 967 (Grave 1020), a female aged 36-45 years, the fractured fifth sacral vertebra had associated periosteal new bone (Fig 5.42). Skeleton 683 had both active and healed lesions while skeleton 967 had only active ones.

Table 5.43: Non-specific infection rates by sex (TPR)

Bone	*Male*	*%*	*Female*	*%*	*Total*	
Rib	5/806	0.6	4/633	0.6	9/1439	0.6
Pelvis	1/19	5.3	0/28		1/47	2.1
Femur	1/175	0.6	1/161	0.6	2/336	0.6
Tibia	9/168	5.4	7/155	4.5	16/323	5
Fibula	1/131	0.8	1/132	0.8	2/263	0.8
Total	17/1299	1.3	13/1109	1.2	30/2408	1.3

Fig. 5.42 Skeleton 967. Fracture to the sacrum 5th body

Table 5:44: Subadult periostitis

Skeleton number	*Age*	*Part affected*	*Stage of healing*	*Endo/ecto cranial lesions*	*Orbit lesions*	*Other pathology*
74 (Grave 38)	10-14 years	Left and right tibiae, right fibula, left humerus	Striated new bone - active			
404 (Grave 445)	1 month (0-6 m)	8 Ribs, vertebrae	Layered new bone – active	Ectocranial and endocranial capillary-like lesions	Left orbit severe	Profuse reactive bone growth over entire remaining skeleton
1467 (Grave 1464)	12 months (1-3 y)	11 Rib sternal ends, radius, clavicle, humerus				Skeleton in general porosity at epiphyses and muscle insertion sites
1565 (Grave 1567)	3-7 years	Left tibia	Striated new bone – healed			Left tibia slightly more bowed medio-laterally than right

Four subadults had periostitis (Tables 5.44 and 5.45), affecting 12 elements. Endocranial and ectocranial lesions were present on subadult 404 and one orbit had severe lesions which were not cribra orbitalia, and are as yet unidentified (Fig. 5.43). The subadult periostitis appears to be more commonly related to a systemic infection (?scurvy) rather than an isolated one, except in skeleton 1565 (Grave 1567) where only the left tibia is affected.

There are few data on prevalence of periostitis in other contemporary populations. Roberts and Cox (2003, 126-7) provided data for only two sites. At Kempston, Bedfordshire (Boylston and Roberts 2000) 25% of tibiae (30 of 120) and 12.2% of fibulae (14 of 115) were affected. At Kingsholm, Gloucester (Roberts 1989) 24.2% (15 of 62 tibiae were affected and 17.2% of fibulae were affected. Wells (1982, 181) noted that, with the exception of periodontal disease affecting the teeth, there was very little evidence for infection at Cirencester. A total of 26 individuals out of 362 (CPR 7.2%; 18 males, 7 females, 1 unsexed) had periostitis involving 53 bones (36 tibiae, 17 fibulae (ibid.).

Fig. 5.43 Skeleton 404. The left orbit has profuse densely organised bone growth which is not the porosity of cribra orbitalia

Only two skeletons, of a 13-17 year old (1902, Grave 1900) and a mature adult male aged 36-45 years (862, Grave 930), were confirmed as having osteomyelitis (Fig. 5. 44). Skeleton 1902 had proliferative new bone which penetrated the cortex involving the right distal humerus. In children the cortical bone is thicker and the cancellous bone more dense, presenting more resistance to metaphyseal subperiosteal abscess formation (Aufderheide and Rodriguez-Martin 1998, 173). Skeleton 1902 did not have a visible cloaca such as is usually required for diagnosis, but given the young age of the individual this may not be unusual. A different

Table 5.45: Subadult periostitis (TPR)

Bone	*TPR*	*%*
Clavicle	1/22	4.6
Femur	0/70	
Fibula	1/49	2
Humerus	2/58	3.5
Radius	1/49	2
Tibia	3/69	4.3
Ulna	0/48	
Ribs	19/323	5.9
Total	27/688	3.9

Fig. 5.44 Skeleton 1902. Osteomyelitis of the distal humerus possible scurvy

Fig. 5.45 Skeleton 862. Radiograph showing healed fracture of left tibia

diagnosis, of osteitis, is proposed. There were no obvious changes that associated this infection with trauma. This skeleton also had periostitis involving the proximal right ulna, proximal left radius and the posterior aspect of the distal right femur (these elements have been counted above). Skeleton 862 had two cloacae (confirmed by radiograph) associated with a healed oblique fracture of the left tibia (Fig. 5.45). A single possible case was identified at Cirencester, in adult female inhumation 146 (Wells 1982, 182).

Sinusitis

Sinusitis is characterised by new bone deposits in the maxillary sinus (Fig. 5.46). It is difficult to calculate the true prevalence rate of nasal or sinus infections: unless techniques such as endoscopy or radiography are used it is only when damage and breaking of the skull has occurred that these areas can be inspected and changes recorded. Factors that can lead to the development of sinusitis include smoke, environmental pollution, dust allergies and upper respiratory tract infections (Aufderheide and Rodriguez-Martin 1998; Roberts and Manchester 2005, 175-6). Considerable air pollution, such as could be caused by working with fire (smithing, cooking, firing kilns), or by dust or animal hair, could be a major contributing factor. Congenital predisposition for sinusitis can also play a role, as can pregnancy, malnutrition and a wide variety of infections. The condition is classed as chronic sinusitis (when seen on bone) if it lasts more than three months. Symptoms can include facial pain, fever and generalised malady. There was some evidence at Lankhills that the condition was linked to problems with dental health.

The following results were observed by the authors and by Karen Bernofsky in the course of the latter's thesis research into sinusitis. Some sinuses were only observable using an endoscope.

Sinusitis was observed in a total of 26 individuals (CPR 9.2%, Table 5.46). The lesions varied in form from a single spicule within the maxillary cavity, to copious amounts of new bone growth. Eighteen left and 24 right maxillae had sinusitis; of the latter 16 were bilateral. The TPR rates for sinusitis were 22.5% for the left and 30% for the right (18/80 and 24/80 observable maxillary sinuses respectively). In several cases the sinusitis was most likely caused by dental disease, where the infection from an abscess or carious cavity had found its way into the cavity. Five individuals also have rib lesions on the visceral surfaces, three healed and two active, which may suggest a respiratory system infection.

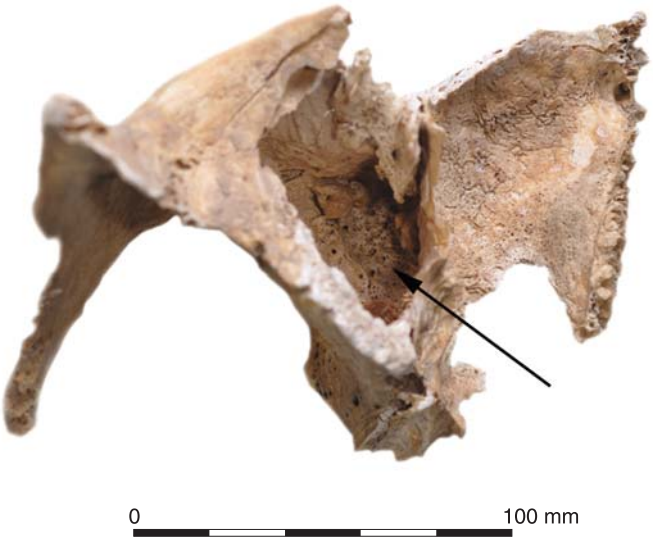


Fig. 5.46 Skeleton 1103. Spicules and spidery new bone deposits indicative of sinusitits

In their summary of osteological evidence from Roman Britain Roberts and Cox (2003, 112) reported a slight increase in frequency of sinusitis to 0.6% (of 5716 individuals, or 0.9% or 32 of 3260 sexed adults) compared to none in the Iron Age (but 0.7% in the Bronze Age). The Roman instances affected 36 individuals from 9 sites, with a CPR of 1.8%. The results from Lankhills appear high when compared with other data, but this is almost certainly because of the special attention that was paid to recording sinusitis in this assemblage. At Cirencester there were seven cases out of 362 (CPR 1.9%; four males, three females) (Wells 1982, 181). At Butt Road 10 out of 575 individuals were affected (CPR 1.7%; five males, five females) (Pinter-Bellows 1993, 79).

Skull lesions

Inflammation on the endocranial surface may arise in response to a number of conditions, including chronic meningitis, trauma, anaemia, neoplasia, scurvy, rickets, venous drainage disorders and tuberculosis (Lewis 2004). The following descriptions of endocranial and ectocranial lesions are not diagnostic of a particular disorder.

Skeleton 1857 (Grave 1859), 5-10 months old at death, had woven new bone deposited within the central portion of the endocranial surface of the occipital bone (Fig. 5.47). The lesion covered an area measuring 40 mm x 30 mm. New bone deposition had caused thickening of the surface. Some smoothing of the central part of the lesion suggested that healing may have been occurring. In addition, the ectocranial surface of the left and right frontal bones was overlaid with a thin layer of fine grained grey active new bone. Similar lesions are present on the ectocranial surface of the squamous part of the occiput, just below the lambda. Here the bone appeared as a clearly separate deposit of woven bone overlying the ectocranial surface. Plaques of thin new bone were also present on fragments of parietal bone with some reduction in porosity in places, suggesting some healing.

Skeleton 1098 (Grave 1130), 5-12 months of age at death, had web-like porous bone in the central part of the endocranial surface of the occipital bone, corresponding to Lewis's (2004) lesion type 1, the aetiology of which is unknown. Frontal, parietal and occipital cranial fragments had ectocranial lesions and layered fibrous new bone growth. A small amount extended to other parts of the skeleton which had lost all density (Fig. 5.48).

Rib lesions

One of the most common lesions associated with pulmonary tuberculosis is new bone formation on the inner (visceral) surface of the ribs. Periostitis involving the visceral surfaces of ribs was observed on six skeletons from Lankhills (skeletons 212, 1209, 1361, 1393, 1532 and 1852 (Graves 210, 1285, 1437, 1394, 1528 and 1790 respectively)). There were three men and three women, and no less than three were aged upwards of 60 years. In three of these cases the periostitis is associated with a fracture (1209, 1361, 1393) and in one (212) with a fracture and soft tissue damage. The periostitis in these instances is unlikely to be from pulmonary disease and the fractures are included in the appropriate section.

Table 5.46: Individuals affected by sinusitis (n=26)

Skeleton number	*Sex*	*Age*	*Left sinus*	*Right sinus*	*Rib lesion*
50	Female	45+ y	Present	Present	
61	Female	26-35 y	Present	Present	
212	?Female	60+ y		Present	Present
281	Male	36-45 y	Present	Present	
476	Female	36-45 y		Present	
522	Male	60+ y	Present	Present	
559	Female	45+ y	Present	Present	
682	Male	45+ y	Present	Present	
717	Male	Adult	Present		
792	Female	Adult		Present	
938	Male	36-45 y	Present	Present	
956	?Male	45+ y	Present	Present	
967	Female	36-45 y	Present	Present	
1022	Male	45+ y		Present	
1103	Female	45+ y	Present	Present	
1137	?Male	26-35 y	Present	Present	
1156	Female	45+ y		Present	
1197	Female	60+ y		Present	
1214	Female	36-45 y	Present	Present	
1219	Male	45+ y		Present	
1258	Male	60+ y		Present	Present
1361	Female	Adult	Present	Present	Present
1532	?Female	26-35 y	Present	Present	Present
1637	Female	36-45 y	Present	Present	
1640	Male	45+ y	Present	Present	
1852	Male	60+ y	Present		Present

The changes in the remaining two skeletons (1532 and 1852) have been classified as non-specific pulmonary disease because on their own they are not enough to allow a diagnosis of pulmonary tuberculosis (Santos and Roberts 2001). Skeleton 1532 had both healed and active lesions while those affecting skeleton 1852 were active. Tuberculosis may be diagnosed if the lesions are accompanied by spinal collapse and deformity, but this was not seen in the Lankhills skeletons (Fig. 5.49).

In the Roberts and Cox sample there was an increase to 0.8% in the Roman period (from 0.3% in the preceding Iron Age) of inflammatory changes to the ribs (45 individuals in total or 36 (1%) of 3620 sexed adults). Examples were seen at Cirencester South (Wells 1982, 181; Manchester and Roberts

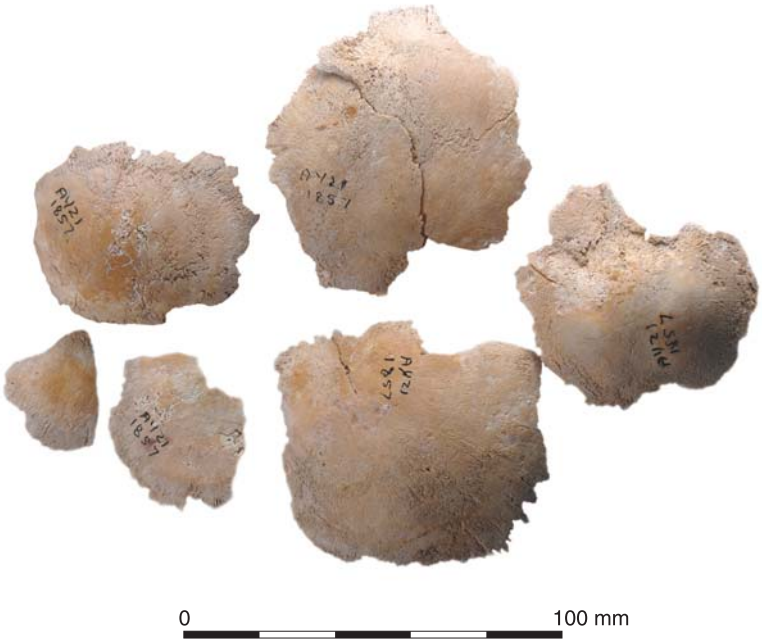


Fig. 5.47 Skeleton 1857. Ectocranial skull lesions

Fig. 5.48 Skeleton 1098. Porous new bone layer on cranium

Fig. 5.49 Skeleton 1532. Rib lesions

1986), while sinusitis was present at Butt Road, Colchester (Pinter-Bellows 1993, 79). At Cirencester eight out of 362 individuals were affected (CPR 2.2%; two males, three females, three subadults). The presence of rib lesions along with sinusitis perhaps suggests that internal living environments were polluted by smoke, or it could possibly reflect a climatic deterioration. Alternatively it may indicate that people were living in close contact with one another and transmitting respiratory infections such as pneumonia (Roberts and Cox 2003, 112, table 3.1-3.2).

Capasso (quoted in Roberts and Cox 2003, 112) reported on the possibility of the impact of indoor pollution on skeletons from Herculaneum in Italy dated to AD 79. He noted the presence of inflammatory lesions of the ribs and found an 11.6% frequency (no numbers given). Animal and vegetable oils were, he says probably burnt in terracotta lamps, but cooking techniques and burning fuel may also have predisposed these people to respiratory problems (Capasso 2000).

Skeleton 1061 (Grave 1944), a child aged 6-7 years, had diffuse, fibrous periostitis involving the left and right ulnae (anterior proximal shaft just inferior to the articular surface), left ribs (predominantly on the anterior shaft adjacent to the head) and the left and right femora (posterior aspect to the side of the linea aspera). There was no involvement of the vertebral column. This individual also had cribra orbitalia (in the left orbit only) and enthesophytes and cortical defects on the humeri and femora. A diagnosis of tuberculosis is favoured here because of new bone formation affecting the ribs. These formations occur more frequently in pulmonary tuberculosis than any other pulmonary disease (Matos and Santos 2006). This suggestion is supported by the occurrence of the diffuse periostitis of the long bones, which in subadults has been identified as related to tuberculosis (Santos and Roberts 2001). Alternative diagnoses include respiratory infection such as bronchitis and pneumonia; heart failure and carcinomas have also been found to produce rib lesions (ibid.). Mary Lewis (pers. comm.) suggests that the Lankhills lesions are similar to those found on some of the subadults from Poundbury which are now believed to have been caused by tuberculosis.

Tuberculosis is a disease of overcrowding. It usually has its onset in childhood. Infected children can become infected adults, and often acquire their infection from the adult population. Tuberculosis is a chronic infectious disease caused in humans by *Mycobacterium tuberculosis.* It can infect the lungs, lymph nodes, skin, intestines and in some cases the joints. Once infection is established, the primary lesion may lie dormant after a brief inflammatory response, and may only become active later in life (ibid.). In the skeleton, tubercular lesions (granulomata) display minimal bone formation and marked osteoporosis in the affected limb. The femur and tibia are the long bones most commonly affected and new bone formation on the shafts of the long bones has also been identified (Santos and Roberts 2001). Skeletal tuberculosis only occurs in around 3-5% of people with the disease (Resnick 1995, 2462), but this figure may be higher for subadults.

Poor housing and nutrition, close contact with infected animals and humans, poverty, climate and occupation have all been cited as causative factors (Lewis 2007, 148). Accommodation of humans and

animals in the same building allows transmission of zoonotic disease in addition to attracting parasitic vectors of disease and initiating allergies. Zoonotic diseases are not particularly frequent in the Roman period but we do see the first published cases of tuberculosis at this time. It is contracted via the lungs from other humans or animals, or through the intestinal tract (from infected meat and milk); both are possible at this time and imported cattle may have helped spread the disease from the continent. Concentrations of people in large settlements and at relatively high population densities would have allowed droplet spread of this infection. Roberts and Cox (2003, 118-119, table 3.8) record 12 cases out of 5716 (0.2%) for the Roman period and most are males. One example comes from Cirencester (Wells 1982, 181) and two come from Poundbury (Molleson 1993, 190). A further two males and one female skeleton from an early Romano-British site in Essex had tuberculosis (J McKinley pers. comm.).

Metabolic conditions

The basic staple diet was bread (less likely porridge; Cool 2006, 74-6) supplemented by meat, fish, fruit and vegetables, which for many would have been both adequate and suitably balanced to prevent dietary deficiency diseases (Roberts and Cox 2003, 140). However, metabolic diseases are seen in the Roman period, indicating that for some their diet was less than adequate.

Rickets

Rickets are the skeletal changes resulting from a deficiency of vitamin D (a prohormone rather than a true 'vitamin') which is essential for proper mineralisation of newly-formed bone (Brickley *et al*. 2006). It is mainly produced internally from ultraviolet light reacting with 7-dehydrocholesterol (Lewis 2007, 119). Some foodstuffs contain vitamin D which contributes to maintenance of the correct level, but in humans the level is maintained primarily by exposure to sunlight. Vitamin D levels affect the absorption and mobilisation of calcium and phosphorous. The uncalcified osteoid, laid down on the growth plate during the remodelling process, causes bones to 'soften' and they become susceptible to bowing deformities. The weight of the body on limbs used for mobility (femur, tibia and fibula in a walking individual, and the humerus, radius and ulna in a crawling child) causes them to become bent medio-laterally or anterior-posteriorly. After the first six months of life, existing stores of vitamin D are depleted and thus exposure to sunlight is needed to make up dietary deficiency.

Rickets may be diagnosed in archaeological skeletons based on the manifestations described by Ortner and Mays (1998) and the additional features observed by Brickley *et al*. (2006, 132). A typical presentation would involve bowing deformities of the lower limbs and occasionally the upper limbs. They would be bowed medio-laterally or anterior-posteriorly. The early changes of rickets are subtle,

Fig. 5.50 Skeleton 977. Diffuse porosity and new bone growth on the entire infant skeleton

comprising expansion and fraying of the rib ends and distal long bones, the characteristic bowing occurring when weight-bearing begins. The radiographic features are coarsening and diffuse osteopenia of the trabecular structure and cortical tunnelling and, where bowing occurs, thickened cortical bone on the concave side of the deformity.

Changes believed to be associated with vitamin D deficiency were observed on five skeletons, two adults (one male, one female) and three subadults. Skeleton 977 (Grave 980), aged 4 months-2 years, (ie at a stage when most children are at least crawling and a few are walking or standing for long periods) may have had rickets with anaemia (Fig. 5.50). There was profuse widening of the cortex of all the extant skeletal elements to produce porous, light-weight bones. There was also 'hair-on-end' (porotic hyperostosis) bone across the ecto-cranium (frontal, parietal, occipital and temporal). The endocranial surface was not affected. The mandible and long bones did not survive for examination. The left orbit had severe grade 5 cribra orbitalia. The bones were examined radiologically, but were too thin and porous to produce a viable result. An alternative diagnosis of ICH (infantile cortical hyperostosis) was considered as a possibility, but none of the diagnostic bones were present.

Skeleton 1034 (Grave 1125), 9-12 months old, had the characteristic bowing of femora which were slightly flared at the distal end (Fig. 5.51). The ribs at the medial/sternal end were wide, fat and oval in shape. The changes were subtle, though considered out of the range for normal development and diagnostic of rickets.

Skeleton 20 (Grave 18), a 13-17 year old female, exhibited signs of possible childhood rickets. The left tibia bowed medio-laterally more than the right. The sacrum curved excessively to become horizontal at the level of sacral bodies 4 and 5, thus creating a bend of 90 degrees (Fig. 5.52). The pelvis and sacrum are known to be affected by rickets, especially when an individual spends long periods of time seated, which would occur if they were deficient in vitamin D before they could walk. In this instance it is possible that the deformity was sufficient to obstruct the birth canal. This individual also had cribra orbitalia, cribra femora and dental enamel hypoplasia.

Two adults, skeletons 1512 (Grave 1510) and 451 (Grave 590) displayed evidence for limb deformity, which may have been caused by rickets in childhood. Skeleton 1512, a 26-35 year old female, had bowed radii, ulnae, humeri, femora and tibiae. The

Fig. 5.51 Skeleton 1034. Possible juvenile rickets represented by anterior posterior bowing of the femora

Fig. 5.52 Skeleton 20. Extreme angulation of the fifth sacral body possibly as a result of childhood rickets

bones were bowed in either the medio-lateral or anterior-posterior plane to varying degrees. The upper limbs were especially bowed. The proximal and distal epiphyses of the tibiae were slightly flared, which is another change seen in rickets. Skeleton 451, a male 36-45 years old, had tibiae that were slightly bowed in the anterior-posterior plane.

Scurvy

The development of scurvy is linked to a deficiency of vitamin C (ascorbic acid) which can be obtained from a wide range of foods, in particular fruit and vegetables. However, there are many circumstances, particularly among past populations, which may have resulted in this deficiency. Although many of the appropriate food types can be stored, levels of vitamin C will decrease rapidly if not replenished. Scurvy is more prevalent in regions with cooler climates and is generally associated with times of hardship and famine (Brickley 2000, 185).

Cases of scurvy have rarely been recorded in archaeological material (Brickley 2000), probably partly due to the ephemeral nature of many of the associated skeletal changes, but also because in the past it has rarely been considered as a differential diagnosis during the study of human bone. Two examples of scurvy (0.03%) are mentioned by Roberts and Cox (2003, 142) in their discussion of the Roman period, but no details are given. These low figures may suggest that adequate levels of vitamin C were being ingested at this time or that the condition was not considered as a possible diagnosis in recorded assemblages.

Vitamin C is important for the formation of connective tissue. Lack of vitamin C increases susceptibility to haemorrhage during normal movement, such as chewing or eye motion. In infants and small children undergoing rapid growth a bout of scurvy will result in defective connective tissues and blood vessels, making them particularly vulnerable to haemorrhage. Haemorrhage causes an inflammatory response in bone, particularly at sites where connective tissues lie close to bone. Rapid growth of the subadult skeleton means that skeletal changes associated with scurvy are visible on subadult bone far sooner than they are on adult bone. Experiments have shown that healthy adults saturated with vitamin C can take up to six months to develop the first signs of scurvy (Maat 2004). Scurvy most commonly occurs in infants between 6 months and 2 years of age (Lewis 2007, 127). Clinical symptoms in children include irritability, painful legs and anaemia (see Stuart-Macadam 1989 for a detailed discussion).

Many of the skeletal changes relating to scurvy are the result of an absence or reduction in the amount of bone matrix formation, as vitamin C is essential for the formation of collagen, hence bone changes will be clearer where rapid bone formation was taking place, and are consequently far more marked in infants than adults. However, many changes affect soft tissues and so are absent from the archaeological record (Brickley 2000, 185).

Scurvy is diagnosed in dry bone by the presence of non-specific bone inflammation, increased porosity and/or new bone formation (the bony reaction to haemorrhage), ante-mortem tooth loss, periodontal disease, haemorrhage into joints and radiopaque lines on radiographs of long bones (Roberts and Manchester 2005, 235-7). In particular, increased porosity and/or new bone formation involving the skull, namely the sphenoid, orbits, zygomatic bones, palate, alveolar sockets and coronoid processes of the mandible (Fig. 5.53), are

Fig. 5.53 Skeleton 8. Porosity on the maxilla and mandible possibly indicative of scurvy

Table 5.47: Skeletons with lesions that may be symptomatic of scurvy

Skeleton number	*Age*	*Cranial lesions*	*Post-cranial lesions*
8 (Grave 6)	10-12 months	Porosity on alveolar bone in region of deciduous molar. Increased porosity on the whole superior and inferior surfaces of basi-sphenoid external surfaces of both maxillae and hard palate. Squamous part of temporal bone posterior to auditory meatus shows the most obvious changes, with an area 29 mm x 25 mm showing increased porosity and grey new bone growth on the ectocranial surface. The endocranial surface shows more sieve-like lesions.	Anterior-posterior bowing of the left and right tibia shafts
221 (Grave 231)	12 months	Left and right orbit layered new bone growth across the upper part of the orbit with some minor porosity. Left and right greater wing of sphenoid on outer surface layered new bone growth minor porosity. Maxilla alveolar sockets thin and porous. Occipital bone lateral margins on left and right side small patch 13 x 10 mm hair-on-end formation of bone. Very occasional minor porosity on ecto-parietals. Endocranial increased vascularity.	
829 (Grave 890)	6-7 years	Endocranial lesions (new bone) over occipital protuberance. Parietal layered new bone and capillary-like lesions on frontal bone. Cribra-like lesion in orbits. Microporosity on alveolar bone in region of deciduous molar, mandibular ramus porosity, wing greater sphenoid porosity.	
1083 (Grave 1370)	6-12 years	Endo- and ectocranial lesions. Right parietal ectocranial macroporosity particularly around the sutures for frontal and occipital, does cross suture lines. continues onto the occipital at lambda area. Right temporal bone has lost some surface post mortem, so tentatively appears to also have the macroporous lesions on the ectocranial surface. Pars basiliaris also has macro and microporosity ectocranially. Endocranially capillar-like lesions are observed on right parietal and occipital near lambda and squamous temporal. These are small islands of new bone growth irregularly located. Pars basilaris has microporosity on the endocranial surface	
1314 (Grave 1317)	Neonate	Endocranially frontal bone porous new bone growth. Orbit new bone layer	

typical in this disease (Ortner *et al.* 1999; Ortner and Erickson 1997) although some are similar to those produced by infections and anaemias (Brickley 2000, 185).

Five subadult skeletons at Lankhills exhibited skeletal changes that *may* have been caused by scurvy. These are detailed in Table 5.47.

Cribra orbitalia

Cribra orbitalia is identified on dry bone as thinning of the compact bone of the orbital roof (the eye socket) in combination with increased porosity. These lesions are believed to reflect the presence of iron deficiency anaemia (Stuart Macadam 1991). Iron deficiency may arise as a result of a number of factors including a lack of iron in the diet, the inability to absorb the iron in the diet (for example a lack of vitamin C makes it harder to absorb iron), parasitic infestation in the gut, malaria, and lead poisoning (ibid.). For the Lankhills assemblage the presence or absence of cribra orbitalia was scored employing the criteria defined by Stuart Macadam (ibid.).

Fig. 5.54 Skeleton 829. Cribra orbitalia

A total of 26 adults (CPR 12.1%) had lesions consistent with cribra orbitalia (Fig. 5.54) in 21 left orbits and 18 right orbits (TPR 17.3% 21/121 and 15.1% 18/119). Subadults with cribra orbitalia numbered 14 (CPR 21.9%) and between them they had 14 left orbits (TPR 73.7%; 14/19) and 10 right orbits (TPR 58.8%; 10/17) which were affected. Adult males were less affected than females, having a true prevalence rate of 14%, (9/64) compared with a true prevalence rate of 33 % (18/53) for females (Tables 5.48-50)..

At Poundbury the lesions were observed in 29% of skulls (TPR 27.7% of females and 24.4% of males) (Stuart-Macadam 1991). At Butt Road, 9.9% of individuals with orbits had lesions (26 people) and nearly half of these were subadults (11). At Cirencester (Wells 1982, 186) the true prevalence rate for males was 19.9%, for females 13.9% and for subadults 35.1%.

Roberts and Cox (2003, 140, table 3.17) record a total of 460 individuals with cribra orbitalia in their Romano-British sample (8.05% of the total burials, or 305 of 3620 sexed adults – 8.4%. This is an increase from the Iron Age rate of 5.4%. It is unlikely that this represents low iron intake, as meat played a significant part in the diet for many at this time. It could be indicating that high pathogen loads induced this condition, or even that lead ingestion was responsible.

Table 5.48: Occurrence of cribra orbitalia

	Adults			Subadults		
Category (Stuart-Macadam 1991, 109)	*Left orbit*	*Right orbit*	*Total*	*Left orbit*	*Right orbit*	*Total*
1	5	4	9	2	1	3
2	3	4	7	2	2	4
3	8	6	14	7	5	12
4	3	2	5	0	0	0
5	1	0	1	3	2	5
Total	20	16	36	14	10	24
% of observable orbits	15.5%	12.8%		73.7%	58.8%	

Table 5.49: Cribra orbitalia in subadult individuals

Category (Stuart-Macadam 1991, 109)	*Left orbit*	*Right orbit*	*Total*
1	2	1	3
2	2	2	4
3	7	5	12
4	0	0	0
5	3	2	5
Total	14	10	24
% of observable orbits	73.7%	58.8%	

Table 5.50: Occurrence of cribra orbitalia by age category and number of individuals

Age category	*Frequency*	*Percentage within age category (TPR)*
Infant	4/23	17.4%
Child	6/21	28.6%
Older child	0/8	0%
Adolescent	4/9	44.4%
Young adult	2/13	15.3%
Prime adult	6/28	21.4%
Mature adult	7/39	18%
Older adult	6/48	12.5%
Adult	6/72	8.3%
Total	41/284	

Neoplastic disease

Button or ivory osteoma

This is a benign tumour which most commonly occurs on the outer table of the skull, usually on the frontal and parietal bones, although it may also appear on other bones of the skull vault to a lesser extent. It usually presents as mature lamellar bone, circular in shape, raised above the outer table of the cranium and measuring no more than 20 mm across (Ortner and Putschar 1981, 368).

Five skeletons (61 (Grave 58), 240 (Grave 237), 435 (Grave 530), 1201 (Grave 1275) and 1209 (Grave 1285)) had six button osteomas. Three are on the frontal bone and the other three on the left parietals (skeletons 61, 240, 1201). Skeleton 435 had two osteomas on the frontal bone while skeleton 1209 had one (Table 5.51).

Roberts and Cox (2003, 114) reported 32 individuals with button osteomas for the whole of the Roman period (1.14% compared with 0.3% in the Iron Age). There were four examples respectively from Cirencester (Wells 1982, 183) and Butt Road (Pinter-Bellows 1993, 87).

Table 5.51: Prevalence of button osteomas in the late Roman period

Site name	*Total no*	*.Affected*	*M*	*F*	*?*	*J*	*CPR%*
Lankhills	284	5	2	3	0	0	1.8%
Cirencester	362	4	3	1	0	0	1.1%
Butt Road	575	4	2	2	0	0	0.5%
Total	1221	11	7	6	0	0	0.9%

Other pathology

Hyperostosis frontalis interna

Hyperostosis of the endocranial surface of the frontal bone of the skull can occur during and just after pregnancy, apparently as a result of altered pituitary hormone secretion. Prominent thickening and formation of nodules of new bone on the frontal bone also occurs in post-menopausal females (Roberts and Manchester 1995, 182, fig. 8.11). It has been suggested elsewhere that these changes are probably also the result of altered pituitary gland secretion of hormones and that they almost always only occur in ageing females (Ortner and Putschar 1981, 294). Henschen (1949, 85) estimated that the female to male ratio was close to 100:1. It is rarely reported in archaeological populations.

Five skeletons at Lankhills had this condition: four were female, one aged upwards of 45 years (skeleton 454, Grave 585), one aged upwards of 60 years (skeleton 1173, Grave 1240) and the others aged only as 'adult' (skeletons 562 (Grave 620) and 1094 (Grave 1140)); the fifth skeleton (986, Grave 1050) was of a probable male aged upwards of 18 years.

Fine pitting on ectocranial surface

Six adult individuals exhibited 'orange peel effect' fine pitting/porosity and a lumpy contour on the parietal and occipital bones of the skull. This may represent healed or minor porotic hyperostosis, but may also be indicative of a scalp infection or the long-term presence of head lice. Three were males and three were females, two were prime adults (skeletons 917 (Grave 1035) and 1532 (Grave 1528)) and four were mature adults (skeletons 612, 702, 1134 and 1289 (Graves 630, 705, 1190 and 1329 respectively)).

Thickened cranium

Skeleton 1913 (Grave 1915), an adult male aged upwards of 45 years, had a thickened cranium. This is a symptom found in Paget's disease (see above), but alone is not diagnostic. Thickening of the skull can occur as part of the ageing process.

Ossified cartilage

There were 11 males and three females (25, 55, 212, 281, 451, 554, 616, 683, 917, 1119, 1209, 1219, 1393 and 1852 (Graves 22, 52, 210, 263, 590, 600, 690, 790, 1035, 1175, 1285, 1295, 1394 and 1790 respectively)) with ossified thyroid cartilage and two males (skeletons 25 (Grave 22) and 1209 (Grave 1285)) with ossified cricoid cartilage (the ring-shaped cartilage at the lower end of the larynx). The rib costal cartilage was also frequently ossified in these individuals. Ossification occurs towards the end of the second decade and there is a gradual increase with advancing age. Although no direct correlation can be demonstrated (Scheuer and Black 2000), all the individuals here were adults in at least their fourth decade.

Cribra femora

This lesion, most commonly seen on subadults, is located on the anterior of the femoral neck just

Fig. 5.55 Skeleton 20. Bilateral cribra femora, anterior porosity inferior to the femoral head

inferior to the head. It is very similar to cribra orbitalia in appearance. It has been commonly reported in European samples, and an attempt has been made to demonstrate a link between cribra orbitalia, cribra femora and cribra humeri (Miquel-Feuchet *et al.* 1999). It is suggested that cribra femora is due to a deficiency of magnesium which is needed for cartilage growth (ibid.). This lesion may be a result of malnutrition, hence the link to cribra orbitalia, which can be indicative of iron deficiency.

Cribra femora was observed on three individuals at Lankhills (skeletons 20 (Grave 18, Fig. 5.55), 507 (Grave 545) and 1114 (Grave 1170)). The first two of these were adolescents (13-17 years of age) and the third was a female 26-35 years old. Only skeleton 20 also had cribra orbitalia; this individual possibly also had childhood rickets which suggests generalised malnutrition. Skeleton 507 had endocranial lesions and skeleton 1114 had a lytic lesion on the right distal humeral epiphysis.

Dental health

Examination of dental health and rates of dental disease can provide some evidence for diet. Poor dental health is in part related to poor dental hygiene but is most likely to be associated with the consumption of carbohydrates, and particularly sucrose. During the Roman period honey and sapa were used as sweeteners, fruits containing sucrose were eaten and there is also evidence of imports of sugar-containing foods (Moore and Corbett 1973, 141) such as figs, dates and grapes from the Continent. Several classical texts refer to cleaning of the oral cavity and toothpicks are frequently mentioned. Although there are no examples of fillings, people obviously did have carious teeth and there were inhalation recommendations (such as henbane) to rid the teeth of worms thought to cause cavities.

Some 646 individuals of 5716 in the total Romano-British sample recorded by Roberts and Cox (2003) have some evidence of dental disease (11.3%, or 367 – 10.1% of 3620 sexed adults) which is an increase from the previous Iron Age of 7.5% (Roberts and Cox 2003, 130-1, tables 3.10-11).

A total of 4341 teeth from 232 skeletons survived at Lankhills: 1764 from 90 females, 1665 from 88 males, 202 from 8 unsexed adults and 710 from 46 subadults.

Dental caries

Caries are cavities that result from the demineralisation of teeth when they are attacked by acids that develop when bacteria ferment food sugars, especially sucrose. Caries affected 83 adult dentitions (CPR 37.7%), or 214 out of 3631 permanent teeth (TPR 5.9%) that were examined. The TPR for 32 males was 4.7% (79/1665 teeth) compared to 7.5% for 49 females (132/1764 teeth). The TPR for two unsexed adults was 1.5% (3/202 teeth). Five subadults, all with deciduous teeth, had carious lesions: 12 out of 710 (TPR 1.7%) erupted deciduous teeth were involved.

TPR rates observed elsewhere were 15.8% at Poundbury, 5.1% (167/3251 teeth; 55 males, 26 females) at Cirencester South, 4.8% at Cirencester North (16/331 teeth) and 3.9% at Butt Road (217/3277 teeth), while the overall rate for 29 Romano-British sites (Roberts and Cox 2003, 131, table 3.10) was 7.5% (2179 of 29,247 teeth). The caries rate at Poundbury was particularly high (Molleson 1993, 183) and it was suggested that this was in part related to the presence of a relatively high proportion of older adults in the group. There was no difference in male and female rates, in contrast to the situation observed at Lankhills where the rate was rather higher in females (see above).

Dental calculus

Calculus is a build-up of mineralised dental plaque, which can result from a high protein diet and poor dental hygiene. It was observed on 63 adult dentitions (CPR 28.6%), or 1645 out of 3429 permanent teeth (TPR 48%). Calculus deposits were heavy on 123 teeth. There was a marked difference between males and females. A total of 29 males had a TPR of 28.7% (477/1665 teeth) compared to 34 females with a TPR of 66.2% (1168/1764 teeth).

Calculus is seen in 481 individuals (8.4% of 5716), or in 405 sexed adults of 3620 (11.2%) in Roberts and Cox's (2003) sample and was more common than in the Iron Age. In terms of absolute frequency for five sites where data are available, 43.4% of 3923 teeth (1702) had calculus. This strongly suggests either that people were not cleaning their teeth or they were consuming a high protein diet, or both. Some people today have to undergo regular scaling of plaque from their teeth because their oral chemistry makes them prone to plaque build-up. At Cirencester South 104 out of 362 individuals (CPR 28.7%) had calculus (Roberts and Cox 2003, table 3.11).

Skeleton 522 (Grave 570) had extreme deposits of calculus on the upper left third molar, extending 6 mm from the buccal side of the tooth. A periapical granuloma with external drain in the region of the upper left first premolar may have caused pain and led to some reluctance to chew on that side. Skeleton 1852 (Grave 1790) had calculus on the occlusal surfaces of teeth from the right side, suggesting a lack of mastication on the right side of the mouth prior to death, which was almost certainly related to the presence of a large abscess cavity on the right maxilla (Fig. 5.56). The dentition of skeleton 1640 (Grave 1638) had a comparable build up of calculus (Fig. 5.57) and an associated abscess. Calculus can obscure other dental conditions, thereby biasing observations. Further bias can occur because calculus tends to drop off the denti-

Fig. 5.56 (above) Skeleton 1852

Fig. 5.57 (left) Skeleton 1640. Heavy calculus deposit

tion. It may also prevent caries from occurring (Waldron 2001, 127). The overall rate of calculus for the Roman period (Roberts and Cox 2003) per individual was 8.4%. TPR data (above) give a figure of 43.4% of teeth, a rate similar to that observed at Lankhills.

Two adolescent skeletons (skeletons 20 (Grave 18) and 74 (Grave 38)) with adult teeth had calculus, of which skeleton 20 had two teeth with heavy calculus deposits. A child aged approximately 5 years, disarticulated skeleton 2064, had flecks of calculus on eight teeth.

Periapical cavities

These are identified as openings or holes in the periapical bone of the mandible or maxilla at the apex of the tooth root. They arise as a result of inflammation of the dental pulp which can occur as a result of trauma, caries or attrition. Depending on severity, these cavities may contain granulation tissue (a 'granuloma'), a fluid filled sac (a 'periapical cyst') or a pus-filled sac (an 'abscess'). Granulomas and periapical cysts are usually asymptomatic. Abscesses, however, may result in a persistent fever, a general feeling of being unwell and, when they burst and discharge their contents, halitosis. Acute abscesses may lead to osteomyelitis (bone infection) which in turn may be fatal causing, for example, septicaemia (Roberts and Manchester 2005, 133).

Forty-five periapical cavities were observed from 27 adult individuals (CPR 12.3%), comprising 32 granulomas (1.1% of all skeletons with surviving tooth sockets), nine abscesses (0.3% of all skeletons with surviving tooth sockets) and four cysts (0.1% of all skeletons with surviving tooth sockets). At Butt Road (Pinter-Bellows 1993, 84) 13% of individuals had an abscess (0.7% per tooth), and at Cirencester 1.2% of erupted tooth positions had an abscess/granuloma (Wells 1982, 149), affecting 37 individuals. This is the same rate as at Lankhills. A TPR of 3.9% for 29 sites is noted by Roberts and Cox (2003) and Freeth (1999) recorded a TPR of 1.1% for females and 1.4% for males from three Roman cemetery populations.

A single subadult (skeleton 113 (Grave 111), aged 9-13) had an apical cyst involving the periapical bone around the upper right second deciduous molar.

Periodontal disease and ante-mortem tooth loss (AMTL)

Inflammation of the soft tissues of the jaw (gingivitis, or gum disease) subsequently transfers to the bone (periodontitis). The resulting resorption of bone can result in ante-mortem tooth loss as the roots are exposed. Ante-mortem tooth loss may also result from abscess development secondary to caries, periodontal disease secondary to calculus formation, pulp exposure and abscess formation secondary to severe attrition, dental intervention ('pulling' teeth) and trauma.

A total of 871 (TPR 24%) tooth sockets out of 3631 that had survived for examination exhibited the vertical bone loss and porosity associated with periodontal disease. Fifty-nine individuals were affected, 26 of whom had a very high level of periodontal disease (classed as severe or grade 4; Ogden 2005). More males (TPR 28.5%; 28 males; 475/1665 sockets) than females (TPR 21.5%; 30 females; 380/1764 sockets) were affected. A CPR of 12.3% of individuals is recorded by Roberts and Cox (2003), but no true prevalence rate figures are available for their dataset.

Three subadults were affected by periodontal disease (TPR 0.6%; 4/710; skeleton 113 (Grave 111) aged 9-13 years, skeleton 767 (Grave 835) aged 4-9 years and skeleton 447 (Grave 540) 5-7 years. A single adult tooth socket and two deciduous tooth sockets showed resorption of bone over 5 mm.

Eighty-three adults had lost 562 out of 3644 teeth ante mortem (TPR 15.4%). Skeleton 1341 (Grave 1351), a mature adult female, exhibited the highest rate of ante-mortem tooth loss in the assemblage with 30 out of 32 teeth (TPR 93.8%).

Dental enamel hypoplasia

Dental enamel hypoplasia (DEH), identified as lines, pits or grooves on the enamel surfaces of the teeth, was observed on 50 adult individuals (CPR 22.7%), predominantly on the lower incisors and canines. These features affected 295 out of 4005 teeth (TPR 7.3%). Of the 46 subadults with observable teeth, 16 (34.8%) had defects which affected 123 teeth. All of the defects involved permanent teeth with the exception of one subadult who had defects involving the deciduous teeth (skeleton 829 (Grave 890)). Defects were highest among adolescents (66.7%) and prime adults (47.4%) (Table 5.52).

Dental enamel hypoplasia occurs as a result of disruption to the growth of the dental enamel during childhood. The disruption may be caused by numerous factors, childhood illness and malnutrition being among them. Because of its multifactorial aetiology, DEH is regarded as a non-specific indicator of physiological stress during childhood

Table 5.52: Dental enamel hypoplasia by age category (CPR)

Age category	*n/ N*	*% of individuals affected*
Young child	8 / 21	38.1
Older child	2 / 8	25
Adolescent	6 / 9	66.7
Young adult	4 / 14	28.6
Prime adult	9 / 19	47.4
Mature adult	14 / 33	42.4
Older adult	18 / 77	23.4
Adult	5 / 70	7.1

(eg Roberts and Manchester 2005, 76-7). Less than a quarter of the population were affected by dental enamel hypoplasia which suggests that the majority were well nourished in childhood and not exposed to high disease loads.

At Butt Road DEH was observed on the teeth of 64 individuals, giving a CPR of 27.2% of individuals with teeth (Pinter-Bellows 1993). A lower CPR of 6.7% of individuals is recorded from 29 sites, with a TPR of 9.1% of teeth affected from 6 sites, among those studied by Roberts and Cox (2003), but it is not clear if these values combine data for adults and subadults.

Abnormal wear patterns

Extra masticatory wear was observed on the upper central incisors of adult male skeleton 642 (Grave 650) aged upwards of 18 years. These two teeth had significantly more wear compared with other teeth from the dentition and were associated with granulomas. Occlusal wear was advanced, with dentine exposure which may have predisposed to the granulomas. Adult female skeleton 1361 (Grave 1437) aged upwards of 18 years also displayed extra masticatory wear on the upper teeth, including the incisors, canines and premolars (Fig. 5.58). These teeth were worn down to the dentine and the central incisors were worn medio-laterally into a 'V' shape. In both cases it was not possible to refine age estimates and the possibility that the individuals were considerably older may have a bearing on the degree of wear. The wear patterns could be related to some sort of activity, for example, medial-lateral movement of a thin cord would create such an effect.

Fig. 5.58 Skeleton 1361. Abnormal wear on maxillary teeth

Dental anomalies

The genetics of most skeletal traits are not well established, but a number of dental anomalies have been shown to 'run in families' (Berry 1978; Brook 1984). These include enlarged and supernumerary teeth, reduced and missing teeth (hypodontia or agenesis), and invaginated incisors, including shovel shaped and palato-gingival grooves (Molleson 1993, 168). A range of anomalies was observed among the skeletons at Lankhills and these are summarised below (Table 5.53).

The identification of these anomalies was based on the descriptions provided by Turner, Nichol and Scott (1991). The most frequent anomaly was agenesis of the third molar, but in the absence of radiology it is possible that in some of the 26 cases recorded the tooth may simply have been unerupted. Care is needed to distinguish between agenesis and impaction, or loss through injury or disease, which may leave little sign on the alveolar crest. The third molars are the most frequently missing teeth followed by upper second incisors, upper or lower second premolars, lower first incisors, and upper or lower first premolars (Hillson 1996a, 113).

Missing third molars were also the commonest dental anomaly at Poundbury (as in other archaeological populations). Just over a third of the sample (39%) (selected for completeness of the dentition) had agenesis of at least one third molar (Molleson 1993, 168, table 29) which is three times the frequency found in modern material (12.7%) (Shin 1975). The frequency of third molar agenesis at Cirencester was 24.3% for males and females combined, with a slightly higher frequency among the females (27.8%) than the males (22.9%) (Wells 1982, 150). The high frequency of dental anomalies in general at Poundbury led Molleson to suggest a strong genetic relationship within the Poundbury population (1993, 168). This is not borne out by the frequency of dental anomalies at Lankhills.

Skeleton 1637 (Grave 1907) had an unerupted tooth lying on its side within the hard palate of the maxilla located where the second right incisor should be.

Crowding and rotation was exhibited by 7 and 13 skeletons respectively. Irregularity and overlapping of the anterior teeth is so common as to be almost normal. Some are merely twisted out of position, but others are wholly displaced to the lingual or labial side (Hillson 1996a, 112). At Cirencester 24 individuals had some crowding, always of the anterior teeth, and in a few cases this was severe (Wells 1982, 150).

Six teeth were impacted. Properly, impaction implies that the tooth remains inside the jaw and does not emerge into the mouth at all, but there are many variations and a tooth may erupt sideways into its neighbour, presenting one of its crown sides uppermost. The most commonly impacted tooth is the third molar, especially the lower, followed by

Table 5.53: Number and type of dental anomalies observed

Number of individuals	*Skeleton Numbers*	*Dental anomaly*
6	20, 435, 1061, 1133, 1289, 1870	Shovelling
7	1552, 61, 119, 616, 1477, 1894, 3002	Crowding
5	77, 119, 593, 1637, 1902	Impaction
2	108, 1271	Enamel pearl
4	1621, 77, 451, 1284	Peg molar
13	1557, 271, 429, 522, 579, 1498, 616,683, 741, 1038, 1084, 1621, 1894	Rotation
1	271	Transposition
1	1133	Carabelli's cusp
26	55, 84, 259, 271, 281, 451, 566, 616, 642, 652, 683, 741, 806, 879, 908, 914, 956, 1114, 1137, 1281, 1481, 1532, 1552, 1621, 1640, 1734	Agenesis of the third molar

the upper canine (Hillson 1996a, 113). Roberts and Cox (2003, 162, table 3.31) record 977 examples for the Roman period and pose the question – did the affected individuals suffer or was there treatment available if the tooth became infected?

Neighbouring teeth may swap position (transposition). This is generally associated with some degree of irregularity and/or rotation (Hillson 1996a, 113). Skeleton 271 (Grave 272) exhibited this condition. Skeleton 1133 (Grave 1355) had an additional cusp on the mesiolingual corner of the left upper first molar, known as a Carabelli's cusp. Hillson (1996a, 85) classifies this as a non-metrical variation.

In incisors and sometimes in canines, the marginal ridges can be especially prominent and enclose a deep fossa in the lingual surface. This is known as shovelling and is also classified as a non-metrical variation (Hillson 1996a, 86). Shovel-shaped incisors were seen in six cases at Lankhills and in three dentitions at Cirencester (Wells 1982, 150).

An enamel pearl is a separate nodule of enamel covered by an enamel cap which is sometimes present on the root surface of upper premolars and molars. Enamel pearls are particularly common in teeth with fused roots, especially on mesial or distal surfaces of permanent upper second and third molars (Hillson 1996a, 98), and occurred in two skeletons at Lankhills. Four individuals had peg-shaped molars at Lankhills, while two cases were reported at Cirencester (Wells 1982, 150).

Disarticulated human skeletal remains from grave contexts

Disarticulated human remains were recovered from 89 graves, noted in the grave catalogue in Chapter 3 above. Further details of the material by context can be found in the project archive. These remains ranged from a single tooth to near complete skeletons. Nine contexts contained the remains of two individuals while one context contained three. Grave 755 contained disarticulated elements of three adults, consisting of three skulls and postcranial elements of two elderly females and a male. Here the additional skulls were placed towards the edges of the grave cut. Grave 1350 contained two probable male adults represented by repeated foot bones. Grave 1907 had parts of at least one adult male and one adult female based on the presence of a whole female skull, another cranium and many postcranial elements. In total 74 adults (10 males and 6 females) were represented by disarticulated remains, along with 14 subadults, 1 infant and 12 neonates.

Disarticulated human remains from contexts other than graves

Very small quantities of human bone, often comprising only a single bone or tooth, were recovered from topsoil and from nine contexts other than graves. These are detailed in the project archive. All the material derives from adult individuals.

Discussion

The preceding sections have presented the results of the osteological analysis of 284 skeletons from OA Lankhills. Demographic data from the recent work on Clarke's Lankhills (Gowland 2001; 2002; 2004) has been combined with OA Lankhills to facilitate a meaningful examination of the cemetery as a whole. Where possible, information has been compared to that from other contemporary cemetery groups, although for some categories of information the data are either unavailable or not in a compatible format.

One of the main aims of the analysis has been to attempt to illuminate the life experiences of the individuals who formed the cemetery population instead of merely presenting a series of tables and statistics. Rather than viewing the skeleton as a fixed biological entity we should view skeletal information as the product of an individual interacting within a social as well as physical environment in a dynamic way (Gowland 2004, 136). For example, frequency and occurrence of particular pathologies are likely to relate in some way to the

age, sex and social status of the individual. Different occupations and activities will have led to different exposure to trauma, joint disease and infection. An obvious example is the role of young women who are actively engaged in childbirth. Access to a better diet, and perhaps medical treatment will also have been dictated in part by age, sex and position within society. Clear evidence at OA Lankhills has been identified for differences between males and females in the frequency of joint diseases, which may reflect gendering of work-related activities, and has also been seen in the occurrence of trauma, particularly fractures.

Skeletal condition and completeness have clear implications for the level of information that can be recovered, particularly in relation to pathologies, and may mean that they are under-represented. A detailed consideration of condition and completeness has concluded that preservation of adult males and females was good on the whole, but less so for subadults. Detailed data on pathology are not yet available for Clarke's Lankhills although there is useful assessment information relating to some aspects of the material (Gowland 2004. 140).

It is due to the paradoxical nature of palaeopathology that the very individuals who exhibit signs of infection may in fact be the healthier ones in a society. This is because pathological skeletal changes demonstrate that an individual had a sufficiently strong immune status to withstand a disease process long enough for the bones to become affected. Adolescent female skeleton 20 (Grave 18) showed signs of vitamin D deficiency, possible iron deficiency anemia and unspecified childhood illness which led to the development of enamel defects in the teeth. She also suffered from a condition known as cribra femora, similar in appearance to cribra orbitalia, which has been linked to a deficiency of magnesium. This combination of conditions may suggest generalized malnutrition, which the girl survived into her teenage years.

Many of the individuals at OA Lankhills lived to a good age and so must have been in relatively good health. The analysis of the carbon and nitrogen isotopes suggests that everyone at OA Lankhills had some access to animal protein. There were no differences when adults of different age categories were examined. Males did, however, have a slight enrichment of both carbon and nitrogen, although this was deemed not to be significant and therefore unlikely to reflect any substantial differences in dietary practices between the sexes. It was concluded that overall the population had ready access to multiple sources of animal protein, including, for some at least, small amounts of marine fish, and that they were generally adequately nourished.

It is clear from the skeletal evidence that some individuals would have appeared physically different or debilitated to their contemporaries. These include skeleton 1026 (Grave 1070), who suffered from scaphocephaly (premature closure of the sutures of the skull). This child, thought to be a girl since she was buried with two bracelets and a ring, would have looked odd, with a slightly lopsided face and a misshapen head. She had been buried prone without a coffin and it is tempting to link the choice of burial position with her disability, although the fact that she was accompanied by jewellery suggests that this was not necessarily a mark of disrespect.

Skeleton 1197 (Grave 1270) was an old woman aged at least 60 years in whom both hip joints had fused. In the absence of any contradictory evidence it is suggested that this fusion may have occurred because one of her legs was slightly shorter than the other with some modification of the lower legs; the femur heads were angled slightly outwards (laterally) and in front of the body (anteriorly). The hip joints may have fused over time as a means of supporting her slightly unusual gait. In contrast to the child discussed above she was buried within a coffin, in a supine position, wearing hobnailed shoes and accompanied by an antler comb.

Skeleton 861 (Grave 905) was an adult male at least 60 years old who had also been buried in a prone position without a coffin. He was wearing a pair of hobnailed shoes though there were no accompanying grave goods. Most of his right little finger had been amputated (whether accidentally or deliberately). Most noticeable though would have been his deformed right arm, probably caused by falling on the elbow and fracturing the humerus. The elbow was completely fused at approximately 100-110 degrees with pronation of the lower arm and

Fig. 5.59 Skeleton 861. Osteoarthritis of the right femoral head

there was much associated degenerative change. Clearly the activities this man could perform would have been dictated by the restricted movement caused by this injury. He exhibited a range of degenerative change associated with old age including spinal osteophytosis (all vertebrae), Schmorl's nodes (affecting all eight of his lowest vertebrae), eburnation (on the fifth and sixth cervical vertebrae of the neck), fusion (ankylosis) of four of seven cervical vertebrae and osteoarthritis affecting his right hip joint. This latter condition may have developed in response to trauma (Fig. 5.59).

In common with the injury to the arm it too was on the right side and the left hip joint was unaffected. He had lost at least 16 of his teeth, had calculus (tartar) and advanced periodontal (gum) disease. Clearly, many of these changes, with the exception of the right arm and the right finger, could be age-related. However, when the skeletal evidence from 861 is considered alongside that of other prone burials (skeletons 661, 686, 919, 1026 and 1281 (Graves 665, 735, 970, 1070 and 1350 respectively)) interesting patterns can be observed. Isotope analysis suggests that four of these individuals (skeletons 661, 919, 1026 and 1281) had a diet slightly depleted in carbon and nitrogen when compared to the rest of the population (see Cummings and Hedges below). This evidence combined with the mode of burial has led to the inference that these individuals may have been of low or even servile status (see Chapter 7). The skeletal data add considerable weight to this inference. All five of the adults had medium to severe degenerative changes, particularly in the spine, and bad dental health. Skeleton 1026, the child with scaphocephaly discussed above, also suffered from probable iron deficiency anaemia. Skeleton 1281 may have suffered from rickets, while skeleton 661 had a poorly healed fracture to the left side of her jaw (Fig. 5.60). Galloway (1999) suggests that this fracture location has a 4:1 male dominance and the most common cause is in fistfights. This woman also had degeneration of her shoulder, hip and knee joints.

It has been argued that cultural information concerning the life of an individual (osteobiography) can be obtained by examination of their skeletal remains (Robb 2002) and that it should therefore be possible to examine a single burial within a cemetery and use the skeletal and material variables to build a social picture of an individual life experience (Gowland 2004, 139).

As an example, this approach was used (ibid.) in the examination of skeleton 283 from Clarke's Lankhills. The skeleton was of an adult male aged 35-49 years who was buried supine with planks placed over the body rather than in a proper coffin. Clarke (1979, 61) considered that the grave was too short and therefore probably unfinished, and that the burial rite was intrusive on the basis of number of grave goods, presence of broken objects and use of planking (ibid., 391). This man was one of only three with osteomyelitis (the addition of two examples from OA Lankhills takes the CPR to 0/7%, 5/765). There was no evidence of trauma to the infected right shoulder so it could have been

Fig. 5.60 Skeleton 661. Healed fracture of the mandible left side

caused by the presence of pyogenic bacteria. The infection was advanced and a weeping ulcerated lesion may have been visible at the surface of the skin, causing severe discomfort and debilitation. This man also had severe osteoarthritis in both elbows with eburnation in identical areas on left and right sides, suggesting that he undertook a specific activity involving the use of both arms in a similar motion. This is likely to have been carried out prior to the development of the debilitating infection evidenced by the osteomyelitis. Severe degeneration in the mid and lower spine is suggestive of a strenuous lifestyle. Skeleton 283 also had a healed fracture of the right fibula, one of 14 fractures from Clarke's Lankhills, only two of which were in females. This led to the suggestion that the risk of fracture must be related to gender and therefore to gendered roles (Gowland 2004, 143).

To what extent did urban living predispose a population to infection? The rate of periostitis at OA Lankhills was low when compared to other Roman populations (see above). Only 5.6% of observable bones were affected (54/2808). Marginally more men (TPR 1.3%; 17/1299) than women (TPR 1.2%; 13/1109) were affected, which agrees with observations for Clarke's Lankhills (Gowland 2004, 143). It was also noted at Clarke's Lankhills that females tended to exhibit periosteal new bone growth in a greater variety of skeletal elements and it was argued (ibid.) that this may indicate either a different pattern of immune response to similar 'health stresses' between the sexes (cf Redfern 2002) or differential exposure to such stresses according to gender. This was not seen at OA Lankhills.

Twenty-one adult individuals, 15 men and six women (CPR 9.6%), had degenerative change to joints other than the vertebrae. The joints of the upper body were mostly affected, the only four exceptions being in one hip, two knees and one ankle. The pattern of vertebral osteophytosis is interesting. It was much more marked in men than women for all vertebrae, suggesting that men were regularly involved in an activity or activities that predisposed them to develop the condition. This pattern is also reflected in the distribution of Schmorl's nodes. While the number of adults who suffered spinal osteoarthritis is small, nonetheless something of a trend can be observed. Cervical vertebrae were affected more in women while thoracic and lumbar vertebrae were more affected in men. This broadly equates with Gowland's results which suggest that in general men had more degenerative changes than women, and that the more severe changes in the men tended to be in the lower spine. The variation between the sexes suggests that these men were involved in more physically strenous activities, perhaps related to manual labouring rather than trade.

The rate of fractures at OA Lankhills was quite low, but some patterns can still be discerned. All fractures were healed, though not necessarily in alignment: some were noticeably deformed (skeletons 61, 861 and 1289 (Graves 58, 905 and 1329)). The number of men with fractures outnumbered women by almost two to one. Ribs were most commonly fractured with a total of 20 fractures among 9 men and women. Skeleton 683 (Grave 790) had five left and three right rib fractures. He also had a broken nose and breaks to both left and right arms and it is tempting to suggest that he may have been something of a fighter, although all of his injuries could equally have been caused accidentally. The most common cause of rib fractures is direct injury such as a fall against a hard object (Adams 1987, 107). Noses were the next most common fracture site and all were in males with the exception of skeleton 61 (Grave 58), a female aged 26-35 years. Only six tibiae and five fibulae had been broken. There were three depressed skull fractures, all of which were exhibited by women.

It is important to consider how peoples' lives might have been affected by the diseases or injuries that they suffered. A small number of people must have suffered terribly from toothache, which even today with the use of painkilling medicine can be difficult to bear. Skeleton 1640 (Grave 1638), a man aged upwards of 45 years, at 1.87 m was the tallest person in the cemetery and would certainly have appeared quite striking to his contemporaries. At the time of his death he had four severe dental abscesses, all apparently linked to advanced tooth decay. The pain must have been too extreme for him to bear chewing, on the right side at least, as evidenced by the considerable build up of calculus there (Fig. 5.57). This man also had spinal degeneration affecting the upper and lower vertebrae but not those in the middle. At some point he had fractured two of the metatarsals in his right foot and while the bones had healed, both were misaligned with 'kinks' in the shafts. This contrasts with the preliminary findings on Clarke's Lankhills (Gowland 2004, 143) which suggest that fractures tend to be well-aligned, indicating some form of treatment; this is thought to be a general characteristic of fractures in the Roman period (Larsen 1997, 152).

A number of the morphological features of the skull of adult male skeleton 566 (Grave 610) suggest that he may have been of Black or Asian rather than Caucasian origin, in contrast to the vast majority of the population. This observation is tentative and recommendations for further work are discussed in the final section. Osteologically, this skeleton was otherwise unremarkable. He was buried supine within a wooden coffin and without grave goods.

Strontium and oxygen isotope analysis has identified a group within the assemblage whose isotopic signature is clearly not British and suggests that they originated in an area with a hot and/or arid environment, perhaps on the southern side of the Mediterranean. This small group included a young adult female, skeleton 119 (Grave 99), with cranial characteristics which suggest a possible

origin in Egypt on the basis of preliminary analysis using the CRANID programme (Richard Wright pers. comm.).

Carbon isotope analysis suggests that infants may not have been exclusively breastfed, which could have led to malnourishment, and perhaps contributed to their early deaths. Four of the infants under the age of two (skeletons, 8, 221, 404 and 1314 (Graves 6, 231, 445 and 1317 respectively)) show evidence of health problems including cribra orbitalia, infantile cortical hyperostosis and scurvy, all of which are related to vitamin deficiency.

Generally speaking the population did not appear to have suffered from a high disease load, although again some patterns can be discerned. There were more females with cribra orbitalia than males, and slightly more with dental enamel hypoplasia, although the pattern is reversed for infection, fractures and joint disease. Almost twice as many women as men had cribra orbitalia. The highest rates of cribra orbitalia were in the adolescent (44.4%), young child (28.6%) and young adult categories, while for DEH it was adolescents (66.7%), prime adults (47.4%) and mature adults. The dominance of joint disease, spinal disease and fractures in males is likely to reflect division of labour between the sexes, with males involved in slightly more physically strenuous activities, although the overall low rates point to a lifestyle which did not involve a great deal of hard manual activity.

There were no specific infections among the adult population, which suggests that living conditions were not particularly crowded. The incidence of tuberculosis, for instance (of which there was a single possible case), increases with poor living conditions, poor nutrition and social deprivation. The rates of sinusitis were low and the majority of cases were in elderly people over the age of 60 years.

The dental health of the Lankhills population was probably a little better than average when compared to that of people in contemporary sites. Where comparable the dental disease rates for this population are the same as or lower than at other sites. Dental health can be linked to the more general health of the individual, which it appears was quite good for this population. As a component of this it is significant that low levels of dental attrition reduced the risk of exposure of dentine to bacterial attack. Dental disease is also specifically an indicator of diet. Lack of oral hygiene combined with ingestion of carbohydrates (particularly sucrose) will lead to higher rates of dental disease. Nevertheless, despite the increased availability of carbohydrates in the Roman period, and the evidence for a varied diet suggested by the carbon and nitrogen isotopes (see below), the generally good condition of the Lankhills teeth was notable, indicating good physical health.

Health problems as a result of living in towns may be indicated by length of life, disease and achieved stature, but determining whether a person was stress-free and happy is much more difficult (Addyman 1989, 245). During the Roman period, rural to urban migration could have provided the potential for people to contract new diseases that they had never previously been exposed to, and in theory they may have been living in poor housing with inadequate diets and exposed to new pathogens (Roberts and Cox 2003, 123). The evidence at OA Lankhills would seem to contradict this impression. Perhaps we should be asking how 'rural' in character this population was. All the evidence suggests a group in good health, almost all of whom had access to an adequate diet and a significant number of whom lived well into old age. The majority were perhaps relatively well-off and engaged for the most part in trade-related activities rather than physically stressful manual labour.

Future potential of the assemblage

The Lankhills assemblage has enormous potential for future research, far exceeding the scope of this project. It has been possible using the work of Gowland (2002) to look in depth at demographic data for the population as a whole which numbers 765 individuals. At the time of writing data on skeletal and dental pathology were not available although some useful observations based on assessment data have been published (Gowland 2002; 2004) in advance of more detailed analysis (Stuckert forthcoming) and these are touched upon above.

Diagnosing the osteological sex of subadults is notoriously problematic and is usually not attempted. However, given the large size of this population and the numbers of children with permanent dentition, it is possible that discriminant function analysis based on the crown dimensions of permanent teeth of subadults may be a means of addressing this problem. Some preliminary work was done and the results seemed promising, although this type of work is not routinely undertaken in standard osteological reports. A fairly high proportion of children at Lankhills were buried with grave goods and it would be useful to test these associations with estimation of osteological sex using tooth dimensions.

There is scope for extending the level of metric analysis carried out to date on the assemblage. It was possible to calculate stature for 69 individuals using the femur only. In the absence of complete major long bones, body stature can be estimated from the mid-line length of the metacarpals according to the method developed by Meadows and Jantz (1992), and the maximum length of the calcaneus and talus (Holland 1995). During analysis it was observed that there was marked sexual dimorphism within the assemblage, a feature also seen at Poundbury (Molleson 1993, 165). It would be useful to explore this further through far more

detailed metric analysis than a standard skeletal report allows.

Skulls, or parts of skulls were present in a total of 246 graves. Of that number there were 90 male and 89 female skulls. Many were fragmented and could not be reconstructed as part of this analysis. It was possible, therefore, to calculate indices for only 55 adult skulls without undertaking extensive reconstruction. Data on the numbers and condition of the skulls from Clarke's Lankhills are not currently available, but there is much potential to increase the data set. Tentative observations have already been made on the basis of some cranial indices, including the identification of three individuals with a particularly broad nasal aperture, a feature which can be characteristic of skulls of Negroid populations (Bass 1987, 87). The isotope analysis has demonstrated that at least one of these individuals is likely to have originated in western or northern Britain. These findings underline the desirability of much further work on isotope analysis of this assemblage. Results of work recently made available as part of the Diaspora project hosted by the University of Reading have demonstrated that a high status burial of the second half of the 4th century from York was that of an adult female of African origin. This clearly counters the assumption that all Blacks in Roman Britain were low-status male slaves.

During the course of skeletal analysis, it was observed that compared with the rest of the population the skull of adult male 566 had unusual characteristics, which are more consistent with Black and Asian groups than with Caucasians (see Loe above). As only broad classifications can be achieved through observation of skull morphology alone it is recommended that other methods such as CRANID and FORDISC which use metrical data in discriminant function analysis programs are required to supplement them. The possible southern Mediterranean origins of female adult 119 suggested by a combination if isotope analysis and preliminary work using CRANID (see above) indicate that this assemblage has the potential to contribute significantly to our understanding of population diversity in the Roman period.

The OA Lankhills group appears 'older' when compared with Gowland's analysis of Clarke's Lankhills. As the two groups represent presumably a single population this fact hints at possible zoning within the cemetery, with more of the older individuals being buried in the area of the OA excavations. Other aspects of variability between the two main excavated samples may be seen when the osteological evidence os compared with that of the associated objects, for example in the different occurrences of grave goods with neonates and infants. The combined demographic data form an excellent basis for examining these and many other cemetery variables.

CREMATED HUMAN BONE *by Ceridwen Boston and Nicholas Marquez-Grant*

Introduction

Thirty features within the excavated area contained deposits of cremated human bone, and a further three included very small undiagnostic fragments of burnt bone where the species could not be determined. The assemblage comprised five urned and 13 un-urned burials, seven possible *busta* and five small deposits of redeposited cremated remains. The status of these last is uncertain and they are excluded from the catalogue of cremation burials in Chapter 3. No deposits of pyre debris were recovered, with only one non-*bustum* deposit (context 857) containing sufficient charcoal to suggest a small dump within a large pit (847). Otherwise, there was no evidence to suggest that surface pyres were located within the excavation area. The absence of pyre debris does not preclude the presence of pyre sites in the area. Alternatively pyre debris may not have been considered to be a necessary inclusion within deposits.

The cremation graves were discovered in two major clusters within dense areas of intercutting features. As a result, a number were truncated by later cremation or inhumation graves. Others had suffered damage from modern construction and service trenches within the area. The stratigraphical and artefactual chronology of the two clusters suggests that one was very early in the burial sequence at Lankhills while the second was very late. Nevertheless, both groups are rare in dating to the late Roman period, when the rite of cremation had largely been superseded by inhumation burial. This is also true of the possible *busta* at Lankhills; these are more commonly found in early Roman contexts in Britain, although they are not exclusively of this date range (eg Struck 1993b, 92).

Methodology

The un-urned cremated bone deposits were recovered as bulk soil samples and were subsequently wet-sieved and flots collected for charred plant analysis. Human bone, charcoal, artefacts and faunal remains were retrieved from the wet-sieved residues that had been sorted into fractions of >10 mm, 10-4 mm and 4-2 mm.

Four urned burials (766, 1055, 1255 and 2060) were lifted intact and their contents excavated in the laboratory by an osteologist. The urns were excavated in 20 mm spits, with a plan recording the spatial arrangement of bone, pyre and grave goods at each level. Written descriptions were also made, including maximum fragment size, colour, identified bone element, the presence of charcoal, burnt soil, and pyre and grave goods contained within the vessel.

Osteological analysis on the washed bone was undertaken in accordance with guidelines set out by

the IFA (McKinley 2004c). The minimum number of individuals (MNI) was calculated by counting the presence of repeated bone elements (eg left proximal femur) and differences in age and sex characteristic of fragments within each deposit.

The same sex and age categories and standard methods that were employed in skeletal age and sex estimation of the inhumations at Lankhills (see Clough and Boyle above) were applied to the cremated remains. Ectocranial suture was used only as a complementary method, as this method has been shown to be unreliable on its own (see Key *et al.* 1994; Lynnerup and Jacobsen 2003). Metrical analysis involved measuring cranial vault thickness, which has been employed in estimating biological age, although there are several problems inherent in this approach (see McKinley 2000b). Measurements were taken with a sliding calliper to the nearest 0.01 mm. Non-metric traits (see Clough and Boyle above) were scored as present or absent. Identification of pathological changes followed the same procedures outlined by Clough and Boyle (above).

Deposit types

Deposit types were defined using the criteria set out by McKinley (2000c), which are summarised in Table 5.54. The Lankhills assemblage contained the remains of five urned burials, 13 un-urned burials and seven possible *busta*. Five groups of redeposited cremated remains may have been remnants of truncated burials. There were no dumps of pyre debris, and the possible *busta* were the only indication that cremation had taken place within the excavation area.

Seven possible *busta* were identified at Lankhills, although McKinley (2000c) does warn that identification of this deposit type may be problematic, and some of the Lankhills examples may not be unequivocally assigned to this category (Table 5.54). *In situ* burning is certainly apparent with typical salmon-pink colour changes to the sides and top of the graves. Where the cremated bone was collected in a number of samples from head to foot of the grave (four graves), *in situ* burial could be demonstrated. The bone appeared to be laid out on a spread of charcoal, and charcoal and *in situ* nails suggest that the pits were wood-lined or contained the bases of wooden platforms on which the corpse had rested on the pyre. Burnt wooden linings with nails hammered into the walls of the pit were present at Brougham, Cumbria (Cool 2004, 465).

Results

Disturbance and condition of bone

The cremated bone deposits are summarised by category in Table 5.55. The condition of the cremated bone from Lankhills is good. Trabecular bone is well-preserved, resulting in a high proportion of recognisable elements. Non-representation of bone could reflect deliberate selection of the

Table 5.54: Definitions of cremation-related deposit types containing cremated human bone

Deposit type	*Definition*
Bustum	Pyre site that also functioned as a grave. The pyre burnt down into the under-pyre pit and the human remains are buried in situ. Where no secondary manipulation has occurred, the cremated remains are expected to lie in the correct anatomical position on a bed of charcoal. The effects of the burning have been observed to penetrate the soil by 2-5 cm. The average weight of bone retrieved from a cremated adult is between 1600-2000 g but may be as little as 1000 g.
Urned burial	Deposit of cremated bone within a container. May be surrounded by, on top of or overlain by redeposited pyre debris.
Un-urned burial	Concentrated deposit of bone, which may have been in an organic container, which may also include a secondary deposit of pyre debris within the backfill.
Un-urned burial or redeposited pyre debris	An apparently mixed deposit of cremated human bone and charcoal which may represent the remains of one or more cremated individuals.
Pyre site	Large quantity of charcoal with relatively small amount of burnt bone fragments situated on the ground surface or in under-pyre pits. The pits may also be T- or L-shaped to aid draught and are shallow (0.10-0.20 m deep). The soil beneath the pyre should show evidence of burning that may penetrate the soil by 2-5 cm.
Redeposited pyre debris	A mixture of fuel ash, fragments of cremated bone and pyre goods, and possibly burnt flint, burnt stone, burnt clay, fuel, ash and slag depending on the local environment. May contain a relatively large quantity of bone since a small deposit of bone may have been collected for burial. The deposit may be present in the backfill of the burial, over the cremation burial, within pre-existing features, uncontained in spreads and in deliberately excavated features.
Redeposited cremated remains	Small amounts of cremated bone situated or recovered from features, such as pits and ditches, and in the backfill of intercutting cremation burials.
Cremation-related deposit	Unknown deposit type including cremated human bone.

Table 5.55: Summary of cremated bone deposits (n=30)

Group	*Contexts*	*Bone weight (g)*	*Depth of feature (m)*	*Primary colour*	*Secondary colour*	*Max. fragment size*	*Age and sex*
Possible *busta*							
655	607	1641	0.43	White	Grey, black, blue	82 mm (tibia)	Adult male?
910	869*	1277.3	0.39	White	Blue, grey	65 mm (femur)	?Mature adult (36-45 y) female
1180	983	1566.7	0.13	White	Grey, blue	42 mm (rib)	Young adult (18-25 y) unsexed
1195	1121*	1308	0.68	White and light grey	Blue, brown, black	95 mm (tibia)	Young adult (18-25 y) unsexed
1215	1148*	1155.5	1.20	Blue	Grey, white	70 mm (ulna?)	Adult ?male
1806	1770, 1771*	1052.4	0.25	White	Grey, blue, black	70 mm (tibia)	Adult male
1845	1843, 1844	171.4	0.30	White	Grey, blue, black	33 mm (femur)	Infant
Redeposited cremated remains							
790	833	32.8		White	Grey, blue	60 mm (tibia)	?Unsexed adult
795	759	10.3		White	Light-grey	11 mm (cranium)	Unsexed adult
1671	1673	32.5		White	Grey, blue	30 mm (long bone)	?
1921	1924	3.1		White	Blue	23 mm (vertebra)	?
2064	857	100.3		Grey	White, blue, black	63 mm (femur)	?Adult
Un-urned burials							
895	843	1097.6	0.22	White	Grey, blue, black	50 mm (femur?)	Mature adult (36-45 y) ?male
915	872	1174.1	0.23	White	Blue, grey	77 mm (humerus)	Unsexed adult
945	888*	14.7	0.15	White	Light grey	15 mm (radius?)	?
1060	808*	1055.1	0.27	White/ light grey	Dark grey, blue	77 mm (femur)	1 adult ?female 1 adult ?male
1065	911*	47.3	0.14	Grey	White	42 mm (tibia)	Unsexed ?adult
1160	1107*	237.3	0.15	Grey	White	39 mm (tibia)	Unsexed ?adult
1320	1238	580.6	0.02	White	Grey, blue, brown, black	50 mm (femur)	Unsexed ?adult
1527	1526	95	0.05	White	Grey, blue	51 mm (radius)	Unsexed ?adult
1724	1661*	335.8	0.06	White	Grey	75 mm (tibia)	Adult ?female
1742	1728	465.8	0.09	Grey	White	87 mm (clavicle)	Mature adult (36-45 y) female
1786	1788	724.9	0.10	White	Light grey, blue, brown	70 mm (tibia)	Adult female
1798	1628*	405.7	0.12	White	Grey	42 mm (humerus?)	Unsexed adult
1904	1749, 1750*	351.7	0.24	White	Grey, blue	74 mm (femur)	?Young adult (18-25 y)
Urned burials							
510	457, 466, 468*	711.8	0.10	White	Light grey	47 mm (rib)	Adult ?male
845	766*	563.1	0.11	White/grey	Blue	67 mm (femur)	Unsexed adult
1055	1008	794.5	0.34	White	Blue, grey	92 mm (tibia)	Adult male
1255	1187*	51	0.16	White	Light grey, light brown	80 mm (rib)	Unsexed adult
2060	424, 425, 428	834.6	?	White	Grey, blue	78 mm (radius)	?Prime adult (26-35 y) male Unburnt infant (5 m-1 y)

Contexts marked with * have been truncated

cremated remains for burial by the mourners or funerary attendants, or more likely perhaps, be due to the truncation of burials by later activity - by subsequent graves and pits, and modern landscaping, foundation and service trenches of the school buildings. The group of cremation burials that appeared to be stratigraphically earlier than the main phase of burial activity at Lankhills comprised 1742, 1806, 1845, 1904 and possibly 1180.

