Wulfhere's People

A CONVERSION-PERIOD ANGLO-SAXON CEMETERY AT WOLVERTON, MILTON KEYNES

A J HANCOCK & R J ZEEPVAT

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WULFHERE'S PEOPLE

A CONVERSION-PERIOD ANGLO-SAXON CEMETERY AT RADCLIFFE SCHOOL, WOLVERTON, MILTON KEYNES

By A.J. HANCOCK & R.J. ZEEPVAT

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Synopsis

In 2007 and 2008 archaeological investigations were undertaken on two sites prior to the redevelopment of part of the Radcliffe School campus in Wolverton, Milton Keynes. Site 1, which revealed evidence of early Iron Age and Romano-British agricultural activity, has been published separately (Hancock 2015). Excavations on Site 2, formerly allotments to the south of the school, revealed a few early Romano-British features and an extensive Anglo-Saxon cemetery. Evidence from grave goods and radiocarbon dates obtained for six inhumations and one cremation indicate that the cemetery dates from the Anglo-Saxon 'conversion period' (late 6th and 7th-century AD). Seventy-six graves were excavated, containing eighty inhumation burials: five empty graves, two urned cremations and two possible disturbed cremations were also recorded. The cemetery is located on an established east-west route dating to the medieval period, if not earlier.

Although the western and northern extents of the cemetery were established, it appeared to have extended further to the south, where it will have been truncated by road construction, and to the east, where further evidence may yet survive. No formal boundary to the cemetery was identified and the graves were scattered randomly across the excavated area, with a concentration towards the north. Within this concentration a row of graves, possibly related, was revealed. Four graves each contained two inhumations: the age and sex of the individuals within them varied widely. Towards the southern edge of the site, four burials had been placed around a four-post structure, evidently of some significance. A wide variety in grave orientation was noted, the most common (head to foot) being west to east, followed by south-east to north-west and then north-west to south-east. No intercutting graves were found, suggesting that grave locations were probably marked above ground.

Fifty-one inhumations were associated with grave goods, with females and non-adults showing a higher prevalence of grave goods than adult males. The most commonly found item with