A later group of cremated bone deposits appeared very late in the burial sequence. These included 655, 845, 1055, 1060, 1195, 1215 and 1255. Un-urned burial 1060 was cut by inhumation grave 790 and urned cremation grave 845. The redeposited cremated bone in inhumation grave group 790 (weighing only 32.8 g) thus probably derived from this disturbed cremation burial. Cremation burial 1215 was cut by cremation 1195.

The remaining six burials (895, 910, 915, 945, 1320 and 2060) were widely distributed across the excavation area. The un-urned, possibly boxed, burial 1320 survived to a depth of only 0.02 m while urned burial 2060 was recovered largely intact and its contents excavated in the laboratory. Cremation burial 895 cut burial 910, and hence may contain some redeposited bone from that context. Cremation deposit 945 survived to a depth of 0.15 m and contained only 14.7 g of cremated bone and some fragments of pottery. Grave depths and an indication of which were truncated appear in Table 5.55. Substantial amounts of bone were present in some relatively shallow features such as 1320 which contained 580.6 g of human bone. Un-urned burials can survive fully intact in graves only 0.06 m deep (J McKinley pers. comm.).

Demography

Minimum number of individuals

Urned burial 2060 contained the cremated remains of a prime adult male (26-35 years), alongside several unburnt cranial fragments and two deciduous molar crowns of an infant, aged five months to a year. The infant remains were recovered within the uppermost 60 mm of the urn fill. While the unburnt remains may be intrusive, and relating to one of the many disturbed infant burials on the site, it is equally likely that they were a deliberate inclusion. Un-urned burial 1060 contained two fragments of supra-orbital ridge, one female and one male. All other cremation burials appeared to contain the remains of only a single individual.

Age and sex distribution

Data on age and sex appear in Table 5.55. Possible *busta* 1180 and 1195 contained the remains of young adults (18-25 years) while 895, 910 and 1742 were considered to be mature adults (36-45 years). Un-urned burial 1904 was a probable young adult. An infant was identified within *bustum* 1845, while an unburnt infant was recovered from 2060 which also contained the remains of a prime adult (26-35 years). A total of 19 deposits could only be assigned to the adult category (more than 18 years). Three small deposits (945, 1671 and 1921) lacked diagnostic features that would allow an estimation of age to be made.

Owing to the good preservation and low fragmentation of the material in most deposits it was possible to identify the sex of almost half of the adults (42.3%): seven males or possible males and four possible females. This high proportion of sexed individuals reflected the good preservation and low fragmentation of most deposits. Some patterning of sex distribution was suggested by the different categories of cremation burial.

Three of the five urned burials contained the remains of a male (1055 and 2060) or possible male adult (510), while the sex of the others (845 and 1255) was unknown. In contrast, the sex of the individuals in un-urned burials was more mixed, with four possible females and two possible males being identified.

The individuals in the group of seven possible *busta* comprised one infant (1845), two young adults of unknown sex (1180 and 1195), one adult male (1806), two adult possible males (655 and 1215) and one mature adult possible female (910). In the past *bustum* burial has tended to be interpreted as a primarily military tradition introduced from the Northern Frontier zone, and associated with forts (eg Brougham, Cumbria (Cool 2004)) and Hadrian's Wall. More recent work on civilian cemeteries has also revealed *busta*, however, examples including Pepper Hill, Kent (Biddulph 2006), the Lea, Denham, Bucks (Cotswold Archaeology 2005), and the Eastern and Great Dover Street, Southwark, cemeteries of London (Barber and Bowsher 2000; MacKinder 2000). An older but poorly understood site is at Bray, Berks (Stanley 1972). These burials are not necessarily solely of adult males; for example at Pepper Hill the eight individuals from seven *busta* included two juveniles, three adult females, one adult male, one unsexed adult and one burial that could not be aged or sexed (Boston and Witkin 2006). At the Lea, Denham, at least one *bustum* contained a 5-10 year old child (Coleman *et al.* 2004; Cotswold Archaeology 2005). Thus, the inclusion of a possible female and an infant in the Lankhills *busta* assemblage is not unprecedented, although the latter is very young. Unfortunately, the human remains from the only possible *bustum* burial within Clarke's excavation could not be aged or sexed (Gowland 2002).

Non-metric traits

Three individuals showed non-metric variation: some of these traits are inherited while others are environmentally produced (Brothwell and Zakrzewski 2004, 28). A moderate to large mandibular torus was identified in deposit 895, while parietal bone fragments of deposits 1060 and 1215 displayed parietal foramina.

Skeletal pathology

Because of the partial nature of deposits, fragmentation and surface damage caused by burning, cremated bone tends to display much lower rates of pathological lesions than seen in unburnt bone. Nevertheless, a range of pathological lesions was identified in the Lankhills cremated assemblage, the most prevalent being degenerative joint disease (see Table 5.56). Detailed discussion of the pathologies is not included below, but may be found in the report on the unburnt skeletal material (above).

Degenerative joint disease was classified as spinal or non-spinal in location. Marginal lipping was observed on both spinal and non-spinal joints within deposits 845, 895, 915 and 1180.

Osteoarthritis was identified from clear contour deformation and osteophytosis of the head of a

proximal hand phalanx from 1806. Macroporosity and osteophytosis of an atlas body fragment of deposit 845 indicated osteoarthritis in that joint, as did marginal osteophytes of the axis articular facet.

Cribra orbitalia was identified on fragments of the left and right orbits in deposit 1060. The lesions were severe (Grade 5 of Stuart-Macadam's (1991) scheme), suggesting marked or prolonged iron deficiency anaemia in childhood. This individual also showed endocranial lesions.

Pitting of the ectocranial surface of cranial vault fragments, and of the palate and zygomas of deposit 1215 was noted. Abnormal pitting of the maxilla was also observed in deposit 1180. The aetiology of these lesions is unclear but may include deficiency diseases (such as iron deficiency anaemia or scurvy) or localised infection of the overlying soft tissue.

Sixteen cranial vault fragments of adult 1060 showed considerable pitting or multiple small lytic lesions, many of which had penetrated the full thickness of the cranial vault. No bony proliferation was present. There appeared to be increased vascularity in the form of multiple indentations of small blood vessels in the endocranial surface. Although differential diagnosis is problematic, a neoplastic lesion is very tentatively suggested. This individual also displayed severe cribra orbitalia.

Periostitis was identified in three deposits (1180, 1320 and 1904). The surface of seven long bone shaft fragments (possibly humeral and ulnar) of deposit 1180 was overlaid by a mixture of grey porous and laminated bone, indicating active but fairly long-standing periostitis. This individual also displayed abnormal pitting on the maxilla. Together the lesions are very tentatively suggestive of active scurvy, but they may well not have been associated originally. The tibial shaft is the most common location of periostitis in most populations, the lack of overlying soft tissue on the shin making the bone more susceptible to trauma and infection.

Damage to muscle fibres and tendons may induce ossification at the point of insertion into bone, which has been interpreted as evidence of excessive mechanical stress of specific muscles or muscle groups. These manifest as small rugose ridges of bone, and are termed enthesophytes. These were observed in deposits 655, 845, 895, 915, 1055, 915, 1195, 1320 and 1806. The sites of enthesophyte formation all indicate strenuous muscle use of the lower limbs, particularly the thigh and knee joint.

Table 5.56: Dental and skeletal pathology in the cremated human bone (n=30)

Group	*Deposit type*	*Age and sex*	*Pathology*
655	?*bustum*	Adult ?male	Possible gross caries on upper molar. Osteophytosis on 1 LV. Enthesophytes on tibial tuberosity
845	Urned burial	Unsexed adult	OA (macropitting and osteophytosis) on 1 CV body, osteophytosis on facet of atlas, rim of radial head, unidentified articular surface fragment and on at least 2 TV and 1 LV bodies, considerable enthesophytes on linea aspera of femur
895	Un-urned burial	Mature adult ?male	Osteophytosis on part of glenoid fossa and on at least 1 TV (or LV) body fragment, moderate enthesophytes on patella and syndesmophytes on two vertebral spinous processes
915	Un-urned burial	Unsexed adult	2 lower premolars lost ante-mortem. Osteophytosis on acetabulum, moderate enthesophytes on iliac crest and linea aspera and considerable on ischial tuberosity and patellae
1055	Urned burial	Adult male	Slight enthesophytes on patella
1060	Un-urned burial	1 adult male 1 adult female	Gross caries on one upper molar. Endocranial lesions and severe cribra orbitalia
1180	?*bustum*	Young adult, unsexed	Fragment of maxilla with abnormal pitting, slight osteophytosis on neck facet of left rib. At least 7 shaft fragments of possible humerus and ulna with periosteal new bone formation
1195	?*bustum*	Young adult, unsexed	1 tooth lost ante-mortem. Osteophytosis on superior CV body; enthesophytes on calcaneous and patella
1215	?*bustum*	Adult ?male	Ectocranial pitting and pitting on palate and zygomatic bones
1320	Un-urned burial	Unsexed adult?	Tibial periostitis. Slight enthesophytes on linea aspera
1742	Un-urned burial	Adult (30-50 y) female	1 tooth lost ante-mortem (upper premolar or molar).
1806	?*bustum*	Adult male	OA on head of proximal hand phalanx; moderate enthesophytes on patella and some portions of linea aspera
1904	Un-urned burial	Probable young adult, unsexed	Active periostitis
2060	Urned cremation	Prime adult (26-35 y) male Infant	1 lower molar lost ante-mortem. Slight ectocranial pitting on left parietal fragment), slight osteophytosis on fovea capitis of femur, syndesmophytes on 2 spinous process of vertebrae

OA = osteoarthritis

Dental pathology

Dental pathology is difficult to recognise in cremated bone due to the tendency of teeth to shatter during the cremation process. Dental disease may, however, be reflected in alveolar bone. Two conditions recognised in the latter were ante-mortem tooth loss and apical abscesses (probably the result of down-tracking infection from the tooth or gums). A large maxillary fragment in deposit 655 had a smooth-walled lesion typical of an apical abscess, as did a maxillary fragment in deposit 1060. In both deposits a molar was affected. Ante-mortem tooth loss was indicated by remodelled tooth sockets in alveolar bone fragments of deposits 910 (a right upper first molar), 915 (two pre-molars), 1195 (location not recognised), 1742 (upper pre-molar or molar), and 2060 (lower molar).

Pyre technology and ritual

The thoroughness of cremation of the corpse on a pyre is very dependent on high temperatures being sustained for at least 7-8 hours (McKinley 1994b). This often requires tending the pyre and adding fuel during the conflagration. By the end of this period, soft tissue should be burnt away, and most of the skeleton oxidised, although experimental work has revealed that the pelvis may continue burning in the hot pyre debris for several hours after the pyre has collapsed (ibid., 67). Thus, effective cremation requires sufficient fuel and a technology of pyre construction that allows the free flow of oxygen through the structure (McKinley 1989; 2000b).

In 23 of the Lankhills cremation deposits, the predominant or primary bone colour was white, (fully oxidated or calcined bone). The primary bone colour was grey in five cases and blue in one (possible *bustum* 1215). All deposits contained bone that had undergone more or less thorough burning, with all predominantly white deposits containing grey and/or blue bone, and some grey deposits containing white bone. Bone from un-urned burials 1320 and 1786, and urned deposit 1255 showed the most variation in colour, containing predominantly calcined bone but also light grey, charred and unburnt bone. Overall, however, the impression was of effective cremation in most cases. There did not appear to be any correlation between efficacy of cremation and burial type, suggesting that effective pyre technology and sufficient pyre fuel were widely available.

In the Lankhills assemblage, all the cremation deposits showed evidence of burning of green bone (Ubelaker 1989; Buikstra and Ubelaker 1994).

Weight of bone for burial

Investigations in modern crematoria have found that the bone weight of cremated adults ranges from approximately 1000-2400 g, with an average of 1650 g (McKinley 2000a, 269). Predictably, individuals of smaller and more gracile build (such as many females and children) will often have a lower bone weight; poorer bone survival of the articular surfaces and spongy bone has been observed in modern older individuals with osteoporosis (McKinley 2000b, 404). Thus, the infant remains in possible *bustum* 1845 weighed only 171.4 g, in contrast with the remains of the adult male in possible *bustum* 655, which weighed 1641 g. Greater mean bone weight was observed in the seven males or possible male burials (1041.1 g) compared with the four possible female burials (701 g) in the assemblage. These data include all three categories of burial, along with both disturbed and undisturbed burials.

In an archaeological context, the weight of bone recovered may be very influenced by the extent of mechanical truncation of deposits and through bone destruction (particularly of trabecular or spongy bone) in the burial environment (eg by chemical leaching). Many cremated bone deposits at Lankhills are known to have suffered truncation. As cremated bone preservation appeared to be very good, however, it is not anticipated that chemical leaching contributed significantly to loss of bone weight.

Grave depths and bone weight are presented in Table 5.55. If the redeposited cremated remains are excluded, there are only 11 completely undisturbed cremation deposits, three *busta* (655, 1180 and 1845), six un-urned (895, 915, 1320, 1527, 1742, 1786) and two urned cremation burials (1055, 2060) with a weight range of 95-1641 g. Unsurprisingly the most substantial deposits are from the adult *bustum* burials (excluding the infant in 1845), bone weights falling within the ranges expected of complete skeletons (McKinley 1994a). *Bustum* burial did not usually include the funeral phase involving the collection of cremated bone from the burnt out pyre - a process that almost always results in the exclusion of some of the cremated skeleton, whether deliberate or inadvertent. The *in situ* undisturbed anatomical position of the skeletons within four possible *bustum* burial pits or graves at Lankhills was confirmed by the presence of appropriate skeletal elements in samples taken from the head, torso, leg and foot ends of the grave (burials 655, 1180, 1806 and 1845).

Of the remaining burials, undisturbed urned deposits had a higher mean weight than their un-urned counterparts (591 g and 506 g respectively) although the numbers are small. Cremated bone deposits placed within a cinerary urn are less susceptible to damage by overlying soil weight, and dispersion by bioturbation and other taphonomic processes. In addition, most urns from Lankhills were lifted intact and excavated in the more controlled conditions of the laboratory, thus facilitating complete bone recovery. McKinley (2004a, 297) suggests that social status may influence the care with which bone was collected from the pyre,

with higher bone weights in higher status burials. She does comment, however, that while this appears to hold true for primary barrow burials in the British Bronze Age, such a clear relationship has not been observed in other periods. This trend is evidenced elsewhere during the early to middle Roman periods in Britain, at Pepper Hill, Kent (Boston and Witkin 2006), Brougham, Cumbria (McKinley 2004a), the Eastern Cemetery, London (McKinley 2000a, 250), and Westhampnett, West Sussex (McKinley 1997, 250).

Overall, bone weights suggest that collection of the entire burnt skeleton from the burnt out pyre was not carried out thoroughly, either because total collection of remains for burial was not regarded as necessary by mourners, or, if professional funerary operators were employed at Lankhills, because considerations of time and profit may have reduced the care with which bone was collected.

Fragmentation

Fragment size represents the measurements taken by the osteologist during analysis and does not necessarily represent fragment size at the time of deposition. Factors that affect fragmentation include both components of the cremation rites, such as the cremation, collection, deliberate crushing and burial of the human remains, bone preservation in the burial environment and the much later process of archaeological excavation and post-excavation processing (McKinley 1994a, 340).

The Lankhills cremated bone demonstrates a low level of fragmentation, probably reflecting both burial practices and good bone preservation within the burial environment. The maximum fragment size in the group of possible *busta* ranged between 33 mm and 95 mm, while the urned burials had a range of 47-92 mm. The large sizes probably reflect lack of post-cremation manipulation of the burnt bone in the former, and the protective effects of the urn in the latter. Maximum fragment size in the un-urned burial group was generally lower (between 15 mm and 87 mm) but higher than in the redeposited cremated remains (11-63 mm). These differences probably reflect damage from soil pressure on the unenclosed remains, and in the latter case, greater fragmentation associated with disturbance and redeposition.

Similarly, where the proportion of bone fragments in the >10 mm, 10-5 mm and <5 mm fractions were compared, the redeposited cremated remains showed the lowest average proportion of large fragments (35.8%), compared to the un-urned burials (45.6%), possible *busta* (52.9%) and urned burials (69.3%). The last two also contained very little bone in the <5 mm category (6.1% and 7.6 % respectively). The largest fragment size in the urned burials reflected the protection offered by the urn, whereas all other deposits were subject to the destructive effects of soil pressures. The differences in fragmentation between these three groups probably reflected the differing extents of manipulation in the post-cremation period, for example variation in collection procedures.

Representation of skeletal elements

There appeared to have been no deliberate selection or exclusion of specific elements or body parts within the cremation deposits, with the exception of undisturbed urned cremation burial 1255, where only the cranium and torso appear to have been represented. The deposit weighed only 51 g.

Pyre goods

Burnt animal bone was recovered from within 13 cremated human bone deposits (43.3%), although in most cases this comprised very small quantities amounting to between 1.9 g and 14 g (see Worley below). A cremated dog's tooth was recovered from possible *bustum* 1215, but this may have constituted a keepsake or decoration (eg part of a pendant) rather than being a pyre offering *per se*. The complete cremated skeleton of a dog aged at least 18 months at death was present in *bustum* 1845.

Pottery vessels were contained within deposit 1060, 1195, 1215. A copper alloy belt buckle and plate, belt plate and an unidentified object were recovered from possible *bustum* 1180. A bone spindle whorl and a coin were recovered from possible *bustum* deposit 1195. A glass fragment was found in possible *bustum* 655. The latter also contained a crossbow brooch, a copper alloy strip, a sheet fragment and an unidentified iron object.

Melted metal and glass are commonly recovered from cremated bone deposits, sometimes melting onto the bone. Such pyre goods include dress items (such as jewellery and clothes fastenings) worn by the deceased on the funerary pyre (Cool 2004, 438-9) or constituted the remains of offerings or objects used in the funerary display (eg unguent bottles or metalwork from biers). The presence of metalwork may also be suggested from staining of the bone (brown-red with iron, and green with copper alloys). In the Lankhills assemblage, green staining was noted on an ilial fragment from possible *bustum* burial 1195, tentatively suggesting the location of a copper alloy object near the hips (possibly part of a belt or an object suspended therefrom). An iron pin adhering to two fragments of clavicle in urned burial 845 may be an *in situ* cloak pin. Hobnails were found within 16 cremation deposits (510, 655, 895, 915, 945, 1060, 1160, 1180, 1195, 1215, 1527, 1724, 1786, 1798, 1806 and 1845). Distinguishing between burnt and unburnt iron is problematic, although the presence of hobnails within these deposits suggests that shoes had been placed on the pyre rather than in the grave, as is common in late Roman inhumation burials.

Discussion

Cremation involves a multi-stage mortuary rite: the laying out and display of the body on a bier and/or the pyre, the cremation on a pyre, the collection of bone following the burning, and the burial of selected human remains within a pit or grave (Pearce 1998, 105). The relative importance of the cremation and the burial stages appears to vary across time periods, and also between social groups (*ibid.*). Within the early Roman period, military sites in the north and west of Britain seem to emphasise the pyre as a location for display much more than in the south-east of England (*ibid.*; Philpott 1991, 220-1). It is highly likely that the act of cremation was still an important visual component of funerary ritual by the late Roman period. The number and range of pyre goods recovered from the Lankhills cremation burials is a reflection of changing fashions in personal adornment and therefore accompanying artefacts. The most richly furnished pyres appear to have been the possible *busta*, suggesting that for this group at least, the spectacle of cremation was an important part of the funerary process.

In Romano-British cremation rites offerings of food and drink, often contained within or upon pottery vessels, were placed on the pyre (Pearce 1998, 105). Lindsay (1998, 70) comments on the widely held Roman belief that beings in the nether-world required nourishment from the survivors in this world for their well-being. In offering food and drink during and after the main funerary rites, it was hoped that the deceased would be transformed into a benevolent, rather than a disruptive ancestor, capable of conferring prosperity and fertility on the living rather than ill luck (ibid., 72). Funerary feasting may also be a source of animal and plant remains within cremated deposits.

The 30 cremation deposits recovered in the OA excavations at Lankhills form an uncommon and relatively large assemblage of late Roman cremation burials. Together with the seven deposits recovered in Clarke's excavations this represents one of the largest late Roman assemblages in Britain. Most commonly, 3rd- to 4th-century cremation burials have been recovered as singletons in among the more ubiquitous inhumation burials. Slightly larger assemblages are known from sites such as Boscombe Down, Wilts (McKinley in Wessex Archaeology 2008) and Barrow Hills, Radley, Oxon (Chambers and Boyle 2007, 58-64). The much larger cemetery at Brougham is exclusively of 3rd-century date (Cool 2004).

At a time when the normative burial rite was inhumation, the presence of a small but significant cremated bone assemblage at Lankhills is interesting, and begs the question as to whether these represent a particular ethnic, social or religious group. The presence of possible *busta*, a burial type often associated with military installations and native rites along the northern Rhine, raises the question of possible ethnic associations with these regions, but the continental evidence, like that relating to most burials of this type in Britain, suggests an emphasis on the early Roman period.

CARBON AND NITROGEN STABLE ISOTOPE ANALYSES *by Colleen Cummings and Robert Hedges*

Introduction

This section presents the results from analyses of carbon and nitrogen stable isotopes performed on a selection of the individuals buried at the Lankhills cemetery site. Because the carbon and nitrogen stable isotope ratios are distinct in different food groups, and these distinctions are passed on in the consumer's bodily tissues, this type of analysis can be used to understand ancient dietary practices. When isotopes from the diet are incorporated into bodily tissue, a change typically occurs in the ratio of one isotope to another, commonly referred to as fractionation. Nitrogen isotopes primarily provide information about position in the food chain, as each step up the food chain (trophic level) entails a fractionation of 3-5‰ from diet to consumer (Hedges and Reynard 2007). Thus, in general, more enriched nitrogen isotopes indicate greater consumption of animal protein or the consumption of animals which themselves are higher on the food chain.

Although carbon isotopes also fractionate by about 1‰ from diet to consumer, carbon isotopes also provide different types of information on diet depending on the local climate. In areas where C4 plants (usually tropical grasses such as maize, millet, or sugarcane) are present, carbon isotopes can distinguish between these and C3 plants (almost all other grains, fruits and vegetables) due to the different photosynthetic pathways in these two types of plants. This type of analysis is commonly performed in New World Archaeology to trace the introduction of maize into new areas (Larsen 1997, 270-280). In temperate climates where C4 plants are not present (such as England), carbon isotopes are primarily used to distinguish between terrestrial and marine food sources (eg Arneborg *et al*. 1999; Barrett *et al*. 2001). Marine environments are enriched in carbon by approximately 8‰ compared to terrestrial food webs due to differences between seawater carbonate and atmospheric CO2 (Chisholm *et al*. 1982; Richards and Hedges 1999). In addition, plants and animals from river and lake environments tend to be depleted in carbon compared to completely terrestrial animals (Fry 1991). Thus, enrichment or depletion in the carbon isotopes of humans beyond the standard expected 1‰ enrichment over terrestrial animals can indicate the presence of fish, freshwater or marine, in the diet.

The focus of this study has been the analysis of bone collagen from a selection of the animal and human remains at Lankhills. There is a general

consensus that bone collagen primarily represents only the protein portion of the diet, other than in exceptional circumstances (Ambrose and Norr 1993; Tieszen and Fagre 1993). It is important to remember therefore, that the results presented here are concerned with relative proportions of dietary protein from different foods, not the total diet. Animal remains are tested in order to build a picture of the local foodweb, and then human remains are related to these results in order to determine the types of foods they were eating.

Materials

The initial sampling strategy for carbon and nitrogen isotope analysis was to sample approximately 200 humans and 100 animals. However, the skeletal preservation at the cemetery was variable leading to difficulties in sampling, particularly as rib and torso bones were especially deteriorated. Only rib fragments were sampled from humans, to prevent undue damage to the skeletal collection. For the animal sample, small sections of bones easily identifiable to species were used. Further, as the animal bone remains at the cemetery did not provide many sheep/goat or pig bones, further animal bone samples were taken from the Staple Gardens site in Winchester (site AY93 in Table 5.59), about 700 metres south of Lankhills and contemporaneous with the main phase of burial at Lankhills (3rd to 4th century AD). In total, the number of samples taken from the Lankhills cemetery group for carbon and nitrogen stable isotope analysis was 124 humans and 35 animals from the Lankhills site and 26 animals from the Staple Gardens site. Care was taken while sampling to avoid areas of bone with markings on them, or which had been glued or treated with a conserving agent in any way, as these procedures have been shown to alter isotope ratios (Moore *et al*. 1989).

Collagen extraction and isotope analysis

The samples were cleaned by shotblasting the bones to remove any dirt or markings. Following this, an amount of bone weighting 0.5 to 1 gramme was broken into smaller fragments. The bone collagen was extracted by first demineralising the bones in 0.5M hydrochloric acid at less than 10° C for approximately one week. The bones were then rinsed with deionised milliQ water and placed in sealed tubes with pH3 water at 75° for 48 hours to gelatinise the collagen. The supernatant of this was filtered off and freeze-dried to obtain the collagen. An amount of 2.0-3.5 mg of this extracted collagen was then weighed out and placed into 6 mm tin capsules; this was done in duplicate for each sample. This method, a modification of the Longin (1971) method, follows standard procedures at the University of Oxford for archaeological bone samples (Richards and Hedges 1999), which have been shown to be comparable to other methods of collagen preparation in stable isotopes studies (Jørkov *et al*. 2007).

Table 5.57: Summary of carbon and nitrogen isotope analyses

	N	$\delta^{13}C$ *Mean*	$\delta^{13}C$ *Std. Dev.*	$\delta^{15}N$ *Mean*	$\delta^{15}N$ *Std. Dev.*
Humans – total	125	-19.2	0.4	8.9	1.0
Humans – adult males	51	-19.0	0.5	9.0	1.0
Humans – adult females	45	-19.2	0.4	8.6	0.7
Cows	14	-21.8	0.4	5.3	1.1
Sheep/Goats	14	-21.6	0.2	4.6	1.5
Pigs	12	-21.2	0.4	5.9	1.3
Domestic Fowl	5	-19.9	0.4	7.2	0.5
Ducks	3	-25.6	0.6	9.2	2.1
Equids	7	-22.1	0.3	4.5	0.7
Dogs	3	-19.9	0.0	7.7	0.3

The carbon and nitrogen isotope ratios of the samples were analysed using a Carlo Erba carbon and nitrogen elemental analyser coupled to a Europa Geo 20/20 mass spectrometer set to operate in a continuous-flow mode. All measurements were made relative to nylon and alanine laboratory standards.

Only data which conform to the standard procedures for determining valid collagen preservation (van Klinken 1999) are included in this analysis, thus any with C:N ratios outside the accepted range were excluded. In this respect, only one sample taken was rejected because its C:N ratio lay outside the accepted range; this was a cow bone from context 1713. All other samples yielded acceptable collagen and were processed as described above. The range of machine variation between multiple mass spectrometer runs of the same sample was 0 to 1.26‰, with an average of 0.14. Summary results are presented in Table 5.57 and the full data are given in Tables 5.58 and 5.59.

Animals

As the primary function of stable isotope analysis in archaeology is to build a picture of the local foodweb at a site and situate humans in relation to that foodweb, it is logical to begin by addressing the common agricultural animals first, and later comparing the humans to these results.

Herbivorous animals (such as cows and sheep/goats) tend to be quite similar to each other in their carbon and nitrogen values and there is no reason to expect a substantial divergence in their data patterns unless the management strategies relating to these animals were quite different. Indeed, at Winchester, there is no substantial difference in carbon values between cows and sheep/goats, and while cows have slightly more elevated nitrogen isotope values than sheep/goats, this difference is

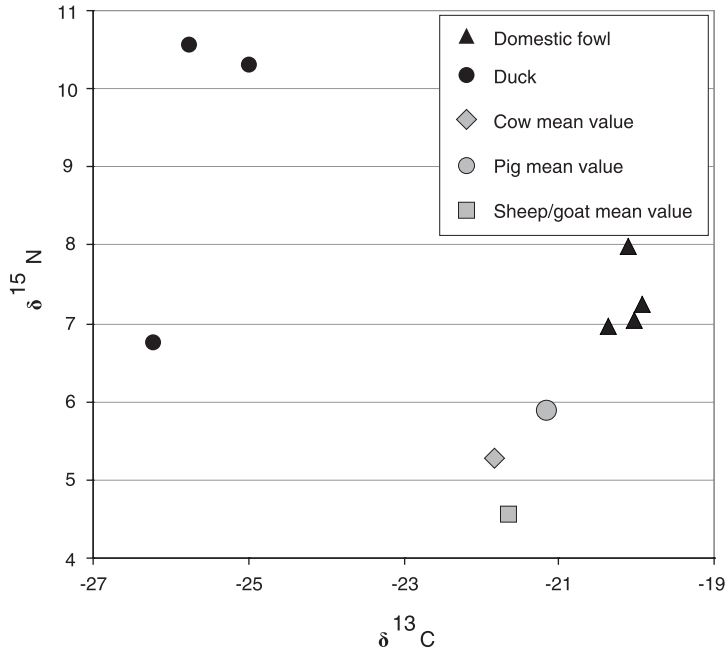


Fig. 5.61 Carbon and nitrogen isotope values for duck and domestic fowl against mean values for principal animal species

not statistically significant. The large range of δ15N values is consistent with other British sites where there is evidence for similarly wide nitrogen value ranges among herbivores (eg Jay and Richards 2006; Müldner and Richards 2007b).

As omnivorous animals, pigs have the potential to exhibit considerable differences in isotopic ratios compared to herbivores. In turn, if pork consumption among humans is prevalent, this can drastically affect human isotope values. The pig values from Winchester are very slightly enriched in carbon compared to the herbivores, and enriched in nitrogen by approximately 1‰. Both of these differences are statistically significant (δ13C t = -3.461, df = 38, p = 0.001 and δ15N t = -2.115, df = 38, p = 0.041). This is consistent with what would be expected if a pig were being fed a mixture of animal and vegetable protein.

The omnivorous nature of pigs at Winchester is important to note, as it breaks with the recommendations of the standard Roman agricultural writers. In these works, pigs are described as having a primarily herbivorous diet – mixed amounts of grains, legumes, vegetables, fruits, refuse from wine making, etc. (Columella *Agri*. 7.9.8-9, Origen *Med. Comp*. 1.49, Varro *Agri*. 2.4, Vergil *Geor*. 2.520), as well as occasional references to allowing pigs to forage on their own in wooded areas (Columella *Agri*. 7.9.6). Indeed, this vegetarian diet of pigs in the Roman world is supported by isotopic analysis of pigs at sites from elsewhere in the Roman world where pigs are isotopically indistinguishable from cows or sheep/goats (Dupras 1999, 259; Prowse *et al*. 2004). Herbivorous pigs are also found in the Iron Age, Anglo-Saxon and medieval periods in Britain (Privat and O'Connell 2002; Müldner and Richards 2005; Jay and Richards 2006). This stands in contrast to the data from Winchester and elsewhere in Roman Britain (Cummings 2008) where pigs clearly have a omnivorous diet. The data therefore suggest that the methods of raising pigs at Winchester (and other sites in Roman Britain) were distinctly different from those in other areas of the empire as well as in contiguous time periods.

Perhaps more surprisingly than the pigs, domestic fowl are also enriched in carbon and nitrogen compared to other animals, including pigs. As with pigs, domestic fowl in Roman Britain are more common on urban sites than on rural (Maltby 1997), and may have shared a similar diet of kitchen scraps comprising mixed animal and vegetable sources. In addition, free-range fowl have access to animal protein in the form of insects and other small animals. Indeed enriched nitrogen levels in chickens have been found at other sites, suggesting that this trend is widespread (eg Dupras 1999, 259; Müldner and Richards 2005; 2007b). Further animal protein consumption for poultry may have come from the processes of fattening the birds prior to consumption. This was a well-attested process for all types of birds in the Roman world (Columella *Agri*. 8.7.1, 8.10; Cato *Agri*. 89; Pliny *NH* 10.25; Varro *Agri*. 3.6, 3.9.19-21), and bread soaked in milk was one food often used in the fattening process. If milk was a common food for domestic fowl, then the carbon and nitrogen isotope enrichment of these birds is understandable.

The animal bone assemblage at Winchester also provided the possibility to test a few duck bones, which yielded interesting results (Fig. 5.61).

As is evident from the graph, the duck values are substantially depleted in carbon compared to the

rest of the animals, and particularly the domestic fowl. In addition, two of them are considerably enriched in nitrogen compared to other animals at the site. If these ducks came from a riverine environment close to the city, anthropogenic factors (eg sewage) could be affecting the nitrogen isotopes (McClelland *et al*. 1997; Schlacher *et al*. 2005). The depleted carbon values are consistent with the range of values characteristic of freshwater environments (Fry 1991).

Humans general

Although there is considerable spread in the human data, on average the humans are enriched by 4‰ in nitrogen and 2.5‰ in carbon compared to the herbivores. These values are considerably higher than one might expect from typical agriculture-based societies. If one were working with a strictly linear model considering herbivorous animals and plants as the only two food sources (eg Schwarcz 1991; Little and Little 1997) the data would appear to indicate that most of the people buried at Lankhills had 100% of their dietary protein from animal products. Of course, this is highly unlikely (Hedges and Reynard 2007) and the likelihood that there were multiple items in the diet with different isotopic values (pigs, fowl, marine and freshwater fish) greatly complicates the linear model approach. The individuals at the site who have the most enriched nitrogen values are enriched by more than one full trophic level above the herbivores, thus the incorporation of other, enriched nitrogen foods is necessary to account for their isotope values. Indeed, even those individuals most depleted in nitrogen are enriched by roughly 2‰ compared to the herbivores, still indicating substantial animal protein consumption. Even though crops can become slightly enriched in nitrogen through practices such as manuring (Bogaard *et al*. 2007), enrichment of this magnitude is significant as it indicates that everyone buried at Lankhills had some access to animal protein. It has often been assumed (largely based on textual evidence) that the vast majority of people living in the time of the Roman Empire had extremely limited access to animal based foods (White 1976; Foxhall and Forbes 1982; Garnsey 1998; 1999; Donahue 2004). However this certainly does not appear to be the case for the Lankhills population (or other groups in Roman Britain, see Cummings 2008), supporting the growing body of zooarchaeological evidence for greater consumption of meat in the Roman world than is generally allowed (King 1999; Grant 2004; MacKinnon 2004).

In relation to carbon, those individuals with a carbon value of around -20‰ can be seen as a normal carbon trophic level enrichment of around 1‰ over the carbon values of the animals, and therefore consistent with a terrestrial based diet. The individuals in the -18 to -19‰ range are enriched by 2‰ or more compared to the carbon values of both pigs and herbivores. This shift in carbon, as well as the enriched nitrogen values of most of the population, again suggests the importance of other food items in the diet besides (or in addition to) the protein gained from terrestrial herbivores. In particular, the slight enrichment in carbon suggests a small, but consistent, incorporation of marine fish or shellfish into the diet of some of the people interred in the cemetery.

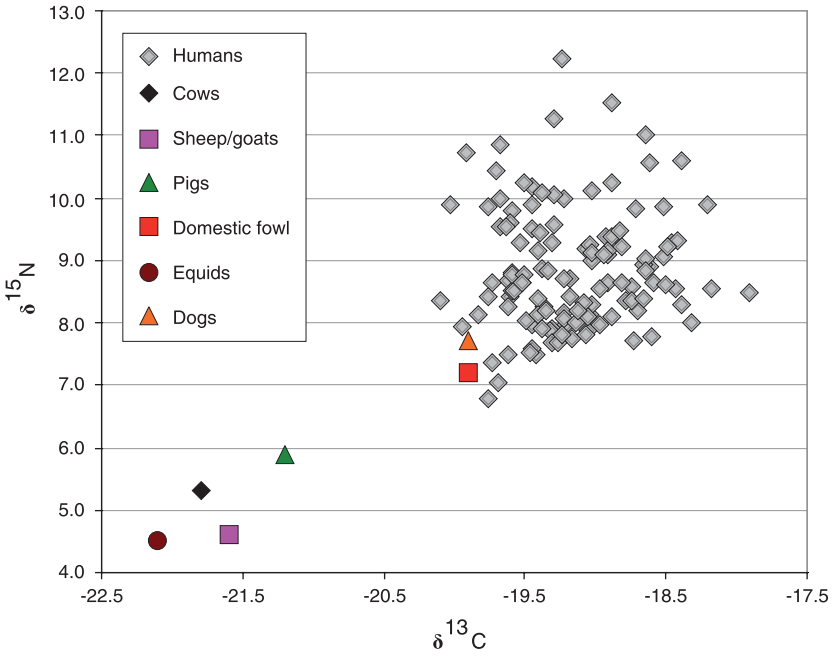


Fig. 5.62 Carbon and nitrogen isotope values for humans and mean animal values

Age and sex

Among the adults at the site, no differences were found between individuals of different age groups. Adult males and females have very similar values, though men do show a slight enrichment over females in both carbon (0.02‰) and nitrogen (0.04‰). While this difference in nitrogen values is statistically significant ($t = 2.371$ $df = 94$, $p = 0.020$), the actual difference is quite small, indeed within the range of standard machine error. Therefore, the enrichment of men over women is unlikely to reflect any substantial difference in actual dietary practices between the two sexes.

With respect to subadults, enough infants were sampled to address the question of infant feeding and weaning processes. The isotopic values for the infants and children are plotted in Fig. 5.62, along with the mean adult value at the site.

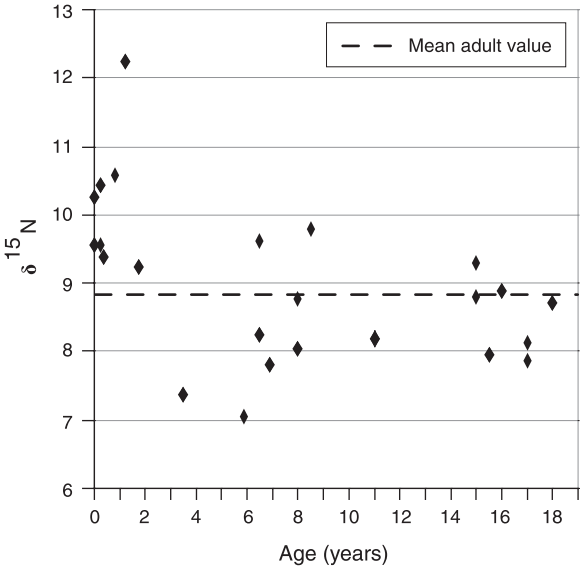


Fig. 5.63 Infant feeding and weaning

It is immediately apparent that among the infants under two years of age, while they are all enriched in nitrogen values compared to the adult mean, only one shows the full trophic level enrichment (~3-5‰) that is generally expected for exclusively breast-fed infants (Fogel *et al*. 1989; Schurr 1999; Fuller *et al*. 2006). It is possible, particularly in the case of the perinatal infants, that the bone had not yet sufficiently remodelled to show any signs of breast-feeding, but for those that are more than a few months old this is unlikely due to the extremely quick rate of bone tissue turnover in very young infants. It is perhaps more likely that these infants were *not* exclusively breastfed, which in turn could have led to malnourishment, and possibly contributed to their early death. It is also worth noting that at least three of the infants under the age of two (grave numbers 231, 1317, 1725) show evidence of health problems including growth retardation, porotic hyperostosis, and possibly scurvy. Unfortunately, therefore, the evidence for the practices of breast-feeding is ambiguous and the lack of children between the ages of two and four makes it difficult to estimate the timing of weaning. Further isotope analysis of dental tissue of older adults (eg using the methodology of Fuller *et al*. (2003) or Humphrey *et al*. (2008)) might be a useful way of getting around the osteological paradox (ie assuming that the population of non-survivors accurately reflects the practices of those who lived, see Wood *et al*. 1992), by directly measuring the infant feeding practices of those who survived to adulthood.

Stature

It is not unreasonable to suggest that those individuals who received the highest quality food items would have had greater success in achieving their full height potential. Therefore, the possibility of correlations between adult stature and stable

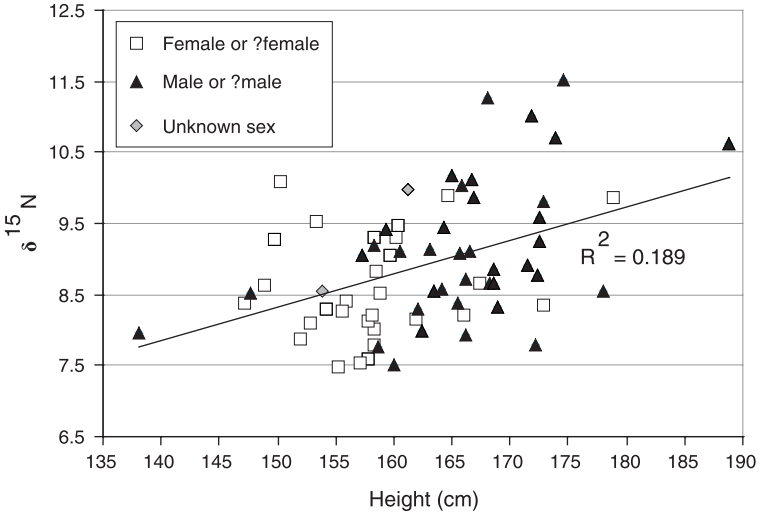


Fig. 5.64 Stature, sex and nitrogen correlation

isotope ratios was explored. A correlation was indeed found between stature and nitrogen for the total population at Winchester (R2 = 0.189, Pearson correlation = 0.434, p = <0.000):

Because stature is affected by sex, men and women were also tested separately to see if stature correlated with nitrogen in these two subgroups. The correlation held for men when tested on their own ($R2$ = 0.198, Pearson correlation = 0.445, p = 0.005), but not for women. This correlation for the men remains statistically significant even when the outliers (men taller than 1.85 m and shorter than 1.50 m) are excluded, thus they have been left in the calculation.

This correlation between stature and nitrogen isotope ratios among the males could be used to suggest better nutrition (specifically higher animal/fish protein content of diet) during growth resulting in taller individuals. However, the skeletal element sampled for isotopic testing was rib bone, which is generally thought to have a relatively quick turnover rate of approximately two years. Thus, except where individuals are quite young, it is unlikely that the isotopic values gained from the rib bones can provide much information on nutritional status during the growing period. Only if the taller individuals not only had a different diet during childhood but also continued to have this same nitrogen isotope enriching diet throughout their adulthood would this type of result be detectable. This may, indeed, be the case at Winchester.

DISH

Three individuals (in Graves 263, 855 (not sampled) and 1310) at Lankhills were afflicted with diffuse idiopathic skeletal hyperostosis (DISH), a relatively rare skeletal condition that causes certain tissues with the body to ossify. The most visually spectacular of these, and often considered the most diagnostic criterion in identifying the condition, is the ossification of the anterior longitudinal ligament in the spine (Ortner 2003, 558-560). This links the individual vertebrae within the spine with a long band of ossified tissue, which is often described as similar in appearance to dripped candle-wax. Bony spurs also occasionally occur elsewhere in the body, where other connective tissues have ossified, particularly at joint margins or muscle insertion points. The aetiology of this condition is elusive, but it has been linked to adult onset diabetes and obesity (Littlejohn 1985; Kiss *et al*. 2002), and in palaeopathological studies, has been used to suggest higher status groups within certain populations (Waldron 1985; Rogers and Waldron 2001; Jankauskas 2003; Müldner and Richards 2007a). Because of the link between this condition and diabetes and obesity, it is interesting to examine whether these two people had a different diet from the other individuals at the site.

Although the individuals with DISH are not completely separate from the rest of the group, they are enriched in both carbon and nitrogen compared to the majority of the population. It is difficult to

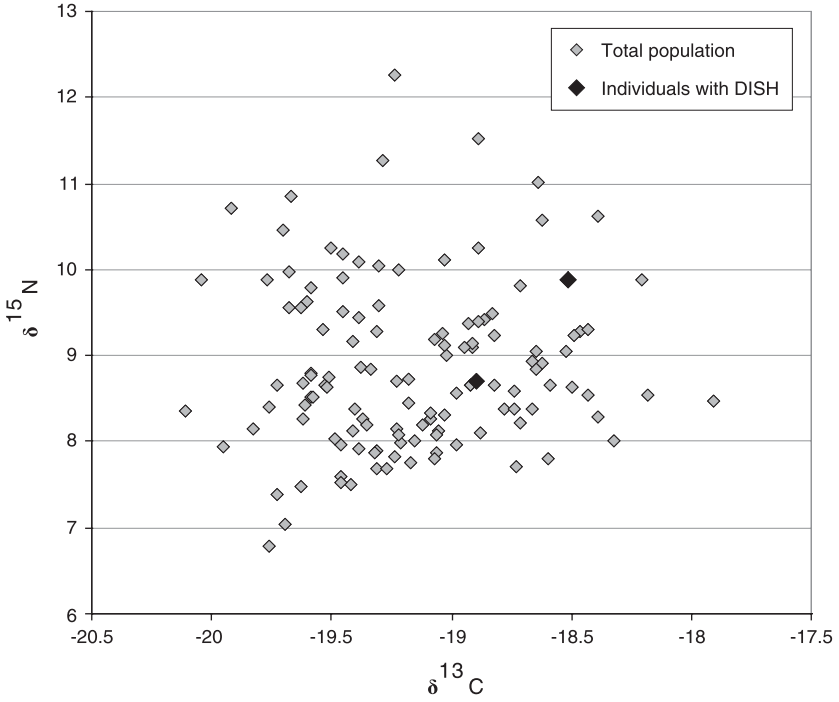


Fig. 5.65 Carbon and nitrogen isotope values for individuals with DISH

base an argument on only two data points, but this could indicate that these people consumed a higher proportion of animal protein, perhaps particularly marine fish, than other people. It has been suggested elsewhere that elevated carbon and nitrogen isotopes are indicative of increased social status, due to the high value placed on marine fish in the Roman (Richards *et al*. 1998; Cummings 2008) and medieval (Müldner and Richards 2007a) worlds. It is possible therefore, that these individuals' condition was indeed related to their dietary practices during life.

Burial position

In addition to biological characteristics of the skeletons, the variation in burial practices at Lankhills provides rich ground for exploring potential differences among individuals buried in particular ways or with distinctive items. For instance, those who were buried prone are depleted in carbon compared to those buried supine (there are only two crouched burials at this site, and they are not significantly different from the rest). This depletion is statistically significant ($t = 2.042$, $df = 113$, $p = 0.044$) (Figure 5.66).

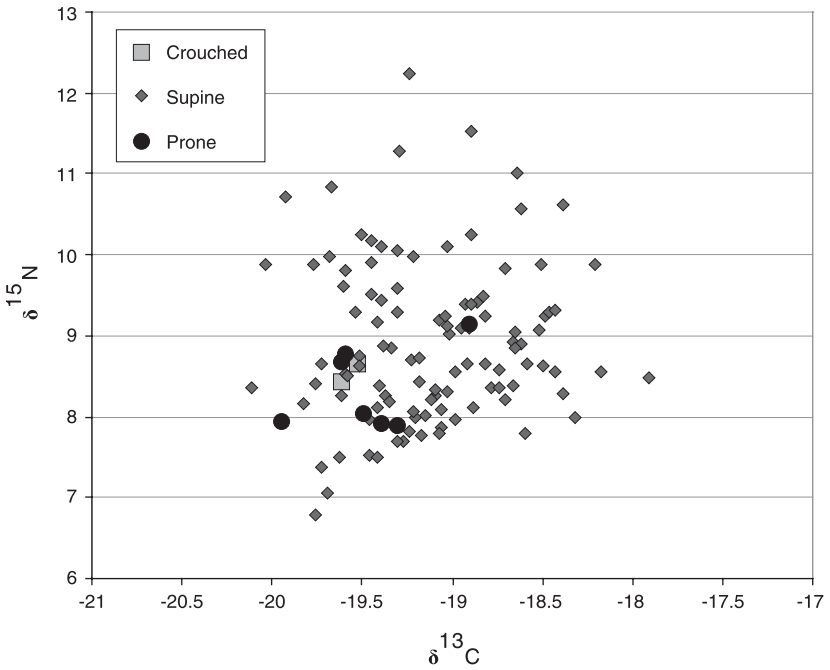


Fig. 5.66 Carbon and nitrogen isotope values in relation to body position

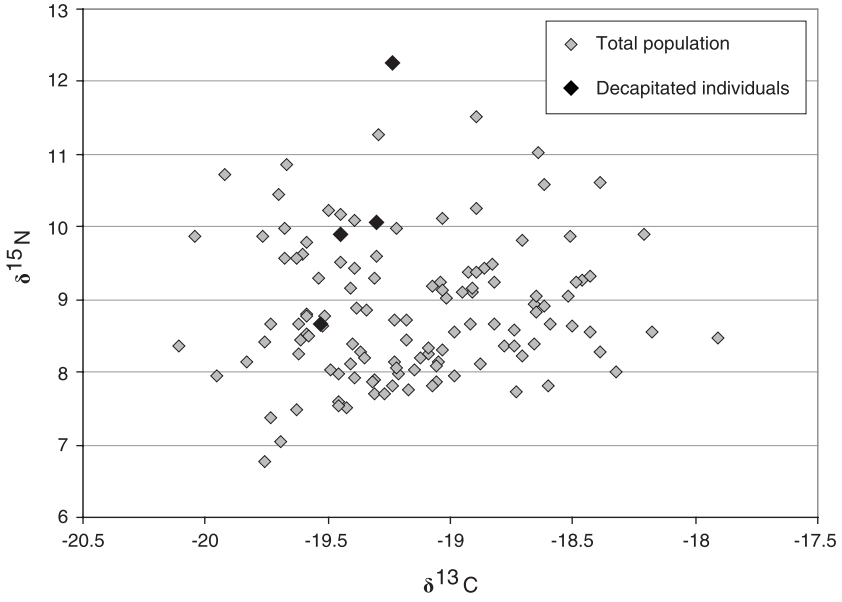


Fig. 5.67 Carbon and nitrogen isotope values of decapitated individuals

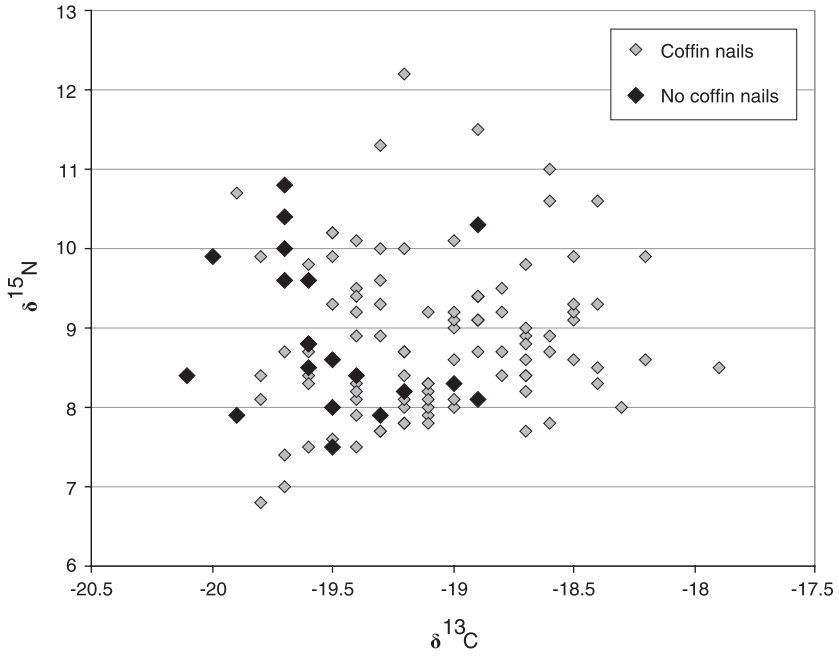


Fig. 5.68 Carbon and nitrogen isotope values in relation to coffin provision

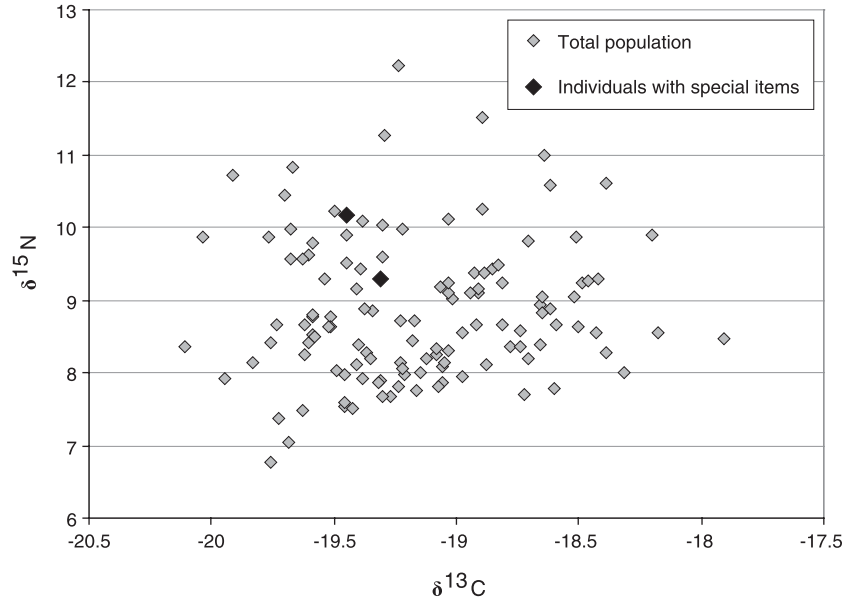


Fig. 5.69 Carbon and nitrogen isotope values for individuals with unusual grave goods

Decapitation

As with prone burials, decapitated individuals are depleted in carbon compared to the majority of the population, but here the nitrogen values are more variable (Figure 5.67).

The point that is the most enriched in δ15N is that of a baby aged 1 to 1.4 years (grave 110), so this point was excluded from any statistical testing, on the basis that his or her elevated nitrogen value is likely due to breastfeeding. The three remaining points are significantly different from the majority of the population in their δ13C values ($t = 3.568$, $df = 3.804$, $p = 0.025$).

Though the cultural significance of the practice of decapitation is unclear (Boylston *et al.* 2000), the stable isotope data indicate that the people who were decapitated or buried prone did not have dietary practices that were completely different from the broader population. However, it does appear that these individuals did not have access to foods that would result in isotopic values particularly enriched in carbon (ie marine fish). The results here are comparable to Cirencester where decapi-

tated individuals are similarly depleted in carbon compared to the majority of the population, though here they are also significantly enriched in nitrogen, a result not found in the Lankhills sample (Cummings 2008).

Coffins

Among the burials at Lankhills, those buried in nailed coffins are significantly enriched in δ13C values compared to those for whom there is no evidence for coffins (p = 0.000), though there is considerable overlap between the two groups (Figure 5.68).

It is, of course, always possible that those burials without coffin nails did indeed have coffins but of a wood-jointed construction and the isotope difference between the two groups is spurious. However, if the burials without coffin nails do indeed indicate an absence of coffins, it is possible that a class difference existed within the Lankhills group, reflected both in dietary practices during life and burial custom at death.

Grave goods

As at the previous Lankhills excavation, there were several burials that contained crossbow brooches and other distinctive items (buckles, strap-ends, spurs etc.), which some have argued are indicative of a special class of foreigners who were buried within this particular cemetery in Britain (Clarke 1975; 1979, 377-403; Baldwin 1985; Evans *et al*. 2006a). Unfortunately, skeletal preservation at Lankhills was variable, and only two of the five individuals with these distinctive brooches had rib fragments suitable for sampling (Graves 745 and 1925). These two are presented in Figure 5.69, in relation to the rest of the group.

These two individuals did not have isotopic values distinct from the rest of the group however, suggesting that their possible cultural differences did not extend to dietary practices. If these two individuals are representative of the crossbow brooch burials in general, and these people are in fact immigrants to the area, then the stable isotope analysis raises two possibilities. The first possibility is that upon moving to the area they adapted to local dietary customs, but choose to maintain traditional burial rites. Secondly, it is also possible that they maintained traditional dietary practices as well as burial rites, but that the original diet is not distinguishable from a Romano-British diet through the use of stable isotopes.

Conclusions

Overall, the stable isotope results from the Lankhills cemetery suggest that this group of people had ready access to multiple sources of animal protein, including, for some people at least, small amounts of marine fish. Although stable isotope analysis cannot determine whether people were meeting their basic minimal health requirements in a quantifiable way, this evidence for access to animal protein would seem to indicate that the people buried in the Lankhills cemetery were generally well fed and likely had overall adequate nutrition. The possible exception to this may be certain young infants, but the evidence is ambiguous, and certainly the osteological paradox (Wood *et al*. 1992) should prevent us from using this to infer general practice towards the majority of infants who lived into adulthood.

These isotopic results may provide some evidence of a status differentiation within the site. This is particularly evident in carbon isotopes where the individuals buried in coffins show more enriched values. Likewise, the prone and decapitated burials, depleted in carbon, may be evidence of lower socio-economic status, though the meaning of decapitation in Roman Britain is ambiguous (Philpott 1991; Boylston *et al*. 2000). It is generally acknowledged that marine fish was accorded particular status as a luxury item within the Roman world (Wilkins 1993; Purcell 1995; Locker 2007) and the variation in carbon isotopes at Lankhills may reflect varying access to marine fish among different segments of the community.

Table 5.58: Carbon and nitrogen isotope data, humans

Laboratory ID Number	*Original Context #*	*Age*	*Sex*	$\delta^{13}C$	$\delta^{15}N$
LH001	8	0-6 mos	?	-19.7	9.6
LH002	25	45+	M	-18.2	9.9
LH003	74	12-19yrs	?	-19.5	8.0
LH004	95	30-40	M?	-19.7	10.0
LH005	108	25-35	M	-19.2	8.0
LH006	271	18-25	F	-18.9	9.4
LH007	284	45+	F?	-19.4	8.3
LH008	451	45+	M	-17.9	8.5
LH009	661	45+	F	-19.3	7.9
LH010	683	45+	M	-19.4	8.4
LH011	712	15 yrs	?	-19.3	9.3
LH012	919	35-45	F	-19.6	8.7
LH013	1026	8 yrs	?	-19.5	8.0
LH014	1197	30-40	F?	-19.4	9.2
LH015	1247	45+	M	-19.7	10.8
LH016	1258	45+	F	-19.2	8.2
LH017	1281	25-35	F	-19.9	7.9
LH018	1284	45+	M	-19.3	7.9
LH019	1517	50+	M	-19.5	8.6
LH020	1532	35-45	M	-19.2	8.1
LH021	1557	25-35	F	-20.0	9.9
LH022	1565	3-4 yrs	?	-19.7	7.4
LH023	1640	50+	M	-18.4	10.6
LH024	1870	14-16 yrs	?	-19.6	8.8
LH025	1882	45+	M	-19.0	8.1
LH026	12	30-40	M	-18.6	8.7
LH027	20	16-18	F	-19.1	7.9

(continued overleaf)

Table 5.58 (continued): Carbon and nitrogen isotope data, humans

Laboratory ID Number	Original Context #	Age	Sex	$\delta^{13}C$	$\delta^{15}N$
LH028	55	40+	?M	-18.9	9.4
LH029	61	30-40	F	-19.1	8.0
LH030	113	8-9	?	-19.6	9.8
LH031	118	1-1.4 yrs	?	-19.2	12.2
LH032	119	20-30	F	-19.4	9.5
LH033	212	50+	?F	-20.1	8.4
LH034	281	30-40	F	-18.5	9.9
LH035	404	0-5 mos	?	-19.7	10.4
LH036	488	25-40	?	-19.2	10.0
LH037	507	16-18	F	-19.4	8.1
LH038	559	30-40	F	-18.6	7.8
LH039	611	6-7	?	-19.6	9.6
LH040	612	25-45	?M	-19.2	7.8
LH041	686	25-35	F	-19.3	7.7
LH042	829	6-7	?	-19.1	8.3
LH043	926	15-17	?	-18.6	8.9
LH044	932	40-50	M	-19.1	7.8
LH045	939	60+	M	-19.4	7.9
LH046	1094	30-50	?	-19.8	6.8
LH047	1119	40+	M	-18.7	9.8
LH048	1134	30-40	F	-18.9	8.1
LH049	1232	35-45	M	-19.7	8.7
LH050	1244	10-12	?	-19.4	8.2
LH051	1271	40+	M	-18.9	8.7
LH052	1304	30-40	?F	-19.4	8.9
LH053	1697	40-55	M	-18.6	11.0
LH054	1926	30-40	?M	-19.5	10.2
LH055	84	25-35	F	-19.0	9.0
LH056	134	25-35	M	-19.3	8.9
LH057	476	30-40	F	-18.5	9.1
LH058	522	35-45	M	-18.7	8.9
LH059	593	18-25	M	-18.8	8.4
LH060	614	12	?	-19.6	8.4
LH061	623	40-60	??M	-19.6	8.5
LH062	636	35-55	?M	-18.7	8.6
LH063	667	16-20	F	-19.2	8.7
LH064	717	40+	M	-19.0	10.1
LH065	741	17-20	M	-19.4	7.5
LH066	806	40-45	F	-19.0	8.3
LH067	861	35-45	M	-19.6	8.8
LH068	879	40-50	? M	-19.1	9.2
LH069	938	35-45	M	-19.4	9.4
LH070	1022	35-45	M	-18.9	9.1
LH071	1082	40+	F	-19.1	8.1
LH072	1084	30-35	F	-19.5	9.9
LH073	1103	25-35	F	-18.5	9.3
LH074	1114	25-30	F	-19.6	8.5
LH075	1173	50+	F	-19.5	9.3
LH076	1191	18-24	? M	-19.1	8.3
LH077	1209	35-45	M	-18.7	9.0
LH078	1223	45-50	?M	-18.3	8.0
LH079	1227	30-45	F	-18.4	9.3
LH080	1277	40-44	M	-18.9	9.1
LH081	1289	35-45	M	-19.3	10.0
LH082	1341	30-50	F	-19.5	7.6
LH083	1361	30-50	F	-18.7	8.8

Table 5.58 (continued): Carbon and nitrogen isotope data, humans

Laboratory ID Number	Original Context #	Age	Sex	$\delta^{13}C$	$\delta^{15}N$
LH084	1416	20-25	F	-19.6	7.5
LH085	1481			-19.0	9.2
LH086	1512	20-30	F	-19.4	10.1
LH087	1552	20-40	F	-19.5	10.2
LH088	1598	40+	? F	-19.6	8.3
LH089	1934	adult	?	-19.2	8.4
LH090	221	.58-1.08	?	-18.6	10.6
LH091	232	40+	?M	-19.3	7.7
LH092	240	25-35	F	-19.8	8.1
LH093	280	1.5-2y	?	-18.8	9.2
LH094	477	7.5-8.5	?	-19.5	8.8
LH095	489	25-35	?M	-19.2	8.7
LH096	554	40-45	M	-18.4	8.5
LH097	566	45-50	M	-19.9	10.7
LH098	579	20-30	M	-18.5	9.2
LH099	616	40-45	M	-18.2	8.6
LH100	702	40-50	M	-19.0	9.1
LH101	726	adult	?	-18.5	8.6
LH102	767	5.25-6.5	?	-19.7	7.0
LH103	852	40-50	?	-19.0	8.6
LH104	908	40-45	F	-19.1	8.2
LH105	914	35-45	M	-18.4	8.3
LH106	917	35-45	F	-19.8	8.4
LH107	967	25-35	F	-18.8	8.7
LH108	971	40-45	M	-19.8	9.9
LH109	1061	6.25-7.5	?	-19.2	7.8
LH110	1137	30-40	F	-18.7	8.2
LH111	1156	40-50	F	-19.5	8.6
LH112	1167	25-30	M	-18.9	11.5
LH113	1219	50+	M	-19.0	8.0
LH114	1393	40-50	M	-19.3	11.3
LH115	1498	40-44	M	-18.9	9.1
LH116	1637	40-45	F	-18.7	8.4
LH117	1722	38w-0	?	-19.6	9.6
LH118	1723	3m-5m	?	-18.9	9.4
LH119	429	60+	F	-18.7	7.7
LH120	435	40-50	F	-19.5	7.5
LH121	1314	38w- 0	?	-18.9	10.3
LH122	866	50+	F	-18.7	8.4
LH123	1621	35-39	F	-18.8	9.5
LH124	1802	30-35	?M	-19.3	9.6

Table 5.59: Carbon and nitrogen isotope data, animals

Laboratory ID Number	Original Context #	Species	$\delta^{13}C$	$\delta^{15}N$
LH125	115	Pig	-20.7	6.9
LH126	1689	Pig	-21.3	6.7
LH127	4	Sheep/Goat	-22.1	6.0
LH128	4	Sheep/Goat	-22.0	5.7
LH129	235	Sheep/Goat	-21.3	2.8
LH130	4	Sheep/Goat	-21.9	5.9

Table 5.59 (continued): Carbon and nitrogen isotope data, animals

Laboratory ID Number	*Original Context #*	*Species*	*$\delta^{13}C$*	*$\delta^{15}N$*
LH131	152	Fowl	-19.9	7.3
LH132	1	Fowl	-17.6	7.6
LH133	853	Fowl	-20.1	8.0
LH134	1159	Duck	-25.0	10.3
LH135	738	Fowl	-20.5	10.3
LH136	1149	Dog	-19.9	7.5
LH137	1306	Dog	-20.0	7.7
LH138	779	Dog	-19.9	8.0
LH140	132	Cow	-21.1	4.5
LH141	749	Cow	-21.9	5.2
LH142	115	Cow	-21.4	5.9
LH143	1212	Cow	-21.9	5.2
LH144	671	Cow	-22.7	4.7
LH145	913	Cow	-21.6	7.2
LH146	964	Cow	-22.4	4.8
LH147	1138	Cow	-21.6	5.2
LH148	1113	Cow	-21.8	7.8
LH149	603	Cow	-22.0	5.0
LH150	1117	Cow	-22.4	5.0
LH151	603	Equid	-21.9	5.7
LH152	1624	Equid	-22.1	4.2
LH153	1543	Equid	-21.5	5.3
LH154	214	Equid	-22.5	3.5
LH155	1698	Equid	-22.1	4.4
LH156	1629	Equid	-21.9	4.1
LH157	799	Equid	-22.4	4.5
LH158	100	Bird	-19.4	6.6
LH159	1159	Duck	-25.8	10.6
LH160	AY93 2290	Duck	-26.2	6.8
LH161	AY93 2344	Fowl	-20.0	7.0
LH162	AY93 9543	Fowl	-20.4	7.0
LH163	AY93 2000	Cow	-21.9	5.1
LH164	AY93 4743	Cow	-21.5	5.1
LH165	AY93 9543	Cow	-21.6	3.3
LH166	AY93 1248	Pig	-20.8	5.8
LH167	AY93 1393	Pig	-20.9	5.0
LH168	AY93 2000	Pig	-21.0	5.0
LH169	AY93 2344	Pig	-21.8	8.2
LH170	AY93 2510	Pig	-21.8	6.8
LH171	AY93 3744	Pig	-21.6	7.4
LH172	AY93 4743	Pig	-21.5	5.6
LH173	AY93 7574	Pig	-20.5	4.2
LH174	AY93 9543	Pig	-21.5	4.5
LH175	AY93 9711	Pig	-20.9	4.6
LH176	AY93 1248	Sheep/Goat	-21.9	6.2
LH177	AY93 1260	Sheep/Goat	-21.7	5.1
LH178	AY93 1393	Sheep/Goat	-22.0	2.2
LH179	AY93 2000	Sheep/Goat	-21.2	4.0
LH180	AY93 2344	Sheep/Goat	-21.6	3.9
LH181	AY93 2510	Sheep/Goat	-20.6	3.4
LH182	AY93 4688	Sheep/Goat	-22.2	2.6
LH183	AY93 4742	Sheep/Goat	-21.8	5.5
LH184	AY93 4743	Sheep/Goat	-20.6	3.5
LH185	AY93 4762	Sheep/Goat	-22.0	6.9

OXYGEN AND STRONTIUM ISOTOPE ANALYSIS *by C Chenery, J A Evans, A Lamb, G Müldner and H Eckardt*

Introduction

In this report we present strontium ($^{87}Sr/^{86}Sr$) and oxygen ($\delta^{18}O$) isotope data for tooth enamel sampled from 40 individuals buried in the late Roman cemetery at Lankhills School, Winchester. The aim is to define 'local' or 'immigrant' origin through isotope analysis, and to compare archaeological assessment of 'ethnic' origin to isotopic signatures. Forty tooth samples were provided by Oxford Archaeology and analysed at the NERC Isotope Geoscience Laboratory at the British Geological Survey (NIGL/BGS). Twenty samples were analysed as part of a larger University of Reading AHRC-funded project "Diaspora Communities in Roman Britain" and twenty samples were analysed by NIGL as a commercial project commissioned by Oxford Archaeology (Evans and Lamb 2008; report in the project archive). A detailed discussion of the results and their implications for the study of funerary archaeology, and a comparison with an earlier study (Evans *et al*. 2006a) has recently been published in the *Journal of Archaeological Science* (Eckardt *et al*. 2009).

Isotopic context

Strontium and oxygen form two independent isotopic systems, reflecting local geology and climate respectively. Oxygen and strontium isotopes are fixed in enamel biogenic phosphate at the time of tooth formation (Hillson 1996a; Price *et al*. 2002; Hoppe *et al*. 2003). As strontium and oxygen isotopes behave independently of one another, they provide two parameters for investigating an individual's place of origin and migration patterns (Evans *et al*. 2006a; 2006b).

Oxygen isotopes of phosphate in tooth enamel ($\delta^{18}O_p$) are derived primarily from ingested fluids and indirectly reflect the isotopic value of available meteoric/ground/drinking water (Levinson *et al*. 1987; Daux *et al*. 2008). Oxygen (and other light stable isotopes, H, C and N) are subject to several stages of metabolic fractionation, from drinking water to body fluids and again from body fluids to phosphates. This fractionation is understood and predictable, thus allowing the calculation of drinking water values ($\delta^{18}O_{dw}$) to assist in determining an individual's place of origin (Longinelli 1984; Levinson *et al*. 1987). Breast feeding affects isotopic signatures, complicating the interpretation of some individuals; these issues are discussed in more detail in Eckardt *et al*. (2009).

Strontium isotopes are derived from both solid and liquid food and directly relate to the geology of the area where the food was produced (Montgomery 2000; Bentley and Knipper 2005; Evans *et al*. 2006b). Strontium isotopes, unlike oxygen, are not fractionated by metabolic functions;

therefore breastfeeding is unlikely to affect the $^{87}Sr/^{86}Sr$ signal in early forming teeth.

Geological context

Winchester lies within 40 km of the south coast of England, at the western end of the South Downs, approximately 8 km north of the Hampshire Basin. The local geology (within 30 km of Winchester) is dominated by Cretaceous chalk with one third of the area covered by Oligocene and Eocene sediments (clays, sands and gravels) to the south and along the coast. To the east, at the western margin of the Weald, about 25 km from Winchester, is a small area of lower Cretaceous, Upper Greensand and Gault clay (Figure 5.70). Strontium isotope values for the area within 30 km of Winchester are expected to range from 0.7072 to 0.7092 (Evans *et al.* 2006a). For comparison, strontium isotope values recently reported for mineral waters from England and Wales were 0.70587 to 0.72065 (Montgomery *et al.* 2006).

Meteorological context

Drinking water is ultimately derived from meteoric water and the oxygen isotope value depends on the source of the rain or snow (evaporation from the Atlantic Ocean for most of Europe), the distance from the coast, latitude, altitude and local temperature of precipitation and humidity (see Darling and Talbot 2003; Darling *et al.* 2003; Darling 2004).

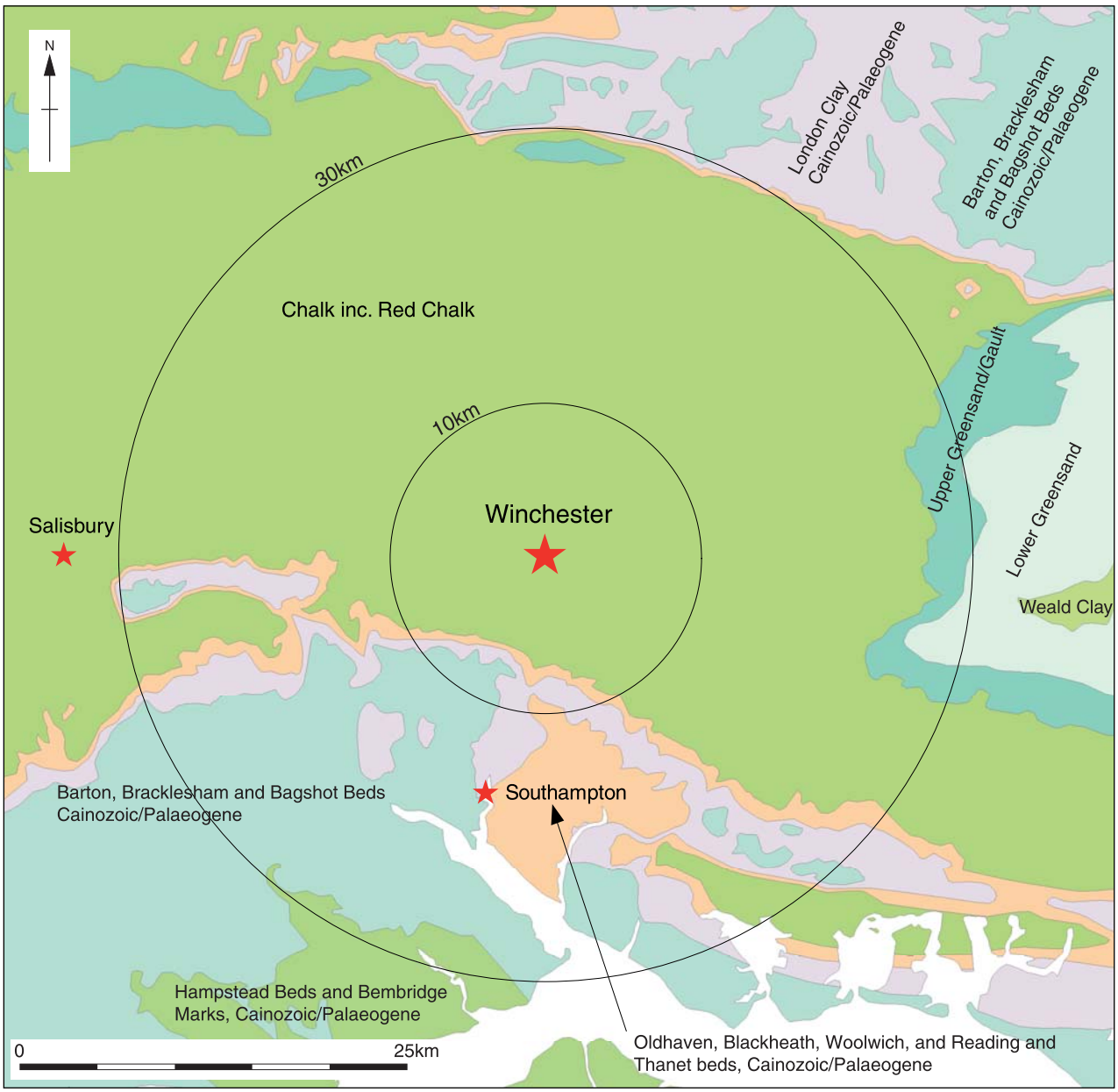


Fig. 5.70 Geology of the Winchester area

The $\delta^{18}O$ of modern UK groundwater varies systematically, from higher values on the west coasts to lower ones in the east. They range between ~ -9‰ to -4.5‰, although values > ~-6.0 are largely confined to extreme western Britain, that is modern Devon and Cornwall, western Wales and the Scottish Isles (Darling and Talbot 2003; Darling *et al.* 2003). Modern drinking waters from the Winchester area gave $\delta^{18}O$ from -7.0‰ to -5.8‰ (-6.6±0.7‰, 2σ, n=14, Darling and Talbot 2003; Darling *et al.* 2003; Darling pers. Comm.).

Materials and methods

Sample selection

Tooth samples from 40 individuals from the cemetery were supplied by Oxford Archaeology (see Tables 5.60 and 5.61). The samples represent a broad cross section of age, sex, burial style and grave goods represented in the recent excavations. They included individuals assessed in terms of the criteria used by Clarke (1979, 377) to identify intrusive elements in the Lankhills population (although

Table 5.60: Summary of skeletons selected for strontium and oxygen isotope analysis

Sample No	*Grave*	*Skeleton*	*Tooth*	*Age (yrs)*	*Sex*	*Origin based on field evidence*	*Position*	*Coffin*	*Grave goods/[other characteristics]*
Ay21-0012	10	12	LP2	45+	Male	Local	S	Y	Shoes unworn
Ay21-0084	82	84	RM2	Adult	Female	Others	S	Y	2 pots [step grave]
Ay21-0118	110	118	dI1	10m-2	Infant	Pannonian?	SD	Y	Beads & bracelets unworn
Ay21-0119	99	119	LM2	26-35	Female	Pannonian?	S	Y	Pot
Ay21-0212	210	212	LP2	60+	?Female	Local	S	N	Shoes
Ay21-0271	272	271	LM2	26-35	Female	Local	S	Y	Pot, shoes unworn
Ay21-0281	263	281	RM2	45+	Male	Local	S	Y	Coin [DISH]
Ay21-0435	530	435	LM2	45+	Female	Local	S	N	Bone ?pendant
Ay21-0489	550	489	LM2	45+	?Male	Local	S	Y	-
Ay21-0566	610	566	RM2	26-35	Male	Others	S	Y	-
Ay21-0661	665	661	LP1	36-45	Female	Others	S	N	Shoes
Ay21-0683	790	683	LM3	45+	Male	Local	S	N	Coin, shoes
Ay21-0776	805	776	RM2	Adult	Male?	Others	S	Y	-
Ay21-0806	850	806	LP2	60+	Female	Local	S	N	-
Ay21-0812	855	812	RM2	45+	Male?	Others	S	Y	Shoes ?unworn
Ay21-0861	905	861	LM3	60+	Male	Others	P	N	Shoes
Ay21-0861	905	861	LP2	Ditto	Ditto	Ditto			
Ay21-0862	930	862	M2	36-45	Male	Pannonian?	S	Y	Knife, ?buckle, shoes ?unworn
Ay21-0874	920	874	RM2	6-12	Child	Local	S	Y	Beads, bracelets, ?ring, shoes, all unworn
Ay21-0926	985	926	L?M2	13-17	?Female	Local	S	Y	Beads, bracelets, rings, pin, all unworn
Ay21-0932	965	932	LM2	18-25	Male	Local	S	Y	2 pots, shoes unworn
Ay21-1026	1070	1026	RM1	Child	Child	Pannonian?	P	N	Bracelets, ring
Ay21-1084	1150	1084	LM2	26-35	Female	Others	SD	Y	Coin
Ay21-1091	1135	1091	RM2	18-25	Female	Others	S	Y	-
Ay21-1094	1140	1094	LP2	Adult	Female	Local	S	Y	Shoes
Ay21-1114	1170	1114	RM2	26-35	Female	Local	S	Y	-
Ay21-1119	1175	1119	RM2	45+	Male	Local	S	Y	Coin, knife, buckle
Ay21-1133	1355	1133	M1	Child	Child	Pannonian?	S	Y	Comb, buckle, shoes ?unworn
Ay21-1134	1190	1134	LP2	36-45	Female	Local	S	N	-
Ay21-1197	1270	1197	LRP2	60+	Female	Local	S	Y	Comb, shoes unworn
Ay21-1207	1280	1207	M2	Adult	?Female	Local	S	Y	Comb
Ay21-1227	1349	1227	LM2	36-45	Female	Others	S	Y	Pot, shoes unworn
Ay21-1244	1360	1244	LM2	13-17	?Female	Local	S	Y	Beads, bracelets, shoes, all unworn
Ay21-1271	1310	1271	RM2	45+	Male	Pannonian?	S	Y	Knife [DISH]
Ay21-1277	1345	1277	RM2	36-45	Male	Others	P	Y	-
Ay21-1289	1329	1289	LM2	36-45	Male	Others	S	Y	Shoes
Ay21-1517	1515	1517	RP2	60+	Male	Others	CD	N	-
Ay21-1697	1805	1697	RM2	36-45	Male	Local	S	Y	3 coins, knife
Ay21-1761	1760	1761	RM3	Child	Child	Pannonian?	S	N	Coin, knife, ring, buckle, glass vessel, pot
Ay21-1870	1866	1870	LM2	6-12	Child	Pannonian?	S	N	Pot, finger rings, bracelets
Ay21-1894	1895	1894	LP2	18-25	Male	Local	S	Y	-

Abbreviations for position: S = supine; P = prone; C = crouched; D = decapitated

there were substantial reservations about the validity of this interpretative framework, and in fact few burial assemblages which matched these criteria closely).

Tooth sampling

Sampling was restricted to later-forming teeth wherever possible (permanent M2, M3 or P3, mineralised between ~3 and ~13 years of age; see Smith 1991). Additional ^{18}O-enrichment must nevertheless be taken into account for individuals where only early forming teeth are available, namely Ay21-118 (deciduous incisor), Ay21-1026 and 1133 (permanent first molars) and possibly Ay21-661 (1st premolar) (Smith 1991; Hillson 1996a).

Isotope analysis

Tooth sample preparation

Each tooth was cut in half using a flexible diamond edged rotary dental saw. The half selected for analysis was cleaned ultrasonically for five minutes in high purity water and rinsed twice to remove loosely adhered material. A tungsten carbide dental burr was used to abrade off the enamel surface to a depth of >100 microns. Secondary dentine was removed and discarded and the enamel and primary dentine were separated. The dentine was reserved for future carbon, nitrogen and background strontium analyses and the enamel was prepared for oxygen and strontium analysis as described below.

Oxygen isotope analysis

Biogenic phosphate was converted to silver phosphate using the method of O'Neil *et al*. (1994), which is briefly summarised here. The core enamel samples were crushed to a fine powder and cleaned in hydrogen peroxide for 24 hours to remove organic material. The peroxide was evaporated to dryness and the sample dissolved in 2M HNO3. The sample solutions were transferred to clean polypropylene test tubes and each sample was treated with 2M KOH followed by 2M HF to remove Ca from the solution by precipitation. The following day, the samples were centrifuged and the solution was added to beakers containing silver amine solution. The silver phosphate was precipitated, filtered, rinsed and dried.

Analytical O isotope determinations were by Continuous Flow Isotope Ratio Mass Spectrometry (CFIRMS) using the method of Venneman *et al*. (2002). The instrumentation comprises a TC/EA (thermo chemical elemental analyser) coupled to a Delta-Plus XL isotope ratio mass spectrometer via a ConFlo III interface, all by Thermo Finnigan.

Reported isotope ratios are expressed using the delta (δ) notation in parts per thousand (permil: ‰) relative to a standard:

$$\delta(‰) = ((R_{sample}/R_{standard}) - 1) \times 1000$$

The reference material NBS120C, calibrated against certified reference material NBS127 (assuming $\delta^{18}O$ of NBS127 = +20.3‰ versus SMOW, has an expected value of 21.70‰ (Chenery *et al.* 2010). Each sample was analysed in triplicate. The mean internal mass spectrometry reproducibility for these sets of analyses is ± 0.11‰ (1σ, n=13 over 3 analysis runs). The mean batch reproducibility was 0.13‰ (1σ, n=12 over 3 precipitation batches). Drinking water values are calculated using Levinson's equation (Levinson *et al.* 1987)

$$\delta^{18}O_{\text{Drinking Water}} = (\delta^{18}O_{\text{Phosphate Oxygen}} - 19.40)/0.46,$$

after applying a method bias of -1.4‰ to the measured $\delta^{18}O_p$ value (see Appendix to Chenery *et al.* 2010).

Strontium isotope analysis

In a clean laboratory, the enamel samples were washed in acetone and cleaned twice, ultrasonically, in high purity water to remove dust and impurities. They were dried and weighed into precleaned Teflon beakers. Each sample was mixed with ^{84}Sr tracer solution and then dissolved in Teflon distilled 16M HN03. The sample was then converted to Chloride and taken up in 2.5M HCl. Strontium was separated and collected using conventional, Dowex® resin ion exchange methods.

The Sr isotope composition and concentrations were determined by Thermal Ionisation Mass spectroscopy (TIMS) using a Thermo Finningan Triton multi-collector mass spectrometer. Samples were run at *c* 5V using single Re filaments loaded using TaF following the method of Birck (1986). The international standard for $^{87}Sr/^{86}Sr$, NBS987, gave a typical value of 0.710275±0.000006 (1s, n=12). All strontium ratios have been corrected to a value for the standard of 0.710250. Strontium procedural blanks provided a negligible contribution.

Results

Oxygen and strontium isotope analyses of dental enamel on the 40 Lankhills individuals are presented in Table 5.61 and Figure 5.71. Drinking water values were calculated using Levinson *et al.*'s (1987) equation, after applying a method bias correction of -1.4‰ to the measured $\delta^{18}O_p$ value, as we have found that $\delta^{18}O_{dw}$ computed this way most closely match local freshwater values for different areas in the UK (see Chenery *et al.* 2010).

Our interpretation of 'non-local' places of origin relies on published data, isotope maps and isotope data bases. Where these do not exist, locations are suggested based on interpolation of geological and hydrological maps. It should be understood that

Table 5.61: Oxygen and strontium isotope results
(All $\delta^{18}O$ is presented in ‰ v SMOW and $\delta^{18}O_{dw}$ has been calculated using the Levinson et al. 1987, equation)

Sample No.	*Tooth*	*Sex*	$\delta^{18}O_p$	*2δ*	$\delta^{18}O_{dw}$	*2δ*	*Sr ppm*	*Sr8786*
Ay21-0012	P2	M	18.2	0.0	-5.7	0.4	103	0.7082
Ay21-0084	M2	F	18.8	0.2	-4.3	0.4	79	0.7086
Ay21-0118	dI1	n.d.	19.1	0.1	-3.7	0.2	77	0.7088
Ay21-0119	M2	F	19.5	0.2	-2.8	0.4	100	0.7087
Ay21-0212	P2	F	18.3	0.2	-5.4	0.4	66	0.7087
Ay21-0271	M2	F	19.4	0.2	-3.0	0.5	139	0.7102
Ay21-0281	M2	M	16.8	0.1	-8.6	0.3	92	0.7115
Ay21-0435	M2	F	17.5	0.2	-7.1	0.4	53	0.7089
Ay21-0489	M2	M	17.8	0.2	-6.6	0.5	72	0.7112
Ay21-0566	M2	M	18.8	0.3	-4.4	0.6	169	0.7095
Ay21-0661	P1	F	18.1	0.1	-5.9	0.3	54	0.7085
Ay21-0683	M3	M	18.9	0.1	-4.2	0.2	132	0.7094
Ay21-0776	M2	M	17.8	0.2	-6.5	0.3	86	0.7096
Ay21-0806	P2	F	19.3	0.0	-3.2	0.0	88	0.7087
Ay21-0812	M2	M	19.0	0.0	-3.8	0.1	128	0.7087
Ay21-0861	P2	M	18.2	0.0	-5.7	0.1	ND	0.7098
Ay21-0862	M2	M	17.8	0.1	-6.6	0.3	118	0.7082
Ay21-0874	M2	n.d.	18.0	0.3	-6.0	0.6	81	0.7088
Ay21-0926	M2?	F?	18.3	0.3	-5.5	0.5	104	0.7086
Ay21-0932	M2	M	17.9	0.2	-6.4	0.4	67	0.7084
Ay21-1026	M1	n.d.	17.9	0.2	-6.2	0.5	78	0.7085
Ay21-1084	M2	F	18.2	0.3	-5.7	0.6	105	0.7092
Ay21-1091	M2	F	18.1	0.2	-5.9	0.4	105	0.7091
Ay21-1094	P2	F	17.0	0.1	-8.2	0.3	42	0.7083
Ay21-1114	M2	F	19.0	0.3	-4.0	0.6	121	0.7089
Ay21-1119	M2	M	15.8	0.3	-10.9	0.7	87	0.7094
Ay21-1133	M1	F	18.5	0.4	-5.1	0.8	52	0.7092
Ay21-1134	P2	F	18.0	0.2	-6.1	0.5	65	0.7086
Ay21-1197	P2	F	17.8	0.2	-6.6	0.4	59	0.7110
Ay21-1207	M2	F	17.9	0.2	-6.2	0.5	108	0.7089
Ay21-1227	M2	F	18.3	0.2	-5.4	0.4	73	0.7083
Ay21-1244	M2	F?	18.4	0.1	-5.1	0.1	61	0.7086
Ay21-1271	M2	M	17.7	0.2	-6.7	0.5	67	0.7083
Ay21-1277	M2	M	18.2	0.3	-5.6	0.6	87	0.7115
Ay21-1289	M2	M	18.1	0.1	-5.8	0.3	58	0.7087
Ay21-1517	P2	M	18.7	0.2	-4.6	0.4	81	0.7090
Ay21-1697	M2	M	18.8	0.1	-4.3	0.1	95	0.7090
Ay21-1761	M3	n.d.	18.3	0.2	-5.5	0.4	80	0.7086
Ay21-1870	M2	n.d.	17.6	0.2	-6.9	0.4	79	0.7087
Ay21-1894	P2	M	18.1	0.1	-6.0	0.3	46	0.7118

these are suggestions, based on currently available data, not secure attributions. They do not rule out origin in other areas where similar combinations of climates and geology exist.

The $\delta^{18}O_p$ signatures for the individuals in this study give a broad range of values, from 15.8‰ to 19.5‰ (mean 18.2±1.4‰, 2σ) with corresponding drinking water values between -10.9‰ and -2.8‰ (mean -5.7±3.1‰, 2σ). Of these, one individual (Ay21-1119) is a clear statistical outlier, with an unusually low $\delta^{18}O_p$ (15.8‰, $\delta^{18}O_{dw}$ = -10.9‰) which falls further than 3σ from the mean.

Strontium isotope ratios for the 40 individuals range from 0.7082 to 0.7118 (mean 0.7092±0.0019, 2σ).

Defining 'local' individuals

In order to use isotope analysis for reconstructing mobility, the range of values consistent with a local upbringing needs to be defined. Typical strontium isotope values for the Cretaceous chalk, Oligocene and Eocene sediments around Winchester are expected to fall between 0.7072 and 0.7092 (Evans *et al.* 2006a; Trickett 2008). Twenty-nine individuals have $^{87}Sr/^{86}Sr$ within this range. Unfortunately, these types of values are not overly specific as they can also be expected for other Mesozoic limestones, Palaeogene sediments and young or low radiogenic igneous terrains (Montgomery *et al.* 2006, 2007; Thirlwall 1988; Beckensale *et al.* 1981).

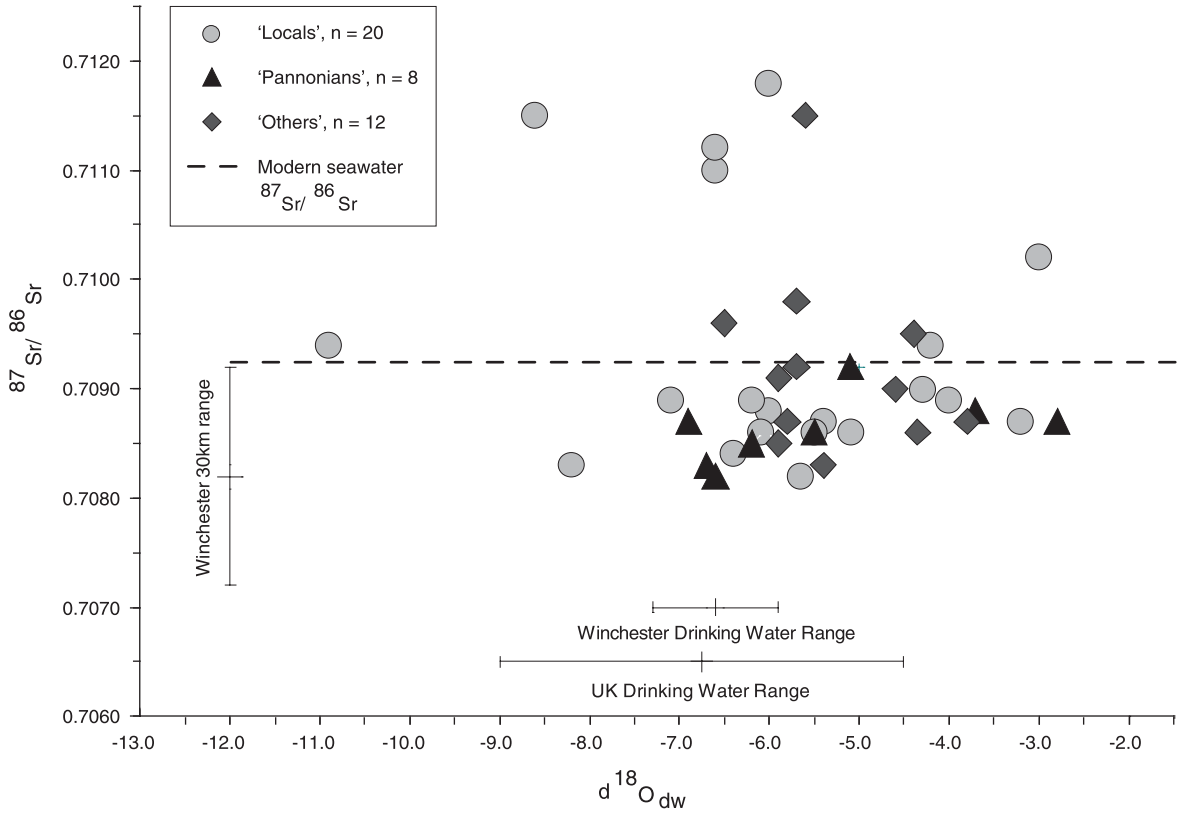


Fig. 5.71 Oxygen and strontium isotope ratios for Lankhills humans

Constraining the 'local' range further with the aid of oxygen isotopes is not straightforward, mainly because there are still few empirical data to allow estimation of the degree of oxygen isotope variation in a sedentary population with the same drinking water source. Observed values for modern British freshwaters are between ~-9 ‰ to ~-4.5‰, although values >~-5 ‰ are isolated to the extreme west of the UK, the western tip of Cornwall, western Wales and the Scottish Isles (Darling *et al.* 2003), some of these being areas outside immediate Roman control. At the present time, we do not want to attempt to subdivide the oxygen isotope data further than this proposed British range. The oxygen isotope composition of drinking water in the Winchester area (~-7.3 to ~-5.9‰; Darling pers. comm.) is nevertheless useful as it allows making relative statements with regards to the human data: individuals with oxygen isotope signatures <-6.6‰ are, if not from the Winchester area itself, more likely to have come from the east of the country (or compatible 'cooler' regions on the European continent), while individuals with higher values are more consistent with 'warmer' areas in western Britain or areas with a comparable climate abroad. In this context it is worth emphasizing that oxygen isotope compositions encountered in British freshwaters are of course not exclusive to the British Isles. They are also found in many areas of western (Iberian peninsula, France, the Low Countries, Northwest Germany and Denmark) and southern Europe (Italy, Greece) as well as the Mediterranean (Turkey, the Levant and even parts of Northern Africa) (IAEA/WISER 2008; Lecolle 1985; Bentley and Knipper 2005; Lykoudis and Argiriou 2007; Daux *et al.* 2008).

Individuals with 'local' $^{87}Sr/^{86}Sr$ and $\delta^{18}O_p$ in the British range

Twenty-one individuals have $^{87}Sr/^{86}Sr$ between 0.7080 and 0.7092 and oxygen isotope signatures consistent with an upbringing in Britain. As discussed above, this combination of strontium and oxygen isotope ratios may be compatible with various places in the UK and abroad; however, it is likely that at least the majority of these individuals are indeed of local origin. The apparent clustering of data-points in this region suggests the same (Figure 5.71). Of these 21 individuals, 10 (Ay21-0012, 0212, 0435, 0874, 0926, 0932, 1094, 1134, 1207, 1244) are characterised as 'local/Romano-British' in terms of their burial rites and grave furnishings, six (Ay21-0862, 1026, 1133, 1271, 1761, 1870) are suggested 'Pannonians' (in Clarke's terminology) and a further five (Ay21-0661, 1084, 1091, 1227, 1289) are classed as 'other/unusual' in terms of their mortuary treatment.

Individuals with 'non-local' $^{87}Sr/^{86}Sr$ and $\delta^{18}O_{dw}$ in the British range

Seven individuals have $^{87}Sr/^{86}Sr$ outside the Winchester range (ie >0.7092) but $\delta^{18}O_{dw}$ which are consistent with a childhood in Britain or a similar climatic zone. Of these, the signatures of two individuals (Ay21-0776, 0861), both classed as 'other' burials on the basis of the field evidence, are only slightly more radiogenic than local values (0.7096 to 0.7098). They are comparable with biosphere data obtained from vegetation on Mesozoic, non limestone, terrains, bottled waters from Carboniferous limestone aquifers, and Mesozoic mudstones, sand, and clay geologies (Chenery *et al.* 2010; Montgomery *et al.* 2006; Beckensale *et al.* 1981). Areas compatible with these values are, for example, the Mesozoic terrains around Bath, Bristol, and Gloucester (Chenery *et al.* 2010). Alternatively, the data may also fit origins on older rocks, but in coastal areas where marine strontium has a significant impact on local biosphere values (Montgomery *et al.* 2003; Montgomery *et al.* 2007).

Five individuals (Ay21-281, 489, 1197, 1277 and 1894), four of them classed as 'local' on the basis of their burial rites, and the fifth as 'other', have higher $^{87}Sr/^{86}Sr$ values (0.7112-0.7118), which are more typical of bottled waters from Palaeozoic (especially Carboniferous and Devonian) sand- and mudstone terrains, as may be found in various areas of western (eg Wales, the Malverns, parts of Devon or Cornwall) and northern Britain (eg Cumbria, parts of Scotland) (Montgomery *et al.* 2006; Thirlwall 1988; Beckensale *et al.* 1981). One of them (Ay21-281) has a markedly lower oxygen isotope signature than the others (-8.6‰) which is at the very edge of the UK range (Figure 5.71), and which makes an origin in western Britain very unlikely. Instead, given the extent of Roman occupation in Britain, the isotopic profile of this individual perhaps rather suggests origins elsewhere in Europe. Areas with compatible drinking water compositions and geology can be found, for example, in certain regions of Belgium (Ardennes) or Western Germany (Rheinisches Schiefergebirge), which are dominated by Palaeozoic terrains (Lecolle 1985, Asch 2005).

Individuals with $\delta^{18}O_{dw}$ suggesting non-British origins

Eleven individuals have oxygen isotope ratios outside the estimated UK range. (Non-adult Ay21-118 is excluded here as the raised $\delta^{18}O_{dw}$ values are probably due to the breastfeeding effect). Ten individuals (archaeologically classified as five 'locals', one suggested 'Pannonian' and four 'others') have higher values, suggesting origins in warmer/more coastal climates. These extend from -4.6‰, which is still compatible with extreme western Britain, to -2.8‰, which is only just within two standard deviations from the population mean. Within the confines of the Roman Empire, oxygen isotope values like these are consistent with parts of the Iberian peninsula, and the Mediterranean, on the southern European and North African side (IAEA/WISER 2008; Longinelli and Selmo 2003; Lykoudis and Argiriou 2007). $^{87}Sr/^{86}Sr$ of nine of the 10 individuals are between 0.7086 and 0.7095 and therefore close to the value of modern seawater (0.7092). They are compatible with a range of Mesozoic and younger terrains (see Chenery *et al.* 2010; Montgomery *et al.* 2006; Beckensale *et al.* 1981), but would also be consistent generally with areas in proximity to the coast (Montgomery *et al.* 2007; Müldner *et al.* in press). One individual (Ay21-271) has a higher strontium isotope signature (0.7102), suggesting an origin on different, older/more radiogenic terrains or further away from the coast.

Ay21-1119, an older adult (45+) male who appeared 'local' by his mode of burial, is the only statistical outlier in the sample. His $\delta^{18}O_{dw}$ (-10.9‰) is more than 3σ from the population mean, indicating a childhood in a significantly cooler and/or more continental climate than Britain. Combined with the $^{87}Sr/^{86}Sr$ (0.7094) which is not easily compatible with the geology of major western European mountain ranges (and therefore areas of significant altitude which could also explain the low $\delta^{18}O$: Asch 2005; Müller *et al.* 2003), an origin in central Europe is the most likely interpretation.

Discussion

The combined isotope results suggest that 21 individuals may be from Winchester and surrounding areas, with a further eight probably from other parts of the UK (Tables 5.64 and 5.65 and Figure 5.71). The remaining 11 individuals are defined as incomers, with 10 coming from warmer and one from colder areas. Many of the individuals defined as incomers isotopically cluster around the edges of the UK range, and we have outlined above how difficult it is to pinpoint specific areas of origin. It is also clear that the relationship between isotopical origin and burial rites is more complex than previously assumed. Only one individual (Ay21-1119) had isotope values compatible with those expected for 'Pannonian' origin (see above). However, this adult male was described as 'local' in terms of the characteristics of his burial.

Two of the three individuals with the warmest oxygen isotope signature were also classed archaeologically as 'local', while the third was tentatively considered 'Pannonian' based on the artefactual evidence (see Figure 5.71). The $\delta^{18}O_{dw}$ of the latter, a female (Ay21-119), is certainly too high to be consistent with an origin either in Britain or Pannonia. The two others, interestingly also both female (Ay21-0806; Ay21-0271), also fall outside the UK range, again contradicting the archaeological criteria.

There is no statistical relationship between isotopically defined origin and sex in our sample, but it should be noted that the three individuals with the highest $\delta^{18}O_{dw}$, which are by current estimates certainly too 'warm' for the UK, were all female.

Six non-adults were sampled, and the technical difficulties regarding selection of teeth and a possible 'breastfeeding effect' have been discussed above. Although five of these were classed as possibly 'Pannonian' archaeologically, isotope analysis indicates that at least four of them (Ay21-1026, 1133, 1716 and 1870) were probably raised in the Winchester area (and certainly not in Central Europe; see Figure 5.71). Although the remaining individual (Ay21-0118) has slightly higher oxygen isotope signatures than the others, the sample was taken from an early forming tooth and the results are likely due to the 'breastfeeding effect'. On isotopic grounds, there is therefore no reason to suggest that the child was not local. Ay21-0118 in particular is a very unusual burial in that the infant (10 months to 2 years) was decapitated. The sixth child (Ay21-0874) was classed as 'local' on archaeological grounds and has an isotope signature consistent with a local Winchester origin.

There is no clear patterning with regard to unusual burial rites such as prone burial and decapitation. Of the two remaining decapitated individuals (in addition to Ay-21-0118 discussed above), Ay21-1084, an adult female, has a local isotopic signature, while the $\delta^{18}O_{dw}$ of Ay21-1517 (-4.6‰), an older male, is strictly still just inside the UK range and therefore inconclusive. All three prone burials (two males Ay21-0861 and Ay21-1277 and a child Ay21-1026) could be from the UK, though interestingly, neither of the adults is from Winchester (Table 5.61).

In conclusion, the results of this study suggest that up to a quarter of sampled Lankhills individuals were incomers and spent their early childhood outside the Winchester area, with a significant proportion likely to have started life outside Britain. These individuals may have originated from as far afield as the Hungarian Basin and the Southern Mediterranean.

Chapter 6: Animal and plant remains, snails, soils and radiocarbon dating

This chapter gathers together a series of specialist reports of broadly 'environmental' character, although the content of several of these has a direct bearing on aspects of burial rite and the placement of different types of remains on cremation pyres and within both cremation and inhumation burials. The evidence of radiocarbon dating is also included here. Most of the reports are the result of work carried out subsequent and supplementary to that of the post-excavation assessment. That on the remains of land snails, however, is based on work carried out as part of the assessment, as it was thought unlikely that further analysis would add significantly to the conclusions reached at that time. Samples were assessed for the preservation of pollen, but the condition of this material was so poor that the assessment report has not been included here. It can be found in the project archive.

UNBURNT ANIMAL BONES *by Lena Strid and Fay Worley*

Introduction

The OA excavations at Lankhills produced an assemblage of *c* 787 refitted fragments (*c* 10.6 kg) of hand-collected animal bone, plus a further 179 tiny fragments (weight 88 g) recovered from sieved samples from 22 contexts, mostly collected from graves. The hand-collected unburnt assemblage also derives principally from graves, with much smaller quantities of material from layers, ditches and pits and grave fills, and represents both mundane waste and possible and probable deliberate deposits. Some 11% of the hand-collected fragments (8% by weight) derived from disturbed or modern contexts. A full initial record of the assemblage (*c* 80% of the hand-collected bone) was made by Kris Poole at OA. Further material, including all that from the sieved samples, was recorded by Fay Worley at Fort Cumberland concurrently with work on the cremated animal bone (see below). Full datasets can be found in the project archive.

Methodology

Material was identified using reference collections at Oxford Archaeology and Fort Cumberland (English Heritage), along with relevant identification manuals (Schmid 1972; Cohen and Serjeantson 1996; Hillson 1996b). Attempts were made to identify all bone fragments to element and species, although ribs, vertebrae (except atlas and axis), and skull fragments were classed as large-, medium-, and small-sized mammal. The methods of Boessneck (1969) and Payne (1985) were used to distinguish between sheep (*Ovis*) and goat (*Capra*). Bones were recorded using the zoning systems of Cohen and Serjeantson (1996) for birds and Serjeantson (1996) for mammals.

Measurements were taken following von den Driesch (1976) for mammals, Cohen and Serjeantson (1996) for birds, but were restricted to long bones of mature specimens. Where possible, pigs were sexed on the basis of their canines (Schmid 1972), while morphological traits of the pelvis and horn cores were used to sex cattle and sheep/goat (Grigson 1982). Presence or absence of tarsometatarsi cockspurs was used to differentiate male and female domestic fowl (Sadler 1991), as was medullary bone in femora (Driver 1982).

Methods employed for ageing specimens were dental eruption/attrition, and epiphyseal fusion. Grant's methods (1982) were used for recording tooth wear in cattle, sheep and pig, with wear stages being assigned using standards set out by Halstead (1985) for cattle, Grant (1982) for pigs, and Payne (1973; 1987) for sheep. Fusion data were used to assign ages to cattle, sheep and pigs using data given by Getty (1975). Horses were aged through tooth crown heights (Levine 1982). As bird bones lack epiphyses, they were recorded as 'fused' or 'unfused.'

Recording included notes on the condition of the bones (graded as very good, good, fair, poor or very poor). Aspects of taphonomy (gnawing, root etching, burning, recent breaks and butchery marks (Lauwerier 1988)) and evidence for age at death (tooth attrition and epiphyseal fusion) were recorded where evident. A zoning system (Serjeantson 1996) was used to record the extent of each specimen.

Animal bone from sample residues was analysed separately from the hand collected remains in order to mitigate for recovery bias in the data, and to allow the recording method to be tailored to the characteristics of the sample (increased fragmentation and prevalence of burnt fragments compared with the hand-collected material). Animal bones from sample residues were recorded as precisely as possible to taxon and element, and evidence of age at death, taphonomy, butchery and pathology were recorded when present. The fragments from each

residue were counted and weighed, with unburnt and burnt fragments counted and weighed separately. The completeness of each fragment was graded under 6 categories (<10%, 11-25%, 26-50%, 51-75%, 76-90%, 91-100%). Evidence of burning was recorded under four categories (unburnt, scorched, charred, calcined) and the predominant colour of the fragments noted. Evidence for tissue regression fractures on burnt bones was noted when present.

The assemblage

The evidence of species representation and skeletal element distribution suggests that most of the bones occurring in grave fills were not related to the burials themselves, but comprised disarticulated material derived from the fills of truncated earlier features or from layers cut by the graves. A small number of bones, however, were thought on the basis of their position or character to have been possibly or probably deliberately deposited and are discussed below.

Burial deposits

The earlier excavation at Lankhills revealed deposits of domestic fowl in six burials, and two dogs in one burial. The birds were mostly complete, and presumably represented symbolic meals for the deceased. The two dogs, one complete and the other fragmentary, were suggested to have had a role as guardians or companions (Clarke 1979, 367-368; Brothwell 1979, 239-241; Harcourt 1979, 244-245).

Eight burials in the present assemblage, including three cremation burials, contained possible ritual deposits of faunal remains (see Table 6.1). Three burials (530, 1547 and cremation burial 655) had horse skulls or parts of horse skulls placed in the grave fill. The identified fragments in Grave 530 included the left mandible and left and right premaxilla. A third mandibular molar and four maxillary incisors with only slight wear indicated that the animal was approximately 3.5-4.5 years old at death (based on eruption of the third molar). The skull (1543) in grave 1547 was complete (though fragmented) except for the mandibles, probably male and *c* 4-7 years old on the basis of the incisors (Habermehl 1975, 51). The skull (603) with cremation burial 655 was also largely complete but lacking the mandibles. It was also probably male and *c* 8 years old based on the incisors (ibid.).

Horse skulls are occasionally found in funerary contexts, as well as in ritual deposits elsewhere in Britain (cf. Luff 1982, 176-189) and cremated horse remains are a significant aspect of the cemetery at Brougham (Bond and Worley 2004, 325-6). Horses are associated with the Celtic goddess Epona, but evidence for the cult in Britain is scarce (Luff 1982, 189). However, horse sacrifices may also be associated with other deities and traditions, as perhaps at Brougham. The horse may also represent social status among the community.

The dog foot bones may possibly represent the remains of a dog skin, perhaps used to wrap the cremated remains. Such an interpretation was suggested in relation to the inhumation burial of a child from Asthall, Oxfordshire, in which the bones of three feet of a large dog were recovered (Booth *et al*. 1996), but the significance of the Lankhills example is less clear, the bones coming from a backfill deposit above the cremated remains. It is not unusual to find intact dogs in Roman burials. Interpretations of their significance range widely and include the deliberate killing of the deceased individual's pet, a status indicator, or a guardian of the dead (Philpott 1991, 204).

Other unburnt animal remains from cremation burials included a fragmented sheep/goat head from un-urned cremation burial 1160 (1107), identified from skull fragments, maxillary teeth and the majority of a left mandible among the material derived from sieved samples. The sheep or goat was 10-20 months old at death (following Legge 1992).

Individual birds, usually domestic fowl, are a very common type of animal deposit in graves. Philpott (1991, 202) suggests that they are mainly found in female cremations and in male inhumations. One skeleton of domestic fowl was found in Grave 870, an adult inhumation of unknown sex. The fowl was mostly complete, lacking the skull, wing tips and toes. The absence of skulls and feet has occasionally been interpreted as indicating the deposition of a cooked fowl (Lauwerier 1993, 77). However, the presence of tarsometatarsi renders it more likely that the small wing tips and toe bones were not retrieved during excavation. Furthermore, bird skulls are very fragile, and fragmented remains of the skull may have been missed during excavation. The presence of medullary bone indicates that the fowl was an egg-laying hen, killed during or at the very end of the breeding period (De Cupere 2001, 36).

Regardless of archaeological period, deposits of articulated remains and skulls are often interpreted as possible ritual deposits. However, disarticulated remains may also be significant, and Philpott argues that animal jaw bones in graves may represent token offerings: the inedible part of the funerary meal (1991, 203). Complete mandibles occurred in two inhumation graves: a sheep/goat mandible in Grave 950 and a dog mandible in Grave 710. However, complete mandibles are not unusual in rubbish and other secular contexts, and thus these mandibles cannot be defined unequivocally as special deposits within the graves. Further dog remains comprised an incisor from Grave 1215 (1148) and a second metacarpal from Grave 1806 backfill (1771), both recovered from sieved samples. Neither bears any evidence of curation prior to deposition (for example modification or polish from handling) and they are considered to be incidental inclusions in the grave fills. The evidence for the

role of dog in special deposits in this assemblage is therefore ambiguous. This contrasts with the evidence of the placement of two dogs in Clarke's grave 400 (above) and the occurrence of a dog as a cremation pyre good in Grave 1843 in the present site (see below).

Faunal remains not related to burial rituals

The faunal remains from Roman contexts not related to burial rituals comprise *c* 661 hand-collected bones, tabulated by general context type in Tables 6.2-6. Of these fragments, some 143 (21.6%)

Table 6.1: Burials containing possible ritual deposits of faunal remains

Context	*Grave No.*	*Burial type*	*Age (human)*	*Sex (human)*	*Animal species*	*Animal bones*
412	530	Inhumation	45+	Female	Horse	Skull (part) 3/254
738	870	Inhumation	Adult	?	Domestic fowl	Skeleton
779	710	Inhumation	36-45	Female	Dog	Mandible
896	950	Inhumation	45+	Male	Sheep/goat	Mandible
1543	1547	Inhumation	Neonate		Horse	Skull
603	655	Cremation	Adult	Male?	Horse	Skull
1107	1160	Cremation	Adult?	?	Sheep/goat	Skull/mandible fragments
1149	1215	Cremation	Adult	Male?	Dog	Foot bones

Table 6.2: Faunal remains from grave fills

	Cattle	*Sheep/ goat*	*Pig*	*Horse*	*Dog*	*Domestic fowl*	*Duck*	*Bird sp.*	*Frog/ toad*	*Medium mammal*	*Large mammal*	*Indet.*
Skull fragments		2								27	8	
Mandible	6	6	1	1	2					1		
Loose teeth	15	11	1	6								
Axis		1										
Vertebrae										4	5	
Ribs										9	18	
Coracoid						1						
Scapula		1		1							1	
Humerus	1		2	2					2		1	
Radius	2	2		1	1						1	
Scaphoid				1								
Ulna	1				1	2						
Metacarpal	1											
Carpometacarpus							1					
Pelvis	1	1							1		1	
Femur	3		1	1								
Tibia	1	4										
Fibula			1									
Tibiofibula									2			
Tibiotarsus						1						
Astragalus	4			1								
Metatarsal	3	3										
Phalanx 1		3										
Phalanx 2	1		1									
Phalanx 3		1										
Sesamoid											1	
Indet. Metapodial	1	1										
Long bone										49	48	
Indeterminate								2	6	13	14	205
TOTAL (NISP)	40	36	7	14	4	4	1	2	11*	103	98	205
MNI	4	3	1	2	2	1	1		1			
Weight (g)	1309	219	78	1216	39	5	1	0	2	185	1588	144

* = articulated remains

could be identified to taxon. Cattle is the most numerous species, closely followed by sheep/goat and horse (although the totals for all these are boosted by numbers of loose teeth).

The predominance of cattle and sheep/goat is common for Roman assemblages in the Winchester area and indeed for much of lowland Britain. The relatively high representation of horse is unusual, even for rural sites, and it is possible that this relates to other evidence for the special use of horse remains in some graves, but the total number of bones identified to taxon is low, and it would be unwise to draw far-reaching conclusions from such a small dataset. Similarly, the numbers of fragments related to context type are too small for meaningful analysis, except for the material from grave fills, which establishes the broad pattern of species representation.

The unburnt animal bone recovered from sample residues adds relatively little to the overall picture (Table 6.7). The majority of fragments were tiny indeterminate scraps of bone but some specimens were identifiable as sheep/goat (*Ovis aries/Capra hircus*), dog (*Canis familiaris*), water vole (*Arvicola terrestris*), bird, fish and anura. Water vole and fish remains were recovered exclusively from this material. The majority of unburnt animal bones from sample residues were probably not of funerary origin, but intrusive or residual in the grave fills, like the hand-collected bone; the single probable exception being mentioned above.

Table 6.3: Faunal remains from ditches

	Cattle	*Pig*	*Medium mammal*	*Large mammal*	*Indet.*
Skull fragment			1		
Tooth		1			
Vertebra				1	
Scapula	1				
Humerus	1				
Ulna	1				
Phalanx 1	1				
Long bone				3	
Indeterminate				47	5
TOTAL	4	1	1	51	5
Weight (g)	236	3	6	136	6

Table 6.4: Faunal remains from pits

	Cattle	*Sheep /goat*	*Horse*	*Dog*	*Domestic fowl*	*Medium mammal*	*Large mammal*	*Indet.*
Skull fragment							1	
Loose teeth		1		1				
Vertebra							1	
Ribs							1	
Tibiotarsus					1			
Astragalus			1					
Metatarsal	1	1						
Long bone						10	2	
Indeterminate								11
TOTAL	1	2	1	1	1	10	4	11
Weight (g)	119	11	51	3	2	21	71	32

BURNT ANIMAL BONE *by Fay Worley*

Introduction

The small assemblage of burnt animal bone provides evidence for the use of pig, sheep or goat, bird, dog, cattle, bird and possible equid pyre goods in the funerary tradition at the site, and adds to the growing dataset of faunal pyre goods known from Roman Britain. The presence of a dog and possibly equid pyre goods is unusual for sites of this period in Britain, dog having been found at only two sites, and horse at only one of 33 sites in a recent survey (Worley 2008).

Methodology

The burnt animal bone was identified as precisely as possible to taxon and element by comparison

Table 6.5: Faunal remains from layers and spreads

	Cattle	*Sheep/ goat*	*Pig*	*Horse*	*Medium mammal*	*Large mammal*	*Indet*
Skull fragments						8	
Loose teeth		2					
Scapula						1	
Ribs					4		
Femur			1				
Tarsal				1			
Metatarsal	1						
Phalanx 1				2			
Long bone					5	5	
Indeterminate							5
TOTAL	1	2	1	3	9	13	5
Weight (g)	80	11	22	79	24	99	6

Table 6.6: Hand-collected faunal remains (unburnt) occurring incidentally in cremation deposits

	Cattle	*Large mammal*
Loose teeth	4	
Vertebra		1
Carpal (magnum)	2	
Indeterminate		2
TOTAL	6	3
Weight (g)	37	24

Table 6.7: Unburnt animal bone from samples (total number of fragments)

Context	*Sample*	*Cremation burial/ other feature*	*Sheep/goat*	*Dog*	*Large*	*Medium mammal*	*Bird mammal*	*Fish*	*Anura*	*Water vole*	*Micro-mammal*	*Indet.*	*Total*	*Weight (g)*
607	496-7	655	-	-	1	-	-	-	-	-	-	7	8	1
808	722	1060	-	-	-	-	1	-	-	3	-	15	19	3
983	829	1180	-	-	-	1	-	-	-	-	-	-	1	<1
1107	901	1160	4	-	-	50	-	-	-	-	-	-	54	48
1121	936	1195	-	-	-	1	-	-	-	-	-	-	1	1
1148	957	1215	-	1	-	-	-	-	-	-	-	-	1	2
1264	1100	Pit 1261 backfill	-	-	-	1	-	1	-	-	-	41	43	5
1328	1149	Grave 1324 backfill	-	-	-	-	-	-	-	-	1	-	1	<1
1526	1236	Pit 1623 cremation deposit	-	-	-	1	-	-	-	-	-	-	1	3
1628	1416	Pit 1623 cremation deposit	-	-	-	1	-	-	-	-	-	-	1	<1
1661	1368	1724	1	-	-	-	-	-	-	-	-	-	1	13
1673	1367	Pit 1671 truncating burial 1724	-	-	-	3	-	-	-	-	-	-	3	1
1686	1378	Fill of pit 1680	-	-	-	10	-	-	1	-	-	-	11	4
1728	1382	1742	-	-	-	-	-	-	-	-	-	3	3	1
1749	1385	1904	-	-	-	1	-	-	-	-	-	-	1	1
1750	1386	1904	2	-	-	-	-	-	-	-	-	-	2	<1
1770	1405	1806	-	-	-	-	-	-	-	-	-	1	1	<1
1771	1401	1806	-	1	-	-	-	-	-	-	-	1	2	2
1777	1502	Gully 470	1	-	-	1	-	-	-	-	-	11	13	1
1788	1488	1786	-	-	-	1	-	-	-	-	-	-	1	<1
1795	1421	Pit 1799	-	-	-	1	-	-	-	-	1	-	2	<1
1844	1427	1845	3	-	-	4	-	-	-	-	-	2	8	1
Total	-	-	11	2	1	76	1	1	1	3	2	82	179	88

Table 6.8: Burnt animal remains from sample residues

Feature	*Context*	*Sample*	*Description (calcined unless stated ,< > denotes sample number)*	*Weight (g)*	*No. frags*
Un-urned burials					
910	869	713	**Sheep/goat** molar, 6 **medium mammal** maxilla/mandible fragments, 18 tooth fragments, 16 indeterminate fragments (10 **medium mammal**-sized) and I possible human tooth enamel and root fragment.	11	42
915	872	706	**Pig** right humerus fragment and **medium mammal** indeterminate.	3	2
945	888	756	Three **large mammal** indeterminate fragments (charred).	2	3
1060	808		A **large mammal** indeterminate (charred) and scorched long bone fragment. Seventeen **medium mammal** fragments including two scorched skull fragments and six scorched indeterminate fragments; a charred long bone fragment and two indeterminate fragments. 43 further indeterminate fragments (21 only scorched).	19	62
1065	911	712	Two **large mammal** flat bone fragments.	3	2
1160	1107	901	**Medium mammal** rib fragment (charred), **medium mammal** cranial fragment, long bone fragments and 16 indeterminate fragments.	6	19
1255	1187	1554	79 very small **medium mammal**-sized indeterminate fragments and one **medium mammal**-sized cranial fragment were recovered from spits 4 and 7.	4	80
1724	1661	1368	Seven indeterminate fragments (five scorched) and two **medium mammal**-sized skull fragments.	3	9
1742	1728	1379-80	Two cranial, two long bone and five indeterminate fragments, none of which could be positively identified as non-human. Also one **medium mammal**-sized indeterminate fragment.	10	14
Possible *bustum* burials					
655	607	496-500	A **bird** long bone and possible bird indeterminate in <497>, **cattle** mandible fragment in <498> and indeterminate fragments in <499> and <500>.	9	5
1180 (truncated)	983	829-831	**Cattle** left ulna (scorched) and **large mammal** flat bone in <830>, two **large mammal** long bone fragments were recovered from <831>. Two **medium mammal** cranial fragments, 14 **medium mammal** long bone and nine **medium mammal** indeterminate fragments (six charred) and six scorched indeterminate fragments from <829> (some **medium mammal**-sized fragments may be human). Eight charred **medium mammal**-sized indeterminate fragments were recovered from <831>.	21	43
1806	1770	1404-6	Two refitting **large mammal** long bone fragments (might be human, one charred) in <1404> and <1405>, **large mammal** long bone, skull and indeterminate fragments in <1405>, **bird** longbone (charred) **medium mammal**-sized possible radius, alveolar, long bone and two indeterminate fragments <1406> .	14	11
1845	1843-4	1427	A near complete **dog** skeleton together with two **sheep/goat** phalanges (see Table 2).	302	1100+
Cremation debris					
1623	1628	1416-7	A scorched equid sacrum fragment and eight charred **large mammal** indeterminate fragments including a sacral or vertebral process and other irregular fragments from <1417>. A charred **sheep/goat** metapodial fragment and five charred **medium mammal** indeterminates, together with 61 calcined **medium mammal**-sized fragments (including cranial and longbone fragments) were recovered from <1416>.	21	78
Other burials ([a] inhumation)					
785 [a]	756		**Medium mammal** vertebra	<1	1
1335 [a]	1238	-	21 **medium mammal**-sized fragments including 4 skull fragments, 2 tooth roots and 15 long bone fragments, 218 indeterminate fragments and seven scorched indeterminate fragments.	65	246
1904	1749	1385	Five **medium mammal**-sized indeterminate fragments .	1	5
Pit fills ([b] truncates 1724)					
1261	1264	1100	Fifteen **medium mammal** indeterminate fragments (six charred)	1	15
1671 [b]	1673	1367	**Large mammal** long bone (may be human), indeterminate, three **medium mammal** rib fragments (two charred), three **medium mammal** indeterminate fragments possibly including a cranial fragment.	3	8
Post holes ([c] under 1904)					
1743 [c]	1744	1388	Nine **medium mammal-**sized indeterminate fragments (one charred). All could be human.	1	9
Gullys					
470	1777	1502	Two **medium mammal** indeterminate fragments (one charred).	<1	2
Total	499g	1783+			

with the English Heritage reference collection held at Fort Cumberland, Portsmouth, and textual reference sources. Evidence of age at death, taphonomy, butchery and pathology was recorded when present. The number of fragments from each sample residue was counted (if less than 200) and weighed, and the completeness of each fragment was graded under seven categories (unknown, <10%, 11-25%, 26-50%, 51-75%, 76-90%, 91-100%). Evidence of burning was recorded under four categories (unburnt, scorched, charred, calcined) and the predominant colour of the fragments noted. Evidence for tissue regression fractures (Pope *et al.* 2004, 436) on burnt bones was noted when present. Unburnt animal bone from sample residues is reported by Strid and Worley (above). A full record of the burnt animal bone, recorded in a Microsoft Excel spreadsheet, can be found with the site archive.

Results

Burnt animal bone was recovered from the sample residues of 22 contexts representing 10 cremation burials (six un-urned, four *busta*), one deposit of cremation debris in a pit, a further cremation burial, two inhumation burials, five pit fills, a gully and a posthole fill (see Table 6.8). In total, 0.5 kg of burnt bone was recorded. The weight of bone recovered from each context varied considerably, from less than 1 g to 302 g from burial 1845. The majority of the burnt animal bone was well calcined and highly fragmented (<10 mm) leading to a low proportion of identifiable fragments. Some fragments from context 983 (cremation burial 1180) had a vitreous appearance, suggesting that they were fleshed when cremated; this may also have been the case for all the burnt faunal remains. One fragment from burial 1724 (context 1673) and one from burial 1845 (context 1843) exhibited patches of orange staining, suggesting that they had been in close proximity to iron objects. No other taphonomic modifications (gnawing, root etching or butchery marks) were identified on the burnt bones.

Despite the highly fragmented nature of the assemblage, sheep/goat (*Ovis aries*/*Capra hircus*), pig (*Sus scrofa*) cattle (*Bos taurus*), dog (*Canis familiaris*), bird and equid remains were identified among the burnt bones, but the majority of specimens were identified as medium or large mammal size. The majority of crematory deposits contained a minimum of one taxon utilised as pyre goods, but burials 655, 1180 and 1845, cremation debris 1623 and pit 1671 (truncating burial 1724) each contained at least two taxa, and burial 1806 contained three taxa (large mammal, medium mammal and bird). The minimum number of taxa in each burial is within the range seen at other Roman sites in Britain. Age-at-death could be estimated from the state of epiphyseal fusion for two faunal pyre goods: the dog from burial 1845 and the pig from burial 706. No pathological lesions or non-metric traits were identified on any animal pyre goods.

The only dog pyre good was recovered from burial 1845. This burial contained the greatest weight of burnt animal bone from the site and the majority could be attributed to a single dog skeleton. All regions of the skeleton were identified in the assemblage (see Table 6.9) indicating that the pyre good comprised a complete carcass. The dog was a male (a baculum was present) and at least 18 months old at death (all long bones were fully fused). Although withers heights should not be estimated from cremated remains due to their variable shrinkage during burning, a radius, a mandible and a skull fragment were similar in size to those of a 0.46 m tall modern dog skeleton held in the English Heritage Comparative Collection (AML #14). The dog from Lankhills would therefore have been around this size or larger, certainly large enough to have been a working animal, and within the upper half of the estimated height range of dogs from Roman Britain (see Harcourt 1974; Clarke 1995).

Sheep/goat pyre goods were recovered from three contexts (burials 910 and 1845, and cremation debris 1623). The sheep/goat in 910 was represented by a tooth together with 40 other medium mammal tooth, jaw and indeterminate fragments, probably representing either a sheep/goat mandible or head. No other faunal pyre goods were recovered from this burial. The sheep/goat from 1845 was represented by charred first and second phalanges, possibly indicating the utilisation of a sheep foot in the cremation. The sheep/goat in 1623 comprised a charred metapodial fragment together with five charred medium mammal-sized indeterminate fragments and 61 calcined medium mammal-sized fragments, including cranial and long bone fragments. This assemblage might be interpreted as a more substantial portion of a sheep/goat than that included in 910 or 1843, comprising at least the head and one leg. The charred fragments may be part of the same pyre good as the calcined bones, but subject to less intense burning, perhaps as a result of being positioned on the periphery of the pyre. Charred large mammal and equid remains were also recovered from this burial (see below).

The single pig pyre good was represented by a humerus fragment from an individual aged over 12 months old at death, recovered from burial 915. An indeterminate fragment was the only other burnt animal bone from this burial.

A scorched equid sacrum fragment together with eight charred large mammal-sized fragments was recovered from cremation debris 1623; a context also containing sheep/goat pyre goods (see above). Like the charred sheep/goat remains, the sacrum may have been burnt on the pyre, or alternatively it may represent residual material scorched by contact with the hot pyre debris. The rarity of equid pyre goods from Roman Britain together with the minimal level of burning on this single equid specimen favours the second interpretation.

Table 6.9: Burnt animal remains from burial 1845

Context	*Sample*	*Description (calcined unless stated)*
1844 (backfill)	1427	Charred **medium mammal** incisor root. Scorched medium mammal long bone fragment and 20 **medium mammal**-sized indeterminate fragments (including eight scorched and one charred).
1843	1428	Fragments of **dog** bones from the head (two tooth fragments), both forefeet (left scapho-lunar carpal, metacarpals I, III and IV; right metacarpal IV; a metapodial, two first phalanges, three second phalanges and two third phalanges that may be from any foot) and hind leg (tibia fragment). 32 **medium mammal**-sized fragments (including our long bone, two rib blade, one flat bone).
1843	1429	Fragments of **dog** bones from the head (two canine tooth fragments, seven tooth roots and six fragments from the mandible and maxilla), both forelimbs (left and right humeri; left radius; right ulna), both forefeet (left and right cuneiform and pisiform carpals; left metacarpal III; three metapodials, four first phalanges and three second phalanges that may be from any foot), the hips (two acetabular pelvis fragments) and a baculum. **Sheep/goat** bones comprised a charred first and second phalanx. **Medium mammal**-sized fragments comprised two long bone fragments, two sternal fragments, 13 rib blade fragments, 16 vertebral fragments (from at least seven vertebrae, including thoracic lumbar and caudal vertebrae) and >200 (69g) of indeterminate fragments.
1843	1430	Fragments of **dog** bones from the head (skull, mandible and tooth fragments, one charred, one scorched), right forefoot (right metacarpal I and scapho-lunar carpal), left hind foot (left calcaneum), hips (a sacrum fragment) and an indeterminate foot (two metapodials, one first phalanx, three second phalanges and one third phalanx). **Medium mammal**-sized fragments comprised thirteen skull fragments, eight rib fragments, 22 vertebral fragments (from at least eight vertebrae including lumbar and cervical vertebrae), seven long bone fragments, a charred sesamoid and >500 (58g) of indeterminate fragments.
1843	1431	Fragments of **dog** bones from the head (mandible and cranial fragments), left and right forelimbs (left scapula and humerus, right radius), left and right hind limbs (left and right femora, left tibia), left and right hind feet (left and right calcanea; right cuboid and metatarsals II, IV and V; left astragalus and metatarsal IV) and indeterminate foot bones (a sesamoid, four metapodials (one charred), eight first phalanges, three second phalanges and five second phalanges). **Medium mammal**-sized fragments comprised five skull fragments, sixteen vertebral fragments (from at least seven vertebrae including cervical, lumbar and caudal vertebrae), a scapula fragment, seven long bone fragments, twelve rib fragments and 133 indeterminate fragments.

Cattle pyre goods were recovered from burial 655 and possibly burial 1180. Burial 655 included a calcined mandible fragment together with three indeterminate fragments and a bird bone, and burial 1180 contained a scorched ulna fragment together with six scorched indeterminate fragments, a large mammal-sized flat bone fragment and two large mammal-sized long bone fragments (which are not certainly non-human). Like the equid remains (above), the cattle ulna might be a residual bone scorched by contact with hot pyre debris. No unburnt faunal grave goods were recovered from this burial so it is unlikely to have been an intentional grave good.

Bird pyre goods were recovered from two burials (655 and 1806). Both comprised single long bone fragments and neither could be identified any more specifically.

Un-urned burials 945, 1060, 1065 and 1806, and pit 1671 (which truncated burial 1742), contained burnt large mammal remains, with no specimens identifiable to individual large mammal species. Similarly, burials 1160, 1255, 1335, 1724, 1742, 1806 and 1904; pits 1671 (which truncated burial 1742) and 1261; posthole 1743 (underlying burial 1904); gully terminal fill 1777 and inhumation 785 contained burnt medium mammal remains, with no specimens identifiable to individual species.

Discussion

Burnt animal bones were recovered from the burials of 11 adults (including three female/probable females and five male/probable males) and a 2-year-old child. The remaining deposits of burnt animal bone may also represent animals burnt during cremation ceremonies, but not interred in burials or disturbed from burial contexts. The range of species comprised domestic taxa including cattle, possible equid, sheep/goat, pig and dog. The only bird remains could not be identified to species.

While cattle, pigs and sheep/goats are relatively common pyre goods in Roman cemeteries in Britain, dogs and equids are not. The funerary provenance of the burnt equid bone is uncertain. If it was a pyre good, it would join only nine others from Roman Britain, all recovered from the cemetery at Brougham, Cumbria (Bond and Worley 2004). Dogs were the least common domestic taxon pyre good in utilised in Roman Britain (Worley 2008) only three examples having been identified at two other Roman cemeteries: Brougham, Cumbria (Bond and Worley 2004) and St Stephen's, Hertfordshire. A dog listed in the grave catalogue for Folly Lane Hertfordshire (Niblett 1999, 116), was not identified by osteologists recording the assemblage (Mays and Steele 1999) and is therefore not considered here. The Brougham assemblage

included dogs in two features; one of the dogs, like the Lankhills example, was represented by a complete skeleton. We cannot know whether the dogs were burnt as the pets of the deceased, as their protectors or as funerary sacrifices, perhaps to honour the 'divine shades' (see Henig 1984b, 193). The dog at Lankhills was included in the cremation burial of a young child. This in itself is unusual; only three other Romano-British burials of single infants buried with faunal pyre goods were identified in Worley (2008). The dog pyre goods from other sites were all recovered from the graves of unsexed adults and sub-adults.

CHARCOAL AND CHARRED PLANT REMAINS FROM THE CREMATION BURIALS

by Dana Challinor

Introduction

The assessment of the charred plant remains and charcoal was carried out by Dr Ruth Pelling (2005) and showed that a number of the cremation deposits from Lankhills produced significant quantities of charcoal worthy of full analysis. The material offered the potential to characterise fuel use from a range of cremation-related deposits, including one urn burial, five un-urned burials, four *bustum* burials and two deposits of pyre debris. A posthole sample was also examined. Most of the cremation burials were of 4th-century AD date, but a few pre-date the main phase of use of the cemetery (AD 300-350) and might be as early as the 1st-2nd century. Pelling also noted the widespread presence of charred tubers which might indicate the use of turves as fuel. Some limited analysis of these remains was carried out and the results – both from the analysis and from the assessment – are discussed in this report. Dr Wendy Smith at Oxford Archaeology kindly assisted with the identifications of the charred plant remains.

Methodology

Charcoal

The charcoal samples were analysed in full, following standard procedures outlined below. Large assemblages were divided to provide an optimum number of *c* 100 fragments which were >2 mm in size. Where samples contained less than this, 100% of the charcoal was identified. Cremation burials which had been excavated in spits were recorded appropriately so that any differences within the spit assemblages could be determined. The charcoal was fractured and sorted into groups based on the anatomical features observed in transverse section at x7 to x45 magnification. Representative fragments from each group were then selected for further examination in longitudinal sections using a Meiji incident-light microscope at up to x400 magnification. Identifications were made with reference to Schweingruber (1990), Hather (2000) and modern reference material. The maturity of the wood was noted where possible and the presence of roundwood, sapwood and heartwood is noted in the tables. Distinguishing between heartwood and sapwood is difficult in charcoal, so the quantities of each are not statistically reliable. Classification and nomenclature follow Stace (1997). The figures are based upon fragment count as a means of quantification, but it is acknowledged that there are limitations to this method.

Charred plant remains

Samples which were analysed for charcoal and noted by Pelling as containing tubers were examined for charred plant remains. A rapid sorting of the samples was undertaken using a binocular microscope at x7 to x45 magnification, and a range of tubers and seeds were extracted for identification. The aim was to characterise the charred material and provide a broad quantification. The material was subsequently examined and photographed by Dr Wendy Smith at Oxford Archaeology. Given the limited sorting of the samples, it is likely that the charred remains, and in particular small weed seeds, are under-represented. Some identifications referred to in the text are derived from the assessment (Pelling 2005) and should be treated as unconfirmed.

Results

Charcoal

The results by fragment count are given in Table 6.10. Additional data, including roundwood counts and a breakdown of the species composition per spit within the burials, are included in the archive. The preservation of the charcoal was generally good, although the majority of samples were dominated by small-sized (<4 mm) fragments. This made it difficult to determine maturity in ring porous taxa. Only two samples – 722 and 957 – produced large fragments of >10 mm in size. Although a number of small roundwood fragments were noted, none were complete enough to examine age/diameter. In general, the samples were primarily composed of trunkwood, with lesser quantities of roundwood which might have derived from kindling. Context 1121 (sample 936) was the only sample to produce a significant quantity of immature stems – mostly *Corylus* (hazel), but also *Quercus* (oak), Maloideae (hawthorn group) and *Acer* (field maple).

Notes on identification

Twelve taxa were positively identified. The taxonomic level of identification varies according to the anatomical similarity between genera. Most of those given to species level are based upon the likely provenance and period, ie where a genus is represented by a single species. The only non-native taxon

Table 6.10: Charcoal from the cremations and related deposits

	Group number	*915*	*945*	*1060*	*1195*	*1215*	*1724*	*1742*	*1786*	*1798*	*1806*	*1845*	*2060*	*-*	
	Cremation type	*Un-urned*	*Pyre debris*	*Un-urned*	*Grave-shaped*	*Grave-shaped*	*Un-urned*	*Un-urned*	*Un-urned*	*Pyre debris*	*Grave-shaped*	*Grave-shaped*	*Urn*	*Grave backfill*	*Posthole*
	Context number	872	888	808	1121	1148	1661	1728	1788	1628	1770	1843	424	428	1744
	Sample number	706	756	722	936	957	1368	1379-1383	1488	1416	1403-1406	1428	1554	258	1388
	Volume floated	10	10	90	120	-	20	5	10	12	25	10	2	6	0.7
	% flot identified	100	100	12.5	6.25	1.56	12.5	100	100	12.5	100	12.5	100	25	100
Juglans regia L.	walnut	58													
Fagus sylvatica L.	beech										14r				
Quercus sp.	oak	6r	56r	58hr	29r	57rs	113hr	21	57r	116r	27r	13	36r	1	46rhs
Betula sp.	birch		11												
Alnus glutinosa Gaertn.	alder							14r							
Corylus avellana L.	hazel	2		10r	52r	25r						37r			2r
Alnus/Corylus	alder/hazel	1					1	21r	6		9r	10r	2	2	
Betulaceae	birch family		2												
Populus/Salix	poplar/														
willow			3r	4											
Prunus spinosa L.	blackthorn							1					22	85	
Maloideae	hawthorn, pear, apple	3		52r	11r	29r	4		1			52r	15r		17r
Acer campestre L.	field maple				6								16	13	1
Hedera helix L.	ivy					1									
Fraxinus excelsior L.	ash				2r	4r						21			
Indeterminate		6	3	1	3	2		7			4	4	5	3	4
Total		76	72	124	107	118	118	64	64	116	54	137	96	104	70

identified was *Juglans* (walnut) from cremation 915. It is of particular interest since walnut is thought to have been introduced to Britain by the Romans.

JUGLANDACEAE: *Juglans regia* L., walnut. The fragments from sample 706 were quite small and there is possible confusion with *Betula*, although walnut has large pores and simple perforation plates. It was not always possible to check the distinguishing characteristics, but comparison with modern reference charcoal suggested that the pores in transverse section were too large for *Betula.*

FAGACEAE: *Fagus sylvatica* L., beech; *Quercus* sp., oak

BETULACEAE: *Betula* sp., birch; *Alnus glutinosa* Gaertn., alder; *Corylus avellana* L., hazel. See notes on walnut for possible confusion with *Betula* (above); scalariform perforation plates, and smaller pores confirmed the presence of *Betula* in sample 756. This sample also produced two fragments of charcoal which had aggregate rays. It is likely that they were *Alnus* or *Corylus*, but the pieces were too small to check the longitudinal sections, and since *Betula* does (rarely) have aggregate rays, the identification was left at family level. *Alnus* and *Corylus* have very similar anatomies and given the small size of the charcoal, it was not always possible to check the perforation plates which are the main distinguishing feature.

SALICAEAE: *Salix* sp., willow; *Populus* sp., poplar; rarely possible to separate on anatomy.

ROSACEAE: *Prunus spinosa* L., blackthorn; distinguished from other *Prunus s*pecies by its wide ray widths.

Maloideae, subfamily including *Pyrus* sp., pear; *Malus* sp., apple; *Sorbus* sp., rowan/service/whitebeam and *Crataegus* sp.(hawthorn); all are anatomically similar.

ACERACEAE: *Acer campestre* L., field maple.

ARALIACEAE: *Hedera helix* L., ivy.

OLEACEAE: *Fraxinus excelsior* L., ash.

Indeterminate fragments were not identified because of poor preservation or an unusual cellular structure. Some bark fragments were included in this category. It is likely that the indeterminate fragments represent additional specimens of taxa positively identified at the site.

Charred plant remains

The data on the charred plant remains are presented in Table 6.11. Two types of tubers were identified to species level: *Conopodium majus* (Gouan) Loret (pignut) and *Arrhenatherum elatius var. bulbosum* (Willd.) St-Amans (false oat grass). A third tuber type was noted in context 1416, with a small rounded, dense structure and stalk attachment, but this was not positively identified. There was a lot of variation in the specimens: some of the *Conopodium* were compressed and flattened in appearance and varied in size considerably (Figure 6.1). There appeared to be a range of immature *Conopodium* tubers in context 1628, which suggests that they were burned prior to May when the tubers are mature enough to merit gathering. This also suggests that, although the tubers are edible, these were not deliberately gathered for food. The *Arrhenatherum* tubers ranged from long and thin to fat and conical (Figure 6.2). Numerous small rootlet/rhizome structures were recorded in some samples; one of these was attached

Fig. 6.1 Tubers of Conopodium majus from sample 1430, showing internal structure and variation in size

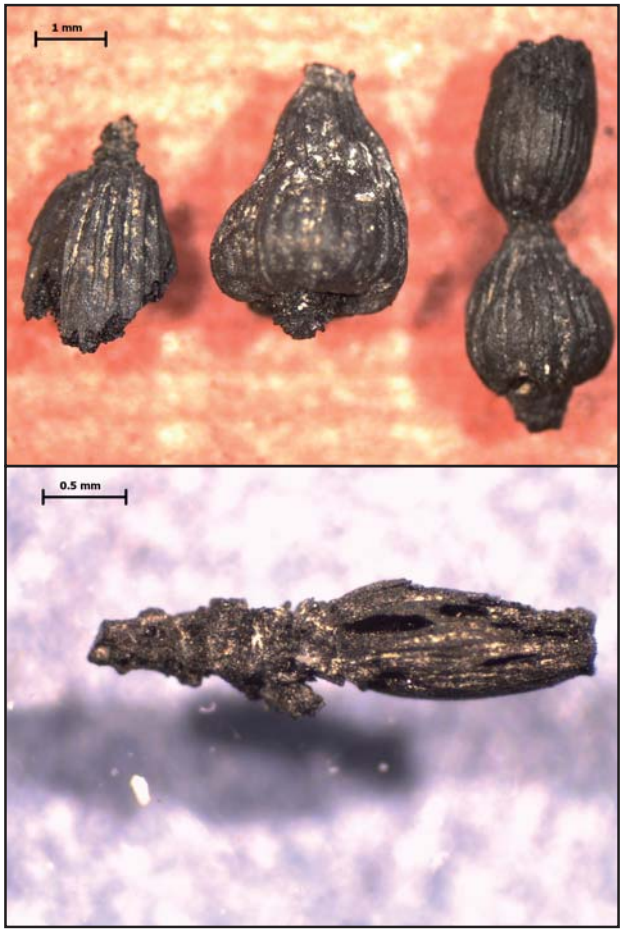


Fig. 6.2 Tubers of Arrhenatherum elatius (false oat grass) from samples 1488 (left) and 1416 (right) showing variation in size, and rootlet attachment

Table 6.11: Charred plant remains from charcoal samples

Group number		*1195*	*1724*	*1742*	*1786*	*1798*	*1806*	*1844*		*1845*		*2060*
Cremation type		*Grave-shaped cremation*	*Un-urned cremation burial*	*Un-urned cremation burial*	*Un-urned cremation burial*	*Pyre debris*	*Grave-shaped cremation*	*Grave-shaped cremation*	*Grave-shaped cremation*	*Grave-shaped cremation*	*Grave-shaped cremation*	*Backfill of cremation grave*
Context number		1121	1661	1728	1788	1628	1770	1844	1843	1843	1843	428
Sample number		936	1368	1379-1383	1488	1416	1406	1427	1428	1430	1431	258
Tubers/Roots												
Conopodium majus (Gouan) Loret	pignut				+	++	+	+	+	++	+	
Arrhenatherum elatius var. *bulbosum* (Willd.) St-Amans	false oat grass		+		++			+		+		+
Indeterminate – tuber type 3					+							
Indeterminate - rhizomes/ rootlets/twiglets		+		++ +	++++		++		++	+		
Indeterminate – root bark					+							
Seeds												
Ranunculus sp.	buttercups					+					+	
Rumex sp.	docks							+		+		
Prunus spinosa L.	blackthorn			+								
Fabaceae	legumes					+					+	
Asteraceae – seed head	daisies	+										
Asteraceae - seed	daisies		+							+		
Poaceae	grasses			+				+				
Avena sp.	oat						+					

+=<5; ++=5-25; +++=25-100; +++=>100

to an identifiable *Arrhenatherum* tuber (Figure 6.2, right). The preservation of this fine, rooty material was exceptional, suggesting insufficient combustion. Some carbonised molluscs were noted in the richer samples (eg 1416).

Weed seeds were infrequent, and included *Ranunculus* sp. (buttercups), *Rumex* sp. (docks), small-seeded legumes of *Trifolium*-type (clover), Poaceae (grasses), and a couple of *Carduus*-type (thistle) Asteraceae (daisy family) seeds. The Asteraceae seeds were consistent with the type which would have come from the composite seed heads recovered from context 1121, although this particular sample did not produce seeds. The weed species noted were dominated by low-growing grassland taxa. One cremation burial (1742) produced several *Prunus spinosa* (blackthorn) seeds. *P. spinosa* was also identified in the charcoal from this deposit, and it is likely that the fruit entered the pyre attached to the wood, since there is no general evidence for the deliberate deposition of food remains. This suggests that the cremation took place in autumn when the tree is in fruit.

Cereal remains in the analysed samples were rare. A couple of *Avena* sp. (oat) grains were identified from cremation 1806. Pelling, in the assessment, noted the presence of *Triticum* sp. (wheat), *Hordeum vulgare* (barley) and *Avena* sp. (oat) in low quantities throughout various features across the site. The paucity of remains led her to conclude that it is unlikely that the deposits represent deliberately placed offerings in the graves or cremations.

Discussion

The charcoal from Lankhills derives largely from wood remains of cremation-related deposits. The posthole sample (context 1744) produced an assemblage similar to those of the cremations, suggesting that it might represent remains from related activities. It is clearly not the burnt remains of a sole post, since several species are represented. In any case, the exact provenance for the charcoal from this deposit is uncertain. In the case of the cremation burials, the charcoal in the archaeobotanical assemblage will have come from several potential sources of wood selected for use on the pyre, including fuelwood, pyre structure, coffin/bier and artefacts. An initial examination of the type of cremation-related deposits at Lankhills will be useful in interpreting the charcoal remains.

Burial type and pyre debris

Three distinct cremation burial types were examined – urned, un-urned and *bustum*. None of these showed obvious evidence of burning *in situ*, although several of the grave-shaped burials contained bone in anatomical order, consistent with *bustum* burials. The paucity of charcoal in these burials refutes this interpretation. The evidence from other sites with genuine *busta* or *in situ* cremations indicates that a large volume of charcoal and large-sized pieces of charcoal are preserved in these features (eg Challinor 2006). This is not the case at Lankhills, where only one grave-shaped, anatomically arranged burial (1806) produced enough charcoal to merit analysis, and this assemblage was still poor and small. Apparently, these features had been cleaned – to a large extent – of charcoal, which seems unlikely in a *bustum* which is specifically designed to act as pyre site and grave. The urned deposits, as might be expected, had also been mostly cleaned of charcoal and only one – 2060 – produced analysable data. With the possible exceptions of burials 1060 and 1215, the small size of the charcoal suggests that larger fragments were deliberately and carefully avoided when the bone was collected for burial, particularly given that the bone remains were of good size (Clough, this report).

The two samples of pyre debris (contexts 888 and 1628) were spreads of material, rather than discrete burials. It is usually assumed that pyre debris is likely to contain more types of wood than burials of bone collected from the pyre since the remains of more than one pyre may be represented (Gale 1997). The Lankhills pyre debris is unusual in that oak is predominant in both assemblages. Indeed, context 1628 is the only assemblage to produce a single taxon. Given the taxonomic diversity of many of the other burials at Lankhills, the charcoal from contexts 888 and 1628 suggests that a single pyre is represented in each case.

Selection of fuelwood

The cremation assemblages from Lankhills are generally characterised by taxonomic diversity, containing an average of four taxa per sample. This level of diversity is unusual, since cremation deposits are often dominated by a single taxon – a trend observed at both prehistoric sites (Thompson 1999) and Romano-British ones (Challinor 2007). Both the 1st/2nd-century burials and the late 4th-century burials produced diverse assemblages (Fig. 6.3). In contrast, the early-mid 4th-century cremations, representing the main use of the cemetery, tend to be dominated by a single species – usually oak – although the material from the urn and related assemblage from 2060 was more mixed. The significance of this is difficult to gauge, but there appears to be a pattern worth noting. In general, diversity of taxa suggests a more indiscriminate gathering of wood for fuel, and the single taxon burials may represent a ritual choice (as suggested at some prehistoric sites, eg Thompson 1999).

The selection of fuelwood is determined by a number of factors, including availability, burning properties and ritual considerations. The amount of wood required to cremate a human body is estimated at 300-500 kg (McKinley 1994), but this will depend upon the burning properties of the species chosen. Oak and ash are commonly utilised in Britain since they would provide the necessary

high calorific heat to cremate a human body (Gale 1997), and these species were overwhelmingly dominant on the A120 sites in Essex (Challinor 2007), and the Pepper Hill cemetery in Kent (Challinor 2006). Hazel, beech, maple, blackthorn and the members of the Maloideae family – hawthorn apple, pear, service – all make good quality fuel, but alder and willow/poplar do not burn so well unless very well seasoned. It is notable that three of the burials with a range of taxa in the charcoal, contained unburnt bone (1060, 1195, 1215) indicating that the optimum temperature for the cremation of a human body had not been reached (see Boston and Marquez Grant, Chapter 5 above). These burials were all dated to the late 4th century and were in close proximity to each other. Their assemblages are similar; oak, hazel and hawthorn group forming the main fuelwood and a few other taxa in lesser quantities. Perhaps there was not sufficient wood to complete the cremation.

Pyre construction

In the absence of confirmed pyre locations, the evidence for the pyre construction is indirect. According to Vitruvius, a bier was placed on a pyre constructed of logs, each layer placed at right angles to the next (Hope 2007). Experimental evidence suggests a similar structure, built from large logs infilled with brushwood which acts as kindling and allows the circulation of air (McKinley 1994). Studies of *busta* and pyre sites in Kent (Challinor 2006) and Essex (Challinor 2007) have shown that oak and ash were usually used for the pyre construction, and also largely as fuelwood, with a few other lesser taxa for kindling. The assemblages at Lankhills are not easy to interpret in terms of timber construction, but the presence of *Arrhenatherum* (false oat grass) and *Conopodium* (pignut) tubers in nine burials/pyre deposits may relate to pyre construction.

There is evidence from other Roman sites which suggests that a wooden pyre was sometimes placed on top of a structure made out of turves or that the pyre was constructed over a pit or scoop (Campbell 2007). The widespread recovery of tubers and small rhizomes may reflect the exposure of roots and underground parts of plants to charring in the pit sides (ibid.). At Westhampnett, West Sussex, pyre sites were identified by a variety of shallow channels cut into the ground and filled with charcoal indicating this form of pyre construction (Gale 1997). Any comparable evidence from Lankhills would have disappeared through truncation at the site. However, there are two key pieces of evidence which suggest that the construction of the pyres over a pit was likely at Lankhills. Crucially, the associated remains of tubers, low growing grassland weeds and carbonised molluscs make the burning of subground or turves in cremation probable. The presence of burnt molluscs, in particular, is relevant as these would not be present if the plants had been uprooted for use as kindling (Mark Robinson, pers. comm.). Secondly, burning a pyre

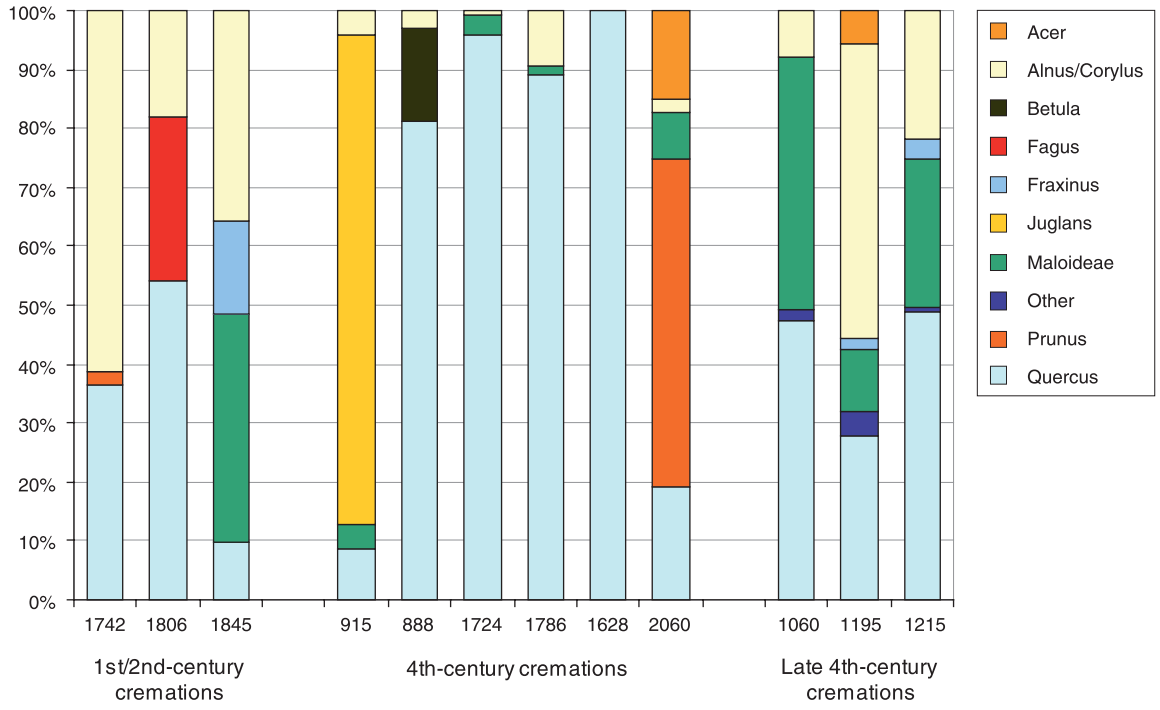


Fig. 6.3 Graph showing percentage of charcoal taxa per grave by phase (based upon fragment count)

over a pit would result in more reducing conditions, favouring the preservation of charcoal and charred remains. This would explain the excellent preservation of tubers and small rootlets in some of the samples.

Links with age/gender

The selection of fuelwood according to the gender or age of the deceased has been explored at other sites and two factors are suggested as relevant. The first is the sacred or ritual connotations of different woods. Tacitus (in the first century AD) noted that the German people observed the custom of burning the bodies of celebrated men with certain types of wood (*Germania*, 27). At Brougham, Cumbria a possible link between *Prunus* spp. (cherry/blackthorn) and male cremations has been suggested (Campbell 2004), but this is not supported by evidence from Kent (Challinor 2006) and Essex (Challinor 2007). Burial 2060 contained a significant quantity of blackthorn, but this was an infant burial, and unsexed. In this case, there were two samples analysed from this burial; from the urn itself and from the backfill of the grave. Similar assemblages were found in both, supporting the suggestion that some of the grave material may have derived from the disturbance of the urn. However, there was a greater quantity of blackthorn in the backfill, which might suggest mixing of pyre debris. Of course localised practices may have varied, and the evidence from Lankhills is inconclusive. One possible link is that the two 4th-century burials which were dominated by oak were probably female. However, since the other oak-dominated assemblages were unsexed, this association is tenuous.

Availability of fuelwood and pyre goods

The selection of wood for fuel will, of course, be influenced by availability in the local woodlands. However, the nature of the context will also be an affecting factor. Where people usually followed the 'principle of least effort' for the gathering of firewood (Shackleton and Prins 1992), this does not necessarily apply for cremation purposes. The dataset from Lankhills offers little useful insight into changes or the availability of certain taxa for use as fuelwood. The exploitation of mixed deciduous oak woodland is indicated, since oak is present in all of the samples. The latest (late 4th-century) cremations still produce a reasonable quantity of oak, and are not dissimilar in diversity to the earliest (1st/2nd-century) cremations. With the exception of the walnut, all of the taxa identified at Lankhills are native and could have been locally collected. It is worth noting that there is some beech in the assemblage, which represents secondary woodland in the area, often from plantings in later periods (Cox 1997).

Walnut was introduced to Britain by the Romans, but it is rarely found in the archaeological record, as wood or charcoal, at least before the medieval period (Smith 2002). It is thought to have remained an exotic and failed to naturalise in the same way as sweet chestnut, another Roman introduction (Rackham 2006, 27), but there is no reason to assume that the walnut from Lankhills did not come from home-grown timber. It is a medium dense wood, with reasonable burning properties, but was not generally used for fuelwood, as it is valued for its usefulness for furniture and decorative qualities (Gale and Cutler 2000). It seems likely that the walnut might have come from a decorative artefact placed on the pyre. It is also plausible that some of the diversity of species at Lankhills derives from wooden pyre goods, but this is impossible to determine from the charcoal.

Conclusions

The charcoal record from Lankhills contrasts with other Roman cemetery sites in the general lack of consistency in the selection of fuelwood for cremation. However, most of the cremations from Lankhills are unusually late in date for cremation practice and most relevant published data are of early-mid Roman date. Significantly, the examination of charcoal from two Romano-British cremations (one dating to the 1st century AD and the other to the 4th century AD) at Hyde Street, Winchester, revealed great taxonomic diversity in both assemblages (Gale 2004). Oak, hawthorn group, cherry/blackthorn, beech, birch, ash, field maple and possible willow/poplar were all identified. The strikingly similarity of this species list to that of Lankhills perhaps indicates a localised practice with indiscriminate selection of fuelwood, or some pressure on the availability of resources. The latter possibility is not borne out by the evidence from the early-mid 4th-century burials which were dominated by oak. Finally, there is evidence from the charred plant remains at Lankhills to suggest that some pyre construction consisted of a wooden structure built over a pit, which caused the burning of tubers, rootlets and molluscs. In general, the charcoal was small in size and quantity, indicating careful removal of bone from pyre debris prior to burial.

LAND SNAILS *by E C Stafford*

Introduction

The solid geology at Lankhills is Lower Chalk and the calcareous natures of the soils at the site are therefore generally conducive to the preservation of mollusc shell. Forty-three samples from a variety of feature types; pits, ditches, graves and layers dating from the 4th to early 5th centuries AD, were assessed to ascertain if the molluscan assemblages retrieved could provide data on the local site

Table 6.12: Assessment of mollusc assemblages

Feature type	*Cremation*					*Ditch*							*Ditch*					
Feature number	*764*					*1307*							*1419*					
Subgroup	*845*					*1318*							*1420*					
Drawing no	*223*					*240*							*243*					
Volume processed (kg)	*0.3*	*0.2*	*0.1*	*0.2*	*0.2*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*0.8*	*1*	*1*	*1*	*1*
Spit	*1*	*2*	*3*	*4*	*7*	-	-	-	-	-	-	-	-	-	-	-	-	-
Depth (m)	-	-	-	-	-	*0.00-0.05*	*0.05-0.10*	*0.10-0.15*	*0.15-0.20*	*0.20-0.25*	*0.40-0.45*	*0.45-0.50*	*0.05-0.10*	*0.10-0.15*	*0.15-0.20*	*0.20-0.25*	*0.25-0.30*	*0.30-0.35*
context	*766*	*766*	*766*	*766*	*766*	*1312*	*1312*	*1312*	*1312*	*1312*	*1308*	*1308*	*1421*	*1421*	*1421*	*1421*	*1421*	*1421*
sample no.	*1555*	*1555*	*1555*	*1555*	*1555*	*1521*	*1521*	*1521*	*1521*	*1521*	*1522*	*1522*	*1494*	*1495*	*1496*	*1497*	*1498*	*1499*
TAXA																		
Catholic species																		
Cochlicopa spp.	+				+								+					+
Trichia hispida (Linné)	++	+	+	+		+							++	+++	++	++		
Open country species																		
Truncatellina cylindrica (Férussac)	+																	
Vertigo pygmaea (Draparnaud)														+	+			
Pupilla muscorum (Linné)	++	++	++	++	++	+							+	++	+		+	+
Vallonia costata (Müller)	++			+									++	++	++	+	+	+
Vallonia excentrica (Sterki)	++	++	+	++	+	+							++	++	+			+
Helicella itala (Linné)	+		+	+	+								+	++			+	
Shade-loving species																		
Carychium tridentatum (Risso)														+	+			
Acanthinula aculeata (Müller)																		
Discus rotundatus (Müller)								+										
Vitrea spp.								+		+	+		+	+				
Aegopinella nitidula (Draparnaud)														+			+	
Oxychilus cellarius (Müller)								+	+					+				
Total estimated number	40	15	15	15	10	3	0	3	1	1	1	0	40	60	25	10	4	6

Table 6.12 (continued): Assessment of mollusc assemblages

Feature type	*Buried soil*		*Grave*							*Pit*				*Pit*			
Feature number	-		*1619*							*1623*				*1645*			
Subgroup			*1622*							*1623*				*1645*			
Drawing no	*255*		*255*							*255*				*256*			
Volume processed (kg)	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Spit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Depth (m)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
context	*1629*	*1629*	*1632*	*1632*	*1630*	*1630*	*1628*	*1620*	*1620*	*1626*	*1627*	*1627*	*1627*	*1652*	*1652*	*1652*	*1652*
sample no.	*1319*	*1326*	*1320*	*1321*	*1322*	*1323*	*1327*	*1324*	*1325*	*1331*	*1330*	*1329*	*1328*	*1338*	*1339*	*1341*	*1342*
TAXA																	
Catholic species																	
Cochlicopa spp.	++	++	++	++	+	+	++			++	+++	+++	++	+	+	+	
Trichia hispida (Linné)	+++	+++	+++	++	++	++	++			+++	++++	++++	+++	+++	++		
Open country species																	
Truncatellina cylindrica (Férussac)		+					+					+					
Vertigo pygmaea (Draparnaud)												+					
Pupilla muscorum (Linné)	+++	++++	+++	+++	+++	+++	+++	+		++++	++++	++++	+++	++++	+++	+++	+++
Vallonia costata (Müller)	+++	+++	++	++	++	+	++	+	+	+++	++++	++++	+++	+	+	+	+
Vallonia excentrica (Sterki)	++++	+++	+++	+++	+++	+++	+++	+		++++	+++	++++	+++	+++	+++	+	
Helicella itala (Linné)	++	++	++	++	++	++	++	+		++	+++	+++	++	++	++	++	
Shade-loving species																	
Carychium tridentatum (Risso)																	
Acanthinula aculeata (Müller)														+			
Discus rotundatus (Müller)					+	+		+						+	*		
Vitrea spp.				+													
Aegopinella nitidula (Draparnaud)	+				+	+											
Oxychilus cellarius (Müller)																	
Total estimated number	150	130	150	60	100	80	80	10	1	200	>200	>350	170	150	100	50	30

Table 6.12 (continued): Assessment of mollusc assemblages

Feature type				*Ditch*				
Feature number				*1830*				
Subgroup				*450*				
Drawing no				*268*				
Volume processed (kg)	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Spit	-	-	-	-	-	-	-	-
Depth (m)	*0.00-0.05*	*0.05-0.10*	*0.10-0.15*	*0.20-0.25*	*0.25-0.30*	*0.30-0.35*	*0.35-0.40*	*0.40-0.45*
context	*1811*	*1811*	*1809*	*1809*	*1808*	*1808*	*1809*	*1808*
sample no.	*1447*	*1448*	*1449*	*1451*	*1452*	*1453*	*1454*	*1455*
TAXA								
Catholic species								
Cochlicopa spp.	++	++	++	+	+	+	+	
Trichia hispida (Linné)	++	+++	+++	+++	++	+		
Open country species								
Truncatellina cylindrica (Férussac)							+	
Vertigo pygmaea (Draparnaud)								
Pupilla muscorum (Linné)	++++	++++	++++	+++	++	++	+++	++
Vallonia costata (Müller)	++	++	+++	+++	++	++	+	
Vallonia excentrica (Sterki)	+++	++++	++++	+++	+	++	++	++
Helicella itala (Linné)	++	+++	++	+++	+	+	++	
Shade-loving species								
Carychium tridentatum (Risso)								
Acanthinula aculeata (Müller)								
Discus rotundatus (Müller)								*
Vitrea spp.								
Aegopinella nitidula (Draparnaud)								
Oxychilus cellarius (Müller)								
Total estimated number	130	200	250	150	30	25	40	15

environment for the various phases of activity represented. At the most basic level the assessment aimed to determine the presence/absence of molluscan remains, give preliminary data on taxonomic content and indicate the potential for further work.

Methodology

All samples were processed at Oxford Archaeology. Assessment was carried out on small samples, between 0.2 and 1.0 kg, specifically collected for the retrieval of molluscs. The sediment was floated in water onto 0.5 mm mesh and the flots dried. The residues were also sieved to 0.5 mm and dried. The flots were then scanned under a binocular microscope at magnifications of x10 and x20. Flotation was generally found to have given adequate shell recovery for assessment purposes.

The abundance of taxa was recorded on a sliding scale of + (present, 1-3 individuals), ++ (some 4-11), +++ (many 12-50), ++++ (abundant >50). An estimate was also made of the total number of individuals in each flot excluding *Cecilioides acicula*. This species was excluded because it burrows deeply and provides no useful information on conditions as a sediment or soil formed. *C. acicula* can be extremely numerous and its inclusion in the total tends to obscure the indications from the other species.

Results

The results are presented in Table 6.12. For the purposes of assessment the species are grouped at a very basic level by ecological preferences following Evans (1972; 1984). Nomenclature follows Kerney (1999). Overall preservation and abundance of shell was found to be moderate to good, although frequent carbonate encrustation prevented identification of some specimens to species level.

On the whole features such as ditches that silt up naturally are the most useful in which to examine mollusc assemblages. Pits and graves are often/usually deliberately backfilled leading to complex taphonomic problems. As well as shells that could potentially represent individuals living

within the feature and those from the surrounding environment, assemblages may also contain residual shells from the soil used to backfill. However some useful broad environmental inferences can usually be made.

Overall, although molluscs were abundant in many of the samples assessed, the composition of the assemblages was very similar with little indication of spatial or temporal variability. All assemblages were of low diversity, dominated by a few open country species. Numerically important species included *Vallonia costata* and *V. excentrica, Pupilla muscorum, Helicella itala* and the rare obligate xerophile *Truncatellina cylindrica* was noted in three samples. The catholic species *Trichia hispida* was also abundant. Shade-demanding species were virtually absent apart from very occasional zonitids, and single specimens of *Discus rotundatus* and *Carychium tridentatum.*

The paucity of shade-demanding species, low diversity and species composition suggests that a long established, very open and dry environment, prevailed sometime prior, during and subsequent to the occupation of the site. The character of the assemblages is consistent with short-turved grassland, possibly well-grazed or trampled, with patches of disturbed bare ground. There is no real indication of significant areas of shade such as scrub or unkempt grassland in the vicinity The small shade-demanding component may represent a residual component hinting at previously less open conditions, though they could also reflect microenvironments prevailing within features as they infilled. Indeed the association of *Oxychillus cellarius*, *Discus rotundatus* and *Vitrea* spp. in some samples may be considered reminiscent of Evans' troglophile faunas of rock rubble habitats (Evans and Jones 1973). Certainly the very low numbers of even the more catholic of the shade-lovers within the ditch fills perhaps suggests that the features themselves were being maintained/grazed during the period of infilling.

Conclusion

The assessment served well in revealing the general character of the local environment for the period of activity represented at the site. However, the limited diversity of individual assemblages, and their similarity to one another means that it is unlikely that further work would provide any significant additional ecological information regarding the local environment.

SOIL MICROMORPHOLOGY, CHEMISTRY AND MAGNETIC SUSCEPTIBILITY

by Dr Richard I Macphail and Dr John Crowther

Introduction

Two monoliths (1335 and 1345), from sections 255 and 256 respectively, and associated bulk soil samples were examined. The two monoliths were taken through pit fill deposits in an area of intercutting graves, cremations and pits associated with the use of the late Roman cemetery. A layer 1629 (=1654=1655) sealed many of these features, and was itself cut by later graves. The chief objective of the soil micromorphological, chemistry and magnetic susceptibility study was to establish whether this buried soil was a turfline, as interpreted on site, and if so how long it had taken to form.

The results of the examination of the monoliths are summarised in the text below and in Tables 6.13 and 6.14. A more detailed report is placed with the site archive.

Samples and methods

Monoliths 1335 and 1345 were subsampled and upper contexts conserved in resin, in order to identify more accurately boundaries (in the sawn resin-impregnated blocks) between contexts in these highly stony fills, which in the case of 1345 was fragmented. Thin sections M1335 and M1345 sampled across the 1629-1627 and 1654-1653 context boundaries (Table 6.14).

Bulk samples 1627, 1629, 1653 and 1654 were analysed for chemistry and magnetic susceptibility. Under natural conditions all three properties (LOI, fractionated P and magnetic susceptibility including χmax; see below) would be expected to be higher in samples from a former turfline, and both phosphate and magnetic susceptibility would be likely to show further enhancement as a result of human activities on a former ground surface. It should be noted that the contexts are all highly calcareous. The presence of chalk will not only 'dilute' any anthropogenic signatures, but variability in chalk content between the samples could well lead to somewhat spurious results. The results from just four samples therefore need to be interpreted with caution, especially in the absence of a control sample(s).

Discussion and conclusions

The site, in the northern part of Winchester, occurs on Brown rendzina soils formed on Chalk (Andover soil association; Jarvis *et al*. 1983). Pit fills 1627 and 1653 from sections 255 and 256 are highly chalky, calcareous soil fills. They are poorly humic in terms of their LOI, but significantly, *more* humic compared to overlying contexts 1629 and 1654 (Table 6.13). The fills contain coarse (eg burned flint) and fine (mainly very fine charcoal, rubefied very fine mineral grains and examples of round/spherical iron droplets) anthropogenic inclusions, the burned material and examples of these spherical droplets producing an enhanced magnetic susceptibility (Table 6.13). Fill 1653 seems to contain a few more burned flint and anthropogenic materials (including coprolitic bone

fragments), compared to 1627. Fine organic tissue and organ remains, as well as a possible humified seed, also occur in slightly higher (but still rare) amounts. This slight difference may be reflected in the very slightly higher LOI and phosphate-P concentrations (Table 6.13). The fills are rather enigmatic, because although containing humus-stained land snail fragments, earthworm granules, and the excrements of small to very small invertebrate mesofauna (eg earthworms, and Enchytraeids and Collembola, respectively), they do not resemble humic topsoil deposits, as found for example at Overton Down, where rendzina soils have infilled a ditch (Macphail and Cruise 1996). The organic matter that these contain, rather than being soil humus, could be the oxidized and humified remains of organic matter dumping/inputs of unknown but possibly coprolitic waste origin; certainly earthworm-worked and oxidized upper cess pit fills may contain highly reduced amounts of organic matter and phosphate compared to basal fills (cf. 12th-century Monkton, Kent; lower fill: 19.6% LOI, 4500 ppm P2O5; upper fill: 4.7% LOI, 700 ppm P2O5; Macphail *et al*. 2000, table 8.1). There is also some likelihood that wet soil slurries were being dumped (in 1627). It seems probable that these fills were also influenced by wind-blown very fine charcoal, burned mineral grains, and on occasion, by ferruginous aerosol droplets, all of which could have been derived from contemporary late Roman cremations which occurred within just a few metres of these pits. The lack of any phosphate enrichment in these soils, however, appears to be enigmatic as it would be expected that ash and burned human remains would contribute to raising phosphate levels (as noted in a shallow ditch fill surrounding a Saxon cremation feature at Sutton Hoo, Suffolk; Macphail and Crowther 2008). Alternatively, fine charcoal and burned mineral particles may have derived from more distant and as-yet unknown Roman industrial activity (for instance carried in a smoke plume).

The uppermost fill in section 255, ie context 1629, contains no coarse anthropogenic inclusions (such as burned flint), and is more biologically worked and homogenized compared to context 1627 below which still retains some features of being formed in a wet state. Context 1629 therefore has the structural characteristics of being a turf line, but not the expected humus content (in terms of its chemistry or soil micromorphology) and more likely reflects rapid subsoil silting of the pit sides into the pit (or dumping/back filling); such fills can be rapidly worked and homogenized by biological activity over a season(s) (cf. Overton Down rendzinas; Crowther *et al*. 1996; Macphail and Cruise 1996; see also Babel 1975; Bal 1982). Moreover, the dominant subsoil microfabric of SMT 1c in context 1654, despite inclusions of relict organic matter fragments, again suggests rapid filling from subsoil silting/deliberate infilling (as suggested by its stony character), rather than the slow formation of a turf line. The presence of coprolitic bone could also be associated with scavenging of unburned bone associated with cremations – bird excrement, for example, has been found in (animal) cremation features at Roman Scole, Norfolk (Ashwin and Tester forthcoming).

The pit fills at Lankhills reflect the nearby cremation burials, through their magnetic susceptibility and included fine burned material. They appear to have been sealed by rapid 'silting' or possible backfills of very poorly humic and chalky subsoil material, which also records these nearby cremations. Rapid biological working of these upper layers has taken place, but no earthworm sorting or topsoil humus accumulation took place.

RADIOCARBON DATING

Ten samples, all of human bone, were submitted for radiocarbon dating to the Rafter Radiocarbon Laboratory, New Zealand. The aim of the radiocarbon dating programme was to try to refine questions of chronology relating to the earliest and latest stages of the excavated burial sequence. Features in the early part of the sequence included

Table 6.13: Soil sample chemical and magnetic susceptibility data

Context	*Description*	*LOI (%)*	*Phosphate-Pi (mg g^{-1})*	*Phosphate-Po (mg g^{-1})*	*Phosphate-P[a] (mg g^{-1})*	*Phosphate-Pi:P (%)*	*Phosphate-Po:P (%)*	*X(10^{-8} SI)*	*X^{max} (10^{-8} SI)*	*X^{conv} [b] (%)*
Section 255: Monolith 1335										
1629	Buried soil	1.47	0.651	0.169	0.820	79.4	20.6	22.1	290	7.62*
1627	Upper pit fill	1.98	0.782	0.305	1.09	71.9	28.1	33.6	516	6.51*
Section 256: Monolith 1345										
1654	Buried soil	2.26	0.925	0.314	1.24	74.7	25.3	33.8	534	6.33*
1653	Pit fill	2.51	0.832	0.377	1.21	68.8	31.2	35.5	497	7.14*

[a] Phosphate-P: the concentrations recorded are all quite low, and none of the contexts shows clear signs of enrichment

[b] X^{conv}: all four samples are highlighted to indicate likely enhancement, though none of the samples are 'strongly enhanced':

* = 'enhanced' (5.00–9.99%)

Table 6.14: Soil micromorphology - samples and counts

Monolith	*Sample*	*Layer*	*Depth*	*Relative Microfacies*	*SMT*	*Voids*	*Chalk*	*Flint*	*Landsnail shell*	*Biogenic calcite*	*Burned flint*	*Rubefied grains*
1335	M1335	Context 1629	80-125 mm	A2	SMT 1b (1a)	40%	fff		aa	a		aa
		Context 1627	125-150 mm	A1	SMT 1a (1b)	30%	fff	*	aa	a	a	aa
1345	M1345	Context 1654	60-85 mm	B1	SMT 1c	55%	ffff	*	aa	a		
		Context 1653	85-140 mm	A2	SMT 1b	55%	ffff	f	aa	a	aa	aa

Sample	*Layer*	*Iron droplet?*	*Iron Fragment*	*Burned clay*	*Coarse Charcoal*	*Coprolitic bone*	*Coprolitic seed?*	*Matrix coatings*	*Thin burrows*	*Broad burrows*	*Thin Excrements*	*Broad Excrements*
M1335	Context 1629	a-1			a				aaa	aaaaa	aaa	aaaaa
	Context 1627				a			aa	aaa	aaaaa	aaa	aaaaa
M1345	Context 1654				a	a-4			aaa	aaaaa	aaa	aaaaa
	Context 1653	a*	a-1	a-1	a	a-3	a-1		aaa	aaaaa	aaa	aaaaa

* - very few 0-5%, f - few 5-15%, ff - frequent 15-30%, fff - common 30-50%, ffff - dominant 50-70%, fffff - very dominant >70%
a - rare <2% (a*1%; a-1, single occurrence), aa - occasional 2-5%, aaa - many 5-10%, aaaa - abundant 10-20%, aaaaa - very abundant >20%

Table 6.15: Summary of radiocarbon dates in Grave group number order

Grave group no.	*Skeleton no.*	*Burial type*	*Dated material*	*NZA lab no.*	*Conventional age*	*Calibrated 68% confidence*	*Calibrated 95% confidence*	*Earliest possible 'archaeological' date*	*Comment*
87	157	Inhumation	Human bone	29973	1756 ± 35 BP	AD 238-336	AD 141-152 & AD 169-388	350 pottery	associated pottery vessel (230) dated AD 350-400+, note that 3 out of 4 egs in Clarke are in graves dated after 380
655	607	Cremation ('*bustum*' type)	Human bone	30117	1644 ± 30 BP	AD 348-369 & AD 379-433	AD 267-272 & AD 335-465 & AD 482-533	352 coin	associated pottery vessel (606) dated AD 340-400+; latest burial in sequence in this part of the site, cutting Grave 1010 with a coin of AD 352-3
1175	1119	Inhumation	Human bone	29975	1731 ± 35 BP	AD 254-346 & AD 373-377	AD 237-400	388 coin	coin dated 388-395, also 'late' buckle and knife; burial cuts eastern ditch
1385	1438	Inhumation	Human bone	29974	1732 ± 35 BP	AD 253-346 & AD 373-376	AD 236-400	270 pottery	1 sherd NFCC pottery in grave backfill; cuts northern boundary ditch
1440	1441	Inhumation	Human bone	29977	1725 ± 35 BP	AD 256-304 & AD 315-352 & AD 367-381	AD 240-401	388 coin	grave goods include vessels and 5 coins, 2 dated 388-402; latest burial in sequence in NW corner of site
1491	1488	Inhumation	Human bone	30158	1703 ± 25 BP	AD 263-279 & AD 329-389	AD 257-303 & AD 316-408	330 context date?	latest burial in sequence in this part of site, above group of cremations, cuts 'turf line' of late 3rd-4th century date. Coin of 260-268 residual in backfill of grave
1622	1621	Inhumation	Human bone	29976	1767 ± 35 BP	AD 227-265 & AD 274-335	AD 138-380	270 later than burial 1904	vessel 1592 (dated 270-350) inverted above grave fill and presumed associated; beneath 'turf line', cuts cremation burial 1904
1845	1843	Cremation	Human bone	30237	1977 ± 25 BP	AD 2-60	38 BC-AD 60	300 cremation urn	later than undated pits, only other secure relationship is beneath 'turf line' of AD 330(+)
1846	1848	Inhumation	Human bone	29978	1701 ± 35 BP	AD 261-282 & AD 325-397	AD 255-414	?360 metal objects	grave goods are gilded crossbow brooch, silver belt fittings and spurs
1904	1749	Cremation	Human bone	30116	1831 ± 35 BP	AD 134-223	AD 84-254 & AD 308-312	?*	cuts undated pit, beneath 'turf line' of AD 330(+)

*Another ?burial (1547, no body) in this cluster of features has a horse skull and a coin of AD 330-331.
The latter provides a tpq for the overlying 'turf line' and may suggest a date for the closely associated but otherwise undated cremation burials.

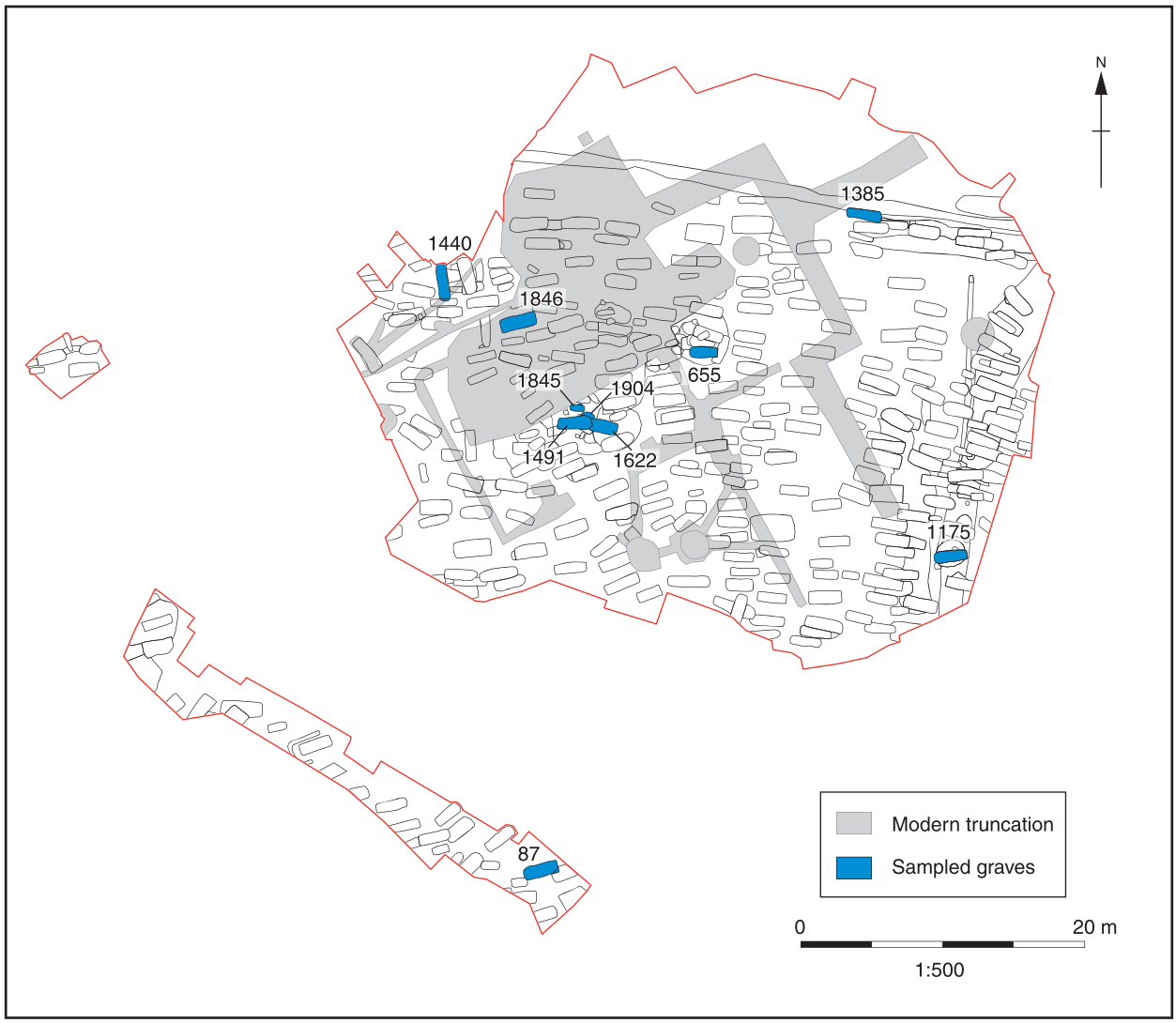


Fig. 6.4 Location of graves sampled for radiocarbon dating

undated cremation burials. The question about these concerned their relationship to the rest of the sequence; did they immediately predate the main 4th-century burial sequence, or did they represent funerary activity on the site over a longer period of time prior to the establishment of the late Roman cemetery?

A number of the latest burials from the cemetery were selected for dating because it was thought desirable to obtain dates supplementary to, but independent of, artefact-based and historical chronologies. In particular it was hoped that radiocarbon dates might shed some light on the date of the end of use of the cemetery. The selected burials included ones which were stratigraphically the latest in particular areas of the site, and ones for which there was some artefact dating, including two burials with a terminus post quem of AD 388 on coin evidence. The locations of the burials selected for dating are shown in Figure 6.4.

The dated samples are listed in Grave number order in Table 6.15, in which key archaeological information is also given. The dates, calibrated using OXCAL v4.0.5, are presented graphically in Figure 6.4.

The dates are discussed further in Chapter 7 below. Here it suffices to note a very early (possibly pre-Roman) date for one of the cremation burials, although it subsequently emerged that this burial was associated with late Roman pottery, and the generally consistent, broadly 4th-century date ranges assigned to most of the dated inhumation burials. These ranges do not sit particularly well with the later – and in some cases very late – 4th-century dates indicated by the associated artefacts in some of the graves.

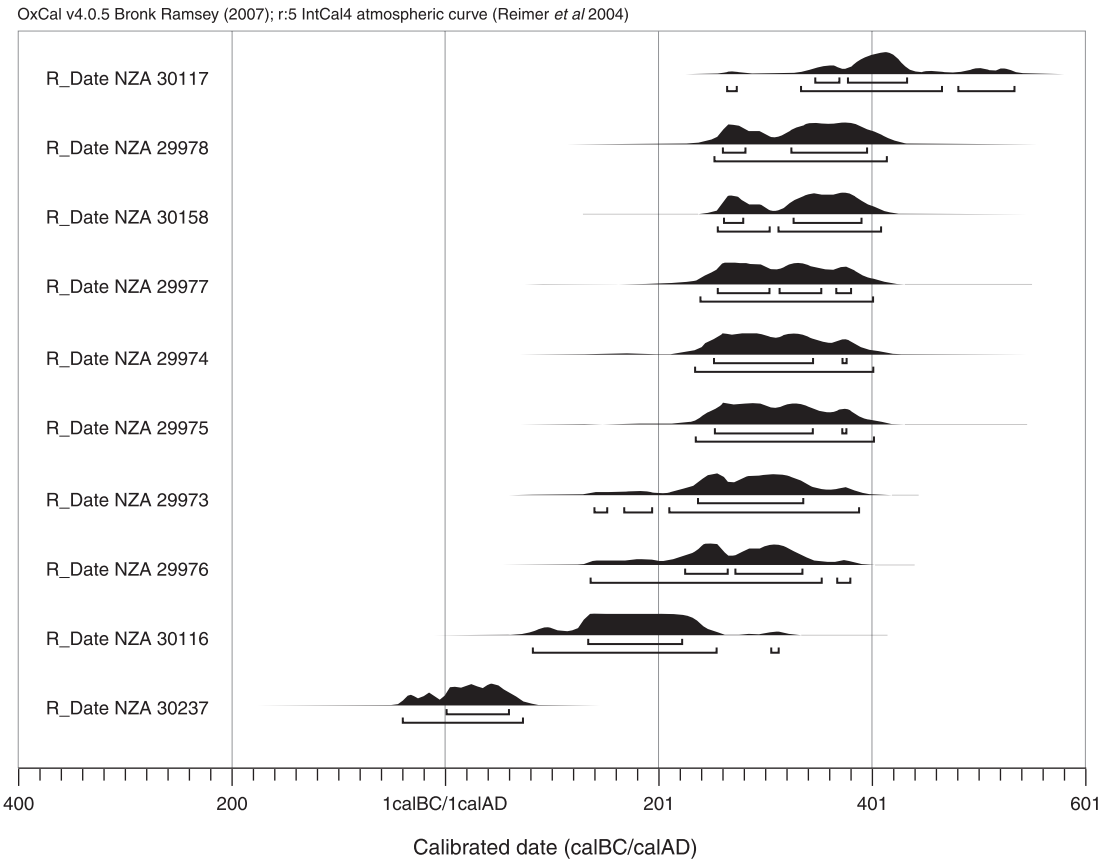


Fig. 6.5 Radiocarbon dates

Chapter 7: Synthesis and discussion

INTRODUCTION

The following discussion attempts to integrate the different strands of evidence presented in the chapters above to produce a reassessment of some of the most important aspects of the cemetery. The debt to the work of Giles Clarke is obvious, and the high quality of presentation of the data in the 1979 report has made it a key source of material for many subsequent analyses of aspects of Romano-British cemeteries. For some aspects of the present analysis, however, the resources of this project have not permitted consideration of the evidence and its comparanda at a level equivalent to that of the earlier work. The analytical possibilities of a cemetery such as this are enormous and the purpose of this report is to present the data and indicate some of its potential, rather than attempt exhaustive analysis of all areas. At the same time, in the 30 years that have elapsed since Clarke's publication new evidence for late Roman cemeteries in Britain has been published, new insights into the material, from consideration of individual object types to ways of looking at large questions such as identity, have developed, and whole new techniques of analysis, particularly with regard to isotopes, have emerged. It is unsurprising, therefore, that not all the issues that seemed important in the 1970s appear so now; many questions are the same, but some are different.

This section begins with discussion of the chronology of the cemetery, followed by a review of its principal physical characteristics, before moving on to consider aspects of detail at the level of individual graves, their structure and contents and what these tell us about the burial rites practised. Many of these aspects are also relevant to the question of chronology. A summary of the evidence for the cemetery population follows, and the discussion concludes with a brief review of the extent to which aspects of religion conditioned the ways in which people were buried at individual and group level.

CHRONOLOGY

Problems of chronology

Establishing a chronological sequence for the cemetery is a basic requirement for any analysis of its use. Only with a rigorous chronological framework in place is it possible to investigate how funerary practices changed through time, allowing us to produce a nuanced understanding of the dynamics of the use of the cemetery. Without it we run the risk of combining evidence from throughout the use of the cemetery to produce an idealised, composite model of late Roman funerary practices at Lankhills that may bear only a generalised resemblance to the ceremonies that actually took place there at different times during the 4th century. A chronological framework also enables us to correlate events at Lankhills with those at other contemporary cemeteries, both within Winchester and further afield. This has a direct impact on our understanding of late Roman society in Winchester and beyond during the later part of the Roman period, for which the burial evidence provides some of the most important information. Indeed, the continued use during the second half of the 4th century of the Lankhills cemetery for organised burial provides some of the most convincing evidence for the continuing occupation of the city itself, and the apparently abrupt abandonment of the burial ground may afford a dramatic demonstration of the equally sudden collapse of urban life (Biddle 1983, 115 and note 3).

Archaeological dating evidence, by its very nature, produces chronologies that contain an ever-present but rarely acknowledged element of uncertainty (Hinge 1996, 66). Dating based on artefactual typologies provides a date range within which the artefact is thought to have been manufactured or to have been in general circulation, and it is inferred that the feature from which the artefact was recovered was created within this period. However, even if this assumption is correct (and it frequently is not), the resulting date range for the feature may be quite large and is likely to overlap with the similarly-derived date ranges for other features, making the creation of a chronological sequence problematic. In the case of cemetery sites, this situation is exacerbated by the possibility that objects accompanying the dead may have had a use-life of unknown length before being placed in the grave, or may have been deliberately curated and perhaps chosen for use in the funerary ritual specifically because of their antiquity or previous associations (Schiffer 1987, 88; for pottery see Biddulph 2005; Wallace 2006, 260-262). This may be the case with some of the grave goods at Lankhills, where damage to some of the pottery vessels may have been sustained during their use prior to incorporation into burials (Booth, Chapter 4), and in their study of the eastern cemetery of Roman

London, Barber and Bowsher (2000, 122) went as far as to suggest that damaged vessels were preferentially selected from existing household stock for use in burials. Also at Lankhills, a denarius of Hadrian dating from AD 119-138 was recovered from Grave 3029, which in all other respects appears to be part of the main, 4th-century phase of the use of the cemetery, suggesting that the coin, although exhibiting relatively little sign of use-wear, may have been 200 years old when placed in the grave. In some instances the dating of objects placed with a burial is clearly at odds with that derived from stratigraphic evidence. In others graves may have contained material with conflicting date ranges. Thus Grave 745 contained a vessel dating from the first half of the 4th century and a brooch and belt likely to date from the second half of the century, but examples of this kind of occurrence were rare.

The ambiguities inherent in archaeological dating techniques are accentuated in the case of burials, which are likely to represent a single event. Each burial is likely to have taken place in no more than a single day, and to a contemporary observer the burials forming the cemetery would have taken place in a definite, discernible sequence, but to an archaeologist the dating evidence associated with a given grave may only indicate a date range that spans several (or more) decades, and which encompasses many burials. Consequently the sequence of burials is lost. This is graphically demonstrated at Lankhills by the large number of graves that can only be attributed broadly to the first half of the 4th century on the basis of ceramic evidence. The availability of dating evidence is additionally affected by changes in funerary practice, such as the apparent shift away from the deposition of pottery vessels after the mid-4th century. It should also not be forgotten that the majority of the graves contained no datable objects and so cannot be assigned any date on artefactual grounds.

The nature of the cemetery did not, unfortunately, lend itself easily to the establishment of chronological sequences through the stratigraphic relationships between burials. In general some effort seems to have been made to avoid disturbing existing burials, with the result that the majority of the graves were dug into previously undisturbed ground and so had no useful stratigraphic relationships, having been cut into the chalk bedrock and sealed by the modern overburden. Where sequences existed, which was mainly on the eastern side of the cemetery where a dense concentration of graves had been dug into the backfilled ditch 450, they were generally short, consisting of no more than three or four superimposed or successive burials. Few of these groups included graves with datable artefacts that might have assisted in the attribution of absolute dates to the sequence, and it is not possible to make correlations between the individual sequences.

Phasing the cemetery

With the caveats discussed above, it has been possible to use the existing dating evidence to construct a broad chronological scheme for the use of the cemetery, based on those burials to which a date could be attributed on the basis of associated artefacts, stratigraphy or radiocarbon determinations. The evidence from Clarke's excavations was also re-assessed in order to incorporate all the dating evidence from the cemetery into a single integrated scheme. The majority of the burials lacked either intrinsic dating evidence or stratigraphic relationships with features that could be dated and so remain unphased, but there is no reason to believe that they do not conform with the scheme devised for the datable burials.

There is no evidence for breaks in the use of the cemetery. Although the types of datable objects placed with the dead changed over time (and may have their own, unrelated, dating schemes), burial seems to have been continuous from its inception until the end of the 4th century, if not beyond. There were, however, changes over the course of the century in the degree of use of particular areas of the cemetery, the most notable of these being the expansion of burial into the area east of ditch 450/F.12 in the second half of the century. In the report on the 1967-72 excavations, Clarke (1979, 116-119) used this shift as a basis for dividing the cemetery into four distinct areas with clearly defined, though overlapping, periods of use. The area of the OA excavation was mostly confined within only one of these zones, Area W, to which Clarke attributed a period of use of *c* AD 310-370/90, with burials here becoming less common after *c* AD 365/70 (ibid., 117-8).

Because the use of the cemetery, and particularly of the area west of ditch 450/F.12, was continuous, this use cannot readily be divided into a sequence of distinct phases, as the dislocations in activity that this would imply are simply not present. However, the date ranges of many of the datable artefacts placed with burials fall clearly on either side of AD 350, and this allowed these burials to be attributed to either the first half of the 4th century or after AD 350, while a small number of burials could be assigned to the period after AD 388 on the basis of numismatic evidence. This facilitated comparison between burials with artefacts dating from before AD 350, those from the second half of the century, and those dating from the final stage of the use of the cemetery, after AD 388. The division of the dated burials into these broad periods enables the development of the cemetery and diachronic changes in the funerary practices that occurred within it to be examined, although it should be emphasised that they are not intended to be phases in the conventional sense of distinct, temporally bounded episodes distinguished by dislocations or alterations in the activities represented (Clark 2000, 158).

The dating evidence

A total of six graves from the OA excavations were attributed to the period before AD 350, eight to the second half of the century, and four to after AD 388 on the basis of coins deliberately placed with the burial. Although it is possible that some coins may have been in circulation for some time before being deposited, and therefore that they provide a misleadingly early date for the grave with which they were associated, there is no indication that the issues of the 330s and 340s were more worn than the coins appearing in later graves, and therefore no particular reason to place them in the later period.

Very few of the pottery vessels associated with graves have closely-defined date ranges, and a few of the reduced ware types could only be assigned a very broad date range in the period AD 270-400 (no attempt has been made here to reconsider aspects of the published chronologies of New Forest pottery types). Where closer dating was possible the most common ranges were AD 270-350 and AD 300-350, and this allowed a further 20 burials from the OA excavations to be attributed to the period before AD 350.

Most of the other categories of material placed with the burials were broadly attributable to the 4th century, but some are more specifically associated with the latter half of the century, and can thus be used to assign the graves in which they occur to this period. These items were the shale spindle whorls, the combs, the bone and ivory bracelets, and the belt sets and crossbow brooches. In all, 23 graves were attributed to the period after AD 350 on the basis of these associated finds.

A small number of burials that contained objects dating from the first half of the 4th century also contained material that indicated that they dated from the second half of the century. Grave 18, which contained a small jar dated to *c* AD 270-350, also had 11 bone bracelets and thus a date later than that of the pottery vessel is indicated. Grave 745 had a flask or jug that also dated from before AD 350, but the unusual strap ends in this grave belong to the second half of the 4th century. One grave that contained a group of three coins dating from the 330s and 340s (1370) was assigned to the period after AD 350 because it also contained four bone bracelets, and another (1755) that contained three coins of similar date was likewise attributed to the later period on the basis that pottery from its backfill dated from the second half of the century. In the latter case, however, the 'discrepancy' between coin and pottery dates may only have been very slight and a date around the middle of the 4th century is not implausible.

Two further burials from the OA excavation could be attributed to the period before AD 350 on the basis of stratigraphic relationships with graves dated to this period on the basis of artefactual evidence, and four graves that cut burials dating from after AD 350 were similarly assigned to that period.

Radiocarbon dating

A series of radiocarbon dates was obtained with the aim of providing independent dating for key aspects of the cemetery, particularly relating to its earliest and latest phases. A specific objective was to use these dates to test the view that use of the cemetery had ceased at the end of the 4th century. It was unfortunate that the present excavations did not encompass any of the area east of the original north-south boundary ditch, the area where Clarke thought that the latest burials had occurred. Nevertheless, six inhumation graves (87, 1175, 1385, 1440, 1491 and 1846) and one *bustum* burial (655) were selected for radiocarbon dating on the basis that they were the latest graves in local sequences and/or were potentially of late 4th-century or later date on other (mostly artefact-related) criteria (see Table 6.15). Most obviously, two of these graves (1175 and 1440) were dated after AD 388 by associated coins.

As presented in Figure 6.5 the calibrated radiocarbon dates have quite wide ranges, particularly at the 95% confidence level. The date for the *bustum* Grave 655 is centred on the end of the 4th century, which is consistent with the archaeological evidence. Broadly comparable evidence placing Graves 87, 1175, 1385, 1440, 1491 and 1846 at the end of the 4th century is not, however, reflected in the same way in their radiocarbon dates. These tend to span the later 3rd and 4th centuries. The earliest dates for these graves on archaeological criteria (for example, assigning Graves 1175 and 1440 to AD 388 rather than any later point in the date range (388-402) of their associated coins, let alone a subsequent date) therefore coincide fairly consistently with the upper extremity of the 95% confidence ranges of their associated radiocarbon dates. This is clearly problematic. The radiocarbon dates cannot be considered to be 'wrong', but for so many dates to display the same pattern, when one or more (if not all) of these dates might reasonably have been expected to resemble that obtained from *bustum* Grave 655, suggests a phenomenon that requires explanation. This is not easily achieved, but one possibility is that the radiocarbon dates reflect a documented skewing effect on radiocarbon dated human bone resulting from consumption of relatively high levels of marine food, as a result of which radiocarbon dates appear older than would normally be the case (for examples from widely differing periods, see Barrett *et al*. 2001; Cook *et al*. 2001). The suggestion that this applied to some of the Lankhills people may be (tentatively) supported by the work on the carbon and nitrogen isotopes. In general terms Cummings and Hedges (above) conclude that 'the slight enrichment in carbon suggests a small, but consistent, incorporation of marine fish or shellfish into the diet of some of the people interred in the cemetery'. In the specific cases, it is unfortunate that because of the nature of the sampling strategy, carbon and nitrogen isotope

data were only recovered from two of the radiocarbon dated individuals, those in Graves 1175 and 1622. These had moderately enhanced $\delta^{13}C$ levels (-18.7 and -18.8‰ respectively), ie in a range (-18 to -19‰) enriched by 2‰ or more compared to the carbon values of both pigs and herbivores, consistent with the general interpretation just quoted. The relative paucity of direct evidence for fish consumption in Roman Britain is well-known (Locker 2007), and Winchester is no exception to this pattern, but shellfish, particularly oysters, are routinely recovered here and might have formed a substantial part, if not the majority, of the marine component of the diet which contributed to enhanced carbon levels. In fact it is not possible to estimate with any precision the size of any such marine offset in relation to the recorded radiocarbon dates since the nature of the elevation of bone collagen depending on diet remains uncertain (Hedges and Reynard 2007). It may be considered unlikely, however, that the possible extent of marine food consumption indicated here would have been sufficient to result in the apparently 'too early' radiocarbon dates recorded here (Gundula Müldner pers. comm.).

The radiocarbon dates therefore possibly shed an interesting sidelight on an aspect of the diet of the Lankhills people, but they do not advance understanding of the date of the latest phases of burial activity at the cemetery.

THE CEMETERY

The development of the cemetery

Land divisions predating the cemetery

A sequence of features identified in Clarke's excavations was interpreted as having at some stage defined the eastern limit of the cemetery (Clarke 1979, 99-110). Feature F.9, a series of irregular, intersecting pits interpreted as planting pits for trees or shrubs, and feature F.43, a shallow gully interpreted as a bedding trench for a hedge, extended across the excavation area on parallel north-south alignments, and although it was not possible to demonstrate whether they were contemporary, both were clearly superseded by a substantial V-shaped ditch, feature F.12, which lay on a similar alignment. A shallow, linear depression (F.23) *c* 4 m east of the ditch was interpreted as a negative lynchet formed at the foot of a putative bank associated with the ditch. It was further argued that after these features had eventually been overtaken by the eastward expansion of the cemetery, its eastern limit may have been marked by gully F.37, which was situated *c* 29 m to the east of ditch F.12, at the eastern edge of the excavation.

The results of the OA excavation have indicated that some of these features, rather than necessarily being created to enclose the cemetery, may represent the boundaries of previously-defined plots of land into which the cemetery was inserted. Features F.9, F.43 and F.12 all extended into the area of the OA excavation, where they were recorded as features 460, 470 and 450 respectively. In addition, a sequence of shallow ditches on an east-west alignment ran across the northern part of the excavation area, and ultimately defined the northern boundary of the cemetery.

Gully 470 lay at right angles to the east-west boundary, and is likely to have been contemporary with at least one phase of that boundary, dividing two plots of land on its southern side. The north-south orientation of gully F.37 may indicate that it, too, was part of this scheme of boundaries, the whole defining a group of rectilinear plots, the full extent of which is not known. Neither the date at which these plots were created, nor the period of time for which they were in use could be established with absolute certainty, but they clearly predated the main period of use of the cemetery, possibly by some considerable period of time. The only dating evidence directly associated with any of these boundaries was a coin dating from *c* AD 260-295 from ditch 1352, although as this object was recovered from the surface of the feature during cleaning there is some doubt as to whether it was securely stratified. Indeed, this absence of artefactual material may itself be indicative of an early date for these features, as it is apparent from the presence of residual fragments of pottery and animal bone within the backfill of many of the graves that during the use of the cemetery there was a significant quantity of such material lying on the ground surface or within the topsoil, presumably debris from funerary rites or commemorative meals, which might be expected to have become incorporated into the fills of any features that were open at the time. Certainly the features defining the north-south boundary had silted up before the second half of the 3rd century, when ditch F.12/450 was dug, clipping the eastern edge of feature F.9 in the southern part of Clarke's excavations and cutting obliquely across gully 470 within the area of the OA excavation.

Ditch 450 roughly followed the alignment of the earlier gully 470, but at its northern end it curved eastward, and would appear to represent the western side and north-west corner of an enclosure rather than a redefinition of the earlier boundary. The coincidence of this ditch with the earlier boundary is unlikely to be merely fortuitous, and is likely to indicate that the earlier boundary was still being respected when the enclosure was constructed. Indeed, the curvature of the ditch may indicate that to the east of the excavation area, the northern side of the enclosure lay on approximately the same alignment as the east-west boundary. Perhaps the plot of land east of gully 470 was being re-defined and converted into a discrete enclosure by the creation of a more substantial earthwork. The precise date of its creation is uncertain, but after the ditch had partly silted up a turfline that developed over its primary fill contained sherds of New Forest ware, indicating a *terminus post quem* of *c* AD 270 for

this deposit. No conclusive evidence was found regarding the function of the enclosure. It is possible that it was from the outset funerary in nature, as has been suggested for an enclosure in the Wotton cemetery at Gloucester, which has been tentatively interpreted as a precinct around a mausoleum (Foundations Archaeology 2003), although this may be unlikely at Lankhills as the feature predated the commencement of burials in this part of the cemetery. It may have had a more prosaic use, and Clarke's (1979, 105) suggestion that this area was cultivated is by no means unlikely, although this use could have predated the establishment of the enclosure suggested by ditch 450, the scale of which might imply more than just definition of an area of agricultural use. The burial of a neonate (1725) was recorded lying on the base of the ditch, but as this burial was truncated by both cremation burial 1724 and pit 1671, it is possible that it was interred in a grave cut that was not recognised at the time of excavation. This individual may therefore have been buried during the main period of use of the cemetery, and not placed at the bottom of the ditch when the latter was initially dug.

The east-west boundary appears to have remained in use for a considerable period of time, and was retained as the northern limit of the cemetery. There is evidence for at least four phases of ditch cutting, which are likely to have resulted from successive redefinitions of the boundary. Although some graves encroached on the ditches of this boundary, they were few in number and no burials at all were located beyond it, indicating that the boundary continued to be respected into the 4th century and defined the northern limit of the cemetery throughout its use. The digging of a small group of graves into the fills of the ditches indicates that, although the boundary was still respected, the ditches themselves had by this time silted up, and that the physical expression of the boundary most likely survived as a bank. As burials extended right up to the ditches, as well as in some cases being dug into them, it is likely that the bank lay to the north of the ditches. The ditches themselves were relatively slight, and while this might have been in part a consequence of modern truncation of the sequence in this part of the site it might also suggest that the position of the boundary was indicated by further elements such as a hedge, although there was no archaeological evidence for such a feature (or indeed, for the putative bank associated with the ditches).

The early phase of the cemetery, c AD 300-350

The pits

The earliest activity associated with the cemetery was the digging of the group of large, shallow pits in the central part of the excavation area, and possibly a similar group of features at the western end of Area 1. The precise purpose of these pits is uncertain, and the virtual absence of finds is not helpful in this respect. A purely functional role cannot be ruled out; the chalk bedrock that lay close to the surface here would certainly have been a potentially valuable resource, but the shallow depth of these features would not have been sufficient to obtain a worthwhile quantity of material. However, the close spatial association of the pit clusters with later cemetery features, and in particular with the group of early burials sealed by the soil layers and with the sequence of late 4th-century graves including prone burials and burials with unusual alignments, seems unlikely to be merely fortuitous and suggests that burials were being deliberately associated with these earlier features. It seems probable that these pits were used in rituals associated with the funerary use of this area, perhaps related to communication with, or the dedication of offerings to, the dead or the chthonic deities (see below). The nummus of Maximian recovered from the upper fill of pit 1261 provides a *terminus post quem* for this activity of AD 303-5, assuming that it was certainly associated with this feature. If this interpretation is correct it follows that the digging of the earliest pits will have been contemporary with burial activity somewhere in the near vicinity, even if this only extended to the area of the pits themselves at a later date.

Graves AD 300-350 (Figure 7.1)

The evidence for the date of the inception of burial at Lankhills reinforces that established by Clarke's excavations, and indicates a date during the early 4th century. As discussed above, ceramic evidence was of limited usefulness in this respect, as the earliest pottery could be attributed only to fairly broad date ranges, typically of *c* AD 270-350 or *c* AD 300-350. The numismatic evidence was able to provide more closely defined dates. With the exception of a denarius of Hadrian that is likely to have been of considerable antiquity when interred, the earliest coins deliberately placed with burials were two Providentiae Caess issues of AD 324-5 and AD 326. This is consistent with Reece's (1979, 202) assertion that 'graves with coins in them date from after *c* 320'. It is therefore likely that burial began during or shortly before this decade, although it cannot be assumed automatically that placement of coins with burials was a consistent practice throughout the life of the cemetery.

Clarke (1979, 116-119) suggested that in general burials spread from west to east, presumably from an origin adjacent to the Cirencester road, to the west of the area excavated. The OA excavation has found no evidence to contradict this model, although since most of this area is located to the west of ditch 450/F.12, which Clarke suggested was a single, undifferentiated area, the opportunity for identifying such a progression is strictly limited. The distribution of graves containing pottery or coins dating from the first half of the 4th century indicates that by *c* AD 350 burials were distributed across the entire area west of ditch 450, and that at

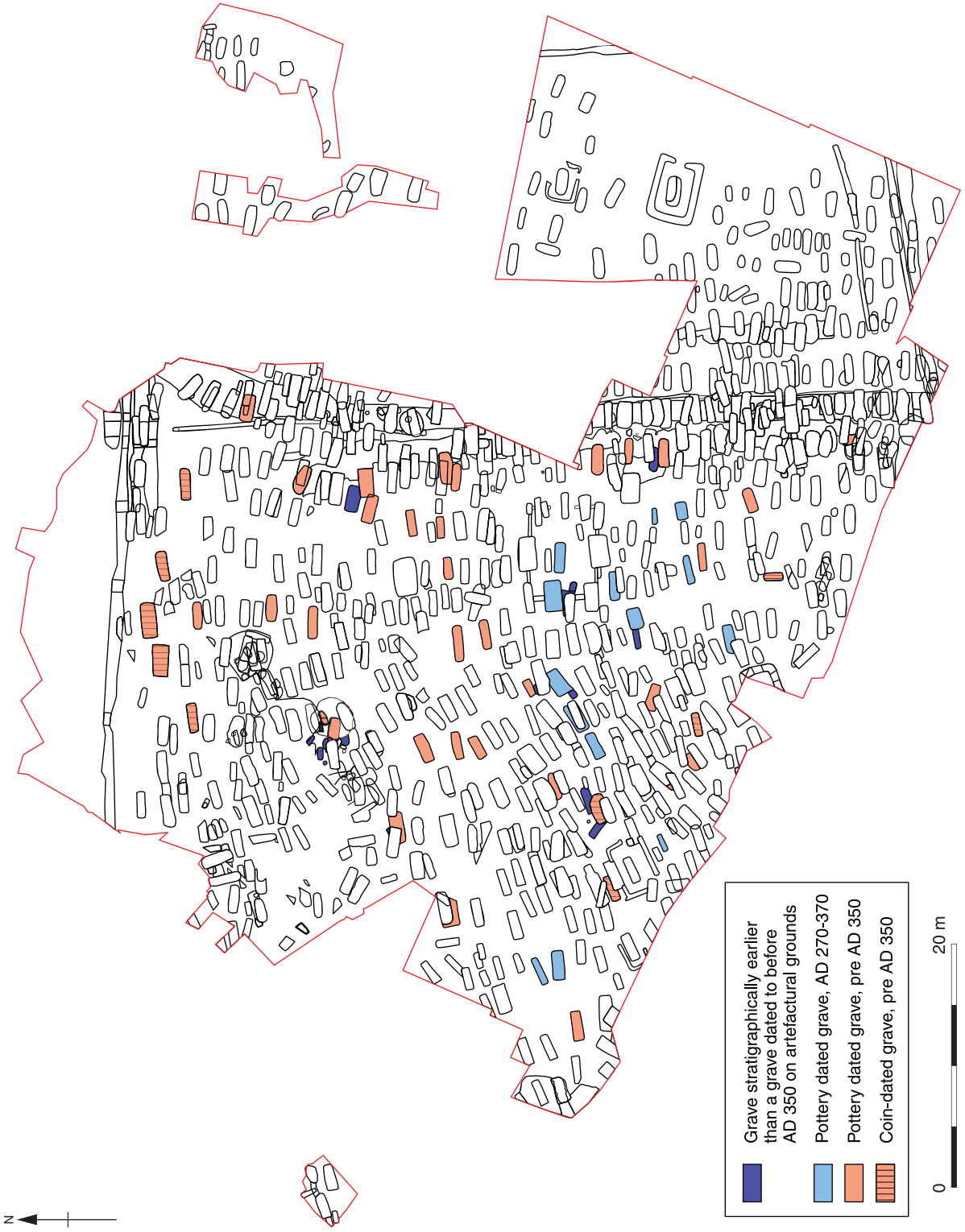


Fig. 7.1 Distribution of graves with artefact dating probably before AD 350

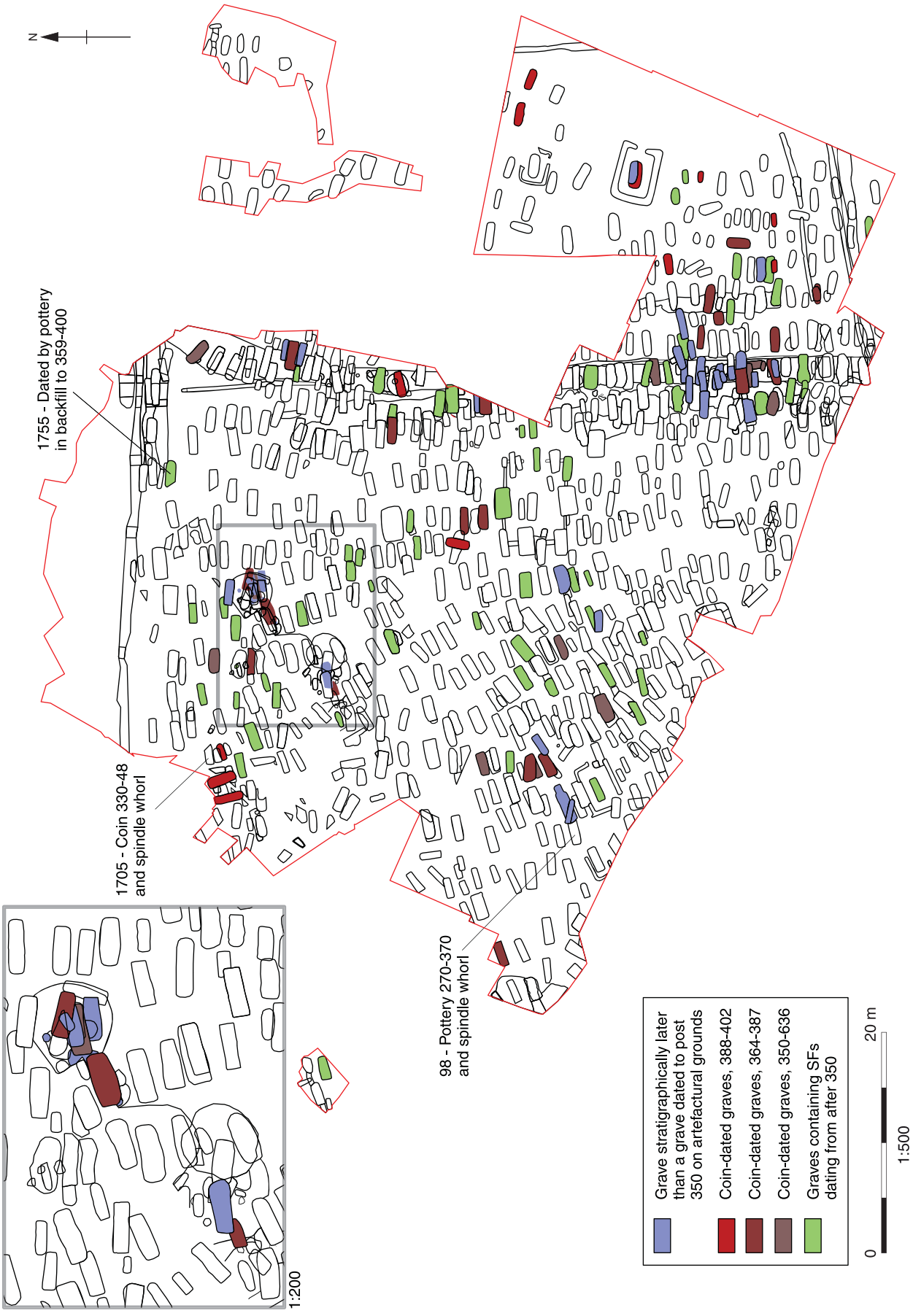


Fig. 7.2 Distribution of graves with artefact dating after AD 350

least one grave (1810) had been dug into the backfill of the ditch. This need not imply that this area was completely filled with graves at this time; burials continued to be made here during the second half of the century, and it is more likely that graves were distributed sporadically across the area, the intervening spaces only later being infilled with subsequent burials. Some of the earliest coin-dated graves were located along the northern edge of the cemetery, where Grave 635, which contained a nummus of Constantine II dating from AD 326, and Graves 870, 1355 and 1403, which all contained coins dating from the 330s or early 340s, lay close to the northern boundary ditch. Although a change in the orientation of burials can be observed between those located to the south-west of a line drawn from Grave 1350 to Grave 645, and south to grave 163 from Clarke's excavations, which are oriented approximately WSW-ENE, and those to the north and east, which are aligned more strictly west-east, this does not appear to correspond with any chronological phases of the expansion of the area used for burial. Rather, it is likely to be a result of the proximity of major topographical features, the burials in the south-western area being aligned on the Cirencester road while the alignment of those to the north and east is derived from that of the features defining the northern and (initial) eastern boundaries of the cemetery.

The group of burials dug into the backfilled pits in the central part of the excavation appears to represent a distinct episode of use of this area, as it was only after these burials had been sealed by soil layers that graves which conformed with the general pattern of burials in the surrounding area as regards spacing and orientation were dug here. The dating evidence from these features is not sufficiently precise to establish whether these burials were made before the main period of use of the cemetery, or whether they were contemporary with early burials in the rest of the cemetery. The presence of a nummus of Constantine dated AD 330-331 in Grave 1547 and a pot with a date range of AD 300-350 in Grave 1622 would appear to indicate that these burials date from the first half of the 4th century, while the earliest dated grave that cuts the soil layers (1490) was dated to AD 367-375 (or later) by a coin of Gratian. It is possible that this area was for some time reserved for use by a specific part of the community, who cremated most of their dead rather than interring them in the manner of the majority of the surrounding burials.

The later 4th century (Figure 7.2)

The area used for burial was not enlarged during the period from AD 350 until the 360s or 370s. Burial still continued in the area that was already in use, resulting in infilling of the spaces between the earlier graves. Perhaps the most notable feature of this period was the apparent intensity of grave-digging within the backfilled ditch 450/F.12. The failure of burials to extend beyond the ditch suggests that the interior of the adjacent enclosure was not available for burial at this time, and further that it was the bank on the eastern side of the ditch that was treated as the boundary, rather than the ditch itself. Presumably the ditch was regarded as being outside the enclosure, and therefore a legitimate location for burials. The repeated digging of graves into the ditch may indicate that the area to the west had by this time been substantially filled with graves. Indeed, if Clark's suggestion that burial spread from west to east is correct, it is possible that the backfilled ditch was seen as the last piece of ground available for burial in this part of the cemetery.

The evidence from Clarke's excavations indicated that the first graves to be dug beyond ditch 450/F.12 were associated with coins of Valentinian I (AD 364-75) and Valens (AD 364-378). After the apparent stand-still in the expansion of the cemetery during the previous decades, it would appear that the enclosure to the east of the ditch was now made available for use for burial. Burials of this date were dug into the area formerly occupied by the bank surrounding the enclosure as well as in the area beyond it, which is unlikely to have happened if the bank was still extant, as it would have provided an impediment to the digging of graves in this location. This suggests that the bank was levelled when the enclosure was given over to burial, and some of the latest fills of ditch 450/F.12, particularly those overlying the mounds over graves recorded in Clarke's excavations, may have resulted from backfilling of the upper part of the ditch with material from the bank.

The latest burials, represented by graves containing coins of the final issue of Roman coinage found regularly in Britain, dating from AD 388-402, are characterised by two contrasting patterns. First, the eastward expansion of burial into the area of the former enclosure, revealed in the excavations of 1967-72 and in the more recent work by Wessex Archaeology, continued, although the burials became increasingly sparse, with considerable empty spaces between them. Secondly, a small group of burials was inserted into the north-western part of the OA excavation area. The latter included at least two burials (Graves 1373 and 1440) that completely disregarded the earlier burials in this area, being aligned north-south and dug through existing graves.

The end of burial at Lankhills

The date of the final use of the cemetery cannot be pinpointed with any certainty, although it is a key question both for Lankhills itself and for the wider chronology of the Roman town. Radiocarbon dates were obtained specifically to test the presumption that the use of the cemetery may have extended beyond AD 410, and perhaps well beyond that date, as discussed above. The artefact-based arguments

for the chronological framework for the end of the cemetery set out by Clarke were also re-assessed (eg Clarke 1979, 4, 287-8). The presumption in favour of an extended chronological range, however, is no more acceptable than a narrow view of the chronology of the cemetery if it is not tested as rigorously as possible.

In a potentially extended chronological framework the value of the standard dating media of coins and pottery (the latter in any case a relatively blunt tool) is reduced, since the extent to which these continue in use (or, in the case of pottery, in production) after the end of the 4th century remains either uncertain or controversial. For the latest copper alloy coinage (leaving aside the still largely exceptional 5th-century material known from several sites in Britain (Abdy 2006, 91-94; Moorhead 2006; but see now Collins 2008)), hoarding as late as the 420s seems likely (Guest 1997, 415) with the implication that some use continued at least as late as this. This is not to say that graves at Lankhills with coins of the House of Theodosius necessarily date after the end of the 4th century, but that such a dating is possible. With regard to pottery, thinking about the demise of production in the major late fine ware industries for the most part remains linked to the issues related to the end of the monetary economy, upon which these industries are considered to have been dependent (eg Young 1977, 241). Again the difficulties of distinguishing between period of production and length of use are to the fore. Work on the black-burnished ware industry has identified a phase of production that is thought to extend into the 5th century (eg Gerrard 2004), but it is likely that Winchester fell outside the distribution area of the relevant products (ibid., 72, fig. 8.4). The general absence of black-burnished ware at Lankhills may indeed owe something to related chronological factors, that is to say reflecting the contraction of the market area of the industry back into its south-western heartland after about the middle of the 4th century, but for the most part is more readily explained in terms of the typological range of vessels employed in the cemetery and the preference for a more local source (the grog-tempered tradition industry) for cremation urns.

Clarke (1979, 4, 287-8) used the absence of Quoit brooch style metalwork as one element in his argument for an early end date for the cemetery. This is problematic, however, because the associations of this material, regardless of its generally accepted insular origin, tend to be with non-urban locations, typically early 'Anglo-Saxon' cemeteries (as for example, barely 3.5 km distant at Worthy Park; Hawkes with Grainger 2003, 58, 74, 134, plate 1) but also because, while the Winchester area does lie within the overall distribution of pieces in this style (Suzuki 2000, figs 78 and 79) the total number of objects is insufficiently large for arguments based on their absence to be compelling. Such an absence cannot therefore be taken as a secure guide to the chronology of Lankhills.

The latest readily-datable graves are therefore those containing coins issued in AD 388-402, although the burials themselves may be later than this date, as the coins could have been in circulation for some time, or deliberately curated, before their final deposition. These graves certainly appear to represent the final phase of burials, since those to the west of ditch 450/F.12 are, without exception, the latest burials in their stratigraphic sequences, and those to the east are located at the limit of the eastward expansion of the cemetery, where the graves peter out. The end of use of the cemetery following the digging of these graves does not appear to have been foreshadowed by any gradual dropping off of use during the preceding period. Since so many graves lack datable artefacts it is difficult to establish the relative proportion of burials made during different periods of the cemetery's use, but the admittedly subjective impression provided by the dateable graves is that there was no significant decline in the rate of burial until the final abandonment of the cemetery.

Several artefact types are demonstrably or potentially associated with the latest (post AD 388) phase of use of the cemetery. The presence of these artefact types (eg bone bracelets and combs), which may not have made their first appearance before the final third or final quarter of the 4th century, does not necessarily mean that their use extended beyond the end of the century, but again this is possible. The evidence for repair of several of the crossbow brooches (see Chapter 4 above) is also highly suggestive of use well beyond the date of their initial production, even if this is not always very precisely defined; these were clearly still important items, the continued use of which was considered desirable (were no replacements available, or was their issue a one-off event?). The dating of Hawkes IB buckles is also pinned firmly to the late 4th-early 5th centuries, but again closer precision is unlikely to be achieved, although Cool (Chapter 4 above) argues for a 5th-century rather than an earlier date. All that can be said for the present example (from Grave 1175) is that the earliest possible date for its deposition is AD 388.

There are thus no graves which contain artefacts of indisputably 5th-century date, either as grave goods or as incidental inclusions, and no Anglo-Saxon material has been identified within the cemetery (although a stave-built bucket from grave 2038 of the recent Wessex Archaeology excavation is possibly of early Saxon character (Wessex Archaeology 2009, 19)), despite the discovery of Anglo-Saxon pottery dating from the 5th century within the town (Biddle and Kjølbye-Biddle 2007, 195) and the presence of a cluster of early Anglo-Saxon cemeteries in the surrounding area (ibid., 199-203). In the present site the best evidence for the continuation of burial beyond the end of the 4th century comes from the sequence of late graves in the central part of the excavation and the smaller group in the north-western corner. The former group constitutes

one of the longer stratigraphic sequences, and may have a start date during the middle of the 4th century, since one of the earlier burials, cremation burial 1195, contained a coin of Valens (AD 364-378). If this is the case, then it is reasonable to infer that the later part of the sequence continues into the 5th century, and this proposition would be consistent with the later part of the date range provided by the radiocarbon determination of AD 267-272, AD 335-465 or AD 482-533 for cremation burial 655. This burial was one of the latest in the sequence, alongside inhumation Grave 790, which contained a coin of AD 383-388, and Grave 795, which cut Grave 790 but in which, unfortunately, no human remains survived *in situ*. The two late burials in the north-western part of the OA excavation, Graves 1373 and 1440, clearly disregarded the east-west orientation of the majority of graves in the cemetery, and particularly those through which they were dug. This might indicate that by the time these burials were inserted, not only were the earlier graves in this area no longer visible on the ground surface, but possibly even that the predominant burial orientation had been forgotten, although this is unlikely to have been the case if the use of the cemetery was continuous, as argued above. While it is more likely that the north-south alignment indicates a different burial tradition from that of the common west-east rite, these graves are in any case probably among the very latest in the cemetery. However, although these two groups of graves may serve as evidence that burials were still being made into the early part of the 5th century, they are clearly not typical of the cemetery as a whole. The burials in the central part of the OA excavation are unusual as regards both the length of the stratigraphic sequence and the range and forms of burial present, including *bustum* burials and three prone burials, while the anomalous orientation of the burials in the north-western part of the excavation is one of the principal reasons for suggesting that they are of significantly late date, although such a date is also supported by the artefactual evidence.

It could be suggested that later burials might pass unrecognised if they lacked accompanying grave goods, but there is little evidence to support this. In particular, there are insufficient stratigraphic sequences in which late 4th-century graves are followed by such undated burials (one of the relatively few examples being the Grave 790-795 sequence mentioned above), and in fact burials with grave goods became more numerous and the range of objects placed with them more varied, during the second half of the century. The latter tendency continued with the graves containing the final issue of coins.

The absence of substantive evidence for continued burial during the 5th century would seem to indicate that, with the exception of a small number of anomalous burials, the use of the cemetery ended (perhaps, as has been suggested, rather abruptly), some time fairly shortly after *c* AD 400.

Organisation

The boundaries of the cemetery

The cemetery excavated at Lankhills formed part of the northern cemetery of *Venta Belgarum*, which extended along the road leading out of the north gate of the city and led toward Cirencester. It has often been assumed that the area used for burial was spatially uninterrupted, and that the cemetery expanded northward in a linear fashion over time from its origin as a relatively small area at the junction of the Cirencester road with the road to Silchester. However, it now appears likely that burial was more discontinuous, and that the area contained a number of more or less discrete cemeteries, which may have been in use at different times. In particular, the area excavated at Andover Road, to the west of the Cirencester road, may represent a distinct burial area (Ottaway and Rees forthcoming, 307)

The site excavated at Lankhlls lay within one of a number of areas that were newly given over to use for burial during the late 3rd and 4th centuries. For a few decades during the early part of the 4th century it may have become the only area of the northern cemetery that was in use, as evidence from other excavations suggests that the area at Victoria Road West may have gone out of use for a short period between *c* AD 320 and 340, and burial in the areas at Hyde Street and Andover Road may not have commenced until the middle of the century (ibid.). Burials were still being made during this period in Winchester's other cemeteries, however, as both Chester Road in the eastern cemetery and the ditch of Oram's Arbour in the western cemetery have produced contemporary burials (ibid.).

As discussed above, the area used for burial at Lankhills was contained within pre-existing plots, defined by ditches and banks. No artefactual evidence was found to indicate the date at which these plots were first laid out, but their stratigraphic relationship with possible enclosure ditch 450/F.12, which was beginning to silt up by *c* AD 270, suggests that they were in existence some considerable time before burial was initiated in this area. It is consequently uncertain whether they were originally established for some non-funerary, perhaps agricultural purpose and were only subsequently utilised for burial, or whether they were established as part of a wider scheme of enclosing land designated for burial, albeit some time before this area was actually so used. Support for either hypothesis can be found in contemporary cemeteries elsewhere; at the Poundbury cemetery at Dorchester, Dorset the 4th-century cemetery overlay a series of rectilinear field enclosures (Farwell and Molleson 1993, xii and 18), whereas the burials at the eastern cemetery of Roman London were all located within a series of 29 plots defined by roads, ditches, paths and other open areas flanking a minor road (Barber and Bowsher 2000, 13).

By the time the part of the cemetery within the excavation area came into use, the principal north-south boundary had been superseded by a ditch (450/F.12) that may have formed the western side of an enclosure, although the boundary that extended across the northern part of the site was apparently still in existence. The area available for burial was therefore constrained by the pre-existing boundaries of the enclosure to the east, the Cirencester road to the west, and the boundary ditch to the north. It is interesting to note that it appears to have been the bank accompanying ditch 450/F.12 that was treated as the boundary of the enclosure, and that the ditch was thus outside the enclosure and therefore a legitimate location for burials. The area west of the enclosure appears to have been fully utilised from the outset, and eventually became overcrowded, resulting in the adjacent enclosure being given over to funerary use. Once the cemetery had been extended beyond ditch 450/F.12 it is not known where its eastern boundary lay, and if an earthwork similar to ditch 450/F.12 defined the eastern side of the enclosure it has not been located and must have lain beyond the eastern edge limit of Clarke's excavation. Alternatively, the much slighter ditch F.37 may have formed the new boundary, but as the burials petered out before reaching it this cannot be demonstrated conclusively.

Boundary features are rather scarce in the other areas of the northern cemetery that have been investigated, although this may be explained, at least in part, by the location of such features beyond the (often limited) areas investigated by excavation. Perhaps the clearest example of a boundary associated with the cemetery is at Victoria Road West, where the area used for burial during the late 3rd and 4th centuries was bounded to the north-east by a ditch (F12) that was originally dug during the late 2nd or 3rd century to separate a group of buildings from a gravel path alongside the Cirencester road (Browne *et al.* forthcoming, 99). Similarly, at Andover Road the western limit of the cemetery was defined by a substantial ditch (F221), which was dug during the late 3rd or 4th century, possibly when the cemetery was first established (Teague forthcoming, 111-112).

Possible symbolic aspects of the cemetery boundaries are discussed further below.

The alignment and layout of the burials

The graves in the area of the OA excavations were somewhat less densely concentrated, and appear slightly less well ordered than is the case immediately to the south in the area of Clarke's excavations. This impression is probably accentuated by the truncation caused by the basement of the School House, which had affected a significant area of the western part of the OA excavations and is likely to have completely destroyed the shallower graves in this area, but it also holds true of those parts of the site less obviously affected by truncation. Whereas the graves recorded in Clarke's excavations were for the most part densely packed and arranged in closely spaced lines (Clarke 1979, 372), the OA excavations revealed a slightly more dispersed distribution and a more irregular structure. The ordered arrangement of burials is a common characteristic of late Roman cemeteries, although how strictly this was maintained varies between sites. The predominance of lines over rows and vice versa is also variable. Rows are strikingly dominant at Poundbury (Farwell and Molleson 1993, 67-9) and Ashton, Northants (Frere 1984, 300-301; 1985, 288), although even then there were minor irregularities within the rows that led the excavators of the former site to conclude that the rows were the result of gradual developments, being extended piecemeal as new burials were added rather than having been planned from the start (Farwell and Molleson 1993, 69). The main phase of the cemetery at Butt Road, Colchester, appears to exhibit both tendencies, with rows more common in the southern part of the excavated area and lines to the north (Crummy and Crossan 1993, fig. 2.21). Within the cemeteries of Winchester other than Lankhills, the most organised arrangement was the third phase of burials at Victoria Road West, where the irregular rows and nascent lines are similar to the arrangement seen at Lankhills, whereas the burials at Hyde Street and Andover Road were more randomly organised. Although the overall organisation of the burials becomes less ordered in the northern part of the cemetery at Lankhills, it is nevertheless possible to discern some groups of burials that may have been arranged into short lines, such as Graves 1170, 1035 and 1230 in the north-western part of the excavation, or the graves cut into the northern boundary ditch near the north-eastern corner. Some adjacent burials also appear to have been laid out parallel to each other, creating short rows, such as those formed by Graves 850, 1000, 1105, 1135 and 1205 in the central part of the site or Graves 35, 565, 670 and 885 in the north-eastern part. Such alignments, however, are not dominant features of this part the cemetery, and the overall impression is of a fairly *ad hoc* approach to the locating of each grave, albeit within the framework of a general west-east alignment. A similar arrangement of slightly irregular alignments and short-lived rows has been noted at the eastern cemetery of Roman London (Barber and Bowsher 2000, 300).

The overriding characteristic of the burials is a common west-east orientation, and it is possible that the apparent rows and lines are nothing more than a side-effect of this shared orientation rather than the deliberate imposition of an ordered arrangement. The preference for a west-east orientation can be observed elsewhere in the late Roman cemeteries around Winchester, although alignment of burials with relation to pre-existing boundaries can also occur. Within the northern cemetery, both phenomena were observed in the cemetery at

Victoria Road West, where, following an initial phase in which the burials were aligned parallel to the ditch defining the north-eastern limit of the cemetery, a more strictly west-east orientation was adopted around AD 350 (Ottaway and Rees forthcoming, 310). At Hyde Street the majority of burials were similarly oriented west-east (ibid.), and at Andover Road, although the earliest burial was oriented north-south, the subsequent burials were all approximately west-east. Further afield, most of the burials from the main phase of use of the town's eastern cemetery were again oriented west-east, although in the case of the area excavated at Chester Road, as at Victoria Road West, this followed an initial phase of burials with a different alignment (ibid., 170-1). Beyond Winchester, west-east orientations have been found to be dominant at the majority of the late Roman urban cemeteries that have been adequately investigated, as, for example, at Poundbury, Dorchester (Farwell and Molleson 1993, 67-9), Westgate, Chichester (Magilton 1993), and Northover, Ilchester (Leach 1994). At Butt Road, Colchester, as at Victoria Road West and Chester Road, west-east orientation was adopted during the early part of the 4th century following an initial phase of burial with a different orientation (Crummy and Crossan 1993). The recurrent preference for this orientation has been recorded too frequently to be the result of mere chance, and clearly indicates a deliberate choice on the part of the individuals responsible for laying out the cemeteries and carrying out individual burials. Although it has been argued that it was derived from the liturgical requirements of Christian burials (Watts 1991, 53-4), there is insufficient evidence to support the notion that Christianity was so influential in Romano-British society, and there is plentiful evidence for the continuation of probable pagan beliefs and practices in cemeteries with a predominantly west-east grave orientation, not least from Lankhills itself (see below). The choice of orientation may alternatively have been influenced by the solar cult that was actively promoted by a sequence of emperors from the late 3rd century onward, and which may have come to be confused with, and to some extent combined with, Christianity (Macdonald 1979, 425-6).

The west-east orientation was in many cases fairly approximate, resulting in a considerable amount of variation in the alignment of individual graves. Most strikingly, there was a slight difference in orientation between the graves in the southern and western parts of the cemetery, which are aligned approximately WSW-ENE, and those to the north and east, which are aligned more strictly west-east. This is most likely to be explained by graves being aligned according to the nearest significant landmark rather than strictly according to cardinal points. Thus, the graves in the south-western part of the cemetery are aligned at right angles to the Cirencester Road, those in the northern part of the cemetery are aligned parallel to the bank and ditch defining its northern boundary, and those to the east are aligned at right angles to the boundary defined by ditch 450/F.12. The importance of such pre-existing features in determining the alignment of burials is demonstrated at Poundbury, where the orientation of the burials appears to have followed that of the boundaries of the earlier field system (Farwell and Molleson 1993, xii and 18), and at Alington Avenue, Dorchester, Dorset, burials were arranged alongside the earthwork of an earlier ditched enclosure (Davies *et al*. 2002, 127). The clearest demonstration of the influence of topographic features on the orientation of the burials at Lankhills is provided by a group of burials dug into the backfilled ditch 450/F.12 in the north-eastern part of the excavation. Here, the northern end of the ditch curved toward the north-east, and the orientation of the burials dug into it curved similarly, indicating that they had been deliberately positioned at right angles to the bank that lay alongside the eastern edge of the ditch.

At some cemeteries the preference for a west-east orientation might be compromised, or perhaps was not considered important. At the Bath Gate cemetery, Cirencester, for example, the majority of the burials were aligned north-south, parallel to an adjacent earthwork boundary (Viner and Leech 1993, 100-1), and a north-south orientation also predominated in the eastern peripheral cemetery at Poundbury (Farwell and Molleson 1993, 19). At Oram's Arbour, the one adolescent and the adult graves appear to have taken their alignment from that of the earthwork (Ottaway and Rees forthcoming, 311). The orientation of burials, both at Lankhills and more generally in Roman Britain, therefore appears to have been determined partly by a preference for a west-east alignment, and partly with reference to pre-existing features of the landscape, characteristics observed equally in rural as well as in urban contexts (eg Pearce 1998; Booth 2001, 21-22). The preferred alignment was not imposed dogmatically, and in some cases was disregarded completely. Even in those cemeteries, such as Lankhills, where the majority of burials were oriented west-east, the influence of significant boundary features could still be felt, and the cardinal orientation compromised accordingly, although it is possible that this was a result of the individuals digging the graves assuming that the two orientations coincided.

The maintenance of a common orientation, and the avoidance of disturbance of earlier graves, would have required graves to be marked in some way so that their location was not lost, although little evidence survives to show how this was done. No tombstones have been recovered from the cemetery, or indeed from anywhere else in Winchester. As is well known, the inscribed tombstones recorded from Roman Britain come largely from the north and west; appropriate stone is more plentiful here, but more significant is the predominant association of the practice of inscrip-

tion with the military and other officials (Mattingly 2006, 202). The 'epigraphic habit' does not seem to have caught on with the native population, and in any case it declined substantially during the latter part of the period (ibid., 247-8). Other forms of marking graves may have been used. One grave was associated with postholes that might have held wooden grave markers, although such markers may not have penetrated deeply enough to impact on the chalk bedrock. It is possible that the outlines of graves were marked using stones or pieces of tile, and this could be the source of the fragments of roof tile found at the cemetery (Poole, this volume), although apart from two imbrices in Grave 256 none of this material was discovered *in situ*. Graves may have been marked only by the mound formed over the burial by excess spoil during backfilling, and/or by markers set into the tops of such mounds and leaving no trace at the truncated level at which the graves were examined archaeologically. Several such mounds were recorded in Clarke's excavations, where some graves had been dug into the hollow left by ditch 450/F.12 before it had silted up to the level of the surrounding ground surface, and had subsequently been preserved beneath further silting, but there were no examples of this in the area of the OA excavations, which had been subject to truncation during the construction of the School House. This calls to mind Sidonius Apollinaris' account of the accidental near-disturbance of his grandfather's grave in a cemetery near Clermont, resulting from the settling of its mound over time (Letters, 3.12.1-2). Although Sidonius' grandfather had served as Praetorian Prefect of Gaul, it is clear from the description that his grave was marked only by the mound.

The widespread distribution of graves dating from the first half of the 4th century (Fig. 7.1) indicates that the whole of the area west of ditch 450/F.12 was in use for burial from the outset, but it is equally clear from the distribution of burials containing grave goods dating from the second half of the century (Fig. 7.2) that much infilling continued during this period. This would suggest that the earlier burials were rather scattered, with open spaces between them that were only subsequently filled by later burials. The plan of the early phase of the use of the cemetery may thus have appeared very similar to that recorded in the eastern part of Clarke's excavations, where no infilling took place because of the abandonment of the cemetery.

There is surprisingly little evidence that the early graves had any significant influence on the locations of later burials. It might be expected that early graves of significant individuals would have acted as foci for clusters of burials, as subsequent graves, perhaps of members of the same kin group, were deliberately placed near them, as at Andover Road, where the earliest burial, G336, has been interpreted as such a 'founder's grave'. However, with the exception of grave 150 from Clarke's excavations, which had been provided with an enclosure surrounded by a hedge and appears to have attracted subsequent burials, placed within the enclosure and dug into the bedding trench of the hedge, it is difficult to identify any such clustering. Five other definite examples and one possible example of similar enclosures were located within the areas of the combined excavations, but of these only the possible example (in the 2005 watching brief area) may have attracted subsequent burials. Likewise, none of the 21 stepped graves, which may also have been burials of prominent individuals and may all be of relatively early date (see below), was associated with deliberate clustering of later burials (Figure 7.3). In contrast with the stepped graves, however, both the distribution and chronology of the enclosed graves are more wide-ranging and two of Clarke's examples were certainly of very late Roman date. These have been seen as possibly related to a tradition found more widely in western Britain in the post-Roman period and considered to indicate the burials of a secular elite (Webster and Brunning 2004, 78-9).

Throughout the period of use of the cemetery an area in the central part of the OA excavations appears to have been reserved for a distinct set of burials. Distinguished initially by the digging of a complex of pits, perhaps as receptacles for libations or other offerings, the south-western part of this area was used during the first half of the 4th century for the insertion of a group of cremation burials, in contrast to the predominant rite of inhumation that prevailed throughout the majority of the cemetery. By the Valentinianic period, if not earlier, the cremations had been forgotten or consciously disregarded and this part of the area was used for inhumations like the rest of the cemetery, but the area immediately to the north-east now became the site of a sequence of burials that included more cremation burials, including *bustum* burials, as well as inhumation graves, including three prone burials. The density of these latter burials would suggest that they were inserted into this constricted area deliberately, perhaps because it was a particularly desirable location or reserved for the burials of a specific group of people, whether a family group or with some other association.

The results of Clarke's excavations suggested that the organisation of the cemetery broke down somewhat during the latter years of its use, with the orientation of burials becoming more varied and less care being taken in the digging of the graves themselves, which were shallower and more irregular in shape (Clarke 1979, 144), and a similar phenomenon has been observed elsewhere in Winchester's northern cemetery at Victoria Road West (Ottaway and Rees forthcoming, 312). The number of graves within the area of the OA excavations certainly dating from this final period of the use of the cemetery was too small to add significantly to discussion of this phenomenon, mainly because the majority of such late burials appear to

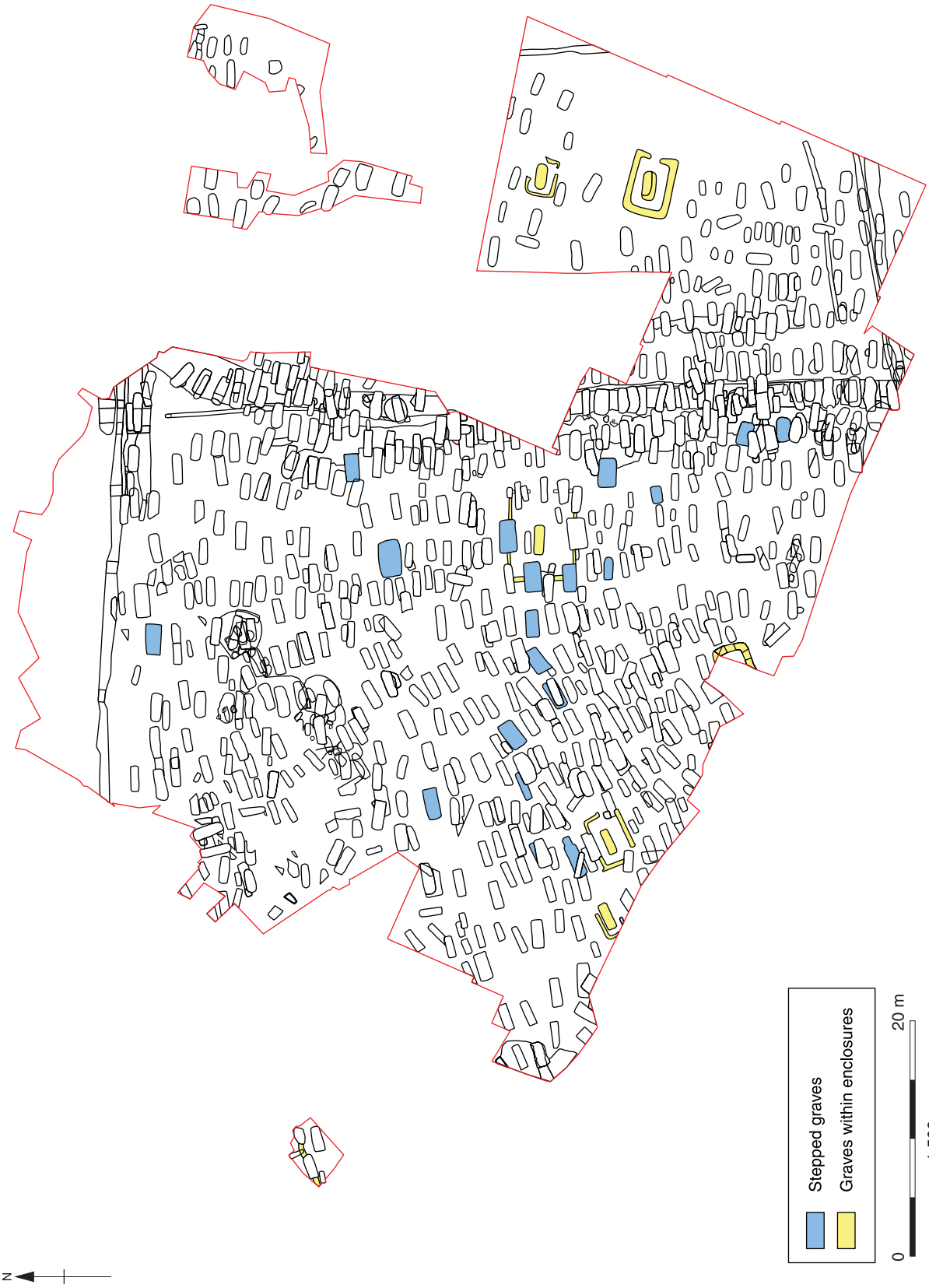


Fig. 7.3 Distribution of stepped graves and graves within enclosures

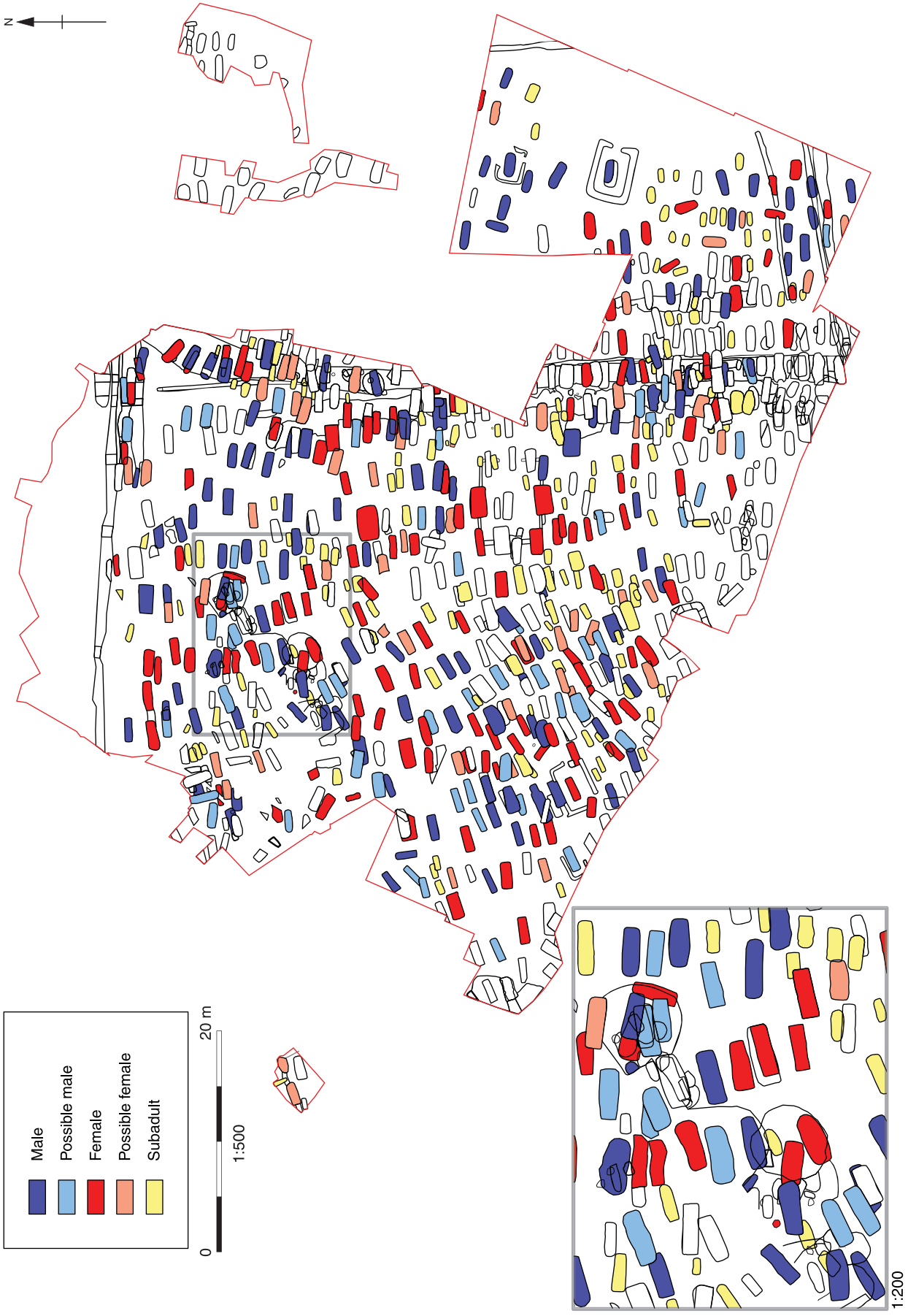


Fig. 7.4 Distribution of osteologically sexed graves

have been located to the east of ditch 450/F.12, beyond the limits of the site. However, all three adult graves containing coins dating from AD 388 or later were quite substantial, measuring 1.1-1.2 m in depth, so it is clear that there is no simple correlation between a late date and reduced grave depth.

Distribution by age and sex

The broad distributions of burials in terms of age and sex do not seem to reveal particularly clear cut patterns, particularly when possible 'balancing up' effects, taking account of those burials where the individual could not be sexed, are allowed for. Trends detected by Clarke (1979, 126-7) in the 1967-72 sample included a concentration of male burials west of the north-south boundary F. 12 in the early stages of use of the cemetery, followed by later use of this area mainly for women, and a particularly marked concentration of male burials east of that boundary in the later part of the 4th century. The OA excavations can shed no light on the latter aspect, but it is notable that on the basis of Gowland's reassessment of the osteological material the numbers of males and females in this area now appear much more evenly balanced, and while there are small clusters of male burials in the northern and southern parts of this area the character of male domination identified by Clarke is not sustained (Fig. 7.4).

Localised clusters of male and female burials can be seen elsewhere across the site, but none of these appears to be extensive enough to suggest clear segregation based on sex, although this is an area where further analysis would be desirable. The distribution of subadult burials certainly appears to have been widespread and although, again, possible clusters may be discerned, there is no part of the cemetery in which, on present evidence, such burials were really concentrated, or from which they were clearly excluded. The distribution of other age groups likewise showed little clear patterning and most analyses of these are not discussed in detail here. Two contrasted groups are shown in Figure 7.5, however. These are the much older adults (only identified as such in the OA sample) and neonates. The former distribution, involving only 15 individuals, shows no meaningful clustering either overall or in relation to sex. The distribution of neonates appears to be more clearly patterned, with an identifiable concentration of *in situ* remains in the vicinity of the north-south boundary feature F.12/450 and perhaps a secondary group east of this feature, although scattered examples are seen elsewhere, particularly in the southern part of the excavated area. Redeposited remains of neonates are less obviously clustered, and when combined with the *in situ* burials produce a less focussed distribution, but the extent to which neonatal remains were moved from their original location makes the significance of this difficult to judge. The concentration of neonate burials in the vicinity of F.12/450 may reflect a tendency for such burials to occur in marginal locations, but this would only apply in the earlier phases of use of the cemetery, before the north-south boundary became a major focus for burial.

The overall picture is consistent with the evidence from other major late Roman cemeteries in Britain which suggests little or no segregation of cemetery populations on the basis of sex or combinations of sex and age (eg Keegan 2002, 66). Keegan (ibid.) follows Clarke in defining a degree of segregation of males and females in Clarke's excavation sample, but her analysis was based on the age and sex data presented in the original report, whereas the reassessment by Gowland, combined with the present dataset, suggest a pattern more closely comparable to that of the other major cemeteries.

A managed cemetery?

It is uncertain how funerals in Romano-British towns were organised, or to what extent the cemeteries associated with such towns were centrally managed. Contemporary sources record a wide range of specialists working in the funerary industry in Rome, including undertakers, morticians, grave-diggers and pall-bearers (Bodel 2000, 135-144), and there is some evidence for the existence of such trades at other cities in Italy also (Bodel 2004). No documentary or epigraphic evidence survives for funeral professionals in Britain, but the similarity of burial evidence observed within and between cemeteries, particularly at the larger towns, may indicate that they existed. The involvement of the same individuals in directing many burials would certainly be consistent with the rather prescriptive range of funerary practices and grave goods encountered. On the other hand, it must be doubted whether the towns in Britain, with their rather smaller populations, would have produced sufficient demand to maintain such professionals on a full-time basis. In addition, employment of the services of such specialists may have been beyond the resources of a large proportion of the population; it is known that during the Republic mass graves had existed at Rome for the burial of those who were too poor to afford a proper burial (Varro *De Lingua Latina* 5.25), and later on Nerva introduced a funeral grant for the Roman plebs (Hope 2007, 88). It is therefore likely that in many instances financial constraints forced mourners to carry out funerals without professional assistance.

Perhaps the clearest indication of the involvement of municipal authorities in the functioning of cemeteries is in the location of the latter, which invariably lie beyond the limits of the town. The most famous exposition of this principle is to be found in the fifth century BC Law of the Twelve Tables, which forbade cremation or burial within the city of Rome (Toynbee 1971, 48). The siting of cemeteries throughout the empire outside the town to which they belonged indicates that similar stipu-

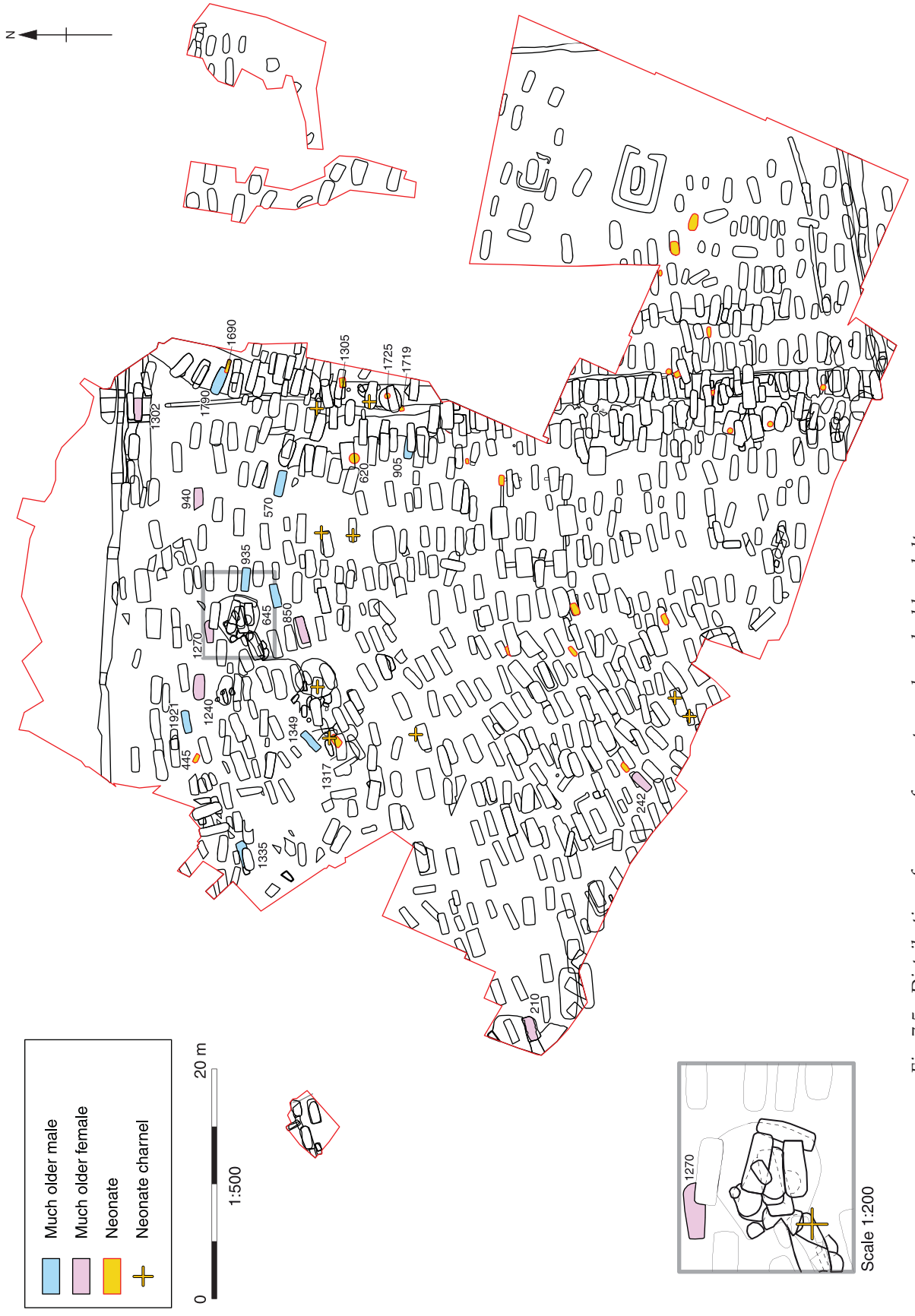


Fig. 7.5 Distribution of graves of neonates and much older adults

lations existed elsewhere, while direct documentary evidence comes from the *colonia* at Urso (Crawford 1996, no. 25). It is likely that all chartered towns, including civitas centres such as Winchester, maintained such statutes.

Burial was just one of a range of potential uses that were competing for space in the suburbs around Winchester, as at other Roman towns, including industrial activity, agriculture and domestic housing (Esmonde Cleary 1987), and consequently land is likely to have been at something of a premium. In order to resolve this conflict and ensure that sufficient land was made available for burial, it therefore seems likely that the allocation of specific parcels of land for burial was in the hands of the municipal authorities. The allocation during the late 3rd and 4th centuries of large areas of new land for burial at Winchester certainly has the appearance of a deliberate act of policy, designed to cope with the increase in the area required for burials resulting from the shift from cremation to inhumation as the primary means of disposing of the dead. At Lankhills, this may have entailed a change from agricultural use, if this was the function of the earlier plots, and a similar change in land-use has been identified at Victoria Road West, where the area given over to cemetery use toward the end of the 3rd century had previously been occupied by a group of timber buildings of unknown, but clearly non-funerary, function. The situation at Lankhills may also provide an illustration of the process by which the cemetery was expanded in piecemeal fashion, with the area west of ditch 450/F.12 being used first, and the enclosure to the east only later becoming available. Perhaps the process of obtaining this land was not straightforward, and the authority responsible for the cemetery may have had to negotiate to acquire land. The enclosure defined by ditch 450/F.12 is likely to have been in use, and the authority may have initially been able to acquire only the plot between the enclosure and the road, only later to purchase the enclosure as and when it became available in order to facilitate the eastward expansion of the cemetery.

Although it might be expected that the municipal authority was involved in determining which areas should be used for burial, it is less certain whether they took direct interest in the internal organisation of cemeteries, or whether these were run as private concessions. However cemeteries like Lankhills were owned, the ordered appearance of the layout and the consistency in funerary practices indicate that some form of controlling authority was present. Cemeteries displaying such evidence for internal organisation have been labelled 'managed cemeteries' (Thomas 1981) and are a typical feature of Romano-British towns. Although Thomas's suggestion (1981, 232) that they are evidence for Christian burials is contentious, they may be regarded as evidence for centralised control, the ordered layout being a practical response to the need to accommodate large numbers of burials within the restricted space of an urban cemetery. Keegan (2002, 108) has also seen this as a deliberate strategy to present the cemetery as an expression of civic pride, the ordered layout of the burials serving as a reflection of the ordered community of the late Roman town. If the observed organisation in the use of cemeteries such as that at Lankhills is indeed an example of the involvement of the municipal authorities in such day-to-day affairs, then the apparent breakdown of this organisation at the end of the use of the cemetery may be a reflection of the failure of that authority. The role of the church as an organising force in the management of cemeteries might also be considered, but recent work (eg Rebillard 2009; Yasin 2009, 58-69) finds little evidence that the church showed much interest in such a role in relation to the 'ordinary dead'.

FUNERARY RITES AT LANKHILLS

Rites preceding the burial

Many aspects of funerary ritual will have left no trace in the archaeological record, because they were composed of actions or recitations that leave no archaeologically visible evidence, took place away from the grave site, or did not entail the deposition of the objects used. Contemporary accounts and depictions of Roman funerals (Toynbee 1971, 43-64) contain many such elements, and should caution us against treating the evidence excavated from the grave as representing the totality of the rites surrounding the individual's funeral. Our knowledge of these rites comes largely from written, epigraphic and iconographic sources and must be treated with care as it is biased both geographically toward Rome itself and the core provinces of Italy and the Mediterranean, and toward the upper echelons of society. Most of these sources were produced by and for the wealthy elite; those that were produced to commemorate the dead, such as *stelae* or inscriptions or reliefs decorating tombs or sarcophagi (eg Toynbee 1971, figs 9-11), will obviously have been intended to reflect favourably on the deceased, and on whatever mourner or other sponsor paid for the work, while written accounts of funerals tend to describe those of individuals of high rank and take little interest in the funerary practices of those of more humble station. Such artistic representations may also treat the funeral as something of a 'set piece' event, and may consequently present a rather idealised version of the actual rites surrounding the burial. Nevertheless, although varied in detail, they present a fairly consistent picture of the sequence of events that formed the basis of the funerary rites, which is likely to represent the core elements of funerary ritual, even if in a more elaborate form than would have been the norm for most of the population.

The rites described indicate that a Roman funeral was not so much an event as an extended process,

lasting over a period of days from the moment of death to the burial. During this time the body was prepared and dressed in clothes appropriate to the status of the individual, and laid out in his or her house for mourners to pay their respects. On the day of the funeral the corpse was carried in a procession to the cemetery, where valedictory speeches may have been recited and sacrifices made before the actual burial took place.

No such account survives of funerary practices in Britain to indicate whether a similar sequence of rites prevailed in funerals here, but it is possible that Romanised individuals throughout the Roman world shared, or at least aspired toward a common set of values and customs. The rites enacted at Lankhills may have been more modest in scale than many of the funerals described in the sources, but they are likely to have encompassed some of the same basic elements. The very location of the cemetery at Lankhills may itself have been a factor in determining the nature of some elements of the funerary rite. The corpse would have had to be carried out of the town, through the North Gate, and up the Cirencester road to the cemetery, and this would have provided a natural opportunity for the sort of procession described in the sources, intended as a spectacle to commemorate the deceased and as an opportunity for the mourners to express their grief publicly. Indeed, the practice of locating urban cemeteries throughout the Roman world beyond the limits of the town may have actively promoted an emphasis on this part of the funerary rites. In contrast, the act of burial itself may have been a relatively private affair. There would obviously not have been enough room at the graveside to accommodate a large number of people, and this would have been particularly true if it was intended that those present should be able to see (for example) grave goods in place in the grave.

The nature and location of these rites preceding the burial militate against direct evidence for them being recovered from the grave, although those aspects of the preparation of the body that relate to its appearance may have been intended, at least in part, for its display during the procession and the lying-in-state that preceded it. The evidence for the clothing of the body provided by hobnails, brooches and minerally-preserved leather and textiles, the arrangement of the hair attested by hairpins and combs, the wearing of items of jewellery, and the objects associated with status, such as official belts and crossbow brooches, may all relate to the display of the body during these parts of the funeral. For further discussion of these aspects see 'Body position' below.

Grave pits

The form of the graves at Lankhills, comprising rectangular pits with generally straight, vertical sides and square or rounded edges, was typical of the graves found in late Roman urban cemeteries (eg Barber and Bowsher 2000, 82; Clarke 1979, 134; Crummy and Crossan 1993, 34 and 100; Farwell and Molleson 1993, 44). The tapering toward the foot end noted for a minority of grave pits is a tendency that was also observed at Butt Road, Colchester (Crummy and Crossan 1993, 34), and a few graves had rounded ends (eg Graves 1220 and 1635), but both these variations appear to be incidental. Some of the graves may have been deliberately extended to allow space for grave goods to be placed at the end, beyond the coffin, and this too was observed at Butt Road, where grave goods had been placed in these locations in some of the Period 1 burials (Crummy and Crossan 1993, 34). At Lankhills grave goods were found at the foot end of two graves that may have been thus extended (Graves 256 and 575), although similar spaces were noted at the foot end of five other burials (Graves 10, 18, 231, 925 and 1020), as well as at the head end of two graves (1035 and 1230), and Grave 710 had a centrally placed coffin beyond which were spaces at both ends. These apparently empty spaces may originally have been the location of organic objects such as wooden items, food offerings or textiles, of which no trace has survived.

Consideration of the depths to which the graves were dug is hampered by the removal of an unknown depth of material during the construction of the School House. Although the extent of this truncation is unknown, it is unlikely to have affected different parts of the site evenly, owing to the slope of the natural topography. The effect of this operation will have been the removal of the upper part of each surviving grave, resulting in a reduction in the apparent depth. The shallowest burials may have been completely destroyed. Clarke (1979, 133) described a class of burials that he dubbed 'topsoil burials', typified by his grave 356, which was only 0.10 m deep and survived only because it had been dug into the hollow of the partly-silted ditch 450/F.12 and had subsequently been protected by its burial beneath the final fills of the ditch. If any similarly shallow burials had existed within the area of the OA excavations they would surely have been destroyed by truncation associated with the 1960s building operations. The truncation was most severe within the footprint of the basements of the School House, where the chalk bedrock had been removed up to a depth of up to 1 m, and consequently only the bases of the deepest graves in this area survived.

Clarke classified the burials recorded during the 1967-72 excavations as 'shallow' (0-0.40 m deep), 'average' (0.41-0.80 m), 'deep' (0.81-1.20 m) or 'very deep' (greater than 1.20 m), and for comparative purposes these categories have been used here. The majority of the adult graves from the OA excavations, like those from Clarke's excavations, fall into the middle two categories (Table 7.1). The greater number of burials from the OA excavations that are categorised as shallow may be explained by the

Table 7.1 Numbers of graves in grave depth categories

	OA excavations		*Clarke's excavations*		*Total*	
Depth	*Adults*	*Subadults*	*Adults*	*Subadults*	*Adults*	*Subadults*
Shallow (0-0.40 m)	41 (16.7%)	14 (25.5%)	34 (11.3%)	34 (29.5%)	75 (13.7%)	48 (28.2%)
Average (0.41-0.80 m)	75 (30.6%)	32 (58.2%)	114 (38.0%)	53 (46.1%)	189 (34.7%)	85 (50.0%)
Deep (0.81-1.20 m)	93 (38.0%)	8 (14.5%)	121 (40.3%)	24 (20.9%)	214 (39.3%)	32 (18.8%)
Very deep (>1.20 m)	36 (14.7%)	1 (1.8%)	31 (10.33%)	4 (3.5%)	67 (12.3%)	5 (3.0%)

greater truncation of this area, as the area investigated by Clarke's excavations was not affected by the construction of the School House. It is somewhat of a surprise, then, that the OA excavations contained a larger number of burials in the very deep category.

Comparing the depths of graves from different cemeteries is unlikely to provide any meaningful conclusions, as the effects of truncation differ and because the depth is likely to be constrained by the material into which they are dug. However, the average depth of adult graves at Lankhills of 0.84 m compares closely with the corresponding measurements from Poundbury, which was similarly located on chalk geology, and where the average depths varied from 0.76 m in the northern group (Farwell and Molleson 1993, 33) to 0.91 m in the main cemetery (ibid., 44), whereas at Butt Road, located on a sandy substrate, most of the graves were only 0.5–0.7 m deep (Crummy and Crossan 1993, 34), and the sides of several graves seem to have collapsed during digging or backfilling (ibid., 100).

Both the range of depths and the average depth were identical for the graves of males and females, and males and females were represented equally in the group of ten graves measuring more than 1.50 m deep. Grave depth was similarly consistent between the sexes at Poundbury (Farwell and Molleson 1993, 44). Clarke detected a tendency for the graves of females to be slightly shallower, with a greater proportion falling in the average rather than the deep category, but this trend is reduced following Gowland's re-assessment of the sexing of the skeletons, and his assertion that more male graves were very deep also no longer holds true. In fact, females were slightly more prevalent in this category in both excavations.

One of the conclusions of Clarke's excavations was that the amount of effort and care put into the digging of the grave pits declined over time, and particularly during the final phase of the cemetery (Clarke 1979, 144). This was reflected in an increase in the proportion of shallower adult graves and a decrease in that of deep ones. This pattern is also found in the results of the OA excavations when comparing the depths of those graves dating from before AD 350 with those from the latter half of the century, but there were insufficient graves of very late date for it to be possible to comment on the supposed deterioration in standards at the end of the life of the cemetery.

Body position

Bodies were found lying in a variety of postures, encompassing a number of variations in the disposition of the arms and legs. The position of the head also varied, with approximately equal numbers of examples of the skull resting on the back of the cranium and those lying on one or other side, but variation will have been affected by post-depositional displacement, particularly in burials that had been placed in a coffin and therefore had a space in which the skull could move during the decomposition process, and so may not provide evidence relating to the burial rite.

The majority of the burials, however, lay in a supine posture with the legs extended. The only group for whom this was not the case were the very young. The bones of neonates and infants survived less well as a consequence of their less robust nature, and so the posture in which the individual was buried could be established for only a fairly small proportion of these age groups, but a greater variety of positions was certainly apparent: two neonates (Graves 1719, 1725) and two infants (Graves 1464, 1880) lay in a crouched position on the left side, and three infants lay on their backs with their legs in bent or irregular positions, while six lay in an extended supine posture. Such young children do not normally lie in a flat, supine position in life, and the placing of them in the grave in these more irregular positions may either reflect the difficulty in manipulating them into such a position or a desire on the part of those burying them to place them in death in a position they would have adopted in life. The range of postures in which children aged four years and over were buried appear to have conformed with those of the adult population.

Excluding neonates and infants, 230 individuals were sufficiently well-preserved to allow the posture to be established, and of these 216 (92.6%)

Table 7.2 The disposition of the arms of all supine burials in which the positions of both arms could be established

Left arm	*Right arm Straight*	*Flexed, across waist*	*Semi-flexed, hand on pelvis*	*On chest/shoulder*	*Other*
Straight	24 (17%)	4 (2.9%)	26 (18.4%)	2 (1.4%)	1 (0.7%)
Flexed, across waist	6 (4.3%)	11 (7.8%)	1 (0.7%)	2 (1.4%)	
Semi-flexed, hand on pelvis	17 (12.1%)	3 (2.1%)	34 (24.1%)	4 (2.9%)	
On chest/shoulder		3 (2.1%)	1 (0.7%)		
Other					2 (1.4%)

lay in a supine position. An almost identical situation was recorded in Clarke's excavations, where 92% of adult burials were supine (Clarke 1979, 138, table 10). All but eight of the supine burials from the OA excavations lay with their legs straight, either with the feet together or with the legs parallel and the feet slightly apart. The remaining eight had been buried with their legs crossed at the ankle. The legs had clearly been placed in this position deliberately, but it is uncertain why this was done. The eight were a varied group, with no other obvious similarities that might explain why they should share this unusual trait. The group included males and females, a range of different ages, and individuals buried both with and without a coffin, grave goods and hobnailed footwear. No subadults had been buried with legs crossed, the youngest individual in this posture (Grave 1412) falling within the 'young adult' category (18-25 years). Clarke's excavations had recorded four individuals buried in this position, with a similar absence of subadults, but the significance of this, if any, is uncertain.

The greatest variation in the postures in which the dead were buried was in the disposition of the arms. The arrangement of the arms of the supine burials that were sufficiently well-preserved for this information to be established did not appear to be random, but conformed to a restricted range of positions: straight, beside the body; flexed with the hands lying over the pelvis; bent at a right angle with the hand lying across the waist; and tightly flexed with the hands on the chest or shoulder. No less than 14 of the 16 possible permutations of these positions were recorded, and although some were much more common than others, none was clearly dominant. Indeed, even the most popular combination was represented by less than a quarter of the burials in which the position of both arms could be established (Table 7.2).

The most common arm positions were those where the arms lay straight, beside the body, or semi-flexed, with the hands on the pelvis, with the combinations of these positions accounting for almost three-quarters of the burials. Approximately half the burials had the arms placed in an asymmetrical arrangement. Some disparity was present between the sexes, with females (13 instances, 22.4% of female burials) considerably more likely to be buried with both arms straight, beside the body, than males (3 instances, 4.9% of male burials), whereas burials with both arms lying across the waist were more common among males (7 instances, 11.5%) than females (2 instances, 3.5%). The arm positions of the subadults were dominated by burials with both arms straight (8 instances, 42.1%) and both arms semi-flexed (6 instances, 31.5%), but since the sample was small, with only 19 burials in which the skeleton survived sufficiently well for the positions of both arms to be established, these figures may not be significant.

The posture in which the body was placed in the grave was a matter of deliberate choice on the part of those conducting the funeral, and may have afforded an opportunity for subtle display of the status and identity of the individual, and the positions of the arms may have played a role in this. However, the apparent lack of coherent patterns in the arrangements recorded indicates that if this were so it is a code we are unable to read. Barber and Bowsher (2000, 87) have suggested that the asymmetric arm positions may mimic the 'toga position' of many Roman statues, with one arm folded across the waist and the other free, and classical sources specifically state that a Roman citizen would be buried wearing a toga (Toynbee, 1971, 44). Togas were no longer worn when the cemetery at Lankhills was in use, nor was simple citizenship a mark of status, but it is not unreasonable to suggest that the asymmetrical arrangement of the arms may have been a consequence of the arrangement of the clothes in which the deceased was buried, if indeed they were buried clothed rather than shrouded.

Reference has already been made above to the possible significance of clothing in relation to the display of the body prior to burial, but this raises the more fundamental question of the nature of the evidence for clothing and its possible interpretations. The recent work has added some evidence to inform the question about whether the deceased were buried in their 'normal' clothes or were treated differently. This is an issue at least partly related to that of Christian burial practice, regardless of whether or not the latter can be defined, let alone identified archaeologically, in this period. The argument that we would expect late Roman burials

to be conventionally clothed has been put forcefully by Samson (1999), although Walton Rogers (Chapter 4 above) has put a different case (see also Swift 2000b, 36 and 69, but the basis for her assertion is not clear), suggesting that for women, in particular, there is very little evidence for the accoutrements that would indicate the wearing of everyday dress in the grave. The best evidence for clothing from Lankhills involves the combination of objects with textile remains (see also discussion of brooches and belt sets below). Only in three graves could the fabric type be identified, and in two cases this was probably linen while the third was wool. Linen may be more likely to have been used for shrouds, and was prescribed for their use (eg Martorelli 2000, 244), but it was certainly not solely used in this way. There are examples of the use of linen in burials as early as the late Iron Age (Walton Rogers 2007b; 2008). Moreover, other materials were also used for shrouds. This question is discussed further below. In both the cases where linen was identified at Lankhills the way in which it was associated with the metal objects whose corrosion preserved the fabric does not suggest garments which were worn. In Grave 1075 the object in question was a crossbow brooch. This lay close to the poorly-preserved remains of the skull in such a position that it is unlikely that it was worn in the normal way at the time of burial (the fact that it was above the left rather than the right shoulder may also support this argument, but is not conclusive on its own – as Swift (2002b, 43) suggests, such a location may suggest that the wearer was left-handed). The strap end in this grave lay beside the left thigh in a position that means that it is unlikely to have been worn, but a dangling strap cannot be completely discounted. Grave 1846 provides further evidence, some clear and some less so. Here it is absolutely certain that the belt was laid between the legs of the deceased and that his riding boots were placed beside the right leg. The crossbow brooch, however, is placed in the classic position on the right shoulder, but in view of the other evidence it is possible that it lay upon a garment rather than fastening it (unfortunately the associated fabric type could not be identified). The occurrence of skin or leather as well as textile in association with this brooch may also suggest that it was not simply attached to a garment as it would have been in regular use, but equally suggests that this was not a shroud.

A further aspect of clothing may be represented by footwear, although this is clearly distinct from other aspects in that the surviving evidence was much more widespread in the cemetery. It is uncertain, however, if the same logic applied in the case of shoes as it may have done with clothes fastenings. At least 120 graves produced evidence of footwear in the form of hobnails. Shoes were considered to have been worn in a minimum of 14 instances (ie 12% of cases), but could have been worn in just over half, the hobnails occurring in the near vicinity of the feet bones but not in configurations which made it certain that the shoes were worn at the time of burial. If shoes were placed against but not on the feet (in a manner comparable to that suggested for the crossbow brooch in Grave 1846) it would be very difficult to distinguish between the two practices. The former possibility was considered likely in many cases by Clarke (1979, 153, 370-371).

In the case of Grave 780 the combination of hobnail evidence and the textile remains associated with a penannular brooch have been suggested to indicate a clothed burial (Walton Rogers above). This is certainly possible. In contrast it may be noted that Grave 58 contained apparently worn footwear, but this consisted of a single shoe associated with the left foot and therefore clearly did not represent day to day reality. This occurrence perhaps supports the view that shoes could be placed right by but not necessarily on the feet (see above). It is notable also that with the exception of Grave 780 (and Grave 1846, arguably a special case, consisting of spurred riding boots rather than nailed shoes) footwear did not occur in association with items related to the fastening of clothing. This lack of a correlation may indicate the existence of different burial traditions.

Shrouds

The evidence for clothing in a small number of burials cannot necessarily be extrapolated to those graves for which evidence (eg of mineral preservation of textiles, recorded on a total of nine pieces of metalwork from six graves from the OA excavations) does not survive. On the other hand, is it possible to identify evidence for the most likely alternative, ie shrouding? Evidence for the use of shrouds is limited and to some extent equivocal, both at Lankhills and in other Roman cemeteries more generally, but there are partial exceptions. Shroud material was typically linen, and survives only under unusual conditions. The possibility that shrouds may be represented by linen fabrics has been noted above, but the association is tentative, at best. Similar textile remains had been recovered from four burials during Clarke's excavations (Crowfoot 1979). At a number of cemeteries, fragments of textiles that were probably parts of shrouds have been preserved in gypsum or lime plaster that was used to cover the body (Philpott 1991, 93). Examples include remains and impressions of linen that was almost certainly part of a shroud in the grave of a child buried in a lead coffin at Butt Road (Crummy and Crossan 1993, 129). At Poundbury almost all the textiles recovered – fragments from nine graves and impressions on gypsum from a further 18 – were of linen and were interpreted as 'shroud materials' (Crowfoot 1993, 111), and similar remains are known from York (eg Wild 1970, 95-96).

Equally, the suggestion that the presence of unworn grave goods is indicative of the use of shrouds is not conclusive. In the absence of

preserved textile remains, the use of a shroud may be indicated in some graves by the position in which the body lay, particularly when this appears to indicate that the body was tightly wrapped – especially suggested by constriction of the shoulders (Bonnabel 1996; Blaizot 2006, 313-316), although a similar situation could also result from containment within a narrow coffin (Duday 2009, 45). This line of argument has been used to suggest the use of shrouds elsewhere in Winchester's cemeteries at Andover Road (Teague forthcoming), as well as at Butt Road (Crummy and Crossan 1983, 110, 129) and the eastern cemetery of London (Barber and Bowsher 2000, 91). At Lankhills a number of burials may provide evidence for such a situation, best exemplified by skeleton 429, an older adult male in Grave 430 (Fig. 7.6), whose upper arms and shoulders were particularly tightly constrained. This may indicate the use of shroud, though it could perhaps have been the result of tight binding with fabric of a different character. A similar situation is seen in Grave 740, containing the burial of a mature adult female (Fig. 7.7). The latter individual, however, was also buried wearing

Fig. 7.6 Possible shrouded burial in Grave 430

Fig. 7.7 Possible shrouded burial in Grave 740

nailed shoes, a practice which seems inconsistent with the use of a shroud, although shoes were associated with one of the Poundbury gypsum-packed lead coffin burials (376) which produced possible textile remains (Crowfoot 1993, 112; Farwell and Molleson 1993, 265). In the case of Lankhills Grave 740 it may be that another factor has resulted in the constricted appearance of the skeleton, a situation which could have implications for the interpretation of other burials as having been shrouded. Such was the variety in recorded body positions (see above), with the possibility that some have been affected by post-depositional movement of bones, that it would be unwise to expect to be able to quantify the use of shrouds from this evidence, but 38 burials from the OA excavations were recorded as having the feet together, another possible, but far from conclusive, indicator of burial in a shroud. By contrast, in some burials the position in which the body was laid would not have been possible had it been wrapped in a shroud. The individuals buried in Graves 585 and 1349, for example, each lay with one arm angled away from the torso. It is notable, however, that at Poundbury, with the greatest number of examples of possible shrouded burials, all the bodies associated with linen remains are described as laid out in 'standard attitude', with no suggestion of constriction. Finally, it may be noted that in the Lankhills examples perhaps most likely to have been shrouded (Graves 430, 735 and 740 above) coffins were present in every case and of the 38 examples in the OA sample buried with the feet together all but five (ie 86.8%) were in coffins – that is to say a figure rather above the site average (78.3%, see Chapter 8 below) and there is thus no suggestion that the possible provision of shrouds might have been complementary to the use of coffins.

Why some people were or might have been buried in shrouds but others were clothed is uncertain (see eg Crummy and Crossan 1993, 129; the religious aspect of this is discussed further below). At Scorton, North Yorkshire, there was some indication that this disparity was based on sex, as the female burials all appeared to be shrouded while five of the male burials were clothed (Walton Rogers unpublished), but this pattern has not been detected at other cemeteries. In practice, definite evidence for shrouds is not usually preserved in sufficient burials for any clear pattern in their use to be identified.

Prone burials

The eight individuals buried in a face down, prone position are examples of a practice found among a minority of Roman burials at many cemeteries. Although they are considered to be more common in rural sites (Taylor 2008, 100), small numbers of such burials have also been recorded from urban cemeteries. A further 14 examples were recorded during Clarke's excavations (1979, table 2; ibid. 138 table 10 gives a figure of 12, but these are from 'intact graves only'), and this overall prevalence, representing 4.1% of the burials in which the posture could be established, is of the same order of magnitude as that recorded elsewhere. Some 14 (3.3%) of burials within the eastern cemetery of London were buried in this way (Barber and Bowsher 2000, 87), as were 33 of the 450 graves (7.3%) excavated at the Bath Gate cemetery, Cirencester (Viner and Leech 1982, 78), and six of the 64 burials (9.4%) excavated at 120-122 London Road, Gloucester (Simmonds *et al*. 2008, 21). Prone burials are usually typified by liminal locations, near the edge of the cemetery (Taylor 2008, 101), and this is certainly true of the burials at Lankhills (Fig. 7.9). The prone burials recorded in the two excavations all lie close to its northern and eastern boundaries. The graves of three of the prone burials had been dug into the group of backfilled pits in the central part of the excavation. Although the significance of these pits is uncertain, the prone burials formed the initial phase of a sequence of burials that appear to have been deliberately placed within this small area. It is possible that the placing of the prone burials here was in some way significant in making this location appropriate or desirable for the subsequent burials.

The treatment of these burials was also different as regards the depth and orientation of the grave itself. No less than five prone burials were aligned at right angles to the prevailing west-east orientation of the majority of burials, and in five further instances the usual orientation of the corpse was reversed, with the head lying at the eastern end. The graves of these individuals were also typically shallower, as, although they included a range of depths, 17 of the 22 fell into Clarke's 'shallow' and 'average' categories, and none into the 'very deep' category.

The prone burials from the area of the OA excavations made a number of contrasts with those recorded during the previous excavations. Half the prone burials from the OA excavation had been placed in coffins, compared to only two in Clarke's excavations, and hobnailed footwear was also more common, with five of the eight burials from the OA excavations having been buried with shoes as against only three of the 14 burials from Clarke's excavations. The location of the footwear was also different, as in all five burials from the OA excavations the footwear was associated with the feet, and probably worn, whereas none of the shoes accompanying prone burials from Clarke's excavations were worn. In addition to this, half of the prone burials from Clarke's excavations were accompanied by grave goods, compared to only one of those from the OA excavations, and this contrast may in fact have been starker still, as the objects with this individual were a ring and a pair of bracelets that may have been part of her everyday dress rather than items specifically placed as grave goods. It is possible that these differences are coincidental, and

it may be unwise to draw too many inferences from apparent patterns observed in so small a number of burials. However, if an attempt at an explanation is to be made, it may be related to chronological differences between the two groups. The prone burials recorded in Clarke's excavations appeared to be late in date: ten of them were located in the area east of ditch 450/F.12, where burial did not begin until the 360s or 370s, in addition to which burial 356 was stratified above grave 357, which contained a coin dated to AD 350-64, and burial 441 cut grave 443, which had a dolphin-head buckle dating from after *c* AD 370 (Clarke 1979, 270). The prone burials east of ditch 450/F.12 also contained objects dating from the later half of the 4th century, including Valentinianic coins from graves 310 and 381, two Theodosian coins from burial 378, and a comb in burial 297, indicating that they were buried after the area had come into general use and are not the graves of individuals placed outside the cemetery at an earlier date. The examples from the OA excavations, on the other hand, are undated, although Graves 665, 970 and 1070 are all located early in the sequence of late burials in the central part of the excavation, and so a date around the middle of the 4th century would be appropriate. It is possible, then, that over the course of the second half of the century there were changes in the rites associated with prone burials, with coffins and worn footwear becoming less frequent and the placing of grave goods becoming more acceptable.

From a demographic perspective, the individuals selected for prone burial were very similar to the population of the cemetery generally, with males and females represented more or less equally, and the representation of subadults only slightly less than in the overall population. There was, however, a pronounced bias toward individuals aged between 25 and 45 years, who accounted for 11 prone burials, or 61.1% of such burials, but only 35.6% of the overall population. These figures are rather different from those obtained from the eastern cemetery at London, where females and subadults were both twice as common among the prone burials as they were in the rest of the cemetery (Barber and Bowsher 2000, 87).

It has been suggested that some prone burials may have been bound when they were placed in the grave (Philpott 1991, 72; Taylor 2008, 109-110), and this may have been the case for several of the individuals at Lankhills. Perhaps the clearest example was Grave 735, in which a female aged 26-35 years had been buried, in a coffin, with her arms bent behind her back, and her shoulder blades pulled together in a manner that suggests that she was pinioned at the elbows (Fig. 7.8).

Although extended, her legs were angled so that her feet were close together, raising the possibility that she was also bound at the ankles. A burial interred in a similar posture was recorded at the Bath Gate cemetery, Cirencester (Viner and Leech 1982, 78-81). The burial of a male aged 36-45 years in Grave 1345 may have been very similar. The arms of this individual were somewhat disturbed, but appeared to have been behind his back, and again the feet were together. The individuals in Graves 665, 905 and 1350 were all buried with their hands together beneath the pelvis, and it is possible that in these cases the wrists had been bound in front of the individual. In the latter two burials the feet were

Fig. 7.8 Possible pinioned burial in Grave 735

also close together. Burial 995 may have been similar, but the upper parts of the arms were too poorly preserved to be certain. The prone burials from Clarke's excavations were more varied and included a number of irregular postures, such as in grave 297, in which the body was bent to the right (Clarke 1979, fig. 64) and grave 332, where the individual had been buried with the legs turned to right (Clarke 1979, fig. 49), but the individuals buried in graves 405 (Clarke 1979, fig. 64), 411 (Clarke 1979, fig. 64) and 412 (Clarke 1979, fig. 49) all lay with the hands together beneath the pelvis and the feet together, and like the examples from the OA excavations, may have been bound at wrist and ankle. It is possible that some of the variation in body position in these burials reflects the late date of many of them, concentrated as they were in the area east of feature F.12. Some of these postures, however, particularly those in which the hands lay beneath the pelvis, are similar to those of supine burials placed with the hands resting on the pelvis, and may represent no more than the normal (but inverted) position in which the body was buried.

The individuals buried in a prone position were clearly treated differently from the majority of the cemetery population. Their burial in (on average) shallower graves, located at the edges of the cemetery and often on aberrant orientations may indicate that these were the burials of outcasts, or at least of individuals of low status, and there is some evidence from the skeletons themselves to support this. Seven of the eight individuals involved produced quite striking evidence of pathologies, including three instances of fractures (the crude prevalence rate of fractures in this population was 13.7%, whereas among those individuals buried prone it was almost three times as high (37.5%)). The osteophytosis recorded on the vertebrae of the individuals buried in Graves 665, 735 and 905 are likely to be the result of hard manual labour from a young age, while the female buried in Grave 1350 suffered from curvature of the sacrum that may have been caused by carrying heavy loads. In addition to this, four of the prone burials (Graves 665, 970, 1070 and 1350) were sampled for carbon and nitrogen stable isotope analysis and were found to be relatively depleted in carbon compared with average values for the cemetery, suggesting that they consumed less marine fish and perhaps had a more restricted diet generally (Cummings and Hedges this volume). This evidence for a combination of manual labour and poor diet would be consistent with a low, perhaps even servile, status, and it is possible that this was a factor in these individuals being buried in this unusual manner. Another possibility is that prone burial was a punishment, intended either as a display of disrespect toward the dead person or as a means of ensuring that the wrongdoer continued to suffer after death. Completion of the correct funerary rituals was thought to be essential to ensure the passage of the soul of the afterlife, and so prone burial may have been a deliberate subversion of the usual rites intended to continue the individual's punishment beyond death. Such punishment after death was a not uncommon practice in the Roman world (Hope 2000, 112-125), and the apparently low status of these individuals may have meant that they were particularly exposed to such treatment.

Some of these individuals, however, were clearly buried with some degree of respect (and the fact that they were buried in the cemetery at all might also be argued to support this). This is demonstrated by the provision of grave goods accompanying the child in Grave 1070 and in six of the 14 prone burials from Clarke's excavations. This is unusual as prone burials with grave goods, although not unknown, are typically very rare (Philpott 1991, 74). Three of these individuals were buried with a coin certainly or probably placed by the mouth, two, including one of those with coins, were accompanied by combs, an iron pin lay beneath the pelvis of burial 405 and burial 378 (of a child) was accompanied by a group of five coins and an iron arrowhead. With the exception of the arrowhead, these items are consistent with the range of items accompanying those buried in a more normal, supine position, and this presumably indicates that it was expected that they would have the same destiny as the rest of the population. Indeed, it is possible that the circumstances that led to these individuals being buried in a prone position were believed to make their transition into the afterlife more difficult, and that these objects were intended to ease their passage. The provision of combs in two graves, both of adult females, is also interesting, as these may have been prestige items belonging to wealthier women (Cool, Chapter 4 above), in contrast with the likely status of some of the individuals buried prone in the OA excavations. This contrast may indicate that prone burials were not the result of a single, consistent practice, but were carried out for a range of reasons, perhaps dependent on the circumstances of the particular individual or the nature of their death.

Burials lying on their sides

In six burials the body was definitely or probably lying on its side. The only one in a true crouched position was the male aged 45+ years buried in Grave 1515. This was the most common position for inhumation burials before the Roman conquest (Whimster 1981, 11), and occurrences during the Roman period are often regarded as a survival of native practice (Philpott 1991, 55), particularly as it is most frequently found at rural sites, where exposure to Roman practices may have been less and communities consequently more conservative. In addition to being buried in a crouched position, the individual in this grave had also been decapitated, and the head placed between the legs. Decapitation is also thought to be a tradition that was mainly practiced among rural communities

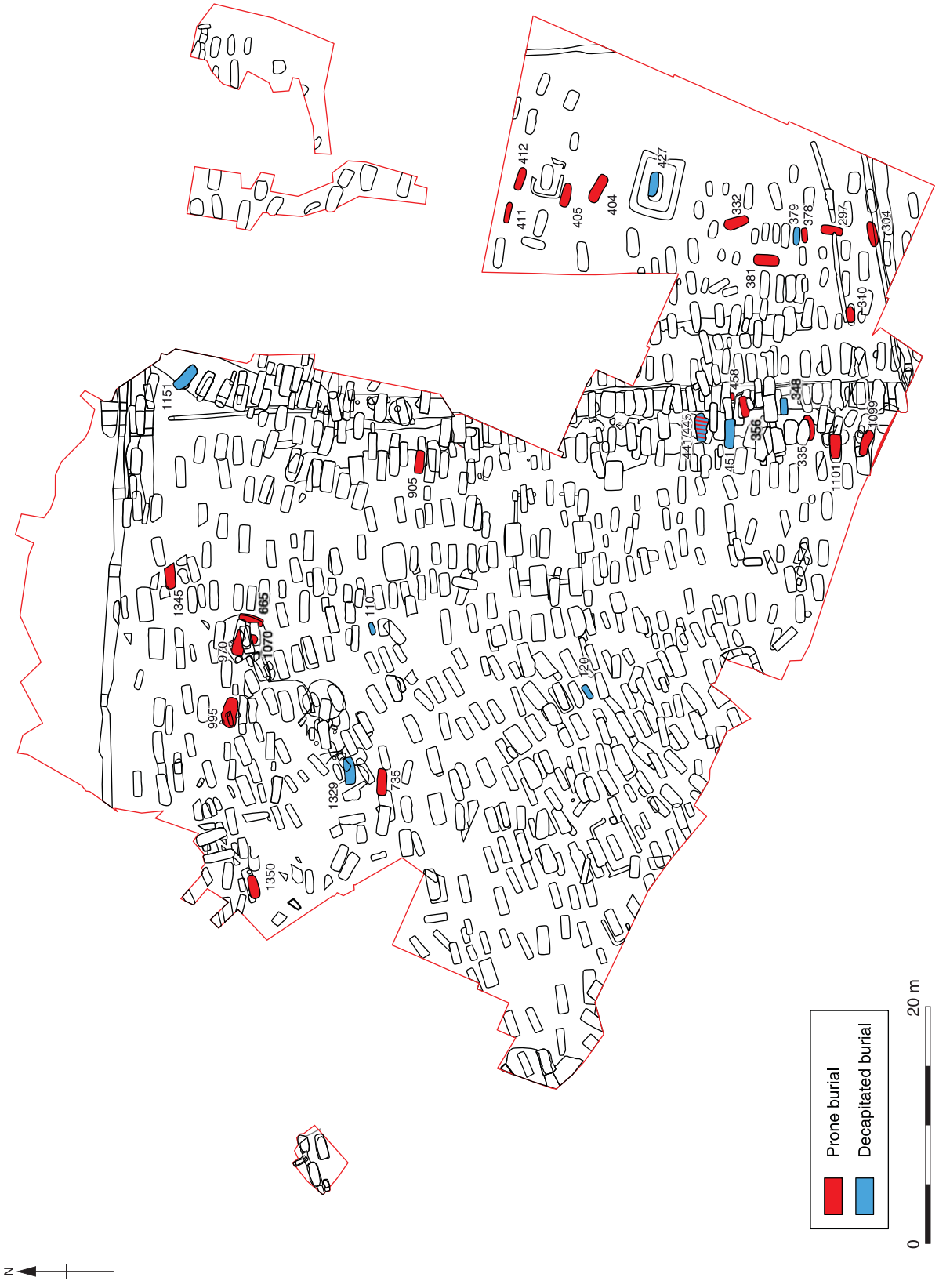


Fig. 7.9 Distribution of prone and decapitated burials

(Philpott 1991, 81; see below). A small minority of burials in urban cemeteries were buried in a crouched position, including one each from the excavations at Victoria Road East, Victoria Road West and Hyde Street (Browne *et al*. forthcoming). The example at Hyde Street was very similar to burial 1515, comprising a male of a similar age who had also been decapitated.

The position of the individual buried in Grave 1351 may not have been deliberate. The legs were in the correct, extended position for a normal, supine burial, and it is possible that the turning to the left of the upper part of the body occurred accidentally while the coffin was being carried to the cemetery or lowered into the grave. The individual in Grave 1915 was not sufficiently well preserved for the posture to be certain, although the positions of the surviving parts of the legs suggest that they were turned to the left. In the remaining three instances the placing of the body on one side was certainly deliberate, as the disposition of the body is too ordered to be accidental. The reasons for these unusual postures are unknown, although in the case of the adolescent in Grave 640 it is possible that this position was chosen because the individual was unable to lie supine in life due to a deformity of the spine. A further 11 burials on their side were recorded in Clarke's excavations (1979, table 10). Burial of adults in this position is an occasional occurrence elsewhere at Winchester, four instances having been recorded at Victoria Road West (Browne *et al*. forthcoming) and two at Andover Road (Teague forthcoming).

Decapitated burials

The OA excavations produced evidence for five instances of decapitation, comprising four burials (Graves 110, 1150, 1329 and 1515) in which the head had been removed and placed on the feet or legs, and the remains of a child recovered as charnel ('Grave 2064') from the fills of Graves 1735 and 1740, which exhibited a deep cut on the left side of the mandible that would be consistent with an accidental injury caused during the removal of the head. To these can be added a group of seven decapitated burials recorded during Clarke's excavations (1979, 141, 342-4). Curiously, no examples have been found at Winchester outside the northern cemetery, the only other instances being at Victoria Road East, Hyde Street and Andover Road, at each of which a single decapitated burial has been recorded.

Cut marks observed on the vertebrae of two of the individuals from the OA excavations and four of those from Clarke's excavations indicate that the head was severed from the front, and this was probably the case in all 12 instances. In both examples from the OA excavations the damage was to the fifth vertebra and appears to indicate that the spine was severed between the fourth and fifth vertebrae, whereas the cut was made between the third and fourth vertebrae in all four instances from Clarke's excavations. Severing the spinal column so precisely at these joints would have necessitated the removal of the overlying soft tissue to expose the vertebrae, which were then sliced or prised apart with a sharp, narrow-bladed knife to allow the removal of the head. The precision with which the decapitations were carried out suggests that the individuals were already dead, as it would have been extremely difficult to achieve with a subject whose blood was still flowing (Harman *et al*. 1981, 166). This is consistent with the method of removal recorded at other cemeteries (eg. Boylston *et al*. 2000), and contrasts with beheadings accomplished by hacking into the neck from the back, which are more likely to be instances of judicial execution, examples of which have been claimed at York (eg Gore and Tucker 2006; Hunter-Mann 2006), Cambridge (Alexander *et al*. 2004) and Dunstable (Matthews 1981). It seems probable that post-mortem decapitations of the sort found at Lankhills were part of the funeral rite for these individuals.

Macdonald (1979, 414-21) discussed the significance of the rite of decapitation at length in the report on Clarke's excavations, where it was concluded that these individuals represented some form of sacrifice. He argued that these burials were each located in close proximity to a richer burial, often with military associations, and that the decapitated burial was that of an individual of low or servile status who had been treated in this way as an offering to facilitate the passage of the soul of the other individual into the afterlife. However, there are several objections to this idea. Human sacrifice was illegal under Roman law and, notwithstanding Isserlin's (1997) argument that the practice continued, it seems unlikely that 12 individuals could have been killed in a public cemetery without the authorities noticing and taking action. Furthermore, the decapitated burials include individuals of a range of ages, including one from the OA excavations aged 45+ years and three from Clarke's excavations aged 35-49 years, indicating an age profile consistent with the rest of the cemetery rather than that of individuals whose lives were cut short by sacrifice. Perhaps most profoundly, the provision of grave goods with four of these burials suggests that they were expected to have the same destiny after death as the rest of the individuals buried in the cemetery – a difficulty that MacDonald had acknowledged (1979, 419-20). Indeed, in the case of Grave 1150 from the OA excavations and grave 427 from Clarke's excavations, which were each furnished with a single coin, and grave 120 from the earlier excavation, in which hobnailed shoes had been placed beside the body, the grave goods appear to specifically reference the journey that the deceased was expected to take to reach the afterlife. There was other evidence that the decapitated individuals had been given similar funerary rites to the majority of the burials. Three of the decapitated burials from the OA excavations and two from Clarke's excavations were buried in

coffins, and unlike the prone burials the graves themselves were similar to those of the 'normative', supine burials, all but two being aligned west-east, and the grave pits were generally of greater depth than those of the prone burials. Males and females were represented equally, there being four decapitated individuals of each sex, and the individuals from the OA excavations had no pathological conditions associated with manual labour that might indicate that they were of low status. Indeed, apart from the fact that they had been decapitated, there was no evidence that these individuals were any different from the rest of the population of the cemetery and their spatial distribution (Fig. 7.9) does not suggest any particularly unusual pattern. It is unlikely, then, that this rite is evidence for any form of disapproval or mistreatment of the individual, although the placing of such burials near the edges of the cemetery may indicate that they were to some extent marginalised.

Most interpretations of the rite of decapitation associate it with a fear of the dead, and suggest that it was intended to prevent the dead person from rising from the grave to haunt the living (Philpott 1991, 84; Taylor 2008). The head was believed in both Classical and Celtic religion to be the seat of the soul (Henig 1984b, 203), and it may be that the removal of the head was thought to prevent the reanimation of the corpse. Alternatively, the rite may have been intended to release the soul and facilitate its passage to the afterlife if the circumstances of the individual's death were thought to have made this transition problematic.

The chronology of the decapitation burials is not completely clear, but of the four undisturbed examples in the OA excavations Graves 110 and 1150 can be assigned to the second half of the 4th century on artefactual evidence, while Grave 1515 was in the middle of a sequence of three intercutting burials, the latest of which (Grave 1373) had a *terminus post quem* of at least AD 388, and it lay parallel to Grave 1400, itself the earliest of a sequence of three graves also ending with 1373 and containing a pot dated AD 340-400. Grave 1515 may therefore date around the middle of the 4th century, though earlier and later dates are also possible. Only Grave 1329, the earlier of a sequence of two otherwise unassociated graves, is really undated. The decapitated burials from Clarke's excavations were assigned to 'the later years of the fourth century' (Macdonald 1979, 414). The OA evidence, while not quite certain, is potentially consistent with such a date range.

Coffins

The majority of the burials recorded during the OA excavations had been placed in coffins or probable coffins (see further below for this qualification), as had been the case for those in the area investigated by Clarke's excavations. The coffins were exclusively made from wood. Coffins, cists and related structures made from stone, lead and tiles are widely attested elsewhere (Philpott 1991), but none have been found at Lankhills, and they are rare at Winchester as a whole. Positive evidence for the presence of a coffin was recorded for 245 graves from the OA excavation, giving an overall total for the cemetery of 593 coffins from 751 excavated graves (Table 7.3). All of the coffins identified in the OA excavations were represented by the nails, and in three instances coffin fittings, used in their construction, the disposition of which approximately defined the outline of the coffin, although it is to be expected that some limited dislocation of nails will have occurred consequent upon the decay and collapse of the coffin.

In 36 instances the outline of all or part of the coffin was also defined by a dark stain resulting from the decomposition of its timber element. In all instances this material crumbled to nothing on excavation, and so could not be collected for analysis, but similar stains recorded elsewhere have been identified as wood replaced by manganese salts (Whytehead 1986, 58). Fragments of desiccated wood were noted in 11 other cases, all in the southern part of the site examined in 2000. In 43 burials, including six graves that had coffin stains, a coffin fill could be identified that contrasted with the surrounding chalk backfill in having a much larger component of light brown silt, and few sizeable pieces of chalk (See for example Fig. 2.34). Such deposits were interpreted as being composed of soil that had percolated into the coffin before its collapse, either between the planks of which the coffin was constructed or through openings created by its gradual decomposition. Positive evidence was identified for lids secured by nails in 98 burials

Table 7.3 Provision of coffins by broad age and sex categories

	Males	*Females*	*Unsexed adults*	*Total adults*	*Subadults*	*Indeterminate*	*Total*
OA excavations	83 (90.2%)	76 (85.4%)	28 (87.5%)	187 (87.4%)	46 (69.7%)	12	245 (78.3%)
Clarke's excavations	81 (84.4%)	85 (80.2%)	78 (83.9%)	244 (82.7%)	98 (74.2%)	12	354 (78.3%)
Total[1]	164 (87.2%)	161 (82.1%)	101 (84.2%)	426 (81.5%)	144 (72.7%)	23	593 (78.1%)

[1] The total has been adjusted to allow for six burials that were excavated partly during Clarke's excavations and partly during the OA excavations

from the OA excavations, with a further 47 possible examples. It seems likely, although it cannot be absolutely certain, that all of the coffins were originally provided with lids, but not all were necessarily secured by nails. Some lids may have simply been placed upon the coffin and held on by the weight of the overlying grave fill, while in some cases it is possible that the nails that secured the lid had become displaced as the coffin decayed. It is not certain, however, that all coffins had lids, and it may be worth considering the possibility that some of the structures interpreted as coffins could have been biers, with low sides or no sides at all. While all of the main identified coffin types (see Powell, Chapter 4 above and Fig. 4.19) are reconstructed with nails at the upper corners the recorded nail positions do not guarantee that every example assigned to each of these types was necessarily a three-dimensional structure, although this is probable in at least the great majority of cases.

In the burials where no evidence for a coffin was found, this need not necessarily imply that no such container was provided. Coffins may have been constructed using joints and pegs rather than being secured by nails, and in such circumstances it is possible that no evidence for the presence of the coffin would survive. That such techniques were used for the construction of a minority of coffins during this period is not in doubt, as no less than 20 examples have been identified within the eastern cemetery of Roman London, where the survival of a coffin stain indicated the presence of a coffin in graves from which nails were absent (Barber and Bowsher 2000, 92). Seven similar examples were noted at Poundbury (Mills 1993b, table 14) and six at Butt Road (Crummy and Crossan 1993, 34). The report on Clarke's excavations at Lankhills mentions that 'a few coffins were made without nails' (1979, 142), but unfortunately gives no further details, though it is likely that the observation was based on the presence of mineralised wood (S Esmonde Cleary pers. comm.). No definite evidence was recorded from the OA excavations for un-nailed coffins in the form of coffin stains without nails, but since such stains were only preserved in a minority of the coffins that had nails, it is possible that this is due to the non-survival of the evidence rather than an absence of such coffins. The number of coffins evidenced by the presence of nails can therefore only be taken as a minimum, as an unknown number of burials may also have been placed in coffins for which no evidence survives, albeit that this number is likely to have been small.

The overall proportion of burials from the OA excavations for which definite evidence for a coffin could be identified was identical to the corresponding figure for Clarke's excavations at 78.3% of all burials (Table 7.3). Slightly more males than females were buried in identifiable coffins, although the discrepancy was not large and so may not be significant. Coffins were provided less frequently for subadults, particularly neonates, who were the only group for which un-coffined burials were in the majority (Table 7.4). For the rest of the subadults buried at Lankhills the proportion buried in coffins remained high, although somewhat lower than was the case for adults, rising to a peak during adolescence and young adulthood. There is some evidence that coffin provision declined with age, with a third of individuals from the OA excavations aged over *c* 60 years being buried without one.

Table 7.4 Proportion of burials in each age group provided with coffins

	OA excavations	*Clarke's excavations*	*Total*
0-1 month	1/6 (16.7%)	15/34 (44.1%)	16/40 (40.0%)
1 month-3 years	16/22 (72.7%)	25/27 (92.6%)	41/49 (83.7%)
4-7	14/20 (70.0%)	22/26 (84.6%)	36/46 (78.3%)
8-12	5/8 (62.5%)	6/7 (85.7%)	11/15 (73.3%)
13-17	9/9 (100.0%)	8/9 (88.9%)	17/18 (94.4%)
18-25	13/13 (100.0%)	52/55 (94.5%)	65/68 (95.6%)
26-35	24/27 (88.9%)	45/58 (77.6%)	69/85 (81.2%)
36-45	34/40 (85.0%)	37/49 (75.5%)	71/89 (79.8%)
45+2	40/48 (83.3%)	18/24 (75.0%)	68/87 (78.2%)
60+3	10/15 (66.7%)		
Adult	66/71 (93.0%)	92/109 (84.4%)	153/175 (87.4%)
Child	1/1 (100.0%)	22/29 (75.9%)	23/30 (76.7%)
Indeterminate	12/33 (36.4%)	12/25 (48.0%)	23/57 (40.4%)
Total[1]	245/313 (78.3%)	354/452 (78.3%)	593/759 (78.1%)

[1] The total has been adjusted to allow for six burials that were excavated partly during Clarke's excavations and partly in the OA excavations

[2] For the purpose of comparison this category encompasses the individuals from the 1967-72 excavations classified in Gowland 2002 as aged 50+ years

[3] No corresponding category was recorded in Gowland 2002

The coffins were constructed from planks that extended for the full length of the coffin. The base and lid presumably consisted of one or more wide planks, although only in Grave 550 was it almost certain that the base was formed from two planks that were nailed together down the middle of the long axis of the coffin. If coffin bases and lids were typically formed of a single wide board this has implications for the nature of timber supply in late Roman Winchester, suggesting the ready availability of substantial pieces of wood for coffin construction. Analysis of a sample of minerally preserved wood adhering to coffin nails from 23 burials, and desiccated wood from the coffins in 11 burials indicated that all the samples were definitely or probably oak (Challinor, Chapter 4 above). Oak has also been found to be the preferred timber in coffin construction at other cemeteries, being the only wood identified in the coffins of Winchester's northern cemetery (Rees forth-

coming), as well as at Poundbury (Mills 1993b, 114) and Trentholme Drive, York (Wenham 1968, 39). Only one of more than a hundred samples examined at Butt Road was of another species (Crummy and Crossan 1993, 120). It is therefore quite possible that oak was used for all of the coffins at Lankhills. Investigating the shape of the coffins from the distribution of their nails is somewhat problematic because of the post-depositional movement of many of the nails, but where the shape could be established with any confidence the coffins were consistently found to be rectangular, with parallel sides (Powell, Chapter 4 above). This is the shape most commonly recorded at Roman cemeteries (Barber and Bowsher 2000, 93; McWhirr *et al*. 1982, 88), although a minority of coffins tapered toward the feet. Clarke (1979, 337) noted the presence of tapered coffins in his excavations, but was unable to quantify their prevalence since coffin shape could only be established for a small number of graves.

The form and manufacture of individual coffins does not seem to have varied according to the sex or age of the individual interred within, except for the obvious provision of smaller containers for the burials of children. Coffins containing male and female burials were of identical manufacture as regards the dimensions, construction techniques, and the number of nails used. Although it was possible to identify a number of different nail patterns representing slight variations in the construction, each coffin type was provided equally for men, women and children, with the possible exception of Type D (fastened at the corners and ends), which was not associated with male burials. However, the number of coffins of this type was very small and so this may not be significant (Powell, Chapter 4 above). The number of nails used in manufacturing the coffins formed a continuum up to the low thirties, although four coffins (in Graves 73, 475, 890, 1140) had more nails. These presumably represent more elaborate construction techniques, although there was no other evidence that these burials were in any way special, the only grave goods other than hobnailed shoes being a flagon and jug in Grave 890. Similarly, the burials containing coffins constructed with particularly large nails or with very thick planks, while striking in these respects, were not in any other way unusual. It is possible that larger or more elaborate coffins were used as an indication of relatively higher status, but this need not necessarily have been the case as two of the individuals from the OA excavations (Graves 1760 and 1921) and one from Clarke's excavations (283) which were accompanied by belt fittings, potentially another aspect of status expression, were buried without coffins.

The results of Clarke's excavations suggested that the provision of coffins declined after *c* AD 390 (Clarke 1979, 143, 353-4). Only four inhumation burials recorded in the OA excavations were certainly of this late a date, but it may be of significance in this respect that two of these were uncoffined (Graves 1373, 1760). These burials did not lack for care or the provision of grave goods, however, as the individual buried in Grave 1373 was accompanied by a New Forest ware jug, a glass beaker and a group of seven coins in a leather pouch (see below), and the child in Grave 1760 was buried with a glass *tettine*, a New Forest ware beaker, a knife, a buckle, a ring, and a single coin, all placed in a group to the side of the upper part of the body. The absence of coffins from these burials may therefore be the result of a change in practices rather than reflecting a lack of expenditure on the funeral.

The high proportion of burials at Lankhills provided with coffins is extremely unusual in comparison with the other cemeteries at Winchester (see Table 8.2). Only approximately half as many burials were provided with coffins elsewhere within the northern cemetery, the highest provision being recorded at Victoria Road West, where 56 of the 126 excavated burials (44.4%) were in coffins (Browne *et al*. forthcoming, table 7). At Andover Road 15 of the 38 excavated burials (39.5%) had been provided with coffins (Teague forthcoming), and at Hyde Street only two burials from a total of 30 may have had coffins (Browne *et al*. forthcoming, table 8). At Chester Road, in the eastern cemetery, 54 coffins were recorded from 121 burials (44.6%, Browne *et al*. forthcoming, table 13). Major cemeteries associated with Roman towns elsewhere in southern England have produced results more consistent with Lankhills, with 87% of the burials in the main cemetery at Poundbury being in coffins (Farwell and Molleson 1993, 228), 90.9% of those in Period 2 at Butt Road, and 68.6% at Alington Avenue, Dorchester (see Chapter 8). The provision of coffins for the vast majority of burials in urban cemeteries would appear to have been the normal practice, and this only serves to emphasise the contrast with the burials at Winchester other than Lankhills.

The use of a coffin has obvious implications for the nature of the funerary rites. If the body was displayed before being brought to the cemetery, it may have lain in the coffin during this time, and is in any case likely to have been carried to the grave in the coffin. The lowering of the coffin into the grave would have been a major focus of the burial rite itself. If the grave goods were put in place during the funeral, or were at least intended to be visible to those attending the funeral, the coffin must still have been open for at least part of the ceremony. Barber and Bowsher (2000, 310) have suggested that coffins were not closed until the last possible moment, as it is recorded that it was usual among the Roman elite for mourners to address valedictory orations to the deceased until the coffin was finally closed. This is plausible, regardless of the status of the deceased and mourners.

Packing

Four graves had flint packing placed around the burial. In none of these burials did the packing completely encircle the body/coffin. Burial 1150 had the most packing, with stones placed along the western half of both sides of the coffin, while in Grave 735 occasional stones had been placed around the body, adjacent to the left shoulder and hip and at the feet, and in Graves 233 and 1335 only a small number of stones were noted on one side of the grave. This practice was more prevalent in the area of Clarke's excavations, where 38 graves were recorded as having such packing (Clarke 1979, 143). It differed from the provision of stone coffins or cists found at many cemeteries (Philpott 1991, 61-8) in that the stones had been placed loose in the grave and did not form any sort of structure. In some instances the packing had been placed all around the coffin, or around the body in graves without a coffin, but there were also graves, like burial 233, in which only a few packing stones were present (Clarke 1979, 355). A similar variation in the quantity of packing stones used was noted among the five graves with such packing at Andover Road (Teague forthcoming). The function of this packing is somewhat obscure. Clarke argued that it could not have been used to support inadequately constructed coffins because in some of the graves in which it was found there was no evidence for a coffin (Clarke 1979, 356), but Ottaway and Rees (forthcoming) disagree, suggesting that stones may have been used 'to hold the boards of some sort of non-nailed coffin in place'. The use of 'packing' stones may of course have been of more symbolic significance, or based on a tradition with no obvious practical purpose.

GRAVE GOODS FROM INHUMATION BURIALS

The unusually large proportion of burials at Lankhills that had been provided with grave goods marks this cemetery out as being quite different in character from the other cemeteries of Roman Winchester. A total of 88 of the 313 burials (28.1%) recorded during the OA excavations had been provided with grave goods of some sort, excluding those only with hobnails. Combined with the 157 furnished graves from Clarke's excavations (Clarke 1979, table 22) this gives an overall total of 245 graves with grave goods (32.6% of excavated and partly-excavated graves). If burials that were provided only with footwear are included, these figures rise to a total of 161 burials (51.4%) from the OA excavations and 398 (53%) overall (see also Table 8.2). Although still more common than at most cemeteries of this date, burials provided with grave goods were slightly less numerous in the area of the OA excavations than they had been in the area of the earlier investigation, and where they were present the assemblages were generally less rich, both in the number and range of items.

The grave goods provided with the burials investigated by the OA excavations are discussed according to their functional categories below. In order to facilitate comparison between the assemblages from the two investigations, the categories used area based on those in the report on Clarke's excavations, and as far as is practical they are dealt with in the same order as in Part III of that report.

Coins

Coins had been deliberately placed with 24 burials, in addition to the 42 instances recorded during Clarke's excavations (1979, 147). As with the examples from the earlier excavations, more than half of these graves, in this case amounting to 15 instances, contained only a single coin. Groups of three coins had been placed in five graves and groups of two, four, five and seven coins were each encountered on one occasion. Individual coins recovered from the backfills of Graves 22, 1000 and 1491 may have been deliberately deposited (Philpott 1991, 212), but this is not certain.

All but one of the coins were of bronze, and were of low denominations. A similar pattern was observed in the coins from Clarke's excavations, where only two graves contained silver coins, leading Reece (1979, 203) to observe that 'the silver coins of the later 4th century which one might reasonably expect, especially from the House of Theodosius, are conspicuous by their absence'. Indeed, it is striking that these groups appear to represent very small quantities of money, mere loose change in contrast to the contents of contemporary coin hoards, which indicate that a large quantity of gold and silver coinage was in circulation at the time (Robertson 2000). Perhaps the deposition of high value coinage in graves was deliberately avoided or considered inappropriate. It seems likely that the coins deposited in graves, consisting of small numbers of coins of low denomination, were not meant as a display of wealth, but were intended as a token payment, perhaps to assist the deceased's passage to the afterlife.

The only coin of precious metal was a silver denarius of Hadrian placed in Grave 3029, which is likely to have been two centuries old at the time of deposition, and certainly would not have been considered legal tender, although it would obviously have retained its value as bullion. This coin presents such a contrast with the other coins that it may not have been deposited as part of the same custom. Perhaps it was treated in its deposition not as a coin, but as a piece of bullion, or as an antique or heirloom.

Coins were placed in a limited number of locations within the graves, which clearly represented customary or traditional practices. The archetypal tradition of placing a single coin in the mouth is likely to have been represented in six

burials (Graves 635, 660, 1020, 1080, 1175 and 1362). Half of these instances date from the early part of the use of the cemetery, before *c* AD 340, in contrast to the evidence from Clarke's excavations, which appeared to indicate that this practice dated from after this time (1979, 167). The evidence of the two excavations together seems to show that burials with a coin placed in the mouth occurred throughout the 4th century. In one other Grave (3029) a single coin had been placed in the area of the skull, and in burial 1805 three coins had been placed in this area. In four burials (Graves 1010, 1150, 1240 and 1755) the coins, whether individual or in groups, were placed on the chest, and this may also have been the case in Graves 870, 1440, 1547 and 1705, but the preservation of the skeletons in these cases was insufficient to be certain of the location in relation to the body. Three coins had been placed in the right hand of the female buried in Grave 710, and four in the left hand of the male in Grave 1638. The dates of issue of these coins indicate that both these burials are likely to date from no earlier than the 360s, which would be consistent with Clarke's (1979, 167) assertion that this became one of the predominant locations from around this date. Burials 1370 and 1373 were accompanied by groups of three and seven coins respectively, placed by the individual's left foot. In only one burial were coins placed in separate parts of the grave: in Grave 1403 one coin (SF 3623) was found in association with the skull and two (SF 3624 and SF 3625) with the chest, although it is possible that they were deposited together and had become separated during post-depositional disturbance resulting from the decay of the body. These preferred locations are identical to those recorded during Clarke's excavations, although there is some variation in their frequencies, particularly regarding the placing of coins in the mouth, which was much more common in the graves recorded during the earlier investigation, where 19 of the 42 graves containing coins had them in this location (Clarke 1979, 148).

Several graves provided evidence that the coins had been placed in some form of purse. Minerally-replaced fabric was attached to the coin from Grave 3029 and to one side of one of the three coins from Grave 1805, and the groups of coins in Graves 1370 and 1373 were both located within patches of dark, organic soil that are likely to represent the decayed remains of a purse or pouch in which they had been deposited. Although no direct evidence for such containers was recovered from Graves 1440 and 1755, the groups of coins from these burials each included a pair of coins that had become fused together, indicating that they had been deposited, and remained, in close proximity.

Coins were not placed predominantly with either sex, there being eight definite or probable males buried with coins and an identical number of definite or probable females. The number and location of the coins also appears to have been unaffected by the sex of the individual. Most of the burials containing coins were of adults, with only three children accompanied by coins. The three child burials were all unusually well-provisioned: burial 1547 was that of a neonate with a horse skull placed, presumably deliberately, in the backfill; Grave 1760, that of a child aged 4-7 years, was accompanied by a New Forest ware beaker, a glass *tettine*, a knife, a ring and a belt, all placed to the right of the upper part of the body; and three bracelets had been placed, with the three coins, at the foot of the burial of a child aged 8-12 years in Grave 1370.

The number of graves from the OA excavations that contained coins was too small for any detailed chronological patterns in their deposition to be established, but some comment can be made regarding the patterns observed in Clarke's excavations. Ten of the coin-dated graves from the present excavations can be assigned to the second quarter of the 4th century and 12 to the third and fourth quarters of the century, with one uncertain. On this basis there is no evidence for a significant change of practice around the middle of the 4th century with regard to coin deposition within the part of the cemetery considered here, in contradiction of Clarke's (1979, 357) view that the placing of coins became twice as frequent during the second half of the century. Clarke also argued that the locations in which the coins were placed became more circumscribed over the course of the 4th century, with later coins mostly being placed in the mouth or hand, and this receives some support from the results of the OA excavations. Certainly, deposition in other locations, particularly on the chest, seems to have stopped at some time around the AD 360s if one disregards the group of late burials represented by Graves 1373, 1440 and 1760, which have coins in more varied locations but appear to represent the introduction of new funerary practices with more richly furnished graves (see below, section on changes in funerary rites). In both parts of the site the latest grave groups tended to contain multiple coins, sometimes with a relatively wide chronological spread (Booth chapter 4 this volume; Reece 1979, 202).

Glass vessels

Glass vessels were placed with only three of the burials investigated during the OA excavations (1373, 1440, 1760). This contrasts somewhat with the results of Clarke's excavations, which recovered a fairly substantial and important assemblage from a total of 17 graves (Harden 1979). Both assemblages consisted entirely of vessels for drinking or containing liquids (cups, beakers, flagons etc) and included a wide range of different forms. The vessels from the OA excavation, comprising a small conical beaker from burial 1373, a hemispherical cup from burial 1440 and a *tettine*, a type used to feed infants or perhaps to fill oil lamps, recovered

from the burial of a child aged 4-7 years in grave 1760, were all of forms that were not encountered in the earlier investigation (Cool, chapter 4 this volume). The practice of placing glass vessels in burials appears only to have become frequent at Lankhills during the second half of the 4th century (Harden 1979, 209), and the three instances from the OA excavations were particularly late, all coming from graves that contained coins dating from after AD 388. These burials appear to be quite different from the majority of the burials as regards the range of grave goods, not least in the inclusion of the glass vessels, and the consistency in their locations within the grave. In all three burials the glass vessel had been placed beside the head, with a pottery vessel placed on the other side of the head in the two adult vessels and beside the glass vessel in Grave 1760.

Pottery vessels

Excluding footwear, pottery was the category of grave good that was most frequently provided. Pots had been placed with the burials in 39 graves, and in addition one vessel had been placed, inverted, in the mound covering Grave 1622. Most of these burials were provided with a single vessel, but six graves each contained two vessels. There were no graves with more than two vessels, in contrast to the area excavated in 1967-72, which contained two graves with three vessels and one that had four. The vessels were not representative of the range of types in use at contemporary sites within Winchester, but were restricted to a narrow range of fabrics and forms. Most of the assemblage from both parts of the site consisted of products of the New Forest industry, which was represented by both colour-coated fine wares and coarse wares in reduced fabrics.

The vast majority of the forms were associated with drinking, comprising either drinking vessels or containers for liquids variously categorised as jugs, flagons and flasks. Only four vessels that were probably associated with eating food were identified, in the form of two dishes and two bowls, and interestingly three of these instances were in graves that contained two vessels, the other vessel in each case being a jug or flask. The only burial that had been provided solely with an 'eating' vessel was Grave 560, which contained a dish made in a local coarse ware. This was also one of a number of vessels that exhibited evidence for use prior to being selected for inclusion in burials. Sooting on the outside of the dish indicated that it had been used in cooking, and numerous other vessels had chips missing from rims and footrings, typical of damage suffered during everyday use. More serious damage was noted to the flask/jug in Grave 745, the neck and rim of which were missing, as was the rim of the flagon in Grave 1200, which had broken off above the flange, and the jug in Grave 1362 had no handle. One of the pair of unguent bottles in stepped Grave 82 had also been deposited incomplete, with the rim and part of the shoulder apparently broken off in antiquity, but presumably the exotic origin of this vessel, or its contents, was more significant than any superficial damage. Damage that is more likely to have been deliberate was observed in the case of the flask in Grave 545, which had been punctured by a small hole at the girth, and the flagon in Grave 680, which had been holed in a similar location, resulting in the body of the vessel fracturing into two main parts. Such damage may have been inflicted deliberately when the vessels were dedicated to the burial, and it is not impossible that some of the more minor damage noted on other vessels had been caused deliberately with the same symbolic purpose.

In 22 burials the vessels had probably or certainly been placed within the coffin, and 14 burials had vessels outside the coffin. In a majority of burials the vessels had been placed in the lower half of the grave, that is in the area from the waist down around the feet and legs. Of the burials with vessels inside the coffin, nine were located around the feet, five beside the legs, and eight at the head, and in graves where the vessels had been placed outside the coffin five were near the feet, four beside the legs and five at the head. There was no preference for vessels to be placed on either the left or right side of the body, and where two vessels were provided they were located together. In three burials (82, 575, 1205) the vessels may have been placed on top of the coffin. The unguent bottles in Grave 82 were located awkwardly between the coffin and the side of the grave pit, with one lying on top of the other, while the vessels in Grave 575 had clearly been disturbed, presumably as a result of the decay and collapse of the coffin. The jar lay on its side at the foot of the grave, while the beaker, also on its side, was located next to where the legs are likely to have lain, although no skeletal material was preserved. The vessels in Grave 1205 had been similarly disturbed, the bowl lying on the pelvis and a jug situated roughly between the knees. The bowl was resting the right way up, having perhaps simply dropped vertically to its new position as the coffin decayed and collapsed, but the jug was tilted noticeably to the north.

Some patterns emerge regarding which members of the community had vessels buried with them. Children were more frequently provided with vessels than were adults, a tendency that was also observed in the results of Clarke's excavations, although there the disparity was slightly less pronounced. No neonates were accompanied by pottery, although one example was recorded during Clarke's excavations, In the OA excavations, pots were less frequently placed with infants than with older children, and children were also more likely to be provided with two vessels, accounting for three of the six burials of this sort. The provision of vessels peaked during adolescence, when a third of the population received such items, after which the proportion of the population for which this was

done reduced steadily with age. Very rarely were vessels buried with older individuals. Fewer males than females were buried with vessels, as was also the case for the burials excavated during 1967-72. No pattern could be discerned in the form of vessels provided in relation to the age or sex of the individual.

As the most frequently provided grave good other than footwear, vessels were inevitably sometimes placed in burials that also contained other items, and associations were recorded in a total of 13 burials. The other items with which vessels were placed were varied, and in general did not seem to form deliberate, persistent associations. The exception to this was a group of three very late burials, each of which also contained a glass vessel and included coins that provided a *terminus post quem* of AD 388 (1373, 1440, 1373, see above). In two instances the pottery and glass vessels had been placed on opposite sides of the head, and in the third they had been placed together on the same side of the head. It was notable that burials that had been provided with belt equipment or brooches did not include pottery, with the exceptions of the slightly unusual burials of an adolescent in Grave 745 and a child in Grave 1760, and it would appear that the burial rites of the adult individuals with these forms of equipment did not include the provision of such vessels and their contents.

Animal remains

Three burials contained faunal remains that are likely to have been deliberate deposits. The only instance in which the animal remains had clearly been placed with the burial was in Grave 870, in which a complete domestic fowl had been placed beyond the head end of the coffin. Domestic fowl were by far the most common species placed in burials at Lankhills, and accounted for six of the 10 deposits of animal bone found in burials in Clarke's excavations. In burials of the Roman period generally, although animal deposits occur only occasionally, domestic fowl are typically the most numerous: at the eastern cemetery of Roman London, domestic fowl was recovered from 15 of the 19 graves that contained animal remains (Barber and Bowsher 2000, 130), and all three animal bone deposits from London Road, Gloucester (Worley 2008, 120) were domestic fowl, as was the only such deposit at the Bath Gate cemetery, Cirencester (Viner and Leech 1982, 129). They were also present at Poundbury, but were outnumbered by sheep/goat, possibly due to a continuation of a local pre-Roman tradition of providing burials with food offerings of sheep/goat or pig (Buckland-Wright 1993, 110). The bird in Grave 870 was female, as were five of the examples from Clarke's excavations, with only a single cockerel. The locations in which the deposits of domestic fowl at Lankhills were placed were rather varied. Two burials from Clarke's excavations had birds placed inside the coffin and three outside, and grave 234 contained two birds, one inside the coffin and one outside. In grave 193 the bones had been scattered in the fill above the feet. The animals could be placed at either end of the grave, or in the middle. What this means as regards the place of such offerings in the sequence of funerary rites is uncertain. Birds that had been placed inside the coffin were obviously killed, and perhaps prepared and cooked if they were intended as food, before the coffin was closed, and in all probability before it was placed in the grave. Perhaps they had already been prepared before they were brought to the funeral. Those that lay outside the coffin, however, may have been freshly slaughtered at the graveside as part of the funeral, and it is open to question whether they represent food offerings for the deceased, sacrifices to the spirit of the deceased or to the chthonic deities, or some combination of these concepts (see further below).

The presence of horse skulls in the backfills of two Graves (530, 1547), and placed on the cremation deposit in cremation burial 655, is particularly intriguing, as it provides evidence that the funeral rites, and the deposition of offerings, did not necessarily end with the insertion of the coffin, but may have continued during the backfilling of the grave. The absence of the mandibles from the skulls in Graves 655 and 1547 suggests that these objects were deposited as skulls rather than fleshed, although there is no direct evidence for defleshing, for example in the form of cut marks on the bones. Horses are not commonly associated with funerary contexts, the most frequently deposited species being domestic fowl, sheep/goat and pig (eg Philpott 1991, 203-4). However, there is a growing body of evidence for at least an occasional association between horses and cemeteries. Within the northern cemetery of Winchester, two horse inhumations were recorded at the early cemetery at Victoria Road East, one of a complete animal and the other containing two partially articulated specimens, as well as a pit containing the disarticulated remains of a man and a woman buried with the sacrum, pelvis and femur of a horse (Browne *et al*. forthcoming). A large horse skull and hoof had also been placed in the particularly substantial late Roman grave of an infant at Victoria Road West (ibid.). Further afield, horse remains, including at least one group of 14 bones, were reasonably common at Trentholme Drive within the Mount cemetery, York, although none were certainly associated with any of the burials (Wenham 1968, 104-9). Also at the Mount cemetery, a 'large amount of horse bones' was recovered from the coffin of a decapitated burial at Driffield Terrace dating from the late 3rd century (Hunter-Mann 2006). Horse was over-represented in grave backfills and non-burial deposits at the eastern cemetery of Roman London in comparison to its frequency at sites within the town (Barber and Bowsher 2000, 79), and included an apparent ritual deposit of a horse, a dog and a deer arranged nose-to-tail at the base of a pit (ibid.,

19-20). Butchery marks are rare on these remains, in contrast to cattle bones from similar contexts, and Barber and Bowsher have dismissed most of the horse remains at the eastern cemetery of Roman London as the result of the dumping of carcasses, and suggested that the area of the cemetery was also used as a knacker's yard (ibid., 80). This interpretation, however, seems somewhat doubtful as it is suggested that most of the animals appear to have been deposited intact, with no evidence for dismembering or use of the carcasses (ibid.). An explanation of these deposits as forming part of some practice related to the funerary use of the cemetery seems more plausible. Away from the major towns, the occurrence of four horses and a dog with human burials in the south cemetery ditch at Dunstable is particularly noteworthy (Matthews 1981, 11). In the rather different context of cremation burial the occurrence of horse is generally rare, with the 3rd-century cemetery at Brougham forming the only significant exception to this at present (Bond and Worley 2004, 325-6, 330-1).

At Lankhills a dog mandible recovered from the backfill of Grave 710 and a sheep/goat mandible from Grave 950 may be incidental inclusions, although the apparently deliberate placing of the horse skulls within the backfills of Graves 530 and 1547 serves as a warning that objects within the filling of graves may have formed part of the funerary process. The dog mandible can be paralleled by a similar bone from a grave fill in the eastern cemetery of Roman London that exhibited a cut mark on the lingual surface possibly inflicted during defleshing (Barber and Bowsher 2000, 77), and the complete dismembered remains of a dog were recorded in the backfill of cenotaph 400 at Lankhills during Clarke's excavations, as well as an intact dog lying on the coffin (Clarke 1979, 150). Although not an exact parallel for the sheep/goat mandible, a rib of this species had been placed under a flagon in grave 47 of Clarke's excavations (1979, 150), and at Poundbury many of the animal deposits similarly consisted of no more than ribs or partial limbs (Buckland-Wright 1993, 110).

Equipment

Combs

Combs had been deposited as grave goods in five burials (Graves 530, 810, 1270, 1280 and 1355; comb fragments were also recovered from the fill of Grave 136), a considerably lower frequency than was recorded for Clarke's excavations, which recovered combs from 21 graves. Of the burials from the OA excavations that contained combs, four were located near the southern edge of the area investigated, and it appears from this that they were provided less frequently in the northern part of the cemetery. However, twelve of the graves with combs recorded by Clarke's excavations were located east of ditch 450/F.12, and it is possible that further examples were located in the corresponding area east of the OA area of excavation. Their prevalence east of this boundary (Fig. 7.10) suggests that there is a chronological aspect to their distribution, and is consistent with Cool's suggestion (Chapter 4, this volume) that they are rather late in date, coming into use during the last third of the 4th century. This suggestion also receives support from the stratigraphic evidence, since only two such burials from the OA excavations and one from Clarke's excavations were cut by subsequent burials, indicating that they were interred toward the end of the use of the cemetery.

Three of the combs were buried with adult females, one with an adult of undetermined sex, and one with a child aged 4-7 years. Two of the females were aged over 45 years (the age of the third could not be established), which supports the suggestion that combs were often deposited with older females (Cool Chapter 4, this volume). Eleven of the burials from Clarke's excavations that contained combs were of adult females, and only two of males, the sex of one of whom was not a definite identification. The combs had been placed in a variety of locations: the comb in Grave 810 was near the head, those in Graves 530 and 1280 on the chest, the one in Grave 1270 lay beside the right hip, and the comb in Grave 1355 was located in the bottom corner of the coffin. They were, however, always located within the coffin, as would befit such a personal effect.

According to Cool (Chapter 4, this volume) 'combs may have been prestige items and indicated that their owners came from the wealthier echelons of society'. None of the graves from the OA excavations that had been provided with combs contained any other grave goods that might indicate the status of the occupant, although three of those from Clarke's excavations (63, 333, 369) were quite richly furnished. It is possible that most of the graves with combs lacked other grave goods because the items most commonly buried with female burials, particularly items of jewellery, were not thought appropriate for individuals of the age and status of those who were buried with combs. If burial with a comb was, indeed, an indicator of status, it is possible that the virtual absence of these items toward the northern limits of the cemetery indicates that this area was reserved for the burial of individuals of lower status, although as discussed above the distribution of combs may also have been influenced by chronological factors.

Spindle whorls

Shale spindle whorls had been placed with five burials from the OA excavations (785, 1000, 1590, 1705 and 1930 (Fig. 7.11), a further example from the upper fill of Grave 595 was not securely associated with this grave), and presumably represent the surviving element of spindles that were originally deposited intact, the wooden distaff having decom-

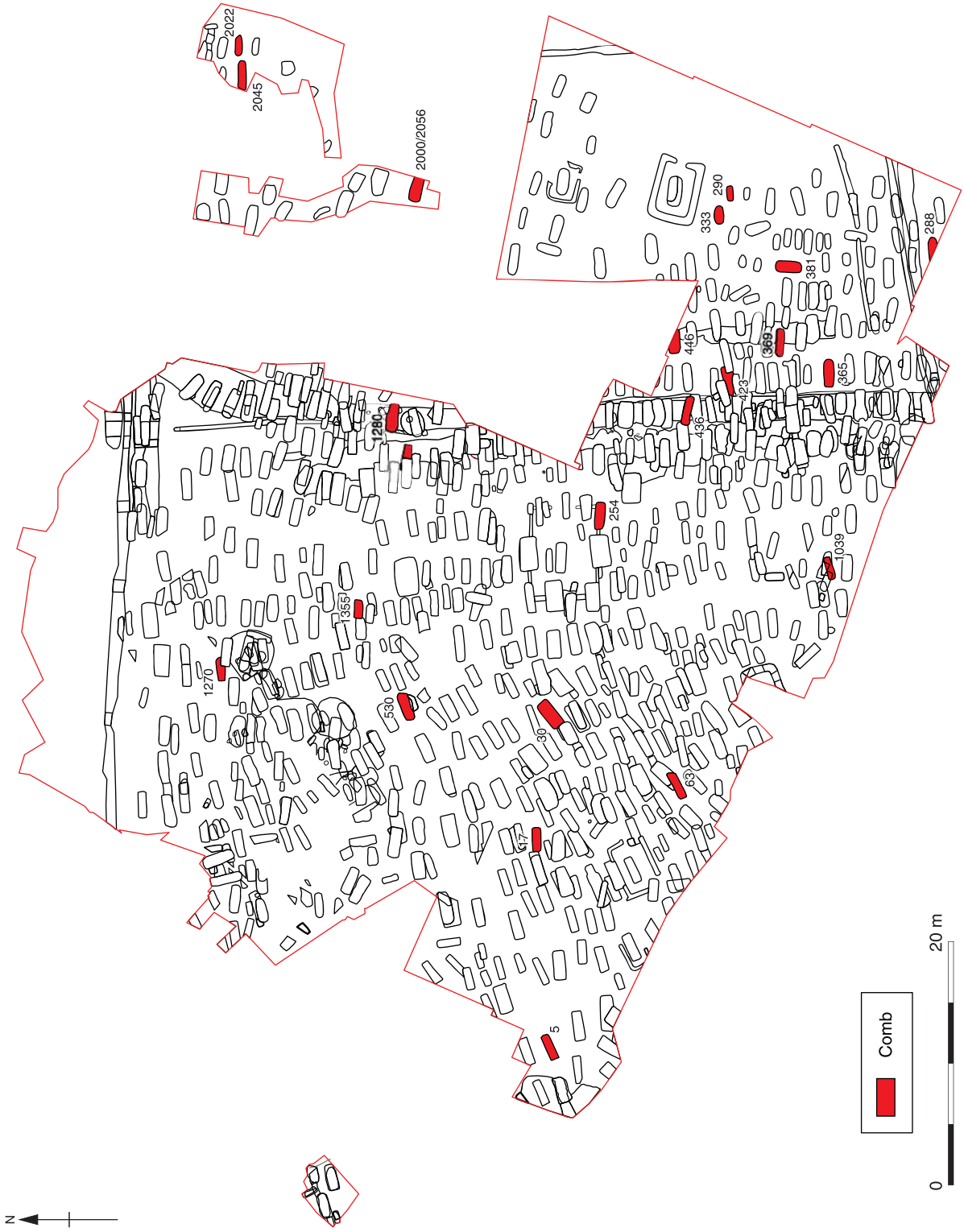


Fig. 7.10 Distribution of graves with combs

posed (distaffs occasionally occur in graves in other materials, such as an ivory example from Hürth-Hermülheim, near Koln (discussed with other examples in Gottschalk 1996)). Like combs, they appear to have been placed only with female burials. Two of the five burials (1000, 1590) were certainly of females, and the remaining three were of unsexed adults (785, 1705 and 1930). Clarke's excavations recorded nine individuals buried with spindle whorls, comprising four females, three unsexed adults and two subadults. One of the unsexed adults (396) was buried with other grave goods appropriate to a female, namely a bracelet worn on each arm. The two individuals from the OA excavations that could be assigned a more specific age range were older adults, aged 36-45 years (785) and 45+ years (1000), but the age ranges of the burials from the earlier investigation were more varied, the most common age range being 18-25 years, which accounted for four individuals. The locations in which spindle whorls were placed within the grave appear to have been quite circumscribed, particularly compared to those for combs, with all but one of the spindle whorls from both excavations having been placed near the legs or feet, regardless of whether they were placed within or, more rarely, beside the coffin. The one exception was the example from Clarke's grave 329, which had been placed in the general area of the chest, although the extremely poor skeletal preservation in this grave precludes being more specific.

The evidence from sites where spindle whorls have been found in more closely dated contexts suggest that they came into use around or shortly before the middle of the 4th century, and were predominantly an artefact of the second half of the century, rather than being evenly distributed in both halves of the century as Clarke (1979, 248) suggested. The dating evidence from the Lankhills graves with spindle whorls is consistent with this, comprising a coin of AD 330-48 from Grave 1705 of the OA excavations, and from Clarke's excavations a coin of the House of Constantine (AD 350-64) from grave 329, a group of six coins from grave 336, the latest of which are two issues of Constantius II (AD 350-61), and a single coin of Valentinian I (AD 364-75) from grave 396. It is notable that none of the burials with spindle whorls was associated with coins of the House of Theodosius, and this may suggest that the placing of these objects had ceased before the final part of the century. This suggestion receives some support from the spatial distribution of these graves, which contrasts markedly with the distribution of burials with combs in being scattered throughout the area west of ditch 450/F.12, with only one instance in the area of later burials to the east.

Cool (Chapter 4, this volume) has suggested that spindles had been buried with these individuals because they were considered to be an appropriate accoutrement for the mistress of the household, perhaps symbolising her responsibility for domestic production. Their potential importance in this regard is supported by their occasional appearance in tomb iconography, as for example on the tombstone of Regina at South Shields (Phillips 1977, 91). The possible loom weight placed with the adult female buried in Grave 1015 may have had similar associations. On occasion, spindle whorls were certainly placed with individuals of status and wealth, as in examples from Dorset with burials that had been placed in lead coffins or stone cists (Philpott 1991, 184), or the burial within a mausoleum and accompanied by jewellery of precious metals at Normangate Field, Castor (Wilson 1969, 219), but whether this means that the individuals at Lankhills were of such status is uncertain (see Cool, Chapter 4). The coin from Grave 1705 and a pot in Grave 1830 were the only other grave goods from burials with spindle whorls in the OA excavations, but the instances from Clarke's excavations provided a much larger and more varied assemblage of goods, notably the collections of jewellery placed with the younger individuals in graves 117, 326, and 336. These latter groups are likely to reflect the social identity of these individuals as girls or young women rather than necessarily indicating wealth.

Knives

The total of seven burials accompanied by knives from the OA excavations (930, 1175, 1310, 1760, 1805, 1921 and 3030) was identical with that recorded during Clarke's excavations. In most cases only the iron blade was preserved, although in the example in Grave 1310 the antler handle survived, as did a bone handle and silver guard in the case of the knife in Grave 1805. It is likely that the other knives were fitted with wooden handles, which have not survived. Two of the knives (in Graves 1310 and 1760) were everyday domestic knives, but the remainder, including all seven from Clarke's excavations, may potentially have been considered as weapons. They are referred to here for convenience as 'fancy knives'.

The latter were frequently associated with belt sets, and it is likely that they were worn, during life and in at least two instances at burial, in a sheath suspended from the belt. This was apparent in Graves 1175 and 1921, in both of which the knife was located near the right thigh of an individual buried wearing a belt. The burial of the child in Grave 1760 was accompanied by a knife that had been placed to the right of the head, with a group of other grave goods including a belt and an iron ring that may have formed part of the fastening that attached the knife sheath to the belt. The knife in Grave 3030 may have been in a similar position, although it is difficult to be certain as the skeleton did not survive. The knife in Grave 930 appears to have been placed on the lower part of the torso, and that in Grave 1805 lay beneath the lower part of the left leg. Clarke (1979, 151) interpreted three of the

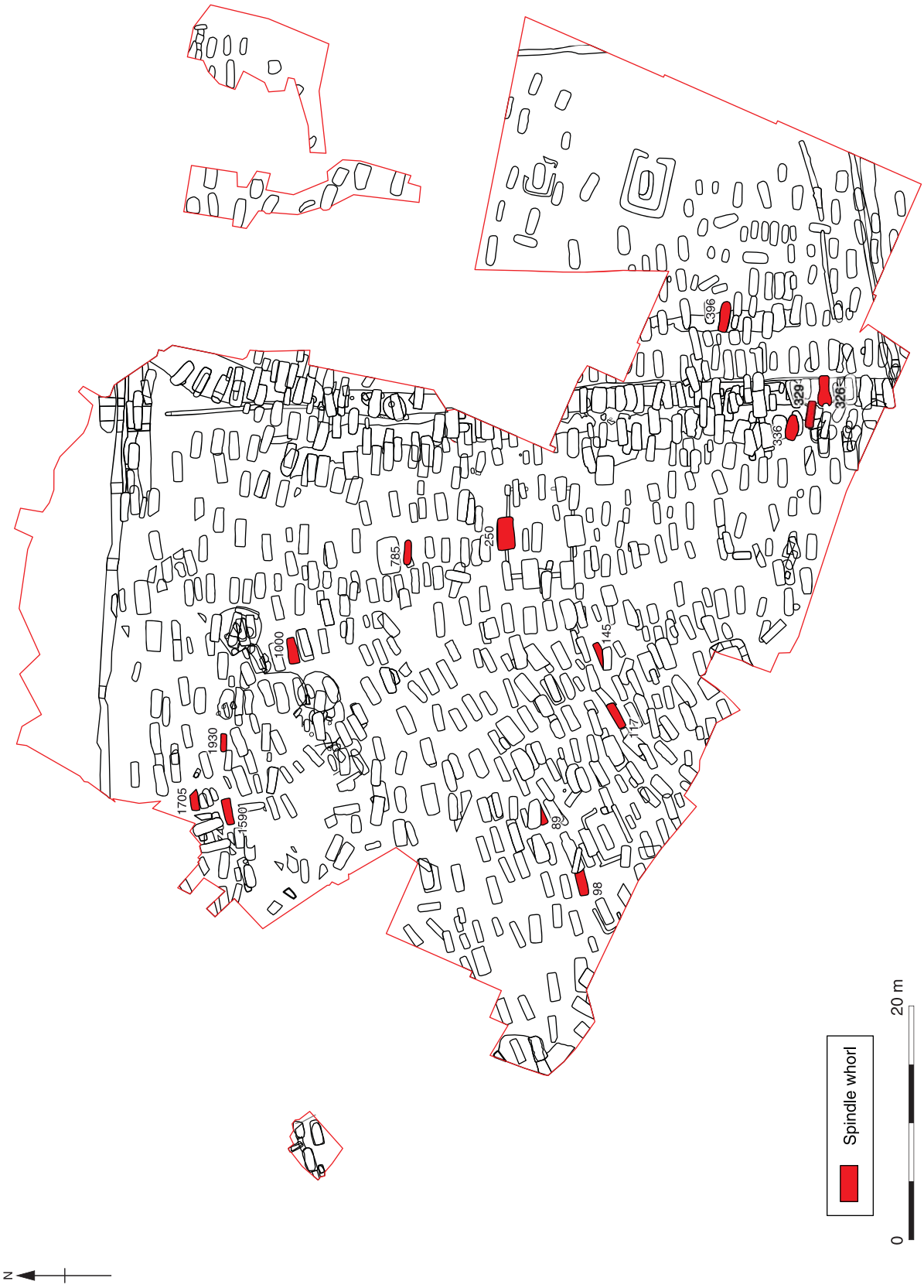


Fig. 7.11 Distribution of graves with spindle whorls

knives from the 1967-72 excavations as having been worn on belts at burial, while a further two had been placed at the foot of the coffin underneath belts to which the sheath was presumably attached.

Knives appear to have been exclusively associated with burials of males. Five of the seven from the OA excavations had been buried with adult males (930, 1175, 1310, 1805, 1921), one with a child aged 4-7 years (1760), and one came from a grave in which no skeletal material was preserved (3030), but which also contained other typically male accoutrements in the form of a crossbow brooch and belt buckle. All but one of the knives from Clarke's excavations were associated with a male individual, the exception being an unsexed adult in grave 418. It is striking that the 'fancy knives' from both excavations were exclusively associated with adults, none of them younger than 25 years, and it seems likely that possession of these items was both a sign of status and an age marker. The association of three of these items from the OA excavations (Graves 1175, 1921, 3030) and six from Clarke's excavations with belt sets, which are themselves an indication of rank, would suggest this, as would the incidence of crossbow brooches with one of these individuals from the OA excavations (Grave 3030) and two from the earlier investigation. A knife was found buried with a possible female burial at Hyde Street (Rees *et al*. 2008, 150), but as this was a domestic utensil it may have little bearing on the placing of the other types with the burials of distinguished males.

The child in Grave 1760 and the adult male in Grave 1310 had both been buried with everyday domestic knives rather than 'fancy knives'. It is possible that the child was from a high status background and would in time have been expected to merit a 'fancy knife' but, at so young an age, had yet to do so, and that consequently a substitute was provided for the funeral. Grave 1310 was one of only three from the two excavations that contained a knife but no other grave goods, and it is possible, and perhaps likely, that the deposition of this item did not share the symbolism of other knife burials.

The custom of placing knives with burials appears to have been practised during the latter part of the use of the cemetery. None of these graves demonstrably dates from the first half of the 4th century, and some certainly dated from the end of the century, if not the early part of the 5th century. Two of the burials from the OA excavations (1175, 1760) were accompanied by a coin of the House of Theodosius (AD 388-402), and Grave 1805 contained three coins of the House of Valentinian (AD 364-378), while the latest of three coins in one of the graves from Clarke's excavations was an issue of the House of Theodosius and two other graves had coins dating from the second quarter of the 4th century. Stratigraphically, all except grave 443 of Clarke's excavations were the latest burials in their respective sequences, indicating that they belong to the final phase of the cemetery. The antler handle of the knife from Grave 1310 is also characteristic of a date during the late 4th century or later as antler became a more commonly-used material at that time.

Belt equipment

Belts were not worn by the bulk of the population of the later Roman world, but were an accoutrement generally reserved for individuals of rank. Belt equipment was recovered from eight inhumation burials during the OA excavations (745, 1075, 1175, 1760, 1846, 1921, 1925 and 3030; Fig. 7.12), as well as from cremation burial 1180. Only two of these belts, in Graves 745 and 1846, were represented by both a buckle and a strap end, and the former grave also contained a second strap end that may have formed part of a second belt or of an attachment for a knife sheath (see below). Five burials (1175, 1760, 1921, 1925 and 3030) contained belts that comprised only a buckle, including two graves (1921, 1925) that each had two such belts, and in Grave 1075 only a strap end was recovered, presumably representing a belt that lacked a buckle and was secured simply by tying it in a knot. A similar range of types had been recorded by Clarke's excavations, which had additionally uncovered a belt with neither buckle nor strap end, represented only by a line of studs (Clarke 1979, 31).

Belts appear to have been predominantly an accoutrement associated with adult males. Only two of the graves for which they were provided were burials of subadults, comprising a young child and an adolescent, and the two adults that could be assigned a sex were both male. Although no body was preserved in Grave 3030, the size of the grave pit is such as to suggest that it was dug for an adult. The individuals from Clarke's excavations that had belts were even more overwhelmingly male: seven of the 14 adults were male and one was possibly female. The individual assigned by Gowland (2002) to the '?female' category had been sexed as male in the original publication (Clarke 1979, 24) and so this identification should be regarded with some caution. Alternatively, it is possible that it was acceptable among the Roman population of Winchester for some females, such as this individual, to adopt certain traits that were more commonly associated with a male persona.

The two adult individuals for whom an age could be established were 45+ years (Grave 1175) and 60+ years (Grave 1921) at death, and this forms part of a clear association of belts with older individuals that was apparent in the results of Clarke's excavations: of seven adult individuals for whom an age could be established, only one was aged less than 35 years. This may indicate that these items were obtained through merit or associated with seniority and were placed in the grave as a symbol of the status gained by the individual. In the case of the child in Grave 1760 and the adolescent in Grave 745 this is of course unlikely, and it may be that the belts placed

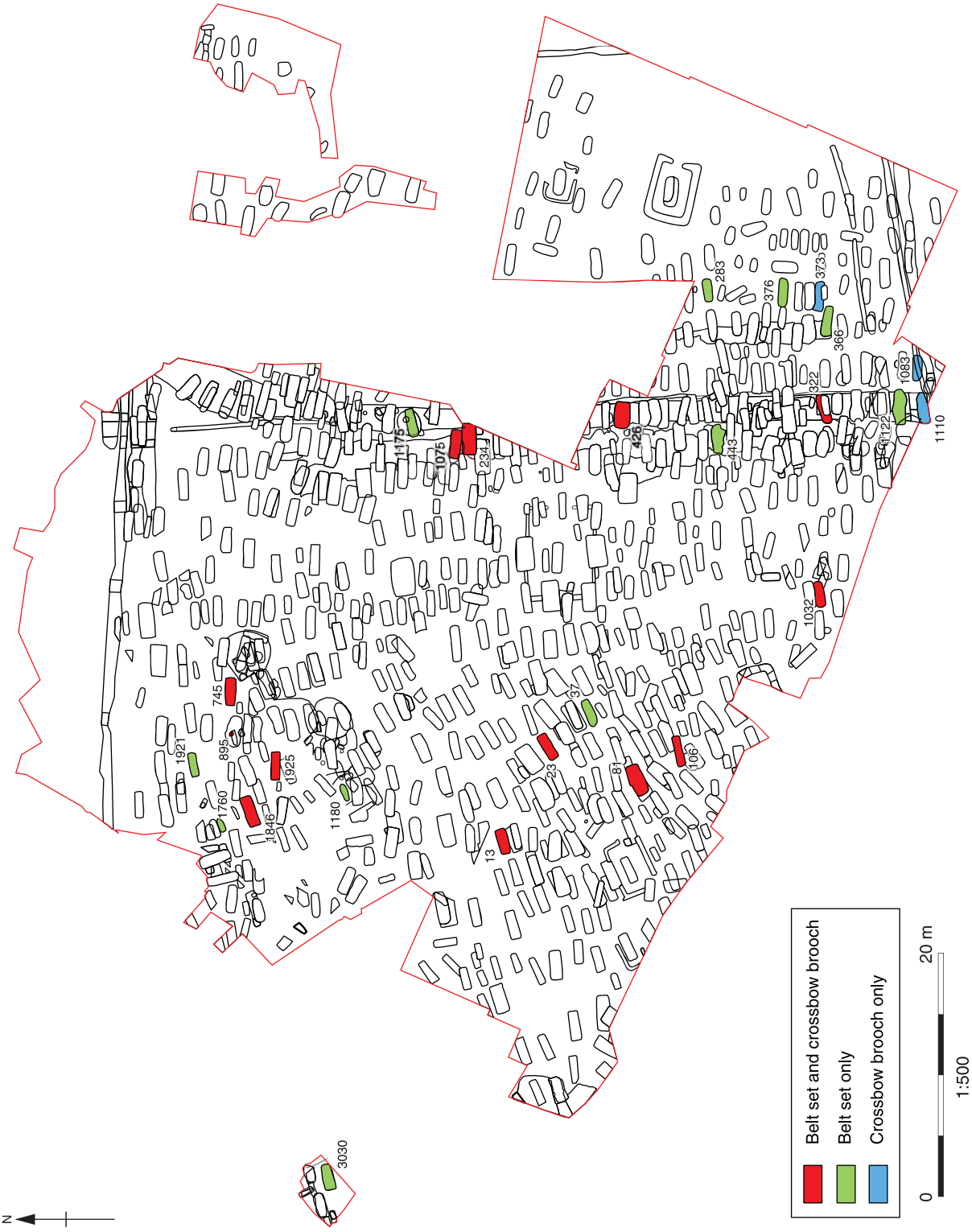


Fig. 7.12 Distribution of graves with belt sets and crossbow brooches

with them had been the property of a senior member of their family, or symbolised the manhood that they had not attained. The belts in Grave 745 had been placed at the feet, and that in Grave 1760 beside the head, but in all but one of the adult graves from the OA excavations with belts these were probably worn at burial or were in a position consistent with having been worn (in the case of Grave 3030 the evidence is unclear since the skeleton did not survive), as was the case with eight of the 14 adults from Clarke's excavations. The exception to this pattern from the OA excavations was Grave 1846, in which the belt had been placed on or between the legs, perhaps because the body was clothed in a way that would otherwise have hidden the belt from view. The recognisably older individuals seem all to have been buried wearing their belts, although this apparent pattern should be treated with caution on account of the number of individuals that could not be aged any more specifically than 'adult'.

The belts recovered from the OA excavations are all of types that were current during the second half of the 4th century and the early part of the 5th century (Cool, Chapter 4, this volume). The evidence from Grave 745 was slightly at odds with this, as it contained a New Forest ware flask/jug dated to AD 300-350, but this probably indicates no more than that the vessel was deposited some time after its probable date of manufacture. Graves 1175 and 1760, on the other hand, both contained coins of the House of Theodosius and provide a clear indication that belt equipment continued to be deposited with burials down to the end of the 4th century, if not beyond. The dating evidence from Clarke's excavations was similar; one burial contained an issue of the House of Theodosius and four had coins issued during the third quarter of the century. There were also four burials that could be attributed to the second half of the century on the basis of pottery, two of which were unlikely to date before the final quarter of the century.

Four of the burials that contained belts also included knives (Graves 1175, 1760, 1921 and 3030), and it is likely that the knives were usually worn in a sheath suspended from the belt, as discussed above. Burials 1760 and 3030 both contained plain metal rings that may have had some role in attaching the sheaths, although in both instances the knives were not worn at burial but were placed beside the body, presumably in their sheaths. Four similar rings found in grave 443 of Clarke's excavations had mineralised leather preserved in their corrosion products and a buckle and a knife in positions that would be appropriate for them to have been attached to a sheath in which the knife was placed. In Grave 1760 the belt and ring, along with the knife, lay to the right of the upper part of the body, and are likely to have been placed in a pile with the sheath attached to the belt. In Grave 3030 the knife, and probably the ring, appear to have been in a similar position to their equivalents in Grave 1760, but it is uncertain whether the belt was similarly placed beside the body or whether it was worn at burial. The location of the knives in Graves 1175 and 1921 is consistent with their having been attached to the belts worn by the individuals in these graves, although no evidence survived for the means of attachment, which was presumably therefore constructed entirely from organic materials. Burial 745 contained a ring similar to those in Graves 1760 and 3030, as well as a second strap end that could also have been part of the suspension for a sheath, but no knife was present. It is possible that the absence of the knife in this case was connected with the young age of the individual, who was an adolescent.

Brooches

Crossbow brooches

Five of the eight burials furnished with belt sets had also been provided with a crossbow brooch (745, 1075, 1846, 1925 and 3030; Fig. 7.12) and the same combination was also seen in cremation burial 895. There were no crossbow brooches in burials without belt sets. This association between the two items was also observed during Clarke's excavations, which recovered a total of eight crossbow brooches, all but one of which came from burials that had also been provided with belt sets. All the brooches were bronze, although the example from Grave 1846, which was by far the largest, was originally gilded all over and had an inscription on either side of the bow. The inscription is carried out in black lettering that is normally described as being of niello (in this instance copper sulphide). One side of the brooch has the wish VTERE FELIX ('good luck to the user'), and the other reads VENE VIVAS. VENE is thought to be a variant for BENE, with the inscription intended to read BENE VIVAS ('live well') (Cool, Chapter 4, this volume). A single gilded crossbow brooch, which was similarly of unusually large proportions, was also recovered during Clarke's excavations (1979, 259).

It is well known from pictorial and burial evidence that crossbow brooches were worn at the (right) shoulder, fastening cloaks with the foot pointing upwards (Swift 2000a, 3-4). The locations of the brooches at Lankhills in relation to the bodies with which they were buried indicate that some were worn at burial, but others were placed in the grave unworn. The examples in Graves 1075 and 1846 were both located in approximately the correct position to have been worn in this way, the former on the left shoulder and the latter on the right, although in both instances the preservation of the skeleton was too poor to be absolutely certain. Mineralised textile remains found on the brooch from Grave 1075 are likely to derive from the garment that it secured, and a few fibres were also found on the head of the brooch in Grave 1846 (Walton Rogers, Chapter 4, this volume). Four of

the brooches from Clarke's excavations were in the correct positions to have been worn, although three of them were the 'wrong way up', that is with the foot pointing downward. Two of these items were also associated with mineralised textile remains. The brooch in OA Grave 1925 lay on the individual's torso, as may have the one in Grave 3030, although in this burial no skeletal material survived. Although not in the normal positions, it is possible that these brooches were also used to pin items of clothing, as mineralised remains of cloth of unknown type were attached to the brooch in Grave 1925, and the pin of the brooch in Grave 3030 pierced a leather strap. Whether the items to which they were attached were worn at burial is less certain. Three of the four unworn crossbow brooches from Clarke's excavations were also located on the torso, and it is possible that the brooches in this position were attached to items of clothing that had been placed in a pile on the body. This may have been a practical way of displaying particularly sumptuous garments or those associated with a specific status, particularly if the body was shrouded or clothed in a cloak or other item that would obscure such garments had the individual been dressed normally in them for burial. Securing the brooch to the top of such garments would have ensured that it was clearly visible, which may have been considered important because, as a symbol of the individual's status, the brooch may have been included in the grave for more than practical reasons. The brooch in Grave 745 was definitely not used to secure clothing, however, as it had been placed against the side of the coffin, to the left of the individual's knees.

Crossbow brooches had been provided for the burials of three adults whose sex could not be determined, a probable adult (in Grave 3030) and an adolescent. It is likely that most, if not all of these individuals were male, as these items and the associated belts are typically a male accoutrement. The examples from Clarke's excavations accompanied the burials of three adult males, a possible adult female, and four unsexed adults. As mentioned above, there may be some doubt regarding the sexing of the individual described as a possible female. None of the adult individuals from the OA excavation could be aged with any precision, but the evidence from Clarke's excavations suggests that, like the practice of wearing belts with which it was associated, crossbow brooches were worn by older men. One of the three adults from that investigation who could be attributed to a specific age category was aged 35-49 years at death and two were at least 50 years old at death. It may be worth noting that one of the older individuals, buried in Clarke's grave 13, was accompanied by one of the two gilded examples, and this may suggest that the most senior individuals were marked out by the size and showy nature of their brooches. It is particularly unfortunate in this context that the remains of the individual buried with the gilded brooch in Grave 1846 were too poorly preserved to allow ageing or sexing.

The practice of placing crossbow brooches with a small number of burials appears to be characteristic of the later part of the use of the cemetery. All six brooches from the OA excavations (including the example from cremation burial 895) can be attributed on typological grounds to the last two thirds of the 4th century and the early 5th century (Cool, Chapter 4, this volume), and the independent dating evidence is consistent with this. The only brooch recovered from a grave that contained other datable artefacts was the example buried with the adolescent in Grave 745. This was associated with a New Forest ware flask/jug dated to AD 300-350, although a later date was suggested by the presence of two strap ends datable to the second half of the century. Rather more examples associated with dating evidence were forthcoming from Clarke's excavations. The brooch in grave 13 was associated with a coin of the House of Constantine dating from AD 350-60, grave 81 contained two coins of Magnentius (one a copy dated AD 350-64) and a copy of one of Constans (AD 348-64), while a coin of Valentinian I (AD 364-75) was recovered from grave 322. Pottery vessels dating from the second half of the century had been placed in three burials that contained brooches, including a bowl from grave 373 that dated from the very end of the century. Some of the brooches may have been in use for a considerable period of time before they were deposited with these burials, as is demonstrated by evidence for wear and repairs. The pin of the brooch in Grave 1925 had been replaced, as had that of the example in Grave 1075. The latter also lacked both the central knob and its safety bolt, as did the gilded brooch in Grave 1846. The brooch in Grave 745 was missing its foot. It is likely that the gilded brooches were particularly prized possessions, and both the example from Grave 1846 and the one from Clarke's excavations were noticeably worn.

The brooches did not, of course, exist in isolation, but formed part of the costume of the individual. This would have been true even in the instances where brooches had been placed on or beside the body rather than being worn at burial, as the garments with which they were normally worn may have been placed with them. By the time the cemetery at Lankhills came into use, forms of clothing that required fastening with a brooch had largely gone out of use (Croom 2004, 294), and so the individuals who were buried with these brooches may have been distinguished both by the display of such ostentatious ornaments and by the unusual clothing with which they were worn. The association of brooches with belt sets (above) is very marked, and together they seem likely to have been part of the equipment of probable officials or (perhaps less likely) military personnel (see further below).

Penannular brooches

The two penannular brooches recovered during the OA excavations are the first such items to be discovered in the cemetery. Both appear to have been worn at the time of burial rather than deliberately placed with the body, and, in contrast to the crossbow brooches, may have been regarded as entirely practical items rather than having any symbolic significance. The bronze brooch buried with the remains of an adult female in Grave 780 was located at the waist, and Walton Rogers (Chapter 4, this volume) has suggested from its position and from textile remains preserved in corrosion products on the pin that it secured a woollen mantle. The example in Grave 1440 was of iron, and accompanied an adult male. This brooch also preserved some textile remains and is likely to have secured a cloak at his right shoulder. The presence of the brooches indicates that both individuals were clothed at burial rather than wrapped in shrouds.

Penannular brooches were in use throughout the Roman period, but are unusual finds in 4th-century cemeteries (Cool, Chapter 4, this volume). Grave 1440 was one of the group of late burials that contained coins of the House of Theodosius (AD 388-402) and provides evidence that these items were still in use in Winchester down to the end of the Roman period. Their use in burials elsewhere continues through the 5th-7th centuries, and both copper alloy and iron examples occur locally, for example in the early Anglo-Saxon cemetery at Worthy Down (Hawkes with Grainger 2003, 34, 65). Brooches of this type can be considered as 'culturally undiagnostic' in a post-Roman context (Carver *et al*. 2009, 81-82).

Personal ornaments

Personal ornaments are defined here as bracelets, necklaces and finger rings which, in contrast to the belt sets and brooches, were associated with the burials of females. They occurred in a total of 14 burials, comprising nine subadults, three adult females and two unsexed adults. This is consistent with the association of such items with the burials of children and females observed during Clarke's excavations (1979, 152) and more widely. All but one of the 14 burials that contained personal ornaments included bracelets. The number of bracelets in each grave varied from one to 16, although most instances were toward the lower end of this scale, and only four graves contained eight or more bracelets. Four of the burials containing bracelets had also been provided with bead string necklaces, and four, including two with necklaces, also had rings. Three of the four burials that had necklaces were also among the four with the largest assemblages of bracelets, and included the only two graves that contained both necklaces and rings. The only burial that contained an item of personal ornament but did not contain any bracelets was in Grave 885, the burial of an unsexed adult provided with a single finger ring.

Only in two instances were the ornaments definitely worn at burial, and these were both the burials of children (Graves 1070 and 1866). The child in Grave 1866 wore a bronze bracelet on the right arm and two bronze and two bone bracelets on the left, and wore two bronze rings on the first finger of the left hand. The child buried in a prone position in Grave 1070 wore a bronze bracelet and a shale bracelet on the left arm and a silver ring again on the first finger of the left hand. It is not known whether the latter burial also had ornaments on the right arm, as the part of the grave containing this arm had been destroyed by the digging of subsequent graves. The arrangement of the bracelets in Grave 1866 was particularly interesting as all five of the individuals from Clarke's excavations who were buried wearing bracelets on both arms likewise had only a single bracelet on the right arm, in each case of bronze. Two individuals recorded in those excavations had bracelets only on the left arm. A bracelet in OA Grave 87 and a ring in Grave 885 may also have been worn; both items were located in the area of the pelvis, where the hands lay in a large number of burials, but insufficient bone was preserved to be sure whether this was the case in these burials.

In the burials in which personal ornaments had been placed unworn, they were placed in a single pile, irrespective of whether they included more than one type of object. The locations in which they were placed were varied: in three burials the ornaments had been placed within the foot end of the coffin, in three they were on the torso, two burials had ornaments placed beside the skull, one beside the left hip, and in Grave 495 a pair of bracelets had been placed under the upper part of the right arm. Beads only occurred in burials in which the ornaments were placed in the graves rather than worn.

The deposition of personal ornaments, with a particular emphasis on patterns associated with the age of the individual, has been discussed in detail by Cool (Chapter 4 above). Younger individuals were generally accompanied by the larger assemblages, the bulk of which consisted of bracelets; most of the graves with ten or more bracelets contained the body of an adolescent or child, whereas older women tended only to have only one or two bracelets. No simple pattern was identified regarding whether the items were worn or placed unworn. Bracelets could be either worn or unworn with an individual of any age, but beads were more commonly worn when accompanying adult women (although this was seen only in Clarke's burials and not in the OA excavation) but placed separately when the burial was of a child or adolescent.

Hairpins

Bronze hairpins were recovered from the burials of two adolescents (Graves 545, 985) and a bone example from the burial of an adult female (Grave

82). The adult was buried with a single pin, located near the feet, while the adolescents had three and two pins respectively, situated close to the skull. A further seven burials containing hairpins were recorded during Clarke's excavations, containing up to five pins and including two examples made from silver. The proximity to the skull of the pins that had been buried with the adolescents suggests that they were worn in the hair at burial. Such items were a necessary device for holding in place the elaborate hair styles that were sometimes popular in the Roman world, and their presence in these graves indicates that the arrangement of the hair formed part of the preparation of the deceased for burial. They may also have been used to secure headdresses: the pin in the burial of a child in Clarke's grave 323 was associated with fragments of glass and gilt bronze around and corroded to the skull, which are likely to be the remains of such an ornament, and it was also suggested that the disposition of one of the sets of beads in grave 336 was more consistent with their having been used to decorate the hair than with their being a necklace. No positive evidence for headdresses was found during the OA excavations. Hairpins were very much a fashion for girls (Cool Chapter 4, this volume). Few adult women were buried with them, and those that were tended to be younger adults. There is a negative correlation between the occurrence of hairpins and that of combs.

Pendant

A silver buckle pin in Grave 1355 appears to have been re-used as a pendant, and was found in the neck area of a child aged 4-7 years, where it was presumably worn at burial. Though it is of cruciform shape and thus to modern eyes possibly a Christian symbol, in antiquity it would not have had this meaning as the cross was yet to become the diagnostic image for the religion, and it is more likely that it had been selected for re-use due to the material and its convenient shape. This burial was also unusual in being the only non-adult burial that was accompanied by a comb.

Other grave goods

Four miscellaneous items appear to have been placed as grave goods: a pair of shears (Grave 730), a possible stylus (Grave 1940), a loom weight (Grave 1015) and a bone plaque (Grave 620). All of these items are rare in a burial context, and none had parallels in Clarke's excavations.

The shears had been placed with a poorly-preserved burial of which sufficient survived, however, to suggest that it was of an adult male and that the item lay on the left side of the body. There is evidence that the few known examples of these objects were buried with adult males (see Chapter 4 above), suggesting that they are male grooming tools.

The possible stylus was recovered from the burial of an individual aged 13-17 years, in which it had been placed near the right foot. Such items occur very rarely in burials in Britain, and in the absence of known associations there is little that can be said about it.

The loom weight, a chalk disc *c* 60 mm in diameter, had been placed within the foot of the coffin of a probable adult female. If its identification as a loom weight is correct, it is possible that it carried similar symbolism to the spindle whorls recovered from other graves, and that its association with textile production made it an appropriate accoutrement for the mistress of the household.

The bone plaque (SF 1536) from Grave l620 was an incomplete object with the inscription DIVV[, which has been expanded as DIV VIVAS. The reading seems almost certain. Inscribed objects of this nature are extremely rare in Romano-British burial contexts and the parallels have been discussed by Hilary Cool (Chapter 4 above). Among the closest are two objects from York which mirror different aspects of the Lankhills piece. The openwork strip (RIB II.3, 2441.11) with the motto SOROR AVE VIVAS IN DEO is undoubtedly of Christian significance, and presumably indicates something of the woman with whom it was buried, notwithstanding the presence of other grave goods (Toynbee 1968, 190-1; Hartley *et al*. 2006, 156-7). The second object (RIB II.3, 2441. 7), a simple bone plaque with the inscription DOMINE VICTOR VINCAS FELIX, is closely comparable to the Lankhills one in the general character of the lettering and the 'serrated' edges, the main differences being that the letters of the York piece are larger and arranged on two lines. A third piece, a plaque fragment from Richborough (RIB II.3, 2441.18), 23 mm high, with notched edges like the Lankhills and the York examples, has the legend]S VIVAS, here enclosed within lines scored inside the notched edges.

It is notable that four of the five examples (including the Lankhills piece) of what can loosely be termed 'motto plaques' do derive from burials. Only the York openwork piece is unequivocally Christian in character. The other York example is presumably not, and the status of the remaining pieces in this regard is uncertain. It is of course possible that the Lankhills example originally carried a longer legend, such as (perhaps) DIV VIVAS IN DEO, but this is highly speculative. This specific word combination is not found in RIB II; VIVAS IN DEO (or variants) occurs five times on its own, as well as being included in the longer York motto, while VIVAS as a single word or in combination with another (eg PIE VIVAS or PIVM VIVAS, RIB II.3, 2417.34 and 2420.36 respectively) is very common, although only one other example of DIV VIVAS is noted in Britain, on a spoon from St Neots, Cambridgeshire (RIB II.3, 2420.25).

The location of the Lankhills object is curious. It lay beside the right foot of the adult female placed

in Grave 620, in an area occupied by the remains of a pair of nailed shoes (unworn) and the fragmentary remains of a neonatal infant, of which only parts of the skull and torso survived. The bone plaque could therefore be seen as associated with the neonate rather than with the adult, although in this case the significance of DIV VIVAS might presumably be a hope in relation to the afterlife rather than of earthly relevance. Is it possible that this is indicative of Christian belief? The loss of part of the plaque, which might have provided further indications, is particularly unfortunate in this regard; it was presumably a result of the extreme and sometimes very localised variation in burial environment seen elsewhere in the cemetery (see above Chapter 5), which probably also accounted for the loss of significant parts of the neonate skeleton – there is no indication of disturbance to this or indeed any other part of Grave 620.

Footwear

Quantifying the provision of footwear in the burials is somewhat problematic, as organic materials such as leather were not generally preserved, and so only in those instances where items of footwear had an inorganic component did any evidence survive. Footwear was identified in 112 burials from the OA excavations, comprising 111 instances represented by hobnails, 20 of which also had boot plates, and one burial (1846) in which footwear was represented by a pair of copper alloy spurs, attached to one of which was some mineralised leather. Whether this provides an accurate representation of the frequency with which footwear was placed in the grave is uncertain, however, as shoes could also be made without hobnails or other metal components. At New Fresh Wharf, London, for example, 33% of the assemblage of *c* 150 shoes dating from the 3rd century were not nailed (MacConnoran 1986, 218), and at the adjacent Billingsgate Buildings site, dating from the 1st and 2nd centuries, 79 of the 147 shoes recovered (46%) had no metal components (Rhodes 1980, 103). Although the shoe assemblages from these sites may provide some indication of the relative proportions of nailed and un-nailed shoes in use in Roman Britain, it is possible that particular types, whether with or without hobnails, may have been considered appropriate for placing with burials at Lankhills. This is particularly so as the shoes appear to have had more than a merely practical significance, as is demonstrated by the relatively common practice of placing items of footwear in the burials in addition to those that were worn.

The burials of males were slightly more likely to be accompanied by hobnailed footwear than those of females. Shoes were present in the graves of 47 males (50% of the graves sexed as male) compared to 37 (41.1%) of female graves. Clarke (1979, 180 and 370) attributed a similar pattern in the data from the 1967-72 excavations to a decline in the number of female graves accompanied by shoes during the later 4th century, and although the results of the OA excavations may be consistent with this, insufficient graves with footwear could be closely dated to confirm this chronological development. Only two infants were provided with hobnailed footwear, perhaps because such young children usually went unshod, but older children were as likely as adults to be buried with shoes. Indeed, subadults aged over three years were slightly more likely to be buried with shoes than were adults, with 45.9% of this aged group being treated in this way compared to 43.5% of adult burials, but the difference is so small that it is unlikely to have been significant. The frequency with which footwear was provided for adults is almost identical to the figure recorded by Clarke's excavations, in which hobnails were recovered from 43% of intact adult graves (Clarke 1979, 180, table 28).

Only in 16 graves was it possible to be certain that the shoes were worn at the time of burial, although in a further 55 graves hobnails were located in close proximity to the feet, and it is likely that most, if not all, of these represent footwear that was worn. In the graves where footwear was worn at the time of burial it is difficult to be certain what, if any, significance these items had, as it is probable that the bodies had been buried clothed, and that the shoes were included merely as part of the individual's normal attire. Indeed, in such circumstances it is questionable whether the shoes should be considered to be grave goods at all, if these are to be defined as objects deliberately placed in the grave for some conscious reason, be it practical or symbolic. Of course, even if the dead were buried dressed in their 'normal' clothes it is still possible, and perhaps likely, that specific items of clothing were selected, and need not have represented their everyday wear.

Items of footwear that were definitely not worn had been placed in 40 burials, and clearly indicate that the provision of footwear formed a significant element of the funerary rites. These graves include one (1015) in which one or more items were placed beside the right leg of an individual who was buried wearing shoes, and two burials (Graves 277 and 570) in which additional shoes had been placed beside the coffins of individuals who had been buried with shoes which may have been worn. In 18 burials the unworn shoes had been placed inside the coffin, and in 16 instances they were outside the coffin. In two instances shoes were located so close to the edge of the coffin that it was not possible to be certain whether they were inside or outside, and unworn shoes were provided for three burials without coffins. They were generally placed in the vicinity of the legs; in graves where the shoes had been placed inside the coffin, they were under the feet or the lower part of the legs in four instances, on either side of the legs in two, and otherwise either beside the legs or at the foot of the coffin, while in the graves where they were outside the coffin they

were placed either at the foot of the grave or beside the part of the coffin where the legs were. Shoes were placed at the head end of the grave in only two burials (Graves 685 and 990). Two graves each contained a pair of shoes placed in different parts of the grave; in Grave 635 one shoe had been placed at the foot of the grave and one beside the left side of the coffin, and in Grave 1941 one shoe was located under the right leg and the other beside the left thigh. An unusual example was provided by Grave 590, which contained an adult male who, in addition to a pair of shoes placed beside the coffin, had been buried with a single hobnail held in his left hand and another placed on his chest.

Offerings in grave fills

Objects found in the fills of a number of graves may have been deliberately deposited during backfilling. The presence of these items may indicate that the funeral rites were not considered complete until the grave had been fully closed, and that rituals which on occasion included the deposition of artefacts continued during the backfilling. Alternatively, these objects may have been used during earlier parts of the ceremony, and were now consigned to the grave because their association with the funeral rites was believed to have rendered them unfit for use by the living (Lindsay (2000) has discussed in detail the concept of ritual pollution resulting from contact with death).

The best evidence for this practice was in the form of horse skulls that had been placed in the backfills of three burials, the most striking example being cremation burial 655, a *bustum* burial of an adult ?male in which the horse skull had been placed on the surface of the cremation deposit immediately prior to backfilling, with the lower part of a large jar inverted over the nose and a small jug placed beside it. These and other animal remains have been discussed above.

Coins were recovered from the fills of Graves 22, 1000 and 1491 and may also represent deliberate deposits (as eg Philpott 1991, 212). However, as in each case only a single coin was found, it is impossible to be certain whether they were placed during the funeral or were incorporated accidentally.

Clarke's excavations also identified numerous instances of objects within the grave fills that may have been deliberate deposits (Clarke 1979, 145-6 and table 15). The most compelling of these were the bones of a domestic fowl that appears to have been dismembered during backfilling and its remains scattered over the feet of the burial in grave 193, a cluster of bracelets, beads and pins placed in the fill of grave 100, the remains of three glass vessels in grave 398, and two pewter bowls from grave 408. Individual coins interpreted as deliberate deposits were recovered from the fills of graves 376 and 401, the former being a rare coin of Licinius II in particularly good condition. A variation on this practice was encountered in graves 329 and 451, in which disarticulated bones disturbed from earlier graves had been reburied, in each case accompanied by a pottery vessel. In the former instance a flagon had been placed next to the bones (originally from grave 328), and in grave 451 it was noted that the bones and a jar, originally from grave 447, lay in a particularly compact pile, as if they had been deposited in a sack (ibid., 91).

That the process of backfilling the grave was regarded as an integral part of the funeral rites should elicit no surprise. Classical sources, albeit of earlier date, emphasised that it was the covering of the body with earth that was considered to be the essential element of the funeral (Cicero, *De Legibus*, 2. 22. 55; Varro, *De Lingua Latina*, 5.23). An insistence on the completion of the backfilling forming part of the funeral would also be characteristic of the nature of Roman religious ceremonies, with their emphasis on correct recitation and performance.

Commemorating the dead

The closing of the grave did not necessarily mark the end of the obsequies. Classical writers recorded that it was customary for the family of the deceased to eat a funerary feast, the *silicernium*, at the grave-side and to return on the ninth day after the funeral for another meal, the *cena novendialis*, at which a libation was poured to the spirit of the deceased (Toynbee 1971, 50-1). Mourners also visited the grave on several other occasions throughout the year to commemorate the dead, both at public festivals, the most important of which was the *parentalia*, a festival of the dead lasting from February 13th to 21st, and for more private observances such as the birthday of the deceased (ibid., 50–54). These celebrations usually took the form of a meal eaten at the grave-side, a portion of which may have been set aside for the deceased and libations poured. It was not unusual for individuals to leave money in their wills to be spent on such commemorations (Hopkins 1983, 233). The sources that record this information were generally of an earlier date than the burials at Lankhills, were concerned primarily with the practices current among the upper echelons of Roman society, and were geographically biased toward Rome and Italy, but there is some evidence that such traditions were also imported into Britain. A number of tombstones bear reliefs that depict scenes of dining presumably intended to represent funerary or commemorative feasts, such as Tombstone 1 from London Road, Gloucester (Henig and Tomlin 2008, 116-7) and examples from York (Tufi 1983, 25-29, nos 40-43) and Chester (Henig 2004, 14-16; for the wider context see Stewart 2009). The pouring of offerings to the dead person, whether during such commemorations or on other occasions (eg Toynbee 1971, 52) is evidenced in Britain by graves excavated at Colchester and Caerleon that were constructed with holes or pipes through which food and drink could be physically poured down into the grave (Wheeler 1929; see also

Philpott 1991, 29). It is possible that the two complete imbrices found in the fill of Grave 256 (see Poole, Chapter 4 above) had been used to form an opening for this purpose, as seen for example at Chichester (Down and Rule 1971, 72), although they might also have served as a grave marker (for an imbrex fragment used as a marker at Butt Road, see Crummy and Crossan 1993, 102) or even as packing. At Lankhills, several deposits may be interpreted as offerings placed to commemorate the dead after the funeral. The pit dug into the fills of Grave 1110 may have been intended to facilitate the placing of such offerings, and Clarke (1979, 145-146, table 15) has suggested that the deposits recovered from the fills of graves 100, 398 and 408 from the 1967-72 excavations, discussed above, could have been buried in pits dug into the grave fills but not recognised during excavation. Offerings may also have been placed on the ground surface around the grave. Groups of pottery and coins were recorded around the mound sealing Clarke's grave 323, and similar objects may have been associated with other nearby graves. Unfortunately, due to the greater truncation of the area investigated by the OA excavations, the Roman ground surface did not survive here and so the potential for the discovery of such deposits was much less, but a New Forest ware jar was found in an inverted position within a layer of soil (1696) interpreted as being the mound over Grave 1622.

CREMATION BURIAL

The 25 cremation burials encountered in the OA excavation (Fig. 7.13) form a significant addition to the smaller group of seven such burials already identified from Lankhills (Clarke 1979, 128-130, 350-351). Their concentration in the north-western part of the excavated area emphasises the particular character of the spatial distribution of this rite. In addition to this location, a few cremation burials were located at or close to the original eastern boundary of the cemetery, with only two examples (Clarke's burials 26 and 60) lying in the main part of the cemetery west of this feature. Clarke (ibid., 129) did stress, however, that cremation burials of 'topsoil burial' type might not have survived across much of the site, and that numbers could therefore be underestimated (and distributions skewed). Nevertheless it may be noted that very little cremated human bone was recovered during the OA excavations except from the identified cremation burials and a very small number of other features (see Boston and Marquez-Grant, Chapter 5 above). This does not mean that truncation was not a problem, but the widespread occurrence of fragmentary cremated material that might have been expected if large-scale truncation had taken place was not identified.

The concentration of cremation burials in the north-western part of the cemetery (see Chapter 2) was not straightforward, however, as this activity seems to have occurred in two distinct stages. At least four cremation burials (1742, 1798, 1806 and 1904) were assigned to a stratigraphically early phase of activity in this area. All were un-urned, but Burials 1742 and 1806 incorporated the remains of animals burnt on the funeral pyre and Burials 1798 and 1806 both contained nails suggesting that footwear was also placed on the pyre, although in the latter case the nails were from a 'backfill' layer rather than the principal deposit containing cremated remains. With the possible exception of the absence of cremation urns there is nothing that distinguishes these burials from the main group of cremation burials found here and elsewhere on the site. Chronology is a slightly open question since so few of the pits which were stratigraphically linked with these early burials produced useful dating material. Pottery associated with two of the burials, however, included sherds in fabrics for which a 4th-century date is most likely. Burial 1904 also produced a radiocarbon date calibrated at 95% confidence to AD 84-254 and 308-312 (see Chapter 6). The majority of this range falls considerably earlier than the likely date of the burial, although the discrepancy is not so extreme as with Burial 1845, perhaps also to be assigned to the stratigraphically early cremation burial group, cremated bone from which produced a calibrated radiocarbon date (95% confidence) of 38 BC-AD 60, despite the presence of sherds of pottery in fabric SG which appears to be fairly consistently of 4th-century date. It is difficult on present evidence to resolve the problem presented by these apparently anomalous radiocarbon dates, and their significance remains uncertain, although it is perhaps worth considering the possibility that cremated remains of some antiquity were moved to the present site and redeposited as part of some rite of establishment of the cemetery.

It is not clear if cremation-related activity continued consistently in the north-western part of the site once the practice was established there. It was certainly maintained in this area in the later Roman period although, as already mentioned, occasional examples of the practice were encountered further south and, more particularly, adjacent to the original eastern boundary of the cemetery. A majority of these examples were dated after AD 350 (Clarke 1979, 129-130).

In total, just over half of the 25 OA cremations consisted of simple, apparently un-urned, depositions of cremated material, typically in small pits. Grave goods were rare, although evidence for items placed on the pyre was more consistently present. This consisted principally of animal remains, including most notably an example of a complete dog (in Burial 1845), and hobnails derived from footwear. The occurrence of a crossbow brooch and probable belt fittings as pyre goods in Burial 895 is also particularly noteworthy. It indicates, inter alia, that the cremation rite did not exclude members of the distinctive group of probable officials/military personnel (eg Reece 2007, 155-157) whose presence is reflected by these objects.

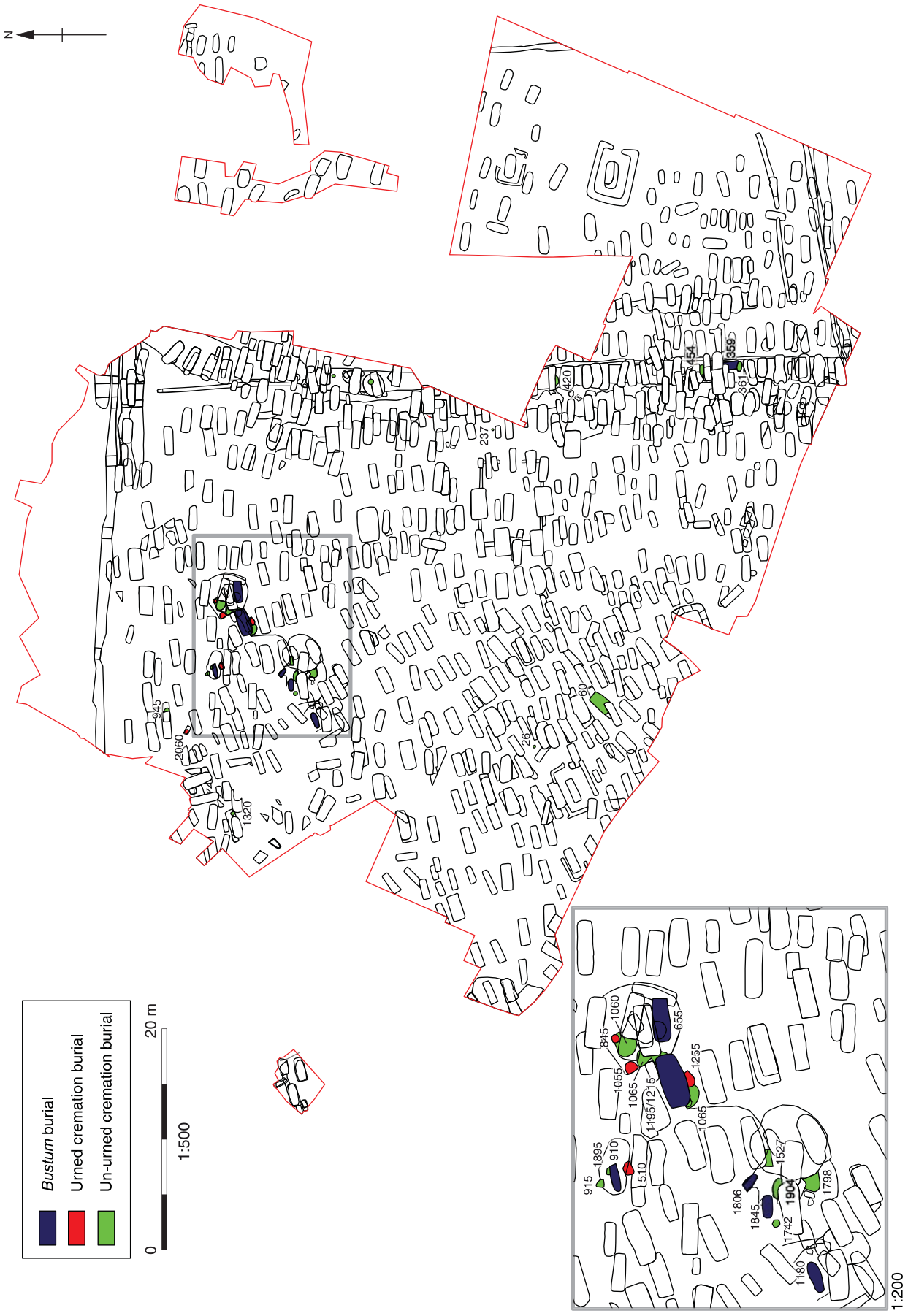


Fig. 7.13 Distribution of cremation graves

The other cremation burials included five urned burials and seven *bustum* burials. The urned burials were generally simple – indications of pyre debris among the associated burnt remains were slight, and only in Burial 510 was there additional material, a fragment of a flanged bowl, that might have been a grave good. This burial was later than an inhumation which contained a coin of AD 364-378, but the other urned cremation burials were not closely dated, either on the basis of stratigraphic associations (845 cut an earlier cremation 1060 which in turn cut inhumation Grave 970; 2060 cut inhumation Grave 445) or the urns themselves, which were only broadly dated to the 4th century.

The use of pottery in relation to the cremation burials is of some interest. Of the five cremation urns, three were in the local grog-tempered fabric SG and the other two were in New Forest grey ware. There was only a single fine ware ceramic grave good from a cremation burial, a fabric TR jug in Grave 655. This was associated with a horse skull, and the base of a very large jar in fabric SG (see above). The only other possible ceramic grave goods associated with cremation burials were also in fabric SG. A small jar in this fabric came from Burial 1180. Only part of this vessel survived so its status is slightly uncertain, but truncation of the grave (which only survived to a depth of 0.13 m) is as likely an explanation for the fragmentary nature of this jar as the suggestion that the sherds were simply redeposited in the backfill from elsewhere. A further vessel in fabric SG, a flanged bowl in Burial 510, may also have been a grave good, or possibly served as a cover for the cremation urn in that burial.

A further characteristic of the cremation-related pottery is the occurrence of three more fabric SG jars apparently as pyre goods, in Burials 1060, 1195 and 1215. Again, uncertainties about the degree of truncation of the burial deposits make interpretation of these vessels difficult (see Chapter 4 above), as it is impossible to say if they were originally deposited as complete, albeit fragmentary, vessels. These vessels have signs of cracking and differential discoloration of joining sherds. Some warping is also evident, but this does not seem as extreme as might be expected had the vessels been placed directly upon the pyre. It is perhaps as likely, therefore, that they were set closely adjacent to the pyre, rather than upon it. Such an action could be interpreted in two ways. It may simply have been the way in which all pots intended for inclusion as grave goods were treated. It may be, however, that the vessel placed beside the pyre was the intended container for the cremated remains, as has been suggested for some of the black-burnished ware jars at Brougham (Evans 2004, 358). Whether such placement represented an act of purification of the vessel, or simply emphasised the association between the cremation urn and the deceased, is unknown. Equally uncertain is the question of how the vessels were used if they became fractured as a result of being placed too close to the pyre – were they still employed as containers of cremated remains, or were they placed in the grave anyway on the basis that this was their assigned place, whether or not they were still performing their originally intended function?

The association of cremation burials with vessels in fabric SG is thus very marked. That it should contrast markedly with the pattern seen in the inhumation burials is explained principally by the functional differences between the two assemblages, but the almost total absence of fine ware vessels as grave goods in the cremation burials is notable and suggests a very different emphasis in grave furnishing, underlining the potentially fundamental difference between cremation and inhumation burial traditions. Fine ware beaker sherds did occur in cremation burial deposits in reasonable numbers (see Table 4.5), but at levels comparable to those in the fills of pits and ditches, so it is perhaps most likely that they were redeposited. It is just possible, however, that beakers played a role in the cremation-based burial rite that did not, in contrast to the inhumation burials, culminate in their deposition as complete vessels within the grave.

Busta

Seven possible *busta* (655, 910, 1180, 1195, 1215, 1806 and 1845, summarised in Table 7.5) were identified in the OA Lankhills site, to add to the one (grave 359) identified by Clarke (1979, 129) and accepted by Struck (1993b, 82, 92) as being of this type. Identification of this burial type can be problematic, but the examples in question here can be regarded as '*Grubenbusta*', involving a pit beneath the cremation pyre, in Struck's terminology (ibid., 82). Clarke's grave 359 and most of the OA Lankhills examples showed evidence for *in situ* burning, with typical salmon-pink colour changes at least to the upper sides of the grave pits. The carbonised remains of tubers, low growing grassland weeds and molluscs also indicate burning of exposed soil in the sides of the pit rather than of uprooted material which could have been placed on a pyre in any location. The reducing atmosphere likely to result from the condition of burning within the pit rather than in an above-ground pyre structure would also help to explain the excellent preservation of tubers and small rootlets in some of the samples (Challinor, above Chapter 6).

In the four cases where the cremated bone was collected in a number of samples from the head to the foot of the grave (cf. Bel *et al*. 2008), *in situ* burial could be demonstrated. The bone usually appeared to lie upon a spread of charcoal, and charcoal and *in situ* nails (the latter probably in at least three examples) suggest that the pits were possibly wood-lined or, perhaps more likely, that they contained the remains of a wooden bier or coffin on/in which the corpse had rested above the pyre fuel, unless it was the case that the nails simply derived from

Table 7.5: Summary of evidence for bustum burials

	Grave						
Characteristic	655	910	1180	1195	1215	1806	1845
Length (m)	1.95	1.19	1.45	2.20	2.44	>0.80	1.00
Width (m)	0.73	0.39	0.55	0.60	1.14	0.40	0.40
Depth (m)	0.43	0.39	0.13	0.68	1.20	0.25	0.30
Burning of pit sides	Y	NR	NR	Y	NR	NR	Y
Significant deposit of charcoal at base	Y	?Y	Y	Y	Y	?Y	?Y
Quantity of human bone (g)	1641	1277	1567	1308	1156	1052	171
Max fragment size of human bone (mm)	82	65	42	95	70	70	33
Human bone distributed anatomically	Y	NR	Y	NR	NR	Y	Y
Sex	M?	F?	M?	?	M?	M	-
Age	Adult	36-45?	18-25	Adult	Adult	Adult	c 2
Nail patterns suggest coffin/bier	?N	-	?Y	?Y	-	?N	?Y
Pyre goods: artefacts	glass		buckle & plate;poss belt plate	coin AD 364-378; hobnails			
Pyre goods: animal	bird and cattle	sheep mandible /head	large and medium-sized mammal			bird bone, large and medium-sized mammal	dog and sheep
Grave goods	horse skull and 2 associated pots on surface of grave fill				bird bone in backfill?		jar in backfill - possibly incidental

NR - not recorded

structural timbers reused for the pyre. One certain and two possible cases of burnt wooden linings, the former involving nails hammered into the walls of the pit, were noted at Brougham, Cumbria and were tentatively linked with a process of burning of the pit for purification prior to the placement of deposits of cremated bone and other burnt and unburnt objects (Cool 2004, 465). There is no suggestion of comparable processes at Lankhills, however.

In terms of their form the Lankhills examples appear more straightforward than the Brougham burials. They are possibly problematic with regard to charcoal, because while significant quantities of charcoal would normally be expected to be recovered from the bases of *bustum* burials, only one of these burials (1806) produced enough charcoal to merit analysis, and this assemblage was still small and poorly preserved (Challinor above). It is clear from the site records, however, that significant quantities of charcoal were present in all these features, as indicated by the observations (above) about the relationship of the cremated bone to underlying charcoally deposits, but it seems that this material was typically very highly fragmented and that in most cases it was decided on site not to sample the deposits.

Despite this problem, there seems little doubt that the rite of cremation burial of *bustum*-type was practised in 4th-century Winchester. The quantities of cremated bone (see Table 5.55) recovered from these graves are certainly consistent with this interpretation. The significance of the rite is less clear. Superficially it appears isolated in both geographical and chronological terms (eg Struck 1993b, 83), but this is less the case as a result of recent work, which has broadened the evidence base in both these respects as well as in relation to the types of site (essentially military sites and major towns) with which Struck (ibid.) considered the rite to be associated. Notable early Roman examples include those from the 'small town' cemetery at Pepper Hill, Springhead, Kent (Biddulph 2009).

The site at Bray, Berkshire, included in Struck's (1993b) survey, provides interesting parallels for the late Roman *bustum* burials at Lankhills, and, at a distance of roughly 65 km to the north-east, is physically the closest site with analogous, approximately contemporary burials. Excavated in 1969-1971 (Stanley 1972), the site has never been published, although various draft reports exist in Reading Museum, despite which many aspects remain unclear. Among other elements, however, a small group of burials comprised 12-14 inhumations (various numbers are given) and 7 cremations. The majority of burials were aligned roughly NW-SE, with a smaller number approximately perpendicular to these (NE-SW). Most of the burials described as cremations (labelled C1-C7) are features of comparable size to the inhumation graves and of rectangular or sub-rectangular form, although one large but less regular pit (C3) contained what appears to have been a standard

cremation burial placed in an Alice Holt grey ware jar of later 3rd- to 4th-century type. Photographs suggest that at least some of the features claimed as *busta* appear to have burnt edges, and a sample of burnt (adult) human bone from C2 includes large fragments (up to *c* 100 mm in length) of variably burnt bone very similar in character to some of the material from Lankhills. If this is representative (not all the human bone was seen) then there could have been as many as six burials of this type, interspersed with inhumation burials. Two of the cremation burials (C5 and C6) are described at one point in the draft report as being of infants, but this is not mentioned elsewhere and the graves in question were at least 1.2 m long and probably larger. While there are difficulties with the detailed chronology of the site and, as might be expected, very little material can be specifically linked with individual graves (although mortaria associated with one of the inhumations (Stanley 1972) appear to be standard late Oxfordshire white ware types), there is no particular reason to doubt a late Roman date. A very narrow date range of AD 325-350 is given in one account (Wilson 1971, 301), while the inhumations included examples that were thought to be both earlier, contemporary with and later than the *busta*. The reason for assigning five of the inhumations to a phase dated by Anglo-Saxon pottery is not clear. There is no obvious Roman or post-Roman material from these graves, so the question must remain open. On balance, the cemetery, which is unlikely to have been completely exposed, contained late Roman inhumations and perhaps as many as six *bustum* burials, likely to be of 4th-century date, plus a further cremation burial.

More recent excavation by Cotswold Archaeology at The Lea, Denham (Berkshire), some 15 km ENE of Bray, has revealed part of a mixed rite cemetery including inhumation and cremation burials and perhaps as many as 20 *busta*, mostly aligned NE-SW (Coleman *et al*. 2004; L Coleman pers. comm.). Dating evidence is limited, but one of the *busta* contained a miniature pottery vessel dated 'no earlier than the second quarter of the 3rd century' (Coleman *et al*. 2004, 16) and another produced pottery of mid 3rd- to 4th-century date, while one of the adjacent inhumation graves contained late 3rd- to 4th-century pottery. Rather further north, an isolated burial of this type has been recorded recently just west of Bedford. This comprised a rectangular pit with burnt sides; its lower fill contained abundant cremated human bone, charcoal and nearly one hundred nails. Two complete pottery vessels from the burial were a large, locally manufactured jar and a smaller Nene Valley beaker dated to the 4th century (Chapman *et al*. 2009, 247). A further isolated example of this rite, potentially of later Roman date, is known from adjacent to a small villa at Didcot, Oxfordshire (Cotswold Archaeology 2003, 28-29).

The wider significance of these burials remains uncertain, but the relative proximity of the examples at Bray and Denham could suggest the existence of a local/regional tradition. Whether the Lankhills examples can be seen as part of the same tradition is questionable, but the more or less contemporaneous juxtaposition of conventional inhumations, urned cremation burials and *busta* is seen at all three sites and suggests broad similarities of practice. Part of the interest of the Bray and Denham cemeteries lies in their rural location, which contrasts with the military and urban associations considered by Struck (1993b, 83) to be typical of burials of this type, albeit mainly in the early Roman period. The settlement context of Bray is uncertain, but there is nothing at Denham to suggest the presence of high status rural settlement in the immediate vicinity (Zeepvat and Radford 2006). Inference from this limited evidence is speculative. There is no particular reason to suppose that the rite in these contexts and at this time is an intrusive one, in contrast to the situation in the mid 1st century AD when it first appeared in Britain (Philpott 1991, 48; Struck (1993b, 84) considers the possibility of a pre-Roman origin in Britain, but this does not convince). Nevertheless, its apparently *de novo* re-emergence in the late Roman period is surprising and raises questions which cannot be answered on present evidence.

Apart from the *bustum* burials, the excavated remains provide a paradoxical picture in terms of the possible status of the cremated individuals, represented by small features containing simple assemblages of charcoal and burnt bone. In these burials the expenditure of resources was arguably on the process of cremation itself, in the provision of materials for the pyre and, in some cases at least, offerings upon it, and the (probably specialist) expertise involved in operating it, in contrast to the effort expended in inhumation, represented by the excavation of the grave and (sometimes) the placement of valuable items within it.

OTHER RITUAL ACTIVITY WITHIN THE CEMETERY

The area of the cemetery exposed within the OA excavation was notable for the number of pits revealed. Clusters of pits were located in the central part of the site and at the south-western corner, and individual examples were found elsewhere. The digging of these features appears to have been a significant, if occasional, activity within the cemetery. Indeed, it is possible that the digging of the pits in the central part of the site was a particularly significant act, as the area thus defined was subsequently used for two unusual groups of burials, comprising a group of cremation burials dating from the early part of the 4th century and a dense cluster of burials dating from the later part of the use of the cemetery that included further cremation burials and three prone burials, as well as more conventional inhumation burials. The consistency of the spatial correspondence between the pits and

these later burials was too exact to be a coincidence. Pit 847 was dug into the backfill of Grave 1110, which formed part of this cluster of later burials. A substantial pit (1671) was also dug into the silting of ditch 450/F.12. This pit, like the group of pits in the central part of the site, had subsequently been used as the location for one of the latest group of burials (Grave 1175), and it is tempting to see this association as deliberate. None of these pits contained artefactual evidence regarding their function, however, the only finds being a few items such as small quantities of undistinctive pottery that appear to have been incorporated into their fills incidentally.

The digging of these pits within the cemetery was clearly not done accidentally, and may be associated with a distinctly Romano-British practice of ritual activity involving wells and shafts that Webster (1997) has argued resulted from the syncretism of an existing native practice of propitiatory rites associated with storage pits and other subterranean locations (Cunliffe 1992) with a Graeco-Roman tradition of chthonic ritual. The use of such features as a means for communicating with the underworld is well attested in the Graeco-Roman world. It is possible that at least part of the population of Britain was familiar with such practices. The pits at Lankhills may have been receptacles for libations or other offerings involved either in attempts to communicate with the dead or with chthonic rituals intended to harness their power (see also Ross 1968; Luck 1985).

Offerings were also made to the dead on specific occasions, and the apparently deliberate association of pit 847 with Grave 1110 (see above) may be an example of this practice. This grave contained no evidence for a body and may have been a cenotaph. It is therefore possible that special care in delivering offerings was deemed necessary because of the absence of the body.

Two other possible votive pits have been recorded within Winchester's northern cemetery at Victoria Road West (Browne *et al*. forthcoming). These pits were grave-like in form and contained assemblages of four and five pots but no human remains. These assemblages were considerably larger than those accompanying burials, none of which contained more than one vessel, and were interpreted as ritual deposits. Beyond Winchester, features have been identified at the Wotton cemetery, Gloucester (Simmonds *et al*. 2008, 137-8) and the cemetery accompanying the fort and *vicus* at Brougham, Cumbria (Cool 2004, 457-460) that may have been ritual rather than strictly funerary in nature. Similarly, an apparently structured deposit comprising a complete heron skeleton, remains of more than 80 frogs or toads, a number of shrews and voles and two broken but complete flagons was recorded in a pit within a cemetery at Clare Street, London (Merrifield 1987, 36). An East London cemetery pit containing remains of a horse, a dog and a deer (Barber and Bowsher 2000, 19-20) has been discussed above. Other features at Verulamium, both at Folly Lane (Niblett 1999) and St Stephens, also contain deposits of funerary material. The lack of finds from the Lankhills pits makes it uncertain how far they should be seen as comparable in character to those discussed here, but their close association with other cemetery features suggests that they were related in some way.

Changes in funerary rites

Although the burials that have been excavated at Lankhills probably took place over only a few generations, the rites conducted here were not static, but evolved, at times very quickly. If we are to use the evidence from the cemetery to better understand the community that used it, and the population of Roman Winchester and Roman Britain more generally, it is important that we appreciate its essentially dynamic nature. The funerary rites of this community were not an ahistorical constant, but were reworked in sympathy with the changes and stresses affecting the population during this turbulent and eventful century. The chronological dimension of these practices must be central to any narrative of the cemetery and its community.

There are, however, certain caveats that must be acknowledged in discussing the development of the funerary practices. Most of the observable changes relate to changes in the provision of grave goods, which inevitably results in a very partial interpretation, since it excludes the majority of the burials. Almost half of the burials did not contain grave goods, and this rises to nearly two thirds if those containing only items of footwear are excluded, and in the absence of stratigraphic relationships with independently dated burials the majority of these graves are inherently undatable. Their place within any chronological trajectory of the cemetery therefore cannot be assessed, and any changes over time in the prevalence of unfurnished burials remain undetectable. Although we may study changes in the practices that are archaeologically visible, the predominance of this silent majority of unfurnished burials should not be forgotten. Their weight of numbers demonstrates that they are likely to have represented the most common form of burial throughout the use of the cemetery, as they are at most cemeteries of the time (and, indeed, overwhelmingly so in many cases), and we should exercise caution in favouring the more 'interesting' furnished burials over them in our interpretations simply because those graves appear to offer more comprehensible information. Nevertheless, the changing pattern in the provision of grave goods is a genuine phenomenon and can make a significant contribution to understanding the rites practised here.

When burial started at Lankhills (see above), the prevailing late Romano-British inhumation rite, comprising burial in an individual grave, usually with the body placed in a supine position and often in a coffin, had already been securely established.

These basic elements of the burial rite did not change throughout the use of the cemetery. Of the 28 burials within the area of the OA excavations that could be attributed on the basis of associated coins or pottery to the early part of the use of the cemetery, before *c* AD 350, a total of 26 (92.9%) had been placed in coffins represented by iron nails. This is significantly higher than the proportion of coffined burials recorded for the cemetery as a whole, but of course relates only to graves containing datable grave goods. It is possible that this indicates no more than that grave goods and footwear were more frequently placed with burials contained in coffins, rather than necessarily implying that coffins were more common during the first half of the century. The results of Clarke's excavations, however, suggested that the provision of coffins was almost universal during this early period (1979, 143). Items of footwear were also commonly provided, being recorded in 14 (50%) of the burials attributed to this period, but of course the same caveats apply to these items also.

Apart from footwear, coins and pottery were the only grave goods that appear to have been placed with burials with any frequency during the early part of the use of the cemetery, although the number of graves thus equipped was small, and it is likely that the majority of the population went to the grave without grave goods. Coins issued before AD 350 had been placed in a total of ten graves from the OA excavations and 11 graves within the area of Clarke's excavations, and pottery dating from the same period was found in 28 burials excavated by OA and 30 by Clarke. Five graves from the OA excavations and two from Clarke's excavations contained both pottery and coins. The results of Clarke's excavations had appeared to indicate that the placing of coins was largely a phenomenon of the later part of the century (1979, 167), but in the OA excavations issues of the early part of the period were equally common. As at Lankhills, pottery was the most common grave good at Chester Road and Oram's Arbour, the two other cemeteries at Winchester that are believed to have been in use during the first half of the century. At those sites, however, graves provided with vessels were far less common than was the case at Lankhills: pots had been placed with only three of the 121 burials excavated at Chester Road and two of the 62 at Oram's Arbour (Ottaway and Rees forthcoming). Clearly, these items were placed with the burials of only a very small proportion of the population, but the graves of those individuals appear to have been concentrated at Lankhills.

Although other grave goods were rare during this period, a few were recorded. The adolescent in Grave 545 was buried with three bronze hairpins in her hair, the remains of a domestic fowl were placed at the head of the burial of the unsexed adult in Grave 870, and an adult female with a neonate, perhaps mother and child, were interred with the bone plaque in Grave 620. It was also during this period that a horse skull, lacking its mandible and therefore probably already defleshed, was placed over the burial of a neonate in Grave 1547. Among the graves excavated during Clarke's excavations that contained coins or pottery indicating a date during the first half of the century, the richest was grave 188, in which the remains of a child aged 4-7 years had been accompanied by a flagon, four bronze bracelets, two bronze rings and a bead necklace. Beads had also been placed in grave 199, and there was a bronze ring in grave 362, while animal bones occurred in three graves: a sheep/goat rib placed under a flagon in grave 47, and domestic fowl placed in graves 150 and 212.

During the second half of the 4th century radical changes took place in the assemblages of grave goods being placed with the dead at Lankhills. Whereas the range of objects that had been placed with burials during the early part of the century had been rather restricted, a much wider variety of types was included in burials from the middle of the century onward. This conclusion rather contradicts the findings of Clarke's excavations, which indicated that burials with grave goods became less common from the middle third of the 4th century onward (Clarke 1979, 371), but it is possible that some graves were dated too early in that report. Some of the diagnostic artefacts were attributed somewhat earlier dates than is now considered likely, although some of the artefact chronologies remain subject to debate, and it is also arguable that the dates assigned to some of the graves on the basis of the scoring of the vertical stratigraphy (ibid., 120-122) were rather more precise than the evidence would support.

The range of objects placed with burials during the later part of the 4th century included spindle whorls, combs and, in one instance, a loom weight placed with the burials of adult females, and items of jewellery including bracelets, necklaces and finger rings that were buried with females of all ages, while some adult males were buried wearing or accompanied by belts, brooches and knives. Many of these were items associated with the status, identity or role of the individual, and it would appear that, at least for some part of the community, the selection of grave goods was increasingly becoming a means by which mourners could express the social identity of the deceased (see 'Status and social identity' below).

At the same time as the range of grave goods placed with the dead was expanding, the deposition of pottery, formerly the most common type of grave good, became less fashionable, and vessels dating specifically from the middle or later part of the century were recovered from only nine graves (see Chapter 4). A similar decline had been observed during Clarke's excavations (1979, 371). The provision of coffins and footwear may also have become less common. The proportion of burials containing nailed footwear after *c* AD 350 fell to little over 30%, less than two thirds of the frequency with which

shoes were placed during the early part of the century. In the case of coffins, the initial reduction may not have been very significant. Some 82.9% of burials that contained grave goods indicating a date between *c* AD 350 and AD 388 had been placed in coffins, although as with the earlier period it is possible that coffins were less common in contemporary burials that lacked grave goods, and which consequently cannot be assigned a close date. However, there may have been a sharp decline in the proportion of burials provided with coffins near the end of the century. Clarke (1979, 143, 353-4) suggested that as few as half the burials interred after *c* AD 390 were placed in a coffin, and of the four burials certainly of this date recorded in the OA excavations, only two were coffined. Coins continued to be deposited more or less as regularly as during the early part of the century, although the locations in which they were placed within the grave became more circumscribed, with coins now mostly in the mouth or hand of the deceased.

The 'new' object types found in the later 4th-century graves need not have been introduced into the cemetery at precisely the same time, although they clearly came into use here over a period of only a few decades. The placing of an initially more limited range of artefacts was seen as legitimising the practice, leading to an expansion in the variety of items considered to be acceptable. Spindle whorls, placed predominantly with the burials of adult females, may have been among the earliest items to be introduced, as they appear to have come into use during the 340s (Cool Chapter 4, this volume), and one from the OA excavations had been placed in a grave (1705) that contained a coin dated AD 330-48. The deposition of bone bracelets may have started only a little later, but the combs are likely to date from no earlier than the final third of the century, and some of the bead types from the necklaces similarly indicate a date toward the end of the century (Cool Chapter 4 above). There is a hint that, in addition to possibly having started before that of most of the other types of artefact, the deposition of spindle whorls may also have petered out before the cemetery ceased to be used, since none of the instances from either excavation was associated with coins of the House of Theodosius, and only one spindle whorl was recovered from a grave located in the area of Clarke's excavations to the east of ditch 450/F.12, where the later burials were concentrated.

The results of Clarke's excavations suggested that there was a general decline in the standard of burials toward the end of the use of the cemetery, particularly after *c* AD 390: graves were shallower, with less care taken in squaring the corners and straightening the sides, coffins were provided more rarely, and the orientation of graves became less consistent (Clarke 1979, 144). The OA excavations were able to add little to these conclusions, as insufficient graves of very late date were found within this area.

A group of three burials located in the north-western corner of the excavation appeared to represent the adoption of a distinct set of funerary practices toward the end of the use of the cemetery. Graves 1373, 1440 and 1760 were sufficiently similar to each other, and sufficiently different from the other burials, that they appeared to form a coherent group. The burials, of two adults and a child aged 4-7 years, were located close together. The two adult graves (1373, 1440), which lay side-by-side, were aligned north-south, at right angles to the prevailing orientation, and had been dug through a number of earlier, west-east aligned graves. The grave of the child, located close by, was oriented west-east, and formed part of a row of four very closely spaced burials, the only such row identified in this area of the OA excavations. These factors alone suggest that the graves did not form part of the overall distribution of burials, but they were also distinguished by the consistency of their grave good assemblages. Each of the three had been provided with vessels of both pottery and glass and one or more coins, and there appears to have been some standardisation regarding the locations in which the vessels had been placed. In the adult burials the vessels had been placed on either side of the head. In Grave 1373 the pottery vessel, a New Forest ware colour-coated jug, had been placed to the left of the head and the glass vessel, a small conical beaker, to the right, and in Grave 1440 these locations were reversed, with the glass vessel, a hemispherical cup, on the left side and the pot, a New Forest ware colour-coated beaker, on the right. The vessels in Grave 1760, comprising a New Forest ware colour-coated beaker and a glass *tettine*, were not placed on either side of the head, but they were still located at this end of the grave, to the right of the head, where the other grave goods, comprising a coin, a studded belt and a knife, were also placed. Burials 1373 and 1440 were also unusual in having the largest groups of coins among the graves from the OA excavations, comprising seven and five coins respectively. Burial 1440 was the only one of these graves to contain a coffin, and none of the individuals possessed nailed footwear. It is uncertain, however, if these graves represent the burials of an intrusive group within the population of Winchester (see further below).

As well as contrasting with the practices seen at Lankhills during the first half of the century, these new patterns of deposition were also different from those in contemporary burials at the other cemeteries around Winchester, or indeed in known cemeteries elsewhere in Britain, which appear to have continued relatively unchanged from the earlier period. This is not to say that the objects themselves were unique to the cemetery at Lankhills. Combs, for example, had been placed in contemporary burials elsewhere at Winchester, with three recorded at Victoria Road West as well as individual instances at Andover Road and Hyde Street and one at St Martin's Close in the eastern

cemetery; jewellery was represented by bracelets from graves at Victoria Road West and Chester Road and hair pins from burials at Andover Road and St Martin's Close, and a knife had been placed with a burial at Victoria Road West (Ottaway and Rees forthcoming). Although some types of artefact, such as crossbow brooches, belt equipment and spindle whorls, have not been found in graves at Winchester except at Lankhills, they have been recorded as grave goods elsewhere in Britain (Cool Chapter 4, this volume; Philpott 1991). It would appear, however, that such items were placed in burials at Lankhills more frequently than was the case elsewhere, or, perhaps more pertinently, that individuals who were buried with such accoutrements were more likely to be buried at Lankhills than at any of the city's other cemeteries.

PEOPLE

Physical remains

The primary source of evidence for the people of Lankhills is the skeletal material itself, discussed in detail in Chapter 5 above. Some 284 individuals were represented by the inhumed remains, with redeposited 'charnel' material accounting for an uncertain number of additional individuals (see further below). A further 29 groups of cremated human bone (only 25 of which were from features characterised as cremation graves) comprised the partial remains of 16 adults, 10 adults or older adolescents and one infant, while the remaining two groups were too small to allow characterisation of the individuals represented; the adults included two certain and five probable males and four probable females. The remainder of the following discussion concentrates on the inhumed remains, however, unless specified otherwise.

The 284 individuals consisted of 215 adults and 69 subadults. The latter group included 7 neonates and 23 infants (aged 3 years or less), although it is possible that some of the individuals in the otherwise undefined 'child' group were also of this younger age. It is clear, notwithstanding the occurrence of neonatal bones among the redeposited material in eleven graves, that this group is underrepresented in the cemetery population, and particularly in terms of formal or semi-formal burial. This is a well-known characteristic of late Roman cemeteries in Britain and elsewhere and is usually interpreted in terms of the legal status of neonates, which were often buried in settlement contexts quite separate from formal cemetery locations (see eg Dasen 2009). Conversely, however, the presence of even small numbers of neonates and infants has been used to identify late Romano-British cemeteries as potentially Christian in character (eg Watts 1989).

The sexed individuals were exactly even in number, 94 males and 94 females, allowing for the inclusion of 'probable' males and females and also of one male and four female adolescents assigned to sex. Issues of sexing have been discussed above (Clough and Boyle, Chapter 5). Inequality in the balance of the sexes has often been noted in relation to Romano-British cemeteries, particularly of urban character. In some cases the nature of a part of the urban population may explain such imbalances, but in other cases the reasons for it are less clear, despite attempts at interpretation (eg Davison 2000). For Lankhills, however, the present results are comparable with those arrived at by Gowland (2002) in her reassessment of Clarke's assemblage. The extent to which recorded differences in the ratio of the sexes reflect genuine differences in the nature of urban populations or recognised methodological problems (Weiss 1972; see also Davison 2000, 234) remains uncertain.

Assessment of age, also potentially problematic, has again been discussed in detail above. A feature of the population, however, was the relatively high proportion (almost 30% of the total population assigned to a specific age category) assigned to the 'older' (ie over 45) and 'much older' (over 60) categories. These figures suggest that at least some of the population enjoyed reasonable health, and this is borne out by other aspects of the osteological record. In terms of stature, the mean heights of Lankhills adults (1.69 m for males and 1.57 m for females) were close to the Romano-British means (1.69 m and 1.59 m respectively) noted by Roberts and Cox (2003, 163). As noted in Chapter 5 above, in certain aspects some of the female skeletons were notably gracile, and this, combined with the mean height slightly below the Romano-British mean may indicate a distinctive characteristic of at least some of the Lankhills women. Gowland (2007, 59) has made a comparable observation with relation to the women from Clarke's excavations and from Victoria Road, and interestingly contrasts them with the contemporary upper Thames Valley sample used in her study, suggesting that the differences should be seen in terms of local environmental factors.

Low levels of trauma and disease were recorded among the Lankhills population, and congenital defects were particularly scarce. Deficiency-related conditions such as rickets (five probable instances), scurvy (five possible instances), cribra orbitalia and dental enamel hypoplasia (DEH) were identified but were not particularly common. Scurvy, however, is not commonly reported in Romano-British populations, although its diagnosis in five subadults here is regarded as tentative, as it was in an additional case, in cremation Grave 1180. Cribra orbitalia and DEH were more common in females than males, but infection, fractures and arthritis were more common in males, suggesting that females were more prone to childhood illness and, in the case of adolescents with cribra orbitalia and DEH, perhaps more likely to die at this time (although these conditions are indicators of illness and emphatically not of cause of death), but less likely to develop physical deformities as adults.

Joint disease, spinal disease and fractures were more common in males and probably reflect a range of more physically strenuous activities undertaken by them. Joint disease levels were nevertheless low in relation to the recorded Romano-British average, particularly considering the relatively large proportion of the population in the older age ranges. Extraspinal osteoarthritis, found in 24 individuals, was most commonly encountered in the hand and elbow, with just four cases involving hip joints and two involving the knee. All the individuals involved were probably over the age of 30 and 15 of the 24 were aged 45+. It is not possible to say, of course, whether these observations reflect principally the range of occupations in which the people were involved, or more general consequences of reasonable living conditions, but while males were probably engaged in strenuous physical activity to a greater extent than females there is little indication that such activity was routinely experienced by a significant proportion of the population. Further indication of reasonable living conditions is provided by the relative lack of evidence for specific infections that can be associated with crowded conditions. These included a single possible case of tuberculosis. Sinusitis was significantly more common than represented in national figures (Roberts and Cox 2003, 112), with a crude prevalence rate of 9.2%, but this is because it was studied specifically (see Chapter 5 above) and there is no reason to believe that it was in fact more common here than elsewhere in Roman Britain.

Dental health at Lankhills was also considered to have been a little better than average in relation to contemporary assemblages (Clough and Boyle, Chapter 5 above) and can again be seen as a reflection of generally good levels of wider health. Dental disease is also specifically an indicator of diet, higher rates of disease resulting from a combination of poor dental hygiene with carbohydrate based diets and particularly the consumption of sucrose (eg Roberts and Cox 2003, 134-5 for some Romano-British data). The carbon and nitrogen isotope data do not provide specific information about the details of diet, but they indicate 'ready access to multiple sources of animal protein, including, for some people at least, small amounts of marine fish' (Cummings and Hedges, Chapter 5 above). Although it is not directly demonstrable, the likely corollary of this is that for many people the diet was fairly balanced and at an adequate level, a conclusion consistent with the osteological evidence. The meat component in the diet of the people of Roman Winchester has now been discussed by Maltby (2010) and in relation to fish it was concluded that, while present, the level of consumption was relatively low (Bullock 2010, 243). One possible indicator of a rich diet is Diffuse Idiopathic Skeletal Hyperostosis (DISH), the specific cause of which is unknown, but may be associated with obesity and Type 2 diabetes (Rogers and Waldron 1995, 48). Three individuals at Lankhills were affected, and of the two that it was possible to analyse for carbon and nitrogen isotopes both had enriched values compared to those of the majority of the population, consistent with (but not absolutely conclusive of) a favoured dietary status. The graves of these individuals provide no particular clues to other aspects of their status, though the individual in Grave 1310 was one of the possessors of a 'fancy' knife (see above).

A few examples of congenital abnormalities were observed, but most of these would have had no obvious health-related impact on the individual concerned, or on their physical appearance to others. One exception to this, however, was a case of scaphocephaly, recorded in Grave 1070. This condition, which creates an abnormally long and narrow skull which may have looked slightly odd, affected a child of about five years of age, presumably female as she was buried with two bracelets and a silver ring. The burial, however, was uncoffined and prone, the latter characteristic perhaps related to the 'otherness' of the child perceived on the basis of her skull shape. The suggestion that physical difference or abnormality might result in different treatment in the grave is supported by the case of skeleton 861 in Grave 950. This was of a much older male, perhaps in excess of 60 years of age, who had suffered multiple injuries. On the basis of the skeletal remains, however, the most obvious would have been the fracture of his right elbow, which had resulted in complete fusion of the joint at an angle of approximately 100-110 degrees with the lower arm pronated. Like the child in Grave 1070 this man had been buried prone and without a coffin. The question remains open, however, whether this burial rite was simply a consequence of the man's physical appearance or whether it resulted from other characteristics (eg of personality or status) which may or may not have been related to that appearance.

Origins and ethnic identity

Questions of origins and identity, not often considered in relation to Romano-British cemeteries before Clarke's work, were brought to the fore by his analysis of the graves excavated in 1967-72, one of the most notable conclusions of which was the identification of two groups of burials interpreted as being those of intrusive elements within the population. Specifically these were a group of 16 individuals thought to have links to Pannonia, the area of modern Hungary, and a group of six Anglo-Saxon settlers (Clarke 1979, 174-5 and 377-403). These burials, particularly the former group, have featured widely in the literature of the late Roman period in Britain, and were seen by Clarke (ibid., 386-9) potentially as members of an official rather than a necessarily military community, while they have also been interpreted as the graves of comitatensian or federate troops and their dependants, a material manifestation of the barbarianisa-

tion of the Roman military indicated by the literary and other evidence (Esmonde Cleary 1989, 55; Mattingly 2006, 346; Millett 1990, 216; cf Elton 1996, 136-145).

The 'Pannonian' group were characterised by what was considered to be a consistent and distinct set of burial rites, defined by the range of grave goods and the locations in which they were placed within the grave, that set them apart from the rest of the burials within the cemetery, and their origin was sought through a comparison of these rites with known burial practices recorded elsewhere within the Roman Empire and surrounding territories. The specific criteria by which these burials were defined (Clarke 1979, 377) were:

- an abundant provision of different categories of object;
- consistency in what was provided and where it was placed within the grave;
- personal ornaments that were worn rather than placed with the burial, comprising a brooch and belt set for males and bead necklaces and bracelets for females;
- offerings placed beside the right foot, most often a single pot for males and two for females;
- coins placed other than in the mouth;
- equipment often provided, in the form of a knife for males and a spindle whorl or comb for females; and
- absence of hobnails.

The second group, which Clarke (ibid., 390) acknowledged was rather more heterogeneous, was identified largely on the basis of contrasts with the rites practiced in the rest of the cemetery rather than any internal consistency. These burials were described as having been well-provisioned with grave goods, particularly personal ornaments and coins placed in locations other than the mouth, but, with two exceptions, were not buried with pots (ibid.). They were interpreted as Anglo-Saxons on the basis of perceived affinities in the artefacts and burial rites with those of demonstrably Anglo-Saxon burials recorded elsewhere.

The criteria by which these groups were defined represent very much a composite model derived from the characteristics of the various burials, and in actuality a number of the individual graves differ in detail from this ideal arrangement. This is particularly the case with the supposed Pannonians, with their more detailed and more prescriptive list of characteristics, and Baldwin (1985) used this to argue that they did not form such a coherent groups as Clarke suggested. In particular, Baldwin pointed out that supposedly diagnostic artefacts were absent from some burials, that the locations of grave goods were more variable than Clarke had allowed, and that where there was consistency in the placement of objects the precise nature of these objects varied. He also argued that the grave goods placed in these burials were British in origin, and that traits that had been regarded by Clarke as indicative of a foreign origin were also to be found in graves that had been interpreted as being those of locals. Similarly, Baldwin considered that the burials interpreted as being of Anglo-Saxons were too varied to be defined as a coherent group with a common origin, and that the parallels from which their ethnicity had been identified were not valid. Although Baldwin accepted that some of the 'Pannonian' burials were unusual insofar as they had been provided with more elaborate grave goods than the majority of the burials in the cemetery, he suggested that they fell within the normal diverse range of burial rites found in Romano-British cemeteries and need not represent a non-native enclave within the population. More recent commentators have not necessarily accepted all of Baldwin's reservations, and broad support for a connection of the larger intrusive group with the Danube area has come from Cooke (1998) and Swift (2000a).

Recent developments in isotope analysis offer the possibility of a new approach to the question of individual origins completely independent of artefact-based analyses. Unsurprisingly, Lankhills was one of the first Romano-British cemetery sites to be examined in this way, in an analysis of strontium and oxygen isotopes centring on a sample of the putatively Pannonian burials (Evans *et al*. 2006). Analysis of nine individuals from this group concluded that they were from a variety of geological areas. Four of the nine were found to fall within the isotope ranges predicted for the native, British population; one had an oxygen value within the range of British values and a strontium signature too high for someone raised in an area of chalk geology, but consistent with values in much of Britain and parts of western Europe; and only four were definitely non-British in origin, three of whom produced $^{87}Sr/^{86}Sr$ values 'within a range predicted for central southern Europe' and one potentially likely to originate from Hungary (ibid., 270). Interestingly, two individuals from a control sample of nine individuals interpreted on the basis of their funeral rites as being local in origin proved to have very depleted oxygen isotope concentrations suggested as indicative of Continental origin (ibid.).

Such diverse origins are clearly not consistent with the identification of these burials as being those of a single, coherent group, intrusive or otherwise. Further isotopic investigation of the Lankhills population, aimed at characterisation of both 'locals' and possible members of intrusive burial groups, was one of the research aims of the OA investigation. To this end, an analysis was carried out to identify burials exhibiting the diagnostic features of intrusive rites described by Clarke, and these individuals were included within a more wide-ranging programme of analysis of strontium

and oxygen isotope concentrations from burials from the excavation (see Chapter 5 (Chenery *et al*.); Eckardt *et al*. 2009).

In the event it proved difficult to identify individual burials from the OA excavations that conformed in detail with Clarke's criteria for intrusive burials. Three individuals satisfied the criterion of having been buried with belts and brooches that were both definitely or possibly worn rather than placed with the body (Graves 1075, 1925 and 3030), which Clarke seems to have treated as an absolute requirement for inclusion of male burials in his Pannonian group, but these burials generally met few of the other criteria. A fourth burial, and the only one in this group that could be described as abundantly provisioned, was that in Grave 1846, which had been provided with a gilded copper alloy crossbow brooch and a belt with a gilded silver buckle and strap end, and a pair of bronze spurs, but of these items only the crossbow brooch was probably worn rather than placed with the body. Burial 3030, which had a knife and ring, was the only other burial from this group with grave goods other than the belt and brooch. These were perhaps the two graves that most closely conformed to Clarke's criteria for consideration as Pannonians, and it is thus particularly unfortunate that neither could be included in the programme of isotope analysis as neither had teeth surviving. Burial 1075 also lacked teeth. The absence of grave goods other than a belt and brooch, however, suggested that this burial and Grave 1925 did not conform with Clarke's criteria.

In addition to these burials, Grave 745 had also been provided with a belt set and brooch, but they were not worn, having been placed at the foot of the grave along with a pot and a second belt. Despite lacking a brooch, the individual in Grave 1921 may have been a candidate for inclusion in this group as he was buried wearing a belt, represented by a buckle and a strap end, and also had a knife at the waist. Burial 1175 was very similar, although the belt was represented only by a buckle and had been displaced, lying on the left thigh rather than at the waist. Three other burials (930, 1310 and 1805) were also equipped with knives, but none had personal ornaments or any other grave goods, apart from three coins placed near the skull of the individual in Grave 1805. Samples from the skeletons in Graves 930 and 1310 yielded isotope ranges that indicated that both were likely to have been raised in the Winchester area, whereas the individual in Grave 1175 was unique among the OA sample in producing an isotopic signature potentially compatible with a Pannonian origin.

The female 'Pannonian' burials identified by Clarke were all characterised by bracelets and necklaces that were worn, but in the majority of burials from the OA excavation furnished with such items these were placed in a separate pile, which Clarke regarded as a native practice, and so did not satisfy his requirements for consideration as intrusive. Only three burials (in Graves 18, 1070 and 1866) had bracelets that were worn, and these additionally fitted Clarke's description in being mostly worn on the left arm, although none of them also had necklaces. Burial 18 was also accompanied by a pot, although it was placed by the left foot rather than the right. The individual in Grave 1070 had been buried in a prone position, which Clarke described as a native rite. The isotope ranges obtained for both this individual and the one in Grave 1866 were indicative of a local origin. Clarke described the provision of equipment in the form of spindle whorls or combs as also being characteristic of female members of his Pannonian group. Five burials were recorded accompanied by each of these objects, although hobnailed footwear, the use of which Clarke regarded as a native custom, was worn in three of the burials with combs and two of those with spindle whorls. One individual buried with a comb (Grave 1355) was included in the programme of isotope analysis, and was demonstrated to be of native origin.

Grave 99, containing a female aged 18-25 years, satisfied Clarke's criterion of burial with a pot placed beside the right foot, but lacked other grave goods. The oxygen isotope signature from this individual was too high to be consistent with an origin in either Britain or Pannonia.

Perhaps the most coherent group of graves in terms of the identification of potentially intrusive burials was represented by Graves 1373, 1440 and 1760, located together near the north-western corner of the excavation and discussed above. The only one of Clarke's criteria for 'Pannonian' identity that they did not satisfy was his emphasis on objects placed by the right foot. Unfortunately, it was not possible to include either of the adult burials in the programme of oxygen and strontium isotope analysis owing to their poor preservation, lacking the necessary teeth, but a sample from the child in Grave 1760 was submitted for analysis and produced isotope ranges consistent with a local origin. It is interesting to note that the combination of a pottery vessel and a glass vessel found in these burials was also a characteristic of four of the 16 burials from Clarke's excavations that were interpreted as having Pannonian origins (graves 63, 333, 351, 396). Three of these burials were included in the earlier programme of isotope analysis undertaken by Evans *et al*. (2006a), and produced rather diverse results, with two (63, 333) having isotope ranges indicative of a local origin and one (351) being potentially attributable to southern central Europe (ibid., 270). The evidence from the two programmes of isotope analysis does not therefore provide direct support for the suggestion that Graves 1373, 1440 and 1760 represent the burials of an intrusive element within the population of late 4th-century Winchester. Although the selection and placing of grave goods in these burials are quite distinct from those of the majority of burials, the most striking aspect is the consistency between the graves rather

than the burial rites themselves, each element of which has parallels with other graves within the cemetery. These may therefore be seen as the burials of a small part of the community, perhaps even a single family, which had adopted a very particular, peculiarly standardised set of burial rites. Alternatively, however, in the absence of isotopic data for the two adults, it could be suggested that this group comprised first generation incomers and a second generation, locally born child buried in line with parental practice. Leaving as unresolved the question of where the adults might have originated, this possibility, however remote, raises the wider issue of the retention of 'intrusive' burial rites in successive generations of people with family origins outside Britain but inevitably exhibiting local isotopic signatures by virtue of birth within Britain. This trend was recognised by Clarke (1979, 360) in terms of departure from the idealised combination of grave good types and locations and seen as a process of assimilation that lasted some three generations. The isotope data do not allow identification of such a process, and it remains uncertain, at best, that the artefactual evidence can be used in such a way. That such developments could and did occur within this cemetery population, however, is entirely plausible. What the isotopic evidence suggests is that incomers were probably drawn from a much wider area than could have been anticipated on any other evidence.

It was difficult to identify examples of Clarke's possible 'Anglo-Saxon' group among the burials from the OA excavations owing to the somewhat heterogeneous character of the original examples. Perhaps the only candidate was the burial in Grave 1760, since the provision of a range of grave goods and their location to the right of the skull and upper body were unusual compared to the majority of the burials. This burial had some parallels with that of the putatively Anglo-Saxon individual in grave 283 from Clarke's excavations, which also had a group of finds placed beside the skull and upper body, in this instance comprising a belt, a buckle-loop and a knife handle, as well as two coins beneath the skull, a knife on the right arm and a whetstone near the right hip. As mentioned above, however, this individual was isotopically local.

The OA excavations have therefore provided no evidence to support Clarke's identification of distinct groups of 'foreign' burials on the basis of their funerary rites. Although all the diagnostic attributes that Clarke described were present, they were rarely found together as would have been expected if they did indeed form a distinct suite of accoutrements. They were also found in combination with characteristics that Clarke considered to be indicative of a local origin, and this would tend to suggest that these practices also are native rather than intrusive, insofar as such characterisation is appropriate at all. Rather than representing intrusive elements within the population, these characteristics fall within the diverse range of Romano-British burial practices. Furthermore, no correlation was found between burials with supposedly foreign funerary rites and isotopic evidence for a non-local origin. In fact, six of the seven individuals from whom isotope samples were taken on the basis that their grave good assemblages had characteristics that Clarke had described as diagnostic of a Pannonian origin proved to be locals, and the isotope signature of the other, although outside the range for Britain, was also not consistent with origin in that region. These results are similar to those obtained for a sample of the putatively Pannonian group of burials from Clarke's excavations, and while they effectively refute the identification of these burials as forming a coherent, intrusive group, the presence among the burials sampled from both excavations of individuals with non-British origins provides some indication of the diverse nature of the population of 4th-century Winchester.

The search for these 'intrusive' groups, and its ultimate failure, is indicative in some ways of the shift in paradigms that has taken place in the study of Roman cemeteries since the 1970s; where once 'normative' burials were sought, and those burials that did not conform with them interpreted as being the graves of outsiders, late Roman burial rites are now more readily seen as encompassing a diverse, if nonetheless circumscribed, range of practices, and grave assemblages appear as the result of a series of decisions taken by conscious actors. Although Clarke was correct in identifying some of these burials as different from the majority of those in the cemetery, a more nuanced understanding of the associations within and between these assemblages in the light of work relating to issues of identity and ethnicity (itself only one aspect of identity), carried out in recent years, has led them to be re-interpreted mainly in terms of the accompaniments deemed appropriate for different individuals based on age, sex and status rather than necessarily as symbols of ethnic affinity. On the basis of the isotopes, most of the burials assigned a Pannonian origin on Clarke's criteria appear to be resolutely local in origin. This association is striking and suggests that any connotations of ethnicity or other aspects of identity that might have been carried by the objects (and the locations within the grave that gave these assemblages their particular character) were deliberately assumed by people of local origin and/or the group(s) burying them. As indicated above, however, the familial and cultural background of such people could still have been remote from Winchester, even if this was where they were born.

The poor correlation between possible place of origin based upon the archaeological criteria defined by Clarke and the possible areas of origin indicated by the isotope data is significant, but more positive aspects of the programme of isotope analysis need to be stressed. As set out above (Tables 5.60 and 5.61 and Figure 5.71) the combined isotope results suggest that 21 individuals from the OA sample of 40 may be from Winchester and

closely surrounding areas, with a further eight probably from other parts of the UK, while 11 individuals are defined as incomers. The broad conclusions of the isotope analyses and the associated archaeological evidence are set out in Table 7.6. All the probable incomers were adults; all of the sampled children appeared, perhaps unsurprisingly, to be of local origin. Ten of the non-British adults were from 'warmer' areas and one from a 'colder' area in relation to British isotope ranges. Many of the individuals defined isotopically as incomers cluster around the edges of the UK range, and identification of particular areas of origin is difficult. It may be appropriate to inject a note of caution here; the application of isotope data in this way is still a relatively new area of research which will undoubtedly undergo refinement in the future. It would perhaps be unwise to assume categorically that all the marginal individuals were necessarily non-British, even though this is what the current assessment suggests.

The group of 'warmer' people did include three, however, all females, whose isotopic signature is significantly warmer than is typical for Britain, suggesting origins in an area with a hot and/or arid environment, consistent with many areas of the Mediterranean, and perhaps even North Africa. These are characterised as 'hot' in the abbreviated terminology employed in Table 7.6. Remarkably, one of these, the young adult 119 in Grave 99, has cranial characteristics which suggest a possible origin in Egypt (on the basis of analysis using the CRANID programme, Richard Wright pers comm.; see also Chapter 5 above).

The archaeological evidence for the people who are suggested to be non-local on the basis of the isotopes is of considerable interest. The one 'colder' individual, male 1119 in Grave 1175, with an isotopic signature suggestive of origin in Central Europe, had an artefact set (belt, knife and coin, see above) partly consistent with the character of the burials assigned to that region by Clarke. The isotope values of this individual are quite different from those of the 'cool' individuals examined in the earlier study (particularly those from graves 81 and 426) and it is unlikely that they are from the same immediate area, but factors such as the altitude at which these people were living could account for some of the variability (G Müldner pers. comm.).

Most of the individuals who appear 'exotic' in terms of their isotopic signatures have generally unremarkable grave assemblages. Two of the 'hot' females, who could possibly have originated from the southern side of the Mediterranean, including the young woman in Grave 99, were each buried with a pot typical of the first half of the 4th century. The vessels were standard New Forest types which occurred relatively widely within the cemetery. The second of these women had a pair of unworn shoes, while the third individual had no grave goods and not even a coffin. In terms of their carbon and nitrogen isotopes these individuals again appear unremarkable. The woman without a coffin (in Grave 850) had a more enriched $\delta^{13}C$ value than most of the people in that category (see Cummings and Hedges above) and so was not obviously among the less well-nourished section of the cemetery population which is correlated broadly with an absence of coffins. It may be noted, incidentally, that the absence of a coffin, considered by Clarke to be a characteristic of some 'local' burials, was the reason for selection of this particular individual for isotope analysis.

The seven 'warmer' individuals (that is to say, those with a western European but not British origin) comprised five males and two females. One of the males (in Grave 1515) was buried crouched and decapitated, the only one of the six examples of 'deviant' burial practice (ie not supine, and/or decapitated) within the isotope study sample apparently of non-British origin. The material with the others was fairly typical, three males having respectively associated shoes, shoes and a coin, and three coins and a knife. The coin dates place the burials in Graves 1805 and 790 after AD 367-378 and after AD 383-388 respectively, indicating the continued presence of a non-British element in the population into the later 4th century, although it is technically possible, given their ages, that the individuals in question could have arrived at Winchester as children before the middle of the century. In terms of artefact provision the most striking of the 'warmer' burials is that of the adult woman in Grave 82, the deepest of the four stepped graves found in the OA excavation. This grave contained the two ceramic unguent flasks of probable North African origin, the only imported pottery vessels in the entire Lankhills cemetery assemblage, along with the comparable vessel from Clarke's grave 45, that of a prime adult female. The rarity of these vessels, as shown by Pirling's study (Pirling 2003) may mark out associated individuals as special, but this significance remains uncertain. It is possible that there was a link between the origin of the vessels and the individual, but this is not demonstrable (and in any case reopens the trap of a simple reading-off of origins from objects). What the isotope evidence suggests, however, is that the woman in Grave 82 may have come from an area where the use of the exotic contents of these vessels was more familiar than it was in Britain. Whether these items reached Britain in the course of regular trade or as occasional arrivals is uncertain, but their exclusive association with large towns, where incomers having some familiarity with these products are likely to have concentrated, is unsurprising.

The distribution of the individuals sampled for O and Sr isotopes, including those from Clarke's excavations, is shown in Figure 7.14, where the graves are marked in terms of their broad isotopic character as set out in Table 7.6 and by Evans *et al*. (2006a; see also Eckardt *et al*. 2009). There are suggestions of patterning in the distribution of individuals in particular groups. The seven individuals with

Table 7.6: Summary of skeletons selected for Sr and O isotope analysis (Table 5.64 adapted)

Grave	Skeleton	Age (yrs)	Sex	Origin based on Clarke's criteria	Position	Coffin	Grave Goods/ [Other Characteristics]	Approximate date	Broad isotopic character
1175	1119	45+	Male	Local	S	Y	Coin, knife, buckle	coin date 388-395	Cold - Central Europe
99	119	26-35	Female	Pannonian?	S	Y	Pot	pot date 270-350	Hot
272	271	26-35	Female	Local	S	Y	Pot, shoes unworn	pot date 270-350	Hot
850	806	60+	Female	Local	S	N	-		Hot
82	84	Adult	Female	Others	S	Y	2 pots [step grave]	pot date 300-350?	Warm
610	566	26-35	Male	Others	S	Y	-		Warm
790	683	45+	Male	Local	S	N	Coin, shoes	coin date 383-388	Warm
855	812	45+	Male?	Others	S	Y	Shoes ?unworn		Warm
1170	1114	26-35	Female	Local	S	Y	-		Warm
1515	1517	60+	Male	Others	CD	N	-		Warm
1805	1697	36-45	Male	Local	S	Y	3 coins, knife	coin dates 367-378	Warm
263	281	45+	Male	Local	S	Y	Coin [DISH]	coin date 324-325	British
550	489	45+	Male?	Local	S	Y	-		British
805	776	Adult	Male?	Others	S	Y	-		British
1270	1197	60+	Female	Local	S	Y	Comb, shoes unworn		British
1349	1227	36-45	Female	Others	S	Y	Pot, shoes unworn	pot date 270-350	British
1895	1894	18-25	Male	Local	S	Y	-		British
10	12	45+	Male	Local	S	Y	Shoes unworn		Local
210	212	60+	Female?	Local	S	N	Shoes		Local
530	435	45+	Female	Local	S	N	Bone plaque		Local
665	661	36-45	Female	Others	S	N	Shoes		Local
905	861	60+	Male	Others	P	N	Shoes		Local
930	862	36-45	Male	Pannonian?	S	Y	Knife, ?buckle, shoes ?unworn		Local
920	874	6-12	Child	Local	S	Y	Beads, bracelets, ?ring, shoes, all unworn		Local
985	926	13-17	Female?	Local	S	Y	Beads, bracelets, rings, pin, all unworn		Local
965	932	18-25	Male	Local	S	Y	2 pots, shoes unworn	pot dates 300-350 & 270-400	
Local									
1070	1026	Child	Child	Pannonian?	P	N	Bracelets, ring		Local
1150	1084	26-35	Female	Others	SD	Y	Coin	coin date 350-364	Local
1135	1091	18-25	Female	Others	S	Y	-		Local
1140	1094	Adult	Female	Local	S	Y	Shoes		Local
1355	1133	Child	Child	Pannonian?	S	Y	Comb, buckle, shoes ?unworn		Local
1190	1134	36-45	Female	Local	S	N	-		Local
1280	1207	Adult	Female?	Local	S	Y	Comb		Local
1360	1244	13-17	Female?	Local	S	Y	Beads, bracelets, shoes, all unworn		Local
1310	1271	45+	Male	Pannonian?	S	Y	Knife [DISH]		Local
1345	1277	36-45	Male	Others	P	Y	-		Local
1329	1289	36-45	Male	Others	S	Y	Shoes		Local
1760	1761	Child	Child	Pannonian?	S	N	Coin, knife, ring, buckle, glass vessel, pot	coin date 388-392	Local
1866	1870	6-12	Child	Pannonian?	S	N	Pot, finger rings, bracelets	pot date 300-400	Local
110	118	10m-2	Infant	Pannonian?	SD	Y	Beads & bracelets unworn		Enhanced O - prob breast-feeding effect

Abbreviations for position: S = supine; P = prone; C = crouched; D = decapitated

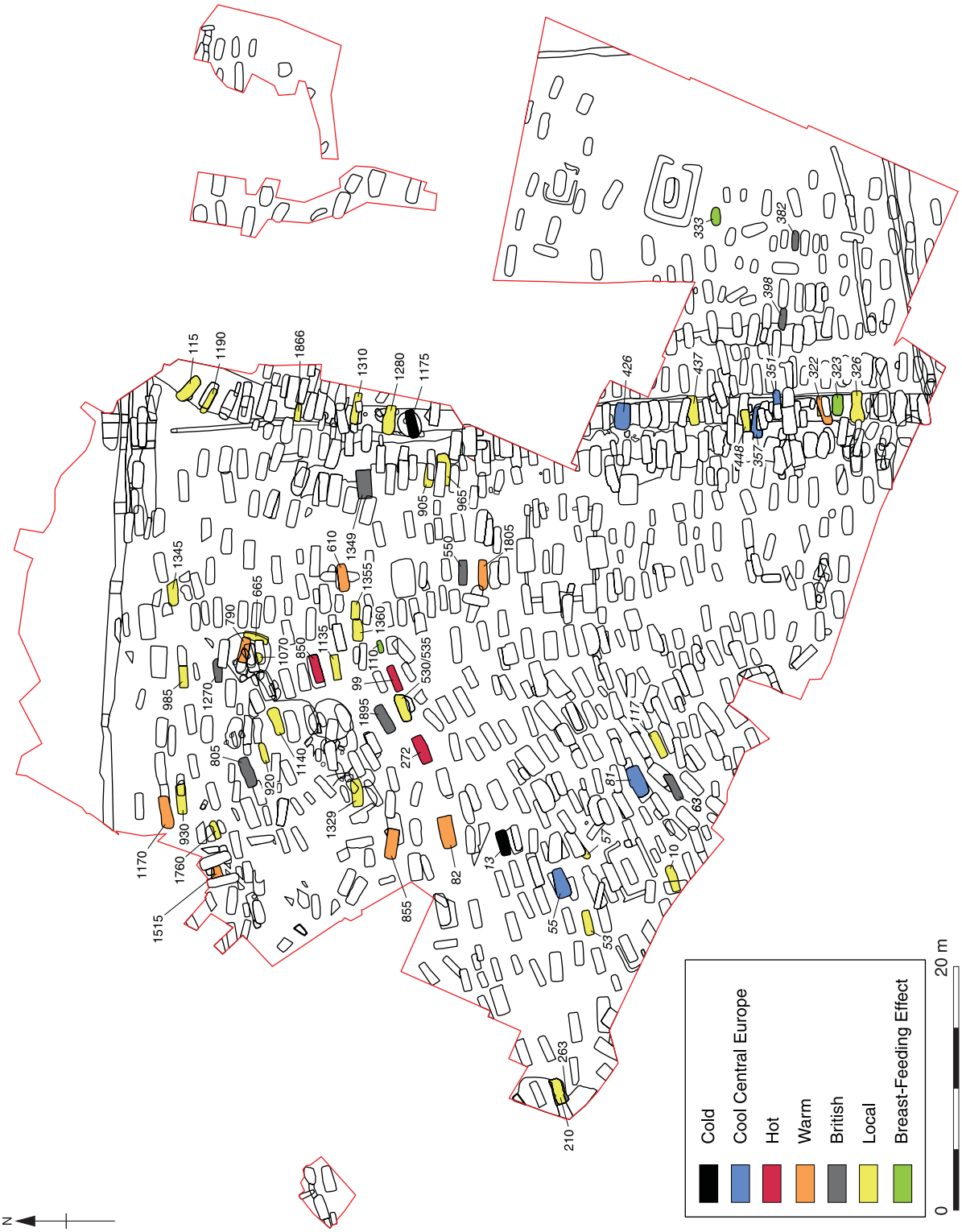


Fig. 7.14 Distribution of graves with Sr and O analyses by broad isotopic character

'cooler' isotopic signatures suggestive of (probably more than one) central European origin are widely scattered through the central and southern part of the site, but are absent from the northern area. Four of them, OA Grave 1175 and Clarke's graves 351, 357 and 426, lie along the line of the original eastern boundary of the cemetery, with graves 351 and 357 closely adjacent. The three 'hot' ladies were all buried quite close together; Graves 272 and 99 were in line and 4 m apart, while 850 lay 5 m north of 99. These associations appear too close to be completely coincidental, but there is no further evidence to suggest the nature of any possible connection between these three women.

The distribution of the people characterised as 'warmer than Britain' in terms of their origins is confined entirely to the area of the OA excavation, although quite widely spread within that area. An absence of such individuals from the north-east corner of the site might be significant, however. Most noticeable is the lack of examples of individuals with a comparable isotopic signature from the area of Clarke's excavation. While this could be related in part to the restricted nature of the sample of burials selected for isotope analysis from this part of the site, the total absence of members of this group here is striking. It is possible that a combination of spatial and chronological factors is at play, as many of the graves in the 'warmer' group appear to belong to the later phases of the use of the cemetery, being typically the latest graves in local sequences and/or associated with late material (such as Graves 1805 and 790, with coins of 367-378 and 383-388 respectively. Grave 1515 was not the latest grave in its local sequence, but was only cut by the very late north-south Graves 1373 and 1440 discussed above. The only significant exception to the view that the burials of this group of individuals were of later 4th century date is likely to have been Grave 82, for which a date in the first half of the 4th century is most likely.

The interpretation of these variations in distribution is uncertain, but a broad chronological trend is apparent. The graves of isotopically 'cold' and 'cool' individuals all date after the middle of the 4th century AD, although it is unlikely that they were all contemporary, with assigned date ranges from AD 350-370 (Clarke graves 13, 55 and 81) to AD 370-390 (grave 351), the latter date comparable to that of OA Grave 1175, associated with a coin of AD 388-395. As already indicated, the great majority of the 'warmer' isotope group are also likely to have been buried in the second half of the 4th century, but it is notable that at least two of the three 'hot' ladies are most probably earlier, being associated with pots dated not later than AD 350, while the third is not closely dated at all. The fact that the only burial in the 'warmer' group likely to date before AD 350 is of the woman in Grave 82, buried in the same line as the 'hot' Graves 99 and 272 and only 4 m west of the latter, may be coincidental but is suggestive of some association with them.

The more general point that there is little or no spatial overlap between burials of the broad 'hot/warm' and 'cold/cool' isotope groups is certainly noteworthy, particularly if many of the burials in these two groups (six out of ten in the former and all seven of the latter) were buried within the space of no more than 50 years. Although the numbers are small, they may suggest the existence of two or more contemporary groups comprising or including individuals of distinctly different backgrounds (and the southern group including members of the official/military community) which were well aware of each other's existence and in disposing of their dead used different areas of the cemetery. There is of course no clear indication of spatial definition in terms of excavated features, but the area immediately south of the west-east line of Graves 82, 272 and 99 and a westerly projection of that line contains a lower density of graves than some other parts of the cemetery and may suggest the existence of some sort of boundary here, although whether this was physically marked out or simply perceived is unknown. It is equally uncertain if such a putative boundary extended much further east than the position of Grave 99. An alternative view might be to see a boundary lying north of Graves 99 and 272, and perhaps also Grave 82, with a suggestion of a narrow underutilised space between these graves and the marked clusters of burials characteristic of the north-west corner of the cemetery area. Regardless of its precise position, any such 'boundary' need not have had the same meaning for the members of all the communities burying their dead at Lankhills. This is clearly demonstrated by the 'official/military' community, for while those of its members who are currently identified on the basis of isotope evidence as likely to have originated in central Europe were only buried in the southern part of the cemetery, other, British-born members of the same community were to be found in the northern part of the cemetery as well. This appears to be a modest demonstration of the ways in which different aspects of identity intersect within the same communities and individuals.

Status and social identity

Many aspects of the funerary rites at Lankhills, particularly the grave goods placed with many of the burials, appear to have been associated with the status or social identity of the deceased. Indeed, the increase in the range of objects placed in graves during the course of the 4th century may reflect an increase in the number and variety of identities that were being expressed through these rites, as well as in the sophistication with which they were articulated.

Among the more obvious examples of grave goods associated with status are the belt sets and crossbow brooches with which the burials of a small

number of adult males were adorned. These elaborate and ostentatious items were fairly clearly symbols of rank, whether military or civil (Reece 2007, 155-157). In addition to being striking objects in their own right, it is likely that they were associated with the wearing of clothes that singled the wearers out from the bulk of the population, and the burial of these individuals with this equipment may in some ways have been analogous to a modern burial with full military honours. Among the more prosaic grave goods that may have been associated with the status or identity of the individual were the spindle whorls that were buried with a number of adult or adolescent females, which may have been regarded as appropriate equipment for adult females, or for married women, their association with textile production perhaps symbolising responsibility for domestic production. The possible loomweight in Grave 1015 may have carried similar symbolism. Combs were similarly associated with female burials, particularly those of older individuals, and may have been the accoutrements of women of matronly status (or virtue?). The burial of jewellery with some of the females appears to have been structured according to rules relating to their age. Children and adolescents could be buried with large groups of bracelets, whereas older women tended to have only one or two, and adult women buried with necklaces and bead strings were usually wearing these items, in contrast to younger females, with whom the objects were placed separately within the grave. The vessels of pottery and glass with which some burials were furnished do not have an overt association with the status or age/sex identity of the individual, but the selection of specific vessels, and their deposition in specific burials, suggests that deliberate choices were being made as regards the appropriateness of the objects to the individual burial. The vessels placed in these burials were of a very restricted range, limited to certain forms that were mostly associated with drinking. Although they may have been deposited for use by the deceased in the afterlife, they may also have had a more symbolic significance, perhaps intended to reference the social contexts in which these types of vessel were normally used. As such, they may have expressed an aspect of the individual's social persona by reminding the mourners of the social practices in which the deceased had played a part during life.

Grave goods were not the only means by which status could be expressed. The construction of enclosures around a small proportion of the graves may have had such a purpose, as may the digging of stepped graves or the provision of a particularly elaborate coffin. The latter may perhaps explain the exceptionally large number of nails used in a few of the coffins, which may have been used to decorative effect or to secure decorative mountings or linings that have not survived. The significance of the stepped burials in terms of status remains slightly uncertain, but while only Grave 82 of the four examples from the OA excavation was marked by the occurrence of unusual grave goods (or indeed any grave goods at all) nine of the 17 examples in Clarke's excavations (1979, 134) contained grave goods, including pottery in all but two cases. While none of the assemblages from these graves was exceptional, they do suggest a slightly above average degree of provision which, when combined with the evidence for extra expenditure involved in the production of the grave structure itself – the extra deep grave pit (only in two out of the 21 examples was the pit less than 1 m deep) and the wooden chamber roof above the coffin – serves to distinguish the individuals buried in this way, even if the characteristic(s) in life that may have correlated with this distinction are unknown. It is also uncertain why some individuals were cremated rather than buried, although the recovery of a crossbow brooch from a simple, un-urned cremation burial may be evidence that these burials could be considered to be of equivalent status to an inhumation.

A striking aspect of the presentation of status or identity is that in none of the burials was the practice of burying grave goods with the dead used as an opportunity to display the wealth of the deceased or their mourners. The majority of the grave goods, such as the pottery vessels, combs and spindle whorls, were of little financial value. Where coins were placed in the grave they were few in number and of low denomination, and the jewellery buried with some of the females comprised trinkets of bronze, bone and shale rather than expensive items made from precious metals. Virtually the only objects likely to have been of any real intrinsic value that had been placed as grave goods were the crossbow brooches and belt sets, the most striking example of which was the group in Grave 1846, with a gilded copper brooch, gilded silver buckle and strap end, and riding boots with bronze spurs. Even in these cases, though, the primary significance of the objects was as a display of status, perhaps even as a badge of office, and any inference of wealth, although real, was secondary. This contrasts starkly with the evidence from contemporary hoards of coins, plate and jewellery that indicate the degree of wealth that existed within Roman Britain. The absence of such items from the assemblage of grave goods from the cemetery is characteristic of later Roman cemeteries in Britain as a whole, and is unlikely to be coincidental; it may suggest that the disparities of wealth that undoubtedly existed within the community were suppressed in his context. One very direct exception, however, might have been with regard to textiles – both the clothes in which people were buried, and perhaps other fabrics placed within the grave, or used as covers or hangings. Examples are seen in the identification of silk at Butt Road (Crummy *et al*. 1993, 128) and of gold thread in burials at Poundbury (Crowfoot 1993, 112), Verulam

Hills Field, Spitalfields in London and from Winchester itself at St Martin's Close (Ottaway and Rees forthcoming). Of course, it is possible that in some instances other parts of the funeral were used as an opportunity to display wealth, perhaps through the splendour in which the deceased was displayed prior to the ceremony or through the size and magnificence of the procession to the cemetery, but the burial itself was generally not the place for such displays.

It would, of course, be a mistake to try to reconstruct some form of social hierarchy from this evidence. With the exception of the burials with belt sets and crossbow brooches, the position in such a hierarchy is not the aspect of the individual's status that appears to be manifested in the burial rite. Rather, certain objects appear to have been buried with the deceased because they were regarded as appropriate accoutrements for such an individual. The evidence of age and gender associations for particular objects discussed here and in Chapter 4 (above) supports the emphasis of Gowland's work (eg 2002; 2007) that these associations were significant in relation to aspects of identity that in some cases may have been closely related to particular life stages. The objects may have been believed to be necessary in order to enable the deceased to continue to enjoy the same status in the afterlife as they had during life, or alternatively they may have been buried with the deceased as a symbol of the end of that role, at least in the land of the living, with the status now passing to another individual. It is also possible that the association of these items with the status of the individual was not articulated in any overt way, but that they were considered to be no more than traditional accompaniments to the burials of certain individuals. Equally, the decision as to whether or not each individual was buried with grave goods may have depended largely on the customary practice within a family, social or ethnic group, or personal preference on the part of the deceased or the mourners, and individuals buried without grave goods need not necessarily have been of lesser status than those who were provided with objects.

BELIEF AND RELIGION

Interpreting religious beliefs from funerary evidence is notoriously problematic. Funerary practices are very much culturally specific, and the correlation of the material evidence with specific meanings or beliefs need not be straightforward (Ucko 1969). Funerals are also more than merely religious ceremonies, or a means of disposing of the dead, but are structured by more mundane concerns such as displaying status or re-establishing the roles of the mourners to accommodate the loss of the deceased. Indeed, it is axiomatic within the study of funerary archaeology that burial rites have more to do with the requirements of the living than the dead (Parker-Pearson 1999).

In the context of the Roman world, and specifically Roman Britain, there are additional difficulties in trying to relate the evidence from burials with that for religious beliefs more generally. Our understanding of Romano-British religion is largely derived from literary and epigraphic sources that are concerned primarily with specific, named deities but tell us little about the day-to-day beliefs and observances of the population (Esmonde Cleary 2004, 423). Funerary practices, on the other hand, were informed by the religious and superstitious beliefs of the people conducting the funerals, but very rarely included iconography that can be easily associated with an individual deity. The two different types of evidence thus relate to rather different aspects of the belief system. Indeed, it would appear that the beliefs that were paramount in a funerary context were only loosely connected to the world of the gods and Classical mythology. The relationship between burial practice and beliefs about death is also not a straightforward one. Practice does not necessarily imply belief, and may rather be associated with fashion, tradition or group identity. It can never be proved that the individual buried within a particular grave, or the people conducting the funeral, genuinely ascribed to the beliefs that appear to have been expressed in the ceremony. In many instances the participants at the funeral may have had only a very sketchy understanding of the symbolism of the practices that they perpetuated. In spite of these difficulties, burial ritual is, as Morris (1992) has argued, our best evidence for the system of beliefs and values that were current within the population using the cemetery. The important thing is not whether the individual deceased and mourners at each funeral truly believed in the ideas that were expressed by these rites, but that by enacting them they were conforming to the accepted norms of the community.

Grave goods associated with specific deities

It is rare for burials from Roman Britain to contain evidence that can be incontrovertibly associated with a specific deity, and none was found at Lankhills. The Roman world was polytheistic, and the literary evidence indicates that a wide variety of beliefs existed, but they were rarely prescriptive when it came to burial. Consequently, there is no reason to assume a link between the form of an individual burial and the religious or philosophical convictions of the deceased or mourners. The broad similarity of the majority of the burials at Lankhills is likely to represent a form dictated by convention and tradition, and considered appropriate to all religious beliefs.

The only evidence at Lankhills that could tentatively be interpreted as associated with specific deities relates to the selection of animal and bird species that were placed with a small number of burials, which may have been chosen because they were the totemic animals of particular gods. It is

possible that the domestic fowl placed in Grave 870 of the OA excavations and the seven such birds recovered from six burials recorded during Clarke's excavations had been selected for deposition because of the role of the cockerel in classical iconography as the sacred bird of Mercury, who conducted the dead to the underworld (Henig 1984b, 199), but the late Iron Age tradition of inclusion of fowl in burials means that this association cannot be taken for granted. Individual bird bones were also recovered from cremation burials 655 and 1806, and although neither of these could be identified to species it is possible that they were also domestic fowl. However, it should be noted that only one of these birds, from Clarke's grave 150, was demonstrably male, with the majority being female and two from the same excavations lacking the tarsometatarsus, upon which the determination of sex is dependent. It is perhaps unlikely that hens had the same significance as cockerels in this context.

The horse skulls that had been placed in Graves 530 and 1547 and cremation Burial 655 may also have had a totemic significance associated with the cult of the horse-goddess Epona. Rather than having been placed at the base of the grave with the burial, the horse skulls in the two inhumation graves had been placed in the backfill over the deceased, and the skull from the cremation burial was in a similar location on the surface of the cremation deposit. This consistency in their locations is surely evidence that the skulls played the same part in the funeral rituals. Horse remains were not commonly placed as grave goods, but there does appear to be a persistent association with some cemeteries, as discussed above.

Although Gaulish in origin, the worship of Epona was widespread throughout the western part of the empire, and she was accepted into the Roman pantheon sufficiently to be granted her own festival day in the Roman calendar of holy days (Aldhouse Green 2004, 213). In Britain her worship is mostly associated with the military, attested by a number of dedications on Hadrian's Wall and the Antonine Wall, but there are also a few references to her in southern Britain, and a wooden figure was found at Brook Street, Winchester (Ross 1975). The figure holds a key that is thought to symbolise her role in conveying the dead to the next world, and it is this attribute of her cult that would make her a suitable recipient for the offerings in the graves at Lankhills. The horse skulls in Grave 1543 and cremation burial 655 appear to have been already defleshed when they were placed in the graves, and although this may simply indicate that they had been prepared in advance of the funeral, it is tempting to interpret this as evidence that they had been previously utilised or displayed elsewhere, perhaps as part of the cult of the goddess.

The association of horses with burials, and particularly with the rite of cremation, is much more common in the early Anglo-Saxon period (Fern 2007) than in Roman Britain. There is no clear evidence to indicate a close relationship between late Roman and early Anglo-Saxon practice in this regard, but it is notable that the occurrence of cremated horses in Britain is 'unequalled in contemporary Europe' (ibid., 102), but its distribution is heavily biased towards East Anglia. While the occurrence of early Anglo-Saxon horse inhumations is more widespread these are less common and more clearly associated with high status burials, and separate heads are relatively rare. Despite superficial similarities, therefore, it appears unlikely that there was a direct link between late Roman and early Anglo-Saxon practice relating to the inclusion of horse remains in burials, but such a link cannot be ruled out completely.

The fate of the soul

The literary and epigraphic evidence indicates that a wide variety of eschatological beliefs was current in the Roman world (Hope 2007, 211-47). Very little of this evidence relates specifically to Britain, but there is no particular reason to believe that beliefs here lay significantly outside the range encountered elsewhere in the empire. The most common belief appears to have been associated with the survival of the individual after death, in some form of afterlife. Individual authors differed as to the precise nature of this afterlife, although it was usually described as being located somewhere beyond the world of the living, the most common version being the underworld kingdom of Hades derived from Greek mythology (Toynbee 1971, 33-9). These beliefs also seem to have been associated with a belief that the well-being of the dead could be affected by the actions of the living: hence the need to provide an appropriate place for their remains in a cemetery, accord them the proper funerary rites, and commemorate them through subsequent feasts.

It is in this context that many of the objects placed with burials at Lankhills may be understood, as equipment that the deceased would require in the afterlife, although we cannot know whether they were believed to literally pass into the afterlife with the deceased or were thought of in more symbolic terms. Traditional accounts indicated that the deceased were required to make a journey to reach the afterlife, and some of these objects seem to reference this journey. The footwear that was provided for many of the dead, for example, even to the extent of placing a second pair in Grave 590, may have been intended for the deceased to wear while travelling, or may have simply symbolised the journey from life to afterlife. One of the most popular elements of descriptions of the underworld was the River Styx and its ferryman, Charon, and it is likely that some of the coins placed as grave goods were intended to pay his fee. This is certainly likely to be true of those burials in which one or two coins had been placed in the traditional locations, in the mouth or hand of the deceased, but

Macdonald's (1979, 408-9) suggestion that in some instances the money was intended as an offering to other deities may apply to those provided with larger groups of coins, or in the case of graves in which they had been placed elsewhere. Vessels were the most common type of grave good, and it is possible that they too were associated with this journey, as receptacles for refreshments to be consumed en route. Some of the vessels, however, could not have had contents, such as the deliberately holed vessels in Burials 545 and 680 and several damaged vessels from both the OA excavations and Clarke's excavations (1979, 149). In these instances the provision of the vessel may have had a purely symbolic purpose. It is possible that the deliberate damage was thought necessary in order to 'kill' the vessel so that it could pass to the afterlife with the deceased. If that was the case, however, the practice might have been expected to be more widespread.

The implication of these objects is not simply that some, perhaps many, of the people using the cemetery believed that the soul survived after death, but more precisely that this existence was thought to be in some way corporeal. It is also possible that the placing with the dead of objects that expressed their identity or status is evidence that they were believed to retain this status in the afterlife (see 'Status and social identity' above), although it is also possible that these objects were buried for other reasons: perhaps because they were thought to be contaminated by their close association with the deceased, or as a display of the status of the deceased, and, by association, that of his or her heirs.

It may also be relevant to consider which members of the population were provided with a place in the cemetery. Neonates and infants are conspicuously under-represented, and this may be associated with the belief that they had not yet developed a soul. The corollary of this is that the individuals who were buried within the cemetery were placed here because they did possess a soul, and that correct burial in an appropriate location was necessary for its well-being.

Fear of the dead

As well as being intended to benefit the deceased or facilitate their passage to the afterlife, some aspects of funerary practice were also concerned with a fear that the dead may be able to escape the grave and have a malign effect upon the living (Toynbee 1971, 33–9). Taylor (2008) has considered in detail the evidence provided by burials from Roman Britain for such a fear of revenants, and the measures taken to contain them. The cemetery at Lankhills contained a number of individuals who had been buried in a prone position or who had been decapitated after death, and these are among the practices that she has interpreted as having formed parts of rituals intended to prevent the dead from rising. Burial in a prone position may have been intended to make it more difficult for the deceased to escape the grave, particularly since several of these individuals may also have been bound when placed in the grave. Removal of the head, which was believed in both Classical and Celtic religion to be the seat of the soul (Henig 1984b, 203), may have been intended to prevent the reanimation of the corpse. Similar burials recorded at other sites have contained evidence for further practices that might be seen as measures intended to secure them in the grave.

There was no clear evidence to explain why these specific individuals had been singled out for such treatment, but the sort of fears from which it resulted may have been provoked by people who were socially deviant, deformed or diseased, or whose death was thought to be unusual or unexplained (Tsaliki 2008). The prone burials, in particular, do seem to have been treated differently from the majority of burials in a number of ways (see above). The graves containing these burials were located toward the edges of the cemetery or in the area near the centre of the OA excavations that had been defined by the digging of a group of shallow pits prior to the commencement of burial, and were more likely to lie on unusual alignments, while the grave pits themselves tended to be shallower. There was also evidence that some of these individuals may have been of low, or even servile status, since several of the skeletons exhibited pathologies that are likely to have been caused by hard manual labour, and their diets may have been more restricted than those of other members of the population. Low social status may have left these individuals with little defence against the sort of accusations or discrimination that might result in a belief that special precautions were required to ensure that they could not return to haunt the living. These burials were not necessarily lacking in respect, as is demonstrated by the occasional provision of grave goods and coffins, and this may indicate that the provision of some of the elements of a normal burial rite was also believed to help to ensure that they remained in the grave. One of the prone burials at the eastern cemetery of Roman London had been weighted down with two large stones (Barber and Bowsher 2000, 87), as had two such burials at Welwyn, Hertfordshire (Taylor 2008, 110), and the iron nails that had been placed in the mouths of two prone burials at Sea Mills (Bennett 1985, 26-7) may have been believed to have magical properties that would restrain the individual after death.

Alternative interpretations for these practices are, of course, also possible. In the case of decapitation, in particular, it could be argued that the removal of the head, as the seat of the soul, was believed to kill the soul or prevent it from reanimating the corpse, or conversely that the intention was to release the soul and facilitate its passage to the afterlife in the case of individuals for whom this was thought to be problematic.

The provision of a bounded cemetery as an appropriate place in which to bury the dead may itself be considered to be associated with a perceived need to confine the dead. To some extent it may be explained as a practical division of areas of varying landuse in densely occupied suburban areas where land may have been at something of a premium, and where land in differing ownership needed to be clearly defined. However, the boundaries enclosing the cemetery may also have had a symbolic significance, as did those surrounding a town. Epigraphic and historical sources indicate that in the Roman world contact with the dead was believed to result in a form of pollution, which appears to have combined a practical concern with hygiene and the potential for contagion with fear of a more spiritual contamination, which could only be removed by undertaking appropriate rites of purification (Lindsay 2000). Separating space designated for the dead from that occupied by the living through the maintenance of a clearly defined boundary, both physical and metaphysical, may therefore have been a very real concern. The area within such a boundary may have been regarded as having a different quality from the mundane world around it, perhaps analogous to the consecrated space of a modern Christian burial ground (Esmonde Cleary 2000, 137). It is likely that placing the dead within such bounded areas, perhaps with appropriate rituals to enforce the efficacy of the boundaries, was intended to contain them and ensure that they could not escape the cemetery and exert a malign influence upon the living.

Christian burial

The issue of Christian burial (see above) has loomed large in discussion of late Roman cemeteries in Britain, particularly in the light of prevailing interpretations of the sites at Poundbury, Dorchester and Butt Road, Colchester. Criteria for definition of a Christian burial rite and, by extension, cemeteries which can be labelled 'Christian', have been refined by Woodward (1993, 236-7), developing the work of Watts (1991) and have been considered with due caution in the context of Cannington by Rahtz *et al*. (2000, 419-420). Watts (1998) and Sparey-Green (2003) have further developed the discussion of some of these aspects. Quensel-von-Kalben (2000, 227-8) analysed Watts' and Woodward's criteria and concluded that they allowed the separation of 'Christian' and 'non-Christian' cemeteries, but this analysis did not question the underlying assumptions – for example that west-east burial is a Christian characteristic. While differences between certain cemeteries were therefore underlined, the significance of these differences in religious terms remains less certain. That Christian cemeteries can be identified on archaeological criteria is accepted by many, including the author of the most recent general review of Christianity in Roman Britain (Petts 2003, 145-9). There is, however, an equally firmly established view that the search for an archaeological definition of Christian burial practice in this period is misconceived and that Continental evidence places the crystallisation of a distinctively Christian rite as late as the 7th century (eg Brown 2003, 24-5; Esmonde Cleary 2004, 424; 2006). It follows from this that identification of whole cemeteries as Christian is problematic (Harries 1992, 61; Millett 1995).

At Lankhills Macdonald tentatively identified Christian elements among the burials excavated in 1967-72, but admitted that the evidence was 'generally inconclusive' (Macdonald 1979, 430). Definition of criteria for the identification of Christian burials in Britain was less refined than it has become subsequently, but Macdonald focussed principally on aspects of care in burial (ibid., 429) and the evidence for possible family burial groups which, he argued, contrasted with the general pattern of the evidence from the cemetery for grouping of burials by sex, which he saw as a pagan characteristic (ibid., 430). The evidence from the present excavation, and from Gowland's re-examination of the skeletal material from Clarke's excavation, suggests that the apparent clustering of burials by sex is less marked than Macdonald thought, although the differences are fairly subtle (cf. Figure 7.4 with Clarke 1979, 189-190 and fig. 22). In any case, it is hard to see why burial in family groups could not have been characteristic of non-Christian groups, and conversely it could be argued that for a religion that emphasised the family of the church the importance of earthly families was less, rather than more likely to influence the grouping of burials than in a non-Christian context. Equally, the suggestion that the exercise of great care in burial was a specifically Christian rather than a non-Christian characteristic seems hard to justify.

With the possible exception of very specific (and uncommon) practices and structural types, and in the absence of inscriptions, the evidence that would allow us to recognise Christian burials thus appears to be slight since, as Macdonald (1979, 425-428) rightly recognised and has been widely pointed out subsequently, neither orientation nor the absence of grave goods were exclusive characteristics of such burial in the late Roman empire (eg Samson 1999), any more than they were, for example, in Merovingian Gaul (Effros 2003, 141). A key exception might, however, relate to the evidence for the use of shrouds (see above). If we could be confident that in a late Roman context this practice was distinctively Christian (it was also used by Jews and later by Muslim communities) it could be a useful pointer to the identification of Christian burials, although it is clear that the difference between prescribed and actual practice was wide (eg Martorelli 2000); shrouds might only have been used by a small part of the Christian community in the 4th century. In the present instance, the use of shrouds can perhaps be inferred from the osteological evidence, but this has to be treated with caution, as

the example of the woman in Grave 740 (see above) indicates, and cannot be quantified with confidence. If correctly understood, however, this evidence suggests that there were a few shrouded burials within the cemetery; these might have been of Christians, but certainty in this matter is impossible.

In view of the injunctions of writers such as Tertullian (discussed by Sparey-Green 2003) it may be that Christian cemeteries were most clearly distinguished by virtue of their physical segregation from those of non-Christians (see also Harries 1992, 61), although Rebillard (2009) has argued that this view has been overstated.. In the absence of a distinctive rite in relation to the individual burials, however, such cemeteries might not be identifiable archaeologically as belonging to a particular community even if they were distinguished by other characteristics in the eyes of contemporaries. In conclusion, therefore, it is clear that around Winchester and quite possibly within the Lankhills cemetery there could have been burials of Christians. There may have been cemeteries in which Christians formed a majority or even the entirety of the cemetery population, but this does not mean that there was at this time a common rite of burial which would have been characterised by contemporaries as distinctly, let alone uniquely, Christian in character, much less one that can be identified as such on the basis of archaeological evidence.

Chapter 8: The cemetery in the context of late Roman Winchester and beyond

The broad sequence of development of Roman Winchester was summarised in Chapter 1. This discussion attempts to relate the Lankhills cemetery more specifically to the late Roman town and to changing perceptions of late Roman urbanism in a wider sense (see below) in the hope that the relationship between town and cemetery may be clarified, and perhaps that understanding of both may be enhanced by considering them in a more integrated way. The cemetery was not just the resting place of a random collection of dead people. It was a significant part of the urban topography of Winchester, albeit only one of a number of such sites. More importantly, it presents us with a cross section of at least some of the communities of late Roman Winchester. Broader consideration of what these people were like and of how they were buried may provide some insights into the character of the town, while a summary of the latter may in turn help understanding of the burial population. Discussion of these aspects in other places has tended to concentrate on the issue of Christianity. While this is an important question it is not one that is capable of resolution on the basis of present evidence (see above), and other aspects receive more attention here.

The character of Roman Winchester in the 4th century

Developments in late-Roman Winchester have been succinctly summarised by Wacher (1995, 299) 'In the fourth century, Winchester seems to have been more densely occupied than before, although there are signs of decline beginning in the mid fourth century'. Inevitably both parts of this characterisation are problematic, the first because of the paucity of evidence, particularly for the early Roman period, which makes comparative assessment of the early and later towns very difficult (this is hardly Wacher's fault!). The second issue relates to the inevitably negative concept of decline. Decline can, of course, be measured in relation to the traditional markers of Romano-British urban character, particularly streets and stone buildings, but what does deterioration in the physical condition of these 'assets' represent? In particular, does it necessarily equate to decline in population, or in the level of economic or other activity? Both of these may indeed have been reduced, but this cannot be assumed to follow straightforwardly from, for example, the apparent evidence for disuse of a particular building. For these reasons the latest survey of the transition from late Roman to Anglo-Saxon Winchester by the Biddles offers a preferable summary (Biddle and Kjølbye-Biddle 2007, 189). In this view Winchester 'underwent a profound change shortly after the middle of the 4th century. Some, or parts of some, of its public buildings already had been or were now demolished, town houses of the greater sort were levelled, large areas inside the walls were apparently laid out to compounds, the water-supply re-organised…. Whatever the physical changes to the fabric of the city, they were not, apparently, accompanied by a decrease in population.' The present discussion will argue that 'profound change' is not just a euphemism for 'decline', and that it better represents what may have happened in Winchester in the 4th century and perhaps beyond. The question of 'how far beyond?' is of course one of the critical ones, and the metaphor of decline based specifically on the cemetery evidence has been retained by the same authors in the context of Lankhills, the thinning out of the graves at the eastern end of Clarke's excavation being described as 'one of the most vivid and poignant images of the end of Roman Britain' (ibid., 189). Equally, in summarising the later phases of the Victoria Road cemetery, closer to the northern walls of Winchester, evidence for decrease in grave depths was interpreted simply in terms of slipping standards (Kjolbye-Biddle 1992, 416, 418).

Winchester has tended to be seen as a fairly typical late Romano-British town. As already indicated there is really insufficient evidence to allow such a judgement to be made with confidence. In terms of the 'public' character of the town, however, Winchester may have been reasonably typical in the continuing development of its defences, here represented by the possible provision of towers attached to the ?3rd-century town wall. This is a feature of many (but not all) of the major towns, as well as of a more restricted number of minor towns (Wacher 1995, 78; Burnham and Wacher 1990, 316; Millett 1990, 152-3, table 6.4). The Winchester evidence is in fact relatively slender, and consists of a single tower located just east of the south gate, examined in 1971. Unfortunately this example shares a characteristic with towers from a

number of other Romano-British towns, in being poorly dated. It was assigned to the second half of the 4th century by the excavator (Biddle 1975a, 115-6), but on stratigraphic criteria alone, although it was thought possible that the tower was contemporary with a road surface which sealed coins of which the latest was dated 367-378 (ibid., 116). A similar problem besets the dating of the towers at Chichester, for example, where Magilton (2003, 165-6) rightly dismisses the traditional date of after AD 367 as based on 'dubious historical grounds', even if the archaeological evidence does suggest that towers at a number of other sites do appear to be broadly of this date. At Silchester (Fulford 1984, 66) and at Dorchester such towers are lacking altogether. Apart from Chichester the nearest major urban defensive circuits with towers are therefore Cirencester, where they are probably to be dated within the period AD 350-364 (Holbrook 1998, 93-4), and London, where a likely date range of AD 341-375 has been preferred (Maloney 1983, 108). Neither of these sites necessarily informs us about the date of the Winchester example.

Turning to 'small towns', at Mildenhall, where the wall and towers were contemporary (Corney 1997, 343) the evidence 'strongly points to a construction date after c. 360' (ibid., 344), while at Alcester (Warwicks) the late wall has a possible *terminus post quem* of AD 364-7 and a likely gap of seven years before the addition of a tower (Cracknell 1996, 39-40). Corney (1997, 349) suggests a link between the construction of the late walls at Mildenhall, Alcester and also Kenchester as part of a programme of provision of defences for key small towns within the province of Britannia Prima. Whether the enhancement of the defences of Winchester, probably (but not certainly) in the province of Maxima Caesariensis, was part of a comparable programme is unknown.

As for civic buildings within the walls, Biddle and Kjølbye-Biddle (2007, 189 n 2) give a concise summary of masonry elements which must have derived from substantial (public) buildings and were reused in later Roman structures; by definition, therefore, the parent buildings were out of use (at least in their original form) well before the end of the Roman period. Of the major public buildings of Winchester, however, there is only direct evidence for the probable forum complex, and this is relatively limited (eg Biddle and Quirk 1962, 153-5). A structure interpreted as an addition to the south side of the forum is thought to have gone out of use at the end of the 3rd century, with no indication of further use of the site (Biddle 1969, 315; 1970, 312). A street immediately to the south continued to be resurfaced through the second half of the 4th century, however (Biddle 1970, 312). To the north, the early 2nd-century Romano-Celtic temple in Lower Brook Street was demolished at about the end of the 3rd century and a rectangular building of simple plan, interpreted as having initially been a workshop, but subsequently of partly domestic character, was then constructed just to the south and remained in use for much of the 4th century (Biddle 1975b, 300-301). Just west of here the 1987-8 excavations in The Brooks have shown fairly intensive activity in the area for much of the 4th century with the construction of new, substantial stone-founded buildings in Insula VIII and Insula XXIII, blocks respectively immediately north and then north again of the forum (Zant 1993, 85-127; for numbering of the insulae see ibid., 6, fig. 6, but note that the most recent mapping (eg Fig 1.4) of the town suggests an increased number of north-south streets in the western part of the town, reflecting the topography). Evidence of continued activity in these buildings after the middle of the 4th century, however, indicates changes in their character, and potential disuse and in some cases demolition before the end of the century (ibid., 131-147). Further substantial buildings are known in the south-east corner of the walled town at Wolvesey Palace, where domestic activity was maintained through much of the 4th century in a house partly examined in Insula XII and in parts of three or four buildings to the east in Insula XXVIII (Biddle 1975b, 322-324). In the north-west quadrant of the walled town recent excavation in Insula XXXIII has produced evidence for intensification of activity in the 4th century, when a number of new structures were built. These included a stone-founded building, perhaps a town house, with painted walls set back from the street frontages, and a timber building, apparently of aisled form, set at right angles to the line of the main north-south street (Biddulph forthcoming). The degree of disturbance from later features, however, makes it impossible to determine which if any of the structures were related to one another, or whether they all formed independent properties.

The extent of 4th-century extramural settlement, or at least non-funerary-related activity, is not very clear, but the impression that this was most intensive on the north side of the walled town, with less occupation to the east and the west, may be largely a function of the location of excavation (see eg Rees *et al*. 2008, 11, fig. 3). Collis (1978, 12-15), for example, records 'plentiful' late Roman pottery from a site 100 m south of the south gate). Successive concise overviews have been presented by Collis (1978, 6-8), Esmonde Cleary (1987, 150-156) and Rees *et al*. (2008, 10-13, 15-17); full publication is awaited (Browne *et al*. forthcoming). To the west there seems to have been no late Roman occupation of the western part of the Oram's Arbour enclosure (Qualmann *et al*. 2004, 95) and there is little other evidence for use of this area except for burials. A broadly similar situation is recorded east of the town, with traces of possible structures close to the east gate recorded in small interventions in St John's Street, but the bulk of evidence comes from the area relating to burials (Rees *et al*. 2008, 17; Browne *et al*. forthcoming). Fourth-century structures were present in the more extensively-excavated northern suburbs, particu-

larly at Hyde Abbey and Victoria Road in the V-shaped area between the roads to Cirencester and Silchester and also on the east side of the latter road. Even in this area, however, most of the identified structures were of timber and many are characterised as ephemeral (Rees *et al*. 2008, 13). What may be of most interest here is the dynamic interrelation of funerary and (presumably) domestic activity. Thus in the Victoria Road site from the mid-late 2nd century, buildings on the east side of the Cirencester road encroached on an area previously used for burial, and non-funerary activity then continued here through to the later 4th century (ibid.). The expansion of areas used for burial, however, tended to be both northwards (for example at Hyde Street, an expansion also represented by the Lankhills cemetery) and westwards (Victoria Road trenches I-VI, west of the Cirencester road), though this development does not seem to have been at the expense of other well-defined activities.

Ultimately both burial and 'occupation' at Victoria Road, respectively west and east of the road to Cirencester, probably continued into the 5th century (ibid.). As in other Roman towns, however, the date of the latest use of the structures identified within the walls is uncertain, although the finds certainly indicate some activity of very late-Roman date, a pattern seen widely across the town even in cases where the structural sequence does not obviously extend right to the end of the 4th century. At Wolvesey Palace, however, the principal Insula XXXIII building was partly overlain by a two-phase, two-roomed building with rammed chalk foundations which 'must belong to the latest Roman period and a post-Roman date cannot be excluded on the present evidence.' (Biddle 1975b, 325). The latest deposits on many of the other sites within the walled town, where they have survived truncation by later activity, often comprise 'dark earths'. These are typically associated with coinage of the House of Theodosius, which is relatively common in Winchester (eg Reece 1991, 20; Davies 2008, 134; Booth forthcoming). The subject of intense debate over the years, a consensus seems to be emerging that 'dark earth' deposits do indeed usually represent processes of human and biological reworking of exposed external deposits (eg Yule 2005, 80), though a single explanation will not necessarily serve for all such deposits. It is also becoming clear that 'dark earth' does not have to be chronologically restricted to the latest phases of Roman activity (ibid.). Analysis of dark earth deposits from Northgate House in the north-west corner of the town (Macphail and Crowther in Biddulph *et al*. forthcoming) showed that they were biologically worked, forming naturally through the growth and decay of vegetation and the action of worms and other creatures, and also contained ash, dung and domestic waste consistent with middening and the accumulation of occupation debris, rather than formation through manuring and cultivation (Biddulph forthcoming).

Uncertainty about the definition of late Roman urban character in Britain is compounded by geographical and quantitative variations in the available evidence, and by contradictory interpretations of that evidence arising from a wide range of interpretative frameworks within which the evidence can be placed (for a concise summary of the principal positions, see Faulkner 2002, 59-61). Leaving aside the question of what happened to towns at/after the very end of the 4th century, views of what was happening within towns during the 4th century may be characterised crudely as ranging from 'towns as administrative villages with low population levels' on the one hand to 'towns sort of as they were but not like in the good old days' on the other. The former view originated with a controversial paper by Richard Reece (1980) and has been developed since, particularly by Faulkner, who has produced quantified assessments of the value of construction work in Romano-British towns and of the number of rooms occupied in urban houses, both expressed in terms of quarter-century units of time (eg Faulkner 2000, 29-31). For the later 4th century there will always be issues related to the character of older excavations and, most particularly, the nature of dating evidence. The limitations of the latter will inevitably tend to support the view of 'decline' from the middle of the 4th century, and indeed radical decline in the last quarter of the century, presented by Faulkner. If the fall in the number of occupied houses/rooms in the later 4th century is genuine, then it is not unreasonable to interpret this in terms of a substantial reduction in the size of the urban population. Opposing views rest largely on a limited number of cases where the material component of the site sequence, upon which the chronology has to be based, has been carefully contextualised. Fulford, for example, has recently argued explicitly for the continuation of activity in Insula IX at Silchester into the 5th if not the 6th century (2006, 280-2). Even if all the detail does not convince, this interpretation is of interest for several reasons. It contrasts with the best known 'sub-Roman' urban sequence in Britain, that at Wroxeter (Barker *et al*. 1997), in broadly maintaining the character of the earlier 4th-century activity at Silchester, rather than representing a significant change in the nature of occupation. It is also of some relevance to Winchester given the relative proximity of the two sites, and it might suggest the potential of what could have existed at Winchester had the site sequences there not been disturbed by Saxon and (particularly) later features (cf eg Brooks 1986, 89; see also Biddle and Kjølbye-Biddle 2007, 194), though it can perhaps be argued that the Silchester sequence is atypical, rather than the reverse.

The chronology of 'Anglo-Saxon' activity in Winchester, and its scale and character, are still unresolved problems, reviewed recently by Biddle and Kjølbye-Biddle (2007, 195-198, 203-4). These may be relevant to questions about the 'end' of the Roman town, although many commentators on the

wider picture would see the collapse of Romano-British urbanism as predating any significant Anglo-Saxon settlement (eg Liebeschuetz 2001, 103), a view that clearly runs counter to that of Fulford, just discussed. If correct, however, there is unlikely to have been any causal relationship between the demise of urban characteristics and the arrival of the earliest Anglo-Saxon settlers in the region, whatever the details of their chronology, although Ward-Perkins, for example, is more prepared than many recent writers to see the problems of 5th-century Britain as a consequence of (inter alia) barbarian pressure (Ward-Perkins 2005, 130). Reverting to Winchester, the evidence of the Lankhills isotopes indicates that the population of that cemetery, at least, derived from many different areas, but it does not support Clarke's claim (see above) for the presence of a specifically Germanic group there at the end of the 4th century (or later). Equally, the Lower Brook Street pottery which 'provides indisputable evidence for the presence of Germanic arrivals…by the middle of the 5th century' (Biddle and Kjølbye-Biddle 2007, 203) is only a small proportion of the known Anglo-Saxon ceramic material from Winchester, much of which cannot be dated more closely than 5th-7th century. Its significance in terms of the 'end' of the Roman town is therefore uncertain.

The question of the transformation of Winchester from the middle of the 4th century can be set in a wider context of late Roman urban change, British perspectives on which have already been mentioned. Evidence for change of use and indeed disuse of public buildings such as fora comes not only from sites in Britain but also from further afield. In North Africa, for example, many fora were probably out of use as public open spaces by the end of the 4th century (Potter 1995, 73), even though it was here that 'the Roman version of the classical ideal remained intact longest' (Liebeschuetz 2001, 74). In some of the Danubian provinces fundamental changes in urban character are evident from quite early in the 4th century (Poulter 1992), while in northern Gaul urban forms changed significantly with the construction of typically small defensive circuits through the 4th century (eg Johnson 1983b, 81-101) and the loss of function of many public buildings (Ferdière 2005, 347). Other aspects of urban transformation can be seen in terms of recent wide ranging debate about the nature of social change in late antiquity, providing a framework for interpretation of some of the fundamental changes observed in the physical record, both in relation to structures and to material culture (eg Lewit 2003; Bowes and Gutteridge 2005). This framework allows those changes to be seen as occurring within a network of surviving towns, albeit of significantly altered character. In the specific case of Britain, however, there are two particular difficulties. The first relates to the possibility of survival of an urban structure in the face of the evidence for the collapse of a meaningful political/military framework (except at a local level) and the consequent disappearance of related economic structures; the second relates to the potentially fundamental role of the church in supporting a largely reconfigured society (Bowes and Gutteridge 2005, 412-3).

On the first point there is widespread consensus that the situation in Britain was different from and more extreme than that seen elsewhere in the western provinces (Esmonde-Cleary 1989, 159-161; Ward Perkins 2005, 117-121; Wickham 2005, 306-308). On the second point there is much less clarity about the extent and character of survival of Christianity in south-eastern Britain, though it can be argued that the disappearance of towns in any meaningful sense meant the loss of an associated ecclesiastical structure. As Peter Brown has said in the context of 5th-century Gaul, 'Walls and bishops went together' (Brown 2003, 107). It is hard to see that the situation in Britain would have been very different, the issue being not the physical disappearance of walls but the absence of means for a political structure to support their maintenance and, if necessary, active defence. The corollary of this in the rather different circumstances prevailing in Britain is that the demise of an urban structure had significant consequences for the church. David Petts has argued that in Britain the focus of Christian activity was, unusually, in the countryside rather than in the major towns (eg Petts 2003, 170), while at the same time conceding that 'Even the most optimistic advocate of the success of Christianity in Roman Britain would not deny that the majority of the population remained pagan.' (ibid., 168). Petts concludes that the church developed 'a semi-rural rather than semi-urban infrastructure' (ibid., 171) which ensured its survival, at least in the west, in the post-Roman period. Peter Brown (2003, 128) argues, perhaps more persuasively, that the nature of post-Roman British Christianity by the 6th century was one in which 'the monks and bishops were critics of their society. They did not claim, as in Gaul, to be its leaders.' Brown retrojects this characteristic on late Roman Britain, with the inference that their influence was not substantial at that time.

In summary, the evidence from Britain, seen both in its own terms and alongside that from the continent, suggests that urban structures had ceased to exist 'by 450 at the latest' (Mattingly 2006, 349). Where longer occupation sequences can be postulated, as at Silchester and Wroxeter, they seem likely to represent either survivals of an exceptional nature, as perhaps in both these cases, or continued activity of non-urban character within the former urban shell. There is nothing at Winchester to contradict the more general view, which forms the background to subsequent discussion of Lankhills. However, Winchester has one potentially unique characteristic in the 4th century which would have had a bearing on its population at least at that time, and therefore merits consideration.

The *Gynaeceum?*

Winchester has been identified as the most probable location of the only *gynaeceum* listed by the Notitia Dignitatum for the Diocese of the Britains. This issue has been discussed in general terms by Wild (1967) and was reviewed again by him in 1976. Although Clarke referred to this association several times (eg 1979, 369, 389) the intention here is to consider its possible implications in more detail. It is emphasised that the Venta mentioned in the text of the Notitia Dignitatum cannot certainly be identified with Winchester; the case has been well-made by Wild (1967), although doubts have been raised, for example by Walton Rogers (2007a, 231-232) on the basis of a wider pattern of textile evidence itself. Nevertheless it is worth considering, if the association is accepted, what the implications might have been for the character of late Roman Winchester. Wild is realistic, if therefore unfortunately unspecific, about what we might expect *gynaecea* to have looked like. He views them (1976, 52) principally as weaving shops, this activity being undertaken probably by men (ibid.; but see Wild 2002, 29), although Birley (2005, 404) translates '*procurator gynaecii in Britanniis Ventensis*' as 'procurator of the women's (weaving factory)…', deriving this from the primary meaning of the word *gynaeceum* as 'women's quarters'. Jones (1964, 836) says that *gynaecea* were manned by state slaves, but that 'by the middle of the fourth century the workers in the state factories had become hereditary groups'. A combination of free and unfree workers is suggested by the Codex Theodosianus (Hurst 1995, 94). Either way it is clear that women, seen by Wild as carrying out supporting roles, were present in *gynaecea*, as also were prisoners (Wild 1976, 53). Whether family units were involved, with the potential for the presence of children as well, is unclear. Wild does not 'postulate[…] the existence of special premises for the *gynaecea*' but does argue for the use of weaving sheds and other rooms, perhaps in 'converted domestic buildings requisitioned by the state' (ibid.). Such use would be very difficult to identify from archaeological evidence. One example, however, has been claimed in Carthage on the basis of a combination of structural and artefactual evidence supported by the documentary record indicating the presence of such an establishment in the city (Hurst 1995, 64-70, 92-98), although the site is thought to have been associated with textile production from a period well before the possible date of establishment of the *gynaeceum* (eg ibid., 96-7). It is clear from Hurst's discussion that this combination of factors is in effect fortuitous and that no one or even two strands of evidence would necessarily have sufficed to support the interpretation. It is uncertain if the excavated buildings at Carthage, on the north side of the circular harbour, were considered to represent the totality of the *gynaeceum* installation or only a part of it. Their general character, however, was consistent with that of other structures in Carthage and emphasises, even if the identification of the *gynaeceum* is accepted, that there was no set structural type to be associated with such an installation.

The Carthage evidence, therefore, does not provide a clear model for the arrangements at Winchester (although it suggests the juxtaposition of dye-making, dyeing, spinning, weaving and fulling activities (ibid., 94-7)). One possibility which might be considered is reuse of part of the forum-basilica complex. It is unfortunate that this building is hardly known at Winchester (see above), but recent work has provided clear evidence for the later Roman use of the basilica at Silchester, in particular, for metalworking (Fulford and Timby 2000, 72-7, 578-80). The evidence for such late Roman reuse in other Romano-British forum-basilica complexes, and in other types of public buildings, has been discussed by Rogers, who emphasises the potential significance of such developments as representing symbolic acts of regeneration (2005, 32-34). This interpretation, while interesting, is not seen as of primary importance here. There seems, however, little doubt that the reorientation of a fundamental part of the civic infrastructure of some Roman towns must have been officially sanctioned in some way – and it is therefore likely, though not demonstrable, that the products were intended for official consumption. Fulford and Timby (2000, 579-80) raise the possibility that the ironworking in the Silchester basilica was related to arms production. It is not inconceivable that textile manufacture for state purposes could have been accommodated in a similar fashion. Equally, however, we may speculate whether weaving activities would necessarily have been concentrated in a single building or complex, or whether they might have been more widely dispersed within the town. Unsurprisingly, direct archaeological evidence for weaving in late Roman Winchester is sparse, although it does include a small group of bone weaving tablets from a building recently excavated in the north-west corner of the town (Biddulph forthcoming; see also above). It is clear, however, that the occurrence of spindle whorls within a number of graves at Lankhills (cf Clarke 1979, 369) is part of a wider phenomenon (see Cool above) and is unlikely to be relevant to the issue of the *gynaeceum*.

Additional questions inevitably follow, although they cannot be easily answered at present. The most important relates to the number of people who might have been employed in a *gynaeceum* – presumably the inclusion of such establishments in the Notitia Dignitatum implies a certain minimum size. Based on eastern evidence Jones argues that 'These factories were like the *fabricae* quite considerable establishments' (Jones 1964, 836). In the context of fabrica sizes James (1988, 276) refers to 'greater numbers, perhaps four hundred to five hundred men' as 'highly speculative'. The length of time over which the *gynaeceum* was maintained is also uncertain, although if it was established as early as the

reign of Diocletian (cf. Jones 1964, 834, 836; James 1988, 265-6 for the Diocletianic date of many fabricae) it could have been in existence for much of the 4th century. A further question relates to the origin of the workers, in turn connected to the issue of their status, already mentioned. Were they drawn from the citizenry of Winchester itself, or were they all, as slaves, at least initially drafted in from elsewhere en masse? These issues could have significant implications for the population of Winchester. In combination they require us to consider the extent to which the likely presence of the *gynaeceum* establishment determined the character of the late Roman town, both in physical terms and in relation to its population. The former issue cannot be resolved on present evidence. In terms of the number of late Roman inhabitants of the town all estimates are guesses. Application of recent formulae for Romano-British urban population density (eg Millett 1990, 183; Swain and Williams 2008, 39; cf. Liebeschuetz 2001, 84-5 for continental estimates; Bowman and Wilson 2009, 55-60 for a recent review) might suggest a peak population for Winchester in a range from 8500-10,000 (based on the area contained within the walls, but omitting the extramural population to compensate for those intramural areas which appear to have had very low levels of occupation), although this figure seems rather high. The extent to which the 4th-century population may have declined from a postulated late 2nd-century peak is uncertain (interestingly Swain and Williams (2008) do not attempt a comparable calculation for London). In any case, with a population by this period probably in the low thousands, at best (eg Esmonde Cleary 1989, 80), a group of a couple of hundred people, whatever their status, would have been a significant element in that population.

Did these people form a coherent group in terms of identity, the location of their working and living quarters and, more importantly in the context of Lankhills, their place of burial? None of these questions can be answered with any degree of certainty. What is clear on the basis of the isotope evidence, however, supported to an extent by aspects of the artefactual record, is that the people buried at Lankhills were very diverse in terms of origin. With isotope studies still relatively in their infancy it is unfortunately too early to say how representative such diversity may prove to be for urban populations in late Roman Britain, although there are indications that the Lankhills situation may not be completely atypical. A sample population from Gloucester (of more wide-ranging date within the Roman period) also included a significant proportion of non-local individuals (Chenery 2008, 153), and the same has been demonstrated at York, always a place likely to produce evidence for a population of varied origins (Leach *et al*. 2009). Even in the rural cemetery at Wasperton, Warwickshire, however, three individuals out of a late Roman sample of 15 people had oxygen isotope ratios 'which appear to be inconsistent with known modern isotope values for England and north-west Europe' (Montgomery *et al*. 2009, 48). This suggests a surprisingly mixed population, but the question of how representative such figures might be remains to be clarified by future work on other populations.

At Lankhills, nevertheless, the provisional impression is that the number of people of non-local origin is rather higher than might have been expected. Whether this variety reflects the circumstances of a specific group such as the workforce associated with the *gynaeceum* can be no more than speculation, though it might be supported by the quite exceptional evidence, in the form of crossbow brooches, for the presence of official/military personnel at a level which has no parallel in other urban cemeteries in lowland Britain, and indeed Clarke suggested an association in terms of official personnel drafted in to secure the oversight of the *gynaeceum* in the aftermath of the rebellion of Magnentius (Clarke 1979, 389). That such people were buried in relatively close proximity at Lankhills may just be fortuitous, but there is perhaps enough evidence from other late Roman cemeteries in Winchester to suggest that the association was not accidental. There is evidence for a degree of community segregation in some late Roman cemeteries in Britain, the differently aligned and furnished groups at Poundbury being one example and the contrast between the apparently contemporary 'managed' and 'backlot' cemetery groups at Ashton and Ilchester being another, although the significance of these distinctions remains controversial. At Lankhills the possible suggestion of group segregation raised by the Sr and O isotope evidence is potentially important in this regard but the distinctions are quite subtle and would never have been postulated without the isotope data. In general terms it is likely that such cemeteries were used by diverse communities 'but with similar practices surrounding death' (Williams 1999, 101). The ways in which burials of these groups were distinguished or segregated, if this was done at all, could easily have left no archaeological trace whatsoever.

While individual burial plots may have been the specific property of family groups or burial clubs, in Britain it is therefore difficult to identify evidence for the exclusive use of particular cemeteries by distinct communities, whatever the basis of their particular identity. The nearest we may come to recognising such a situation is probably at sites such as Brougham, which is suggested to have been the cemetery associated with a particular military unit, perhaps originating in the Danube region (Cool 2004, 464-6). Those burials, presumably comprising those of soldiers as well as their wives and children, may also have included other members of the wider military community of 3rd-century Brougham, and over the space of a century or so this community will have evolved and most likely incorporated

individuals from a variety of places of origin. In this respect it may parallel the situation at Lankhills, although at Lankhills we cannot know if the origins of the group of people burying its dead were as tightly defined (albeit not ethnically linked) as may have been the case at Brougham, but such a scenario is possible and might possibly account for the *de novo* appearance of the cemetery at about the beginning of the 4th century. If this was the case, however, the isotope evidence already mentioned would suggest that there were distinct smaller social units within the ostensibly homogenous larger group, as would indeed be expected (see eg Haynes 1999, 10 in the context of the Roman army).

The burial context

Regional burial tradition

The dominant generalised burial tradition in the Winchester region at the beginning of the Roman period was cremation, although inhumation burials are known (see below), but the cremation tradition included a variety of different practices, among which a group of high status burials, characterised inter alia by the presence of multiple pottery vessels, has been identified and discussed by Martin Millett (1986; 1987). This was seen by Millett as a rural tradition, although he included within it the well-known Grange Road burials (Biddle 1967) and examples from Milland and Highcliffe (Collis 1978, 93-105), both very close to Winchester. The relationship of these burials to the town can be debated, and in the case of Grange Road, albeit some 2 km south of the town, it is likely that proximity to the Roman road, arguably an urban burial characteristic, was important.

Relatively little is known of the development of cremation practice in the properly urban cemeteries of the region. At present the St Pancras cemetery at Chichester (Down and Rule 1971, 53-126) remains the best known such cemetery, with evidence for a variety of practices within the period from approximately AD 70 into the early 3rd century. For Winchester much the best evidence comes from Victoria Road East (Hyde Street), with some 104 cremation burials, similarly dated to those from Chichester, and with the advantage of more detailed consideration of the human remains (Browne *et al*. forthcoming). Just over half of these burials were urned, and one burial was placed in an amphora and three in wooden boxes. Just under half of all the burials were intentionally furnished (pyre goods were relatively rare), the grave goods comprising principally pottery vessels (rarely more than two, but with occasional exceptional assemblages), followed by jewellery including beads, brooches, bracelets, pins and rings. Less common items were mirrors, of which there were four including two from a grave which also contained two glass unguent jars and a small bronze wheel. Pig skulls occurred in two graves, but otherwise there were few animal remains (Browne *et al*. forthcoming). A more unusual characteristic of this cemetery was the contemporary occurrence of inhumation burials, particularly of large numbers of neonates and infants (see further below). A later phase of burial saw low-level use of the site for both cremation and inhumation burials in the 3rd century, whereas at St Pancras only occasional inhumation burials were dated later than the early 3rd century and there was no clear evidence for any significant late Roman use of that site. Conversely, once Victoria Road East finally ceased to be used for burial the area was taken over for later activity of a different character. Meanwhile, in Chichester late Roman inhumation cemeteries may have been established on new sites, such as that outside the west gate (Magilton 1993).

Away from the urban context, aspects of burial practice in Hampshire have been reviewed by John Pearce (1999). This review shows a fairly standard pattern of changes in practice, with inhumation burial becoming the dominant tradition 'in the late third or early fourth centuries' (ibid., 152). By contrast, in neighbouring Wiltshire, the dominant pre-conquest tradition of inhumation burial continued, with modifications, throughout the Roman period, although cremation burials also occurred throughout the period (Foster 2001, 165, 171; see further below). In late Roman inhumations in Hampshire the provision of nailed footwear and pottery vessels is seen as characteristic, and Pearce makes the interesting observation that "the proportion of furnished burials and the furnishing of the 'average' burial was equal to or higher than that from Winchester's cemeteries… although the proportion of furnished burials in the rural sample is exaggerated by the dependency on grave goods for dating." (Pearce 1999, 153). Clearly the latter point may tend to cancel out the possible significance of the former, but what does seem to emerge is that a reasonable level of grave furnishing was not unusual in late Roman inhumations in rural contexts in this region. Directly comparable data are scarce, but for the upper Thames Valley, for example, the evidence suggests a relatively low level of provision of grave goods; a general scarcity of pottery vessels, in particular, does seem to be a reliably documented characteristic here (Booth 2001, 26-7).

Pearce's review suggests a broad degree of uniformity of late Roman inhumation practice in both rural and urban contexts in the Winchester region (there are obvious areas in which contemporary rural and urban practice may differ, such as the significance of burial location in relation to settlement boundaries and grouping by sex (eg Pearce 1999, 158)). It is not so certain, however, if this extends to the less common cremation tradition, but occasional late Roman cremation burials are known at Owslebury (Collis 1977, 34) (St James' Lane, Winchester, with a coin of Magnentius (Alcock 1980, 76) may best be considered urban). A more substantial 4th-century cemetery at Winterbourne Down,

Wilts, roughly 30 km west of Winchester, contained 14 inhumations and 36 cremation burials (Anon 1961-3, 470; Philpott 1991, 50). Details of this site are scarce, but it has been noted that the majority of the cremations were associated with beakers or jars, many of them burnt (Foster 2001, 173). This site appears exceptional, however, and while occasional cremation burials do occur in other late Roman cemeteries in that area the majority of such sites, as for example at Boscombe Down, Amesbury, are dominated by inhumation burials (Wessex Archaeology 2008).

Inhumation burial in Winchester

In the same way that late Roman cremation burials are observed both in the surrounding countryside and within the cemeteries of Winchester it is clear, particularly from the evidence of Victoria Road East, that inhumation burials could form a component of the early Roman cemeteries of the town. The Victoria Road examples, some 16 in all leaving aside the neonate and infant burials, dating to the later 1st-early 2nd century, were generally unremarkable, but they did include three prone burials, two of them of females, the third (unsexed) with an infant burial over the torso. The association of prone adult burials and some 76 neonates/infants might suggest that this area was favoured for burials of the socially marginal, but the evidence of the contemporary cremation burials contradicts this, nor is there any clear indication of spatial or chronological separation of the different types of burial during the 1st- to 2nd-century use of the site.

Inhumation burials elsewhere in Winchester are either demonstrably of late Roman date or are presumed to be so, the identification being helped by the fact that few if any of the known cemetery sites seem to have been used throughout the Roman period. As with Lankhills, the other late Roman cemeteries seem to have been established *de novo*, usually on previously unoccupied sites. Even at Victoria Road West, for example, the late Roman burials were not only mostly later in date than a sequence of structures set against the Cirencester road, but they lay west of a ditch which seems to have defined the western side of a roadside zone within which the structures lay. The ditch effectively segregated the two areas, with very little evidence of pre-cemetery use of the space west of it. The only burials located east of this ditch all lay close to it and were of three neonates/infants. These may have been put in place while the adjacent buildings were still in use, but this juxtaposition is characteristic of infant burials and does not invalidate the point that the main body of the cemetery was clearly segregated from the area of domestic activity, whether or not that still continued as the development of the cemetery got underway. Similarly, at Andover Road the only possible pre-cemetery feature was a north-south ditch of late Roman date which may in any case have been dug as part of the process of defining an area to be used for burial, rather than as a separate activity. At Chester Road the site seems to have been used as a quarry prior to the establishment of the eastern cemetery there. The circumstances of use of the Oram's Arbour ditch in the western part of the town are different, but appear to indicate nothing more than reuse, albeit locally intensive, of a convenient feature; there is no suggestion that ongoing burial was closely accompanied, either chronologically or spatially, by activity of other kinds.

In view of the lack of correlation with occupation sequences, therefore, the precise chronology of the early phases of the late inhumation cemeteries is not always well-defined, and estimates of the date of their inception range from *c* AD 270 to the early 4th century. In any case, there is no reason to suppose that these cemeteries were all established at the same time. Coin-dated graves from any phases of use of these cemeteries tend to be scarce. Unusually, a helpful date for one of the earlier phases of burial at Chester Road, in the eastern cemetery, is provided by one of the two cremation graves from this cemetery. This contained five coins, the latest of which were two fresh issues of Probus, dated AD 276-282 (Browne *et al*. forthcoming). If the phasing of this site is secure, inhumation burial here could have started as early as the mid 3rd century. At Colchester, for example, the changeover in rite from cremation to inhumation is dated either *c* AD 250-275 or over a longer period up to this time (Crummy 1993, 264), but in contrast to Winchester, late (ie 4th century) cremation burials appear to be completely absent.

At Chester Road the majority of the burials assigned to the earliest phases were aligned north-south (and south-north), but while a generally west-east alignment prevailed thereafter, it did not dominate completely until the final phase of use of the cemetery, conservatively dated to after AD 350 (Browne *et al*. forthcoming). Elsewhere, broadly west-east alignments predominated, although it is clear that, as at Lankhills, aspects of local topography and boundary layout were significant factors in determining layout. So, for example, the majority of the earliest graves at Victoria Road West were aligned between NW-SE and NNW-SSE, roughly parallel to a ditch which in turn reflected the line of the Cirencester road a little to the east. This phase of burial is dated approximately AD 270-320, and there is then thought to have been a break in the sequence of burial before it resumed on a perpendicular axis (generally *c* WSW-ENE) towards the middle of the 4th century. A final phase saw both the perpetuation of this alignment and some departures from it, including occasional north-south burials.

Further south, at Andover Road (the Eagle Hotel) a more consistent west-east alignment was observed, with the notable exception of a single south-north aligned burial in a lead-lined coffin. Both alignments may have been conditioned by the north-south ditch located at the western margin of

the site, but insufficient of this was examined for it to be possible to tell how close the correspondence of alignments really was. At Hyde Street, also within the northern cemetery, the general west-east alignment was again in evidence, but was not followed consistently, and a fairly distinct group of burials on a WSW-ENE alignment was amongst the variation recognised. At this site there was no indication of the presence of boundary features which might have influenced some of the alignments, although the existence of these in the vicinity may be suspected.

At Chester Road an east-west aligned boundary may have had some bearing on the alignment of burials in the later phases of use of the site, and perhaps earlier, but in the final phase this boundary was suppressed and a north-south trackway was established (Browne *et al*. forthcoming). The latest burials in this part of the eastern cemetery, still aligned broadly west-east, seem to have been laid out with regard to this feature.

In most of the late Roman cemeteries there is little or no evidence for the presence of significant non-grave features, other than the ditches which might have determined some alignments, although in some cases this may simply reflect the relatively limited nature of excavation. The main exception, apart from the small ditched enclosures at Lankhills, seems to be at St Martin's Close, Winnall, where a walled structure surrounding two graves, one of which was *c* 2.8 m deep and contained a lead-lined coffin, was either a small enclosure or a mausoleum (Browne *et al*. forthcoming; Morris 1986). Within the backfill of the grave were two cists built of tiles and stone roofing material; the smaller of these, *c* 1 m above the base of the grave, may have surrounded a wooden box, while the larger one contained a block of mortared tiles with painted plaster on two sides, apparently redeposited, possibly from the original burial monument (Morris 1986, 345). Some other pieces of painted plaster from the grave may have been deliberately selected for redeposition (Browne *et al*. forthcoming). The only approximately comparable structure recorded in modern excavation is a probable mausoleum, 3.8 x 3.4 m, at Victoria Road East, but this structure was probably associated with an un-urned cremation burial. It was not closely dated but is most likely to have been built in the later 2nd century. It is possible that Winnall was a focus for higher status burial in the late Roman period, as four lead-lined coffins are known from there (including the example from the structure discussed above). Only one such burial has been recorded in the other cemetery areas, this being the single south-north burial at Andover Road.

Apart from the question of general alignment already mentioned the cemeteries show variation in the details of their layout, although again in many cases the excavated areas are insufficiently large for patterns in the evidence, if present at all, to emerge clearly. Interpretation of groups of burials as being laid out in rows or lines can be quite subjective. To the present writers, evidence of layout in rows is seen fairly clearly in the second main phase of burial at Victoria Road East, and at Andover Road. Hints of localised arrangements of rows elsewhere, at Hyde Street, 45 Romsey Road and in the later phases at Chester Road, are identified more tentatively. There are no convincing examples of burials in lines except in limited parts of the Lankhills cemetery (see above), although the NNW-SSE first phase burials at Victoria Road West and the early (?later 3rd-century) north-south burials at Chester Road tend more that way. Other groupings of graves, for example as related clusters, may be even less easily identified, but some do occur. The predominantly west-east burials of the second (mid 4th-century) phase at Victoria Road East clearly fall into an eastern and a western group with a north-south strip *c* 5 m wide between them. The underlying reason for this separation is not known, but there are differences in the composition of the two burial groups, though both are arranged essentially in rows. The 21 burials in the eastern group consisted entirely of adults, while the western group, probably containing as many as 38 graves, included 19 of children and infants (Browne *et al*. forthcoming). Burials of the latter were concentrated towards the south-western corner of the excavated area, but their arrangement was broadly compatible with the scheme of three rows of burials within this group more clearly defined just to the north. A further distinct group of eight or nine burials was identified at Andover Road, concentrated in the south-east part of the site. These were defined not only by their relative proximity but particularly by the fact that the grave pits were deep (over 1 m) and well-cut, and were marked out in these respects from most of the other graves in this site (ibid.).

The cemeteries exhibit quite variable evidence for intercutting of graves. At some, such as Hyde Street and 45 Romsey Road, there was either no intercutting or the relationships were marginal and would not have involved disturbance of earlier graves. At Andover Road there was evidence for two forms of intercutting. Several west-east graves cut the backfill of the single early south-north grave, but it is not clear if this was a consequence of the passage of time and therefore a lack of knowledge of the earlier grave, or resulted from a wish to be associated with it. It is possible, however, that later burials were deliberately sited in relation to the grave, particularly in view of its potentially above-average status. A similar desire to be closely associated with a high status burial group, which is of course suggested for some of the Lankhills burials (eg feature F. 6 in the earlier excavation, Clarke 1979, 97-99), may account for the only certain instance of intercutting at St Martin's Close, Winnall, where a grave intersected with the ?mausoleum wall and one of the burials within it, but unfortunately the presence of other features made it impossible to establish the relative

sequence here. Returning to Andover Road, most of the other examples of intercutting there involved the direct placement of burials within earlier ones. There appear to be four examples of this, and the relative lack of evidence for other apparently more 'accidental' relationships between grave cuts suggests that in these instances the relationship was deliberate, for whatever reason.

Elsewhere the evidence for intercutting is more complex. At Victoria Road West, burial in the third main cemetery phase was confined to the area occupied by the eastern group in the second phase (see above), with minimal incursion into the north-south zone which had separated the two burial areas in that phase. The layout of graves in this last phase was more haphazard than previously, though not entirely so. There were several instances in which phase 2 graves were cut by later ones both on the same alignment and at an angle to the earlier features. There were, however, at least six cases in which earlier graves were directly recut by later ones, in a manner very similar to that seen at Andover Road and at Lankhills. The correspondences are so exact as to make it very unlikely that these associations were fortuitous. In at least these cases, therefore, it is likely either that the earlier graves were clearly marked, thus allowing precise re-identification, or that the lapse of time between the primary and the secondary burials was relatively short, thus allowing the appropriate spot to be identified from living memory, or possibly both. In contrast, at Chester Road many of the instances of intercutting concerned graves on significantly different alignments (roughly west-east and north-south). Overall there seems to have been more accidental recutting of graves in this site than in most of the others for which we have evidence in Winchester (Browne *et al*. forthcoming).

The location of the cemetery

As is well known, Lankhills lies at the northern extremity of the northern cemetery of Winchester. The recent work has emphasised this through the location of an east-west boundary ditch, north of which there were no burials. It has tended to be assumed that the location of the cemetery was a consequence of the logical progression of burial grounds northwards with the passage of time as plots closer to the town walls became full (eg Clarke 1979, 11). While this may have been the case, other interpretations are possible. One of the underlying assumptions relating to the standard view is that burial north of the town was confined to the area between the Silchester and Cirencester roads and did not extend west of the latter until late in the 4th century, perhaps 'the result of overcrowding' (ibid.). It now seems clear that use of this area for burial was underway at least in the earlier 4th century, both at Andover Road and Victoria Road West, and that this development was consistent and broadly contemporary with the establishment of other late inhumation cemeteries around Winchester. It is not certain if these two sites represented distinct burial areas or formed part of the same cemetery (but the latter is likely as the sites were barely 20 m apart). In either case there were areas north and west of the excavated graves at Victoria Road West which were not utilised for burial. There may have been constraints on the use of these areas, but it is not obvious what these were; the issue of land ownership, archaeologically undetectable, might have been one, but does not seem likely in view of the absence of clear evidence for delimiting boundaries in Victoria Road West. Topographical factors might have been more significant here, the valley of the Fulflood just to the north possibly limiting the extent of burials in this direction, but this would not have precluded use of the whole of the Victoria Road West area.

On this basis the location of the Lankhills cemetery 500 m north of the north gate may indicate a deliberate choice of site rather than reflecting the dictates of necessity. One problem with understanding the logic of the choice, however, relates to the lack of evidence for the southern limit of the cemetery. It was clearly defined by boundaries to the north and to the east, even if the latter was eventually superseded, so it seems reasonable to assume that there may have been a southern boundary as well, the western edge presumably being defined by the road to Cirencester or related features. Unfortunately the location of the putative southern boundary is quite unknown. Were the graves noted to the south at the Cattle Market site part of this particular burial ground, or did they lie within another plot? The issue of the extent of municipal involvement in the establishment of late Roman 'managed' cemeteries (Philpott 1991, 227 and see also Chapter 7 above) is relevant to this question. If such involvement is seen as being intensive, then decisions about the location of cemeteries and the nature of their demarcation may have been out of the hands of the communities burying their dead within those cemeteries. On the other hand, if those communities were able to make their own decisions about these matters (within the existing legal framework) they might have been able to select sites for particular characteristics which suited their purposes. The logic behind the selection of Lankhills cannot be reconstructed, but relevant factors might have included a wish to be segregated (or at least seen as distinct) from the occupants of other nearby cemeteries. Alternatively, a prominent location elevated above the town may have been considered desirable, whether for reasons of display or other unknown factors. At Brougham it was suggested that such a location was deliberately selected by the community burying its dead there (Cool 2004, 25), perhaps to be seen as both a clearly identifiable landmark and a well-defined terminal point for funeral processions. It has to be admitted that, given the topographical setting of Winchester, many cemetery locations would perforce have

overlooked the town. The possibility that Lankhills lay in a skyline location as viewed from the north gate of the Roman town (suggested by the contours, but not tested by detailed analysis), however, might suggest deliberate selection of the site with this intervisibility in mind.

Seen against the other late Roman cemetery evidence from Winchester, Lankhills appears reasonably comparable in terms of general characteristics of layout and physical features, although the small sample size of some of the Winchester sites makes it difficult to be certain how carefully laid out they really were. Overall, however, there does seem to have been an emphasis on a reasonable degree of organisation, albeit constrained in part by topographical factors, the Oram's Arbour burials being the most extreme example of this. The principles which determined the details of individual cemetery plans are not always clear and indeed may have varied subtly from site to site, both within Winchester and beyond. These broad characteristics are therefore shared with major urban cemeteries such as Poundbury, Butt Road (Colchester) and East London, all of which can be considered broadly to belong to the category of 'managed' cemeteries (Thomas 1981; 232; Philpott 1991, 226-8). It is less certain how far the Bath Gate cemetery, Cirencester, can be seen as of this type. In this instance, however, one might question whether the apparent lack of coherence of areas of the cemetery plan results in part from the fact that the published plans show skeletons rather than graves, a consequence of the difficulty of recognising grave cuts at this site (Viner and Leech 1982, 70).

Material aspects

The major late Romano-British urban cemeteries do therefore share many general characteristics of layout, although they are far from completely homogeneous in character. There are, however, more readily discernible differences in the provision of coffins, grave goods and other equipment, such as footwear, and the extent of such provision may also be relevant to whether or not sites are included within the 'managed' cemetery category, although hitherto the term has been used here in relation to cemetery layout, rather than adopting a strict definition which encompasses an absence of finds. Selected aspects of late Roman cemetery finds associations are tabulated below (Tables 8.1 and 8.2) for the purposes of general comparison.

Many of the differences between Lankhills and other Winchester cemeteries have already been referred to above. In emphasising the distinctive character of Lankhills with regard to artefacts coins have been chosen here as a potentially informative aspect of the cemetery assemblage (Table 8.1). It is unfortunate that none of the other Winchester cemetery samples is of closely comparable size to Lankhills, and it is therefore possible that some of the figures for incidence of coinage (and other material categories) from these sites are skewed as a result, but overall it can be seen that the other

Table 8.1: Numbers of later Roman inhumation graves in Winchester cemeteries with deliberately deposited coins, by latest issue period (irregular coins assigned to period of regular issue)

		Northern cemetery			*Western cemetery*		*Eastern cemetery*	
Latest issue date	*Lankhills (Clarke and OA)*	*Hyde Street*	*Victoria Road W*	*Andover Road*	*Orams Arbour (New Road, Carfax, 22-34 Romsey Road)*	*45 Romsey Road*	*Chester Road*	*St Martin's Close*
pre 324	6			1 (316-7)			1 (270-84)	
324-330	3							
330-341	13		1					
341-350	1							
350-364	9							
364-378	17		1	1				
378-388	1			1				
388-402	12	1					1	
4C	5							
TOTAL	67	1	2	3	-	-	2	-
Total excavated graves	751	26 (54)	120	38 (49)	79	24	109	34 (52)
% graves with coins	8.8	3.8	1.7	7.9	-	-	1.8	-

Note: numbers exclude non-grave features and graves only dated by coins ?incidentally included in backfill.
Grave totals in brackets include graves observed but not fully excavated

northern cemetery sites have fewer graves with coins than Lankhills (Andover Road has a closely similar percentage from a small sample) but overall are still closer to Lankhills in coin representation than are the known western or eastern cemetery sites. Some of the other differences between Lankhills and the other Winchester northern cemetery sites are even more pronounced, however, figures relating to footwear being particularly striking (see further below). The only artefact category in which the other northern cemeteries match Lankhills is combs, with which they are collectively unusually well-endowed in relation to the other late Roman urban cemeteries for which data are gathered in Table 8.2.

The purpose of Table 8.2 is not to serve as a basis for exhaustive comparative analysis, but to provide yardsticks with which to assess the extent to which the Lankhills cemetery assemblage, both in selected significant components and in the totality of provision of grave goods, may be regarded as typical of or divergent from wider late Romano-British practice (a similar aim to that of Quensel-von-Kalben 2000). The figures presented in Table 8.2 are as accurate as possible, but should be regarded as approximate, because the necessary data are often subject to qualifications which can result in different readings (cf eg Keegan 2002, 109, table 69). The Lankhills figures are based on the combined totals from Clarke's excavations and OA's excavations presented against a grave total (751) which includes some partly excavated graves and others which were almost totally destroyed by later features. On this basis the percentage occurrences for the various attributes listed should be regarded as minima. Amongst the comparative sites, the figures for East London are somewhat problematic because the dating scheme employed in that report does not make it easy to determine the number of inhumation burials assigned to individual periods of the use of the cemetery, especially as different total numbers of inhumation burials are presented (eg Barber and Bowsher 2000, 12 table 4 gives a figure of 513, while a figure of 654 (which presumably included the West Tenter Street burials) is implied on p 117). The figures presented here are based on Barber and Bowsher's table 8 (ibid., 427-432), but are modified to exclude dubious items (ibid., 12), those from West Tenter Street (ibid., 1; Whytehead 1986) and those from graves which in that table are given a terminal date of AD 250 or earlier. Doubtless some of the graves with items included in the totals given here also dated earlier than *c* AD 250, but this cannot be established from the published evidence. Despite these difficulties it is hoped that the resulting figures give a fair reflection of the character of the late Roman phases of the East London cemetery. Selection of sites has generally been restricted to those with large total numbers of burials and resulting robust datasets. The small pre-Period 2 group from Butt Road, Colchester has been included, however, because of the complete contrast in character that it represents when compared with the succeeding cemetery.

Table 8.2: Approximate comparative occurrence of finds categories in inhumation burials from selected late Roman cemeteries

	Lankhills (Clarke & OA)	*Other Winchester northern cemetery*	*Poundbury main late Roman cemetery*	*Poundbury other late Roman burials*	*Cirencester Bath Gate*	*Butt Road Period 1 phase 2/3*	*Butt Road Period 2*	*East London (see text)*
No. excavated graves	751	184	1028 (1114)	*c* 252 (265)	450	44	669	*c* 362
Coffins	78.3%	38.0%	90.0%	63.5%	?*c* 25%	100%	90.9%	?*c* 65%
Footwear	36.1%	6.5%	0.1%	17.9%	1.1%	25.0%	1.0%	6.1%
Vessels	17.0%	2.2%	-	2.4%	0.7%	36.4%	2.2%	13.3%
Coins	8.8%	3.3%	1.9%	0.8%	0.7%	-	0.1%	4.7%
Brooches	2.0%	-	-	1.2%	-	-	0.1%	0.8%
Belt sets	2.7%	-	-	-	-	-	0.1%	0.3%
Other jewellery	7.5%	2.2%	1.4%	3.6%	0.9%	11.4%	3.3%	7.7%
Combs	3.5%	3.3%	0.7%	-	0.2%	-	1.0%	0.3%
Other	7.5%	4.9%	1.0%	6.3%	-	4.5%	0.6%	5.0%
Total graves with goods excluding footwear	245 (32.6%)	25 (13.6%)	4.2%	33 (13.1%)	11 (2.4%)	18 (40.9%)	44 (6.6%)	100 (27.6%)
		Hyde St, Victoria Rd, Andover Rd		percentages are minima				

stone linings etc not counted

There are notable differences between sites in the level of provision of coffins. In most cases approximately two thirds or more of burials are contained within coffins, with particularly high levels of provision at Butt Road and in the main cemetery at Poundbury. A distinctly lower, albeit slightly uncertain, figure (perhaps as high as 25%, on an optimistic reading of the data for coffin nails) is recorded at Cirencester (Viner and Leech 1982, 86-88). This would appear completely anomalous were it not for the figure from the Winchester northern cemetery sites other than Lankhills, which is also substantially lower than those seen for the other major cemeteries. Cirencester Bath Gate also has the lowest overall representation of finds associated with the burials, as well as the lowest representation of coffins. This presumably reflects the general character of a large part of that cemetery population, although the occurrence of five burials in stone coffins precludes a simplistic characterisation of the group as being uniformly of low status. The other major cemeteries with low levels of provision of grave goods are the main Poundbury cemetery and Butt Road Period 2, but although provision at these sites was low in absolute terms, grave goods were two and a half times as common at Butt Road as at Cirencester, for example. Such differences may be significant, particularly when considered alongside the stark contrasts between Cirencester and Butt Road and Poundbury in terms of cemetery layout and coffin provision.

These three sites are consistent, however, in containing uniformly small numbers of burials with nailed footwear. The evidence for this across the sites presented in Table 8.2 suggests three groupings, the first already mentioned, the second consisting of East London and the 'other' Winchester northern cemetery sites, both with footwear in just over 6% of graves, and the third comprising sites with significantly higher incidences, the peripheral late Roman cemeteries at Poundbury, pre-Period 2 Butt Road, and Lankhills. Even amongst these sites there is considerable variation, with nailed footwear twice as common at Lankhills as in the Poundbury assemblage, for example. Lankhills remains particularly distinctive in this characteristic, and further comparative figures (Philpott 1991, 168) show Lankhills to have one of the highest representations of footwear amongst both urban and rural cemeteries in Britain, particularly when sites with small and therefore statistically unreliable numbers of burials are excluded. The significance of footwear provision and variations in its occurrence remain open to debate (ibid., 171-3). While the contrast in provision between the two phases of burial at Butt Road can perhaps be explained in chronological terms it is less clear that this argument would apply at Poundbury, and certain that it cannot in the Winchester northern cemetery, in which Lankhills and the other contemporary sites show clear differences. Other, potentially more complex factors must therefore be invoked to explain these.

Inevitably the contrasting levels of occurrence of different artefact categories across the principal late Roman cemeteries produce a complex pattern of variation, rather than a straightforward one. In overall terms Lankhills contains a higher proportion of graves with grave goods (excluding footwear) than any of these cemeteries except the small late Period 1 group from Butt Road, which has a number of points of comparison with Lankhills (including the most nearly comparable incidence of nailed footwear). A particularly marked characteristic of that group was the very high percentage of graves containing pottery and/or glass vessels; most of the graves with goods in this phase at Butt Road contained vessels, whereas only half of the Lankhills graves with goods contained vessels, of whatever material (including the occasional metal examples from Clarke's excavations). Vessels were usually found in only a very small percentage of graves elsewhere (and in the main Poundbury cemetery were absent altogether), the only other exception being the East London cemetery, in which an estimated 13.3% of graves contained vessels. This figure is closest to that for Lankhills, and the same is true for the two sites in respect of the occurrence of coins, even though these were nearly twice as common at Lankhills as at London. Elsewhere the occurrence of coins in the larger late Roman cemeteries seems to be at a consistently lower level, but the representation of coins in smaller cemeteries, including rural ones, can sometimes be higher and occasionally exceptional, as for example in the case of Roden Downs (Berks), where coins occurred in seven of the ten graves (Hood and Walton 1948, 42-3; see Booth 2001, 33 for regional context).

The unusual nature of the Lankhills assemblage is particularly evident in the occurrence of brooches and belt sets, even though brooches only occurred in 2% of the graves, and components of belt sets in 2.7%. The closest comparisons are perhaps to be seen in the East London cemetery, although here, as in the Butt Road Period 2 cemetery, there was only a single occurrence of belt equipment. Moreover, one of the three brooches in the late Roman East London graves was clearly residual. A similar issue affects all three of the graves with brooches from the outlying Poundbury cemeteries. All were certainly old, if not very old, when buried, but there is no particular reason why they should not still have been in use, given that they were still complete with pins (Farwell and Molleson 1993, 88, fig. 63). The distinction to be drawn here between Poundbury and Lankhills is that at the latter site the brooches were relatively closely contemporary with the graves in which they were deposited, and while there was evidence of wear and repair, particularly on some of the crossbow brooches, they were not yet antiques in the way that the Poundbury ones were. It may be that at Poundbury new brooches were not available or were not considered appropriate for funerary deposition by the burying

population. Lankhills remains quite exceptional amongst the larger cemetery assemblages in its provision of crossbow brooches for a part of the community. The incidence of burials with combs is also high there, although it was almost matched elsewhere in the Winchester northern cemeteries, at a level significantly above that seen in any of the other cemeteries considered here, as noted above.

This rapid sketch suggests points of similarity and difference between aspects of the Lankhills assemblages and those from other key late Roman cemeteries. On the whole, however, the differences seem to outweigh the similarities. Assessment of the significance of these differences is very difficult and can only be attempted in outline here. Identification of individuals with particularly distinctive grave goods, especially the crossbow brooches and belt sets (with the likelihood that these may represent individuals with some official capacity), is straightforward at one level, but because the relationships between these individuals and those buried around them are mostly unknown the presence of these potentially 'special' individuals does not allow us to generalise with confidence about the character of the rest of the cemetery population. It is worth setting out some of the possible questions which arise from this, even if they cannot be answered clearly or (in some cases) at all:

- Did the individuals marked out by the presence of unusual objects (particularly crossbow brooches) form a coherent group?
- Did the presence of belt equipment without crossbow brooches distinguish further members of this putative 'group', or a subset of it, or was it not significant in this respect at all?
- If the 'crossbow brooch set' was a coherent group of people, what proportion of the rest of the cemetery population was made up of their associates and dependants, or were they self-contained and intrusive within the generalised cemetery population?
- Can the generally high level of grave good provision be used to argue a special character for all of the cemetery population, or only for an (unknown) proportion of it?
- Is it appropriate to view the cemetery population as a single community, or does it represent components of many communities within the urban population?

Ultimately these questions all relate to aspects of identity, some of which have been discussed in Chapter 7 above. This is an area which has received a great deal of attention since the time of Clarke's work, generating a huge literature in the social sciences and thence in archaeological writing. Much of this work has been directed specifically at issues relating to definitions of ethnicity (eg Jones 1997), questions of particular interest for Lankhills in view of the interpretations placed by Clarke on the intrusive groups. It is now widely accepted that 'reading off' of ethnic identities from grave group assemblages is at best problematic, and can be highly misleading. Individuals will have multiple identities depending on age, status and social context, amongst other factors. Identities can be manipulated and constructed by individuals and larger groups, a situation which can arise particularly in the context of burial. Ethnicity, which is just one aspect of identity, is potentially subject to the same forces (for a useful summary of the issues in the context of the late Roman west, see Halsall 2007, 35-45; for more detailed discussion in a Romano-British context see eg Gardner 2007, particularly 197-217).

A significant aspect of recent work has been the emphasis on the role of material culture in constructions of aspects of identity, whether ethnicity or other characteristics. With regard to Roman Britain such work has tended to concentrate on the early period, being concerned with transformations relating to the incorporation of Britain into the Roman empire (eg Eckardt and Crummy 2008), but the issues are relevant to all times. The later Roman military/official identity is clearly a good example of this. While not necessarily straightforward, the crossbow brooch is widely agreed to be a symbol of such an identity (Gardner 2007, 214-5 provides some nuances), and this view is accepted here. The significance of belt sets in this regard is more equivocal (eg Philpott 1991, 188-9), but the Lankhills evidence indicates a considerable degree of overlap in the occurrence of these and crossbow brooches. Only one burial (no. 373 in Clarke's excavations) with a crossbow brooch did not contain elements of a belt or belts (see Table 8.3), that is to say that this combination was seen in 13 graves. While a further nine graves contained belt components without associated crossbow brooches the close correlation of belt sets with crossbow brooches is clear and must be significant. Nevertheless, the fact that one of these burials with elements of a belt set (in Grave 1760) was of a child emphasises the uncertainty in making straightforward assumptions about the nature of these items. In all other identifiable cases, however, the associated human remains were of adult males or probable males.

In relation to the question of coherence of the groups of people suggested by the occurrence of particular artefact types, it may be noted that the distribution of burials containing crossbow brooches (Fig. 7.12) falls into three broad groups (with an outlier in the 2005 watching brief area). While not tightly clustered, these groups appear reasonably discrete, being located in the northern part of the site north of the concentrations of pits, in the south-central part of the site between the small ditched enclosures F.2 and F.6, and adjacent to and both sides of the north-south boundary 450/F.12 along the southern two-thirds of its length. In all cases, burials containing belt sets without associated brooches occurred within or in close proximity

to these groups. This may support the suggestion that not only were the two types of burial related, in whatever way, but that there was a sense in which it was desirable for members of the brooch/belt-wearing and belt-wearing communities to be associated in their place of burial. Familial relationships might be implied, but other ones are possible. At the north end of the group associated with the north-south boundary two graves with crossbow brooches and belt sets (Clarke grave 234 and OA Grave 1075) lay immediately adjacent to each other while a further grave with a belt set and knife, coin-dated after AD 388, lay only *c* 2.5 m to the north. This particularly close grouping is unlikely to have been accidental, and other close spatial links can be observed elsewhere amongst these three broad clusters.

Lankhills in a national context

Thirty years on from the publication of Giles Clarke's excavations Lankhills remains a cemetery of exceptional interest. In a number of respects it can be seen within the framework of late Roman

Table 8.3: Summary of graves with crossbow brooches and/or elements of belt sets

Grave	*Crossbow brooch location*	*Belt fittings*	*Other goods*	*Comment*	*Burial date*
Clarke					
13	on right shoulder, foot up	buckle	coins		350-70
23	centrally on chest, foot down	buckles and strap end	pot		350-80
81	near right shoulder, foot down	buckle, strap end, mount	knife, glass beaker, coins		350-70
106	left of skull, foot down	buckles, strap end, toilet implement/ strap end	knife, pot	brooch repaired	350-70/90
234	area of right shoulder, foot up	buckles	pot, bird	cu alloy fragments poss related to the second, smaller buckle	350-90
322	left of skull, foot down	strap end	glass flask, coin	other finds in backfill	370-90
373	?above right shoulder, foot up	-	pot, coins		390-400
426	on chest, foot up	buckle and strap end	pot		350-90
37	-	buckle and strap end	knife		350-70
283	-	buckle/plate and buckle loop		knife, stone and bone objects, 2 coins	390-410
366	-	buckle and strap end	pot		370-410
376	-	buckle/plate, buckle, strap end, terminal fitting, stiffener and studs	?coin		390-410
443	-	buckle/plate	knife and associated suspension rings		350-70
OA					
745	left of left knee	strap ends, ring, Fe buckle	pot	brooch incomplete	
895	unknown	-		cremation burial	
1075	?left of skull, foot up	strap end	-	brooch pin replaced	
1846	area of right shoulder, foot up	buckle and strap end	spurs	brooch repaired	370+?
1925	on chest, foot up	buckle	-	brooch repaired	
3030	uncertain	buckle/plate and ring	knife	no human remains survive	
1175	-	buckle/plate	knife, coin		
1180	-	buckle/plate and another ?plate	vessel as unburnt grave good	cremation burial; buckle(s) are pyre good	
1760	-	buckle (Fe)	knife, Fe ring, glass and pottery vessels, coin, shoes	child	
1921	-	buckle/plate (x2)	knife		
WA					
1032	Y	2 buckles	pot		
1083	Y	-	-		
1110	Y	-	coins, pot		
1114	-	buckle	pottery and glass vessels		

burial practice in Britain, characterised, particularly in an urban setting, by cemeteries with fairly organised layouts and typically, although by no means universally, west-east aligned inhumation graves. In terms of aspects such as the variety of grave forms and the provision of coffins the range of evidence is not exceptional. The impression that some of the graves were unusually deep when compared with other cemeteries is of uncertain significance. As noted above, it was probably easier (in terms of avoiding collapse of the pit) to dig deep graves in the chalk than in the subsoils encountered in some of the comparative cemeteries (Cirencester and Trentholme Drive are perhaps extreme examples), but the question of why this would have been thought desirable remains. The effort involved in excavating a grave through chalk to a depth of over 1 m would have been considerable. Apparently extravagant provision was occasionally seen in other aspects of Lankhills burials, particularly evident in relation to the size of some coffin nails, but in only one case (Grave 870, in which the nails had an average length of almost 250 mm) was this completely exceptional.

The most obviously remarkable characteristics of the cemetery relate to aspects of the provision of grave goods, summarised in Table 8.3. The proportion of graves with grave goods (here excluding footwear, itself unusually common in comparison with most other contemporary urban cemeteries) is exceptionally high for a late Roman urban cemetery in Britain. This was noted in the 1979 publication and remains the case. The most distinctive feature of the cemetery, however, is still the incidence of markers of official/military status, the crossbow brooches and belt sets, the numbers of which, and the proportion of the cemetery population with which they are associated, make Lankhills stand out from any other urban cemetery in Roman Britain and, with the possible exception of Scorton, from any other Romano-British cemetery known at present. It cannot be certain, of course, how far this very distinctive character is relevant beyond the individuals who were thus equipped in their graves. While there is some local clustering, however, their relatively widespread distribution across the cemetery does not suggest that this was a very closely-defined and exclusive group, at least in death. It might therefore be inferred that at least some of the other burials in the cemetery were of relatives and dependants of these individuals. It is not possible to go beyond this and suggest that this community was the dominant element amongst the Lankhills cemetery population, although this just might have been the case if these people were to be seen as, for example, successive generations of workers and officials associated with the Venta *gynaeceum*. Although the sample of late Roman urban cemeteries from Britain is still insufficiently large for it to be certain that this particular cemetery population is unique, it certainly appears sufficiently unusual to suggest that it reflects a characteristic of the Winchester community shared by few if any other towns, and the presence of a *gynaeceum* might be such a characteristic. On balance, however, it may be safer to assume that the cemetery contained burials of some of the people involved with the *gynaeceum* (assuming that it really was located at Winchester) rather than representing a single (albeit diverse) community group associated with it.

Evidence from the near continent provides a slightly different picture. There the major cemeteries in which crossbow brooches occur in the greatest numbers are all closely associated with military sites, as Ellen Swift has shown (eg 2000a, 24), the principal examples being at Krefeld-Gellep (Pirling and Siepen 2006, 334-339), Nijmegen (for a recent summary of the late Roman cemeteries see Willems and van Enckevort 2009) and Oudenburg (Mertens and van Impe 1971). Complementary British evidence, albeit mainly not from cemeteries, comes from the military sites of Richborough (Bayley and Butcher 2004, 106-120) and Caister on Sea (Butcher 1993, 73-75) and from London, where the presence of official/military personnel is undoubted, and exemplified by the individual in grave 538 of the East London cemetery (Barber and Bowsher 2000, 206-208). While crossbow brooches are widely distributed across northern Gaul, they are not numerous in cemetery contexts except at the sites mentioned above and at Chartres, a civitas capital but a site of uncertain significance in the 4th century. This pattern may reflect accidents of discovery, but there does seem to be a broad similarity between Britain and northern Gaul, in the sense that cemetery populations with significant numbers of burials associated with badges of military/official status do not appear, on present evidence, to be typical of the larger towns, The current project does not give scope for further consideration of these aspects, but for the present, at least, the conclusion that the Lankhills cemetery is highly unusual and important in a British and arguably wider north-western Roman provincial context is sustained.

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(catalogue entry in **bold**)

Cremations

CLARKE'S GRAVES
(MENTIONED IN THIS REPORT)

Inhumations

Cremations

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Oxford Archaeology
Monograph No.10

The late Roman cemetery at Lankhills, just north of Winchester, is one of the best known in Roman Britain as a result of work carried in 1967-1972. Excavations by Oxford Archaeology from 2000-2005 revealed a further 307 inhumation graves and 25 cremation burials, almost all of 4th century date. Most burials were laid out roughly west-east, the majority in wooden coffins. Grave goods, including nailed shoes, pottery and coins, were more common than usual in late Romano-British urban cemeteries. A number of age/gender associations were apparent; for example, jewellery was often associated with adolescents and young women, and spindle whorls with older women. Six crossbow brooches (to add to eight from earlier work), buried with males, were almost invariably associated with belt equipment and indicate an official/ military element within the cemetery population. The most spectacular individual burial contained a gilded and inscribed crossbow brooch, silver gilt belt fitting and decorated spurs; a unique assemblage in Roman Britain. Isotope analysis shows that some of the cemetery population were immigrants probably deriving from a variety of locations in Europe and perhaps even - in at least one case - North Africa.

Above: Grave 1175, of older adult male, with knife and belt fittings

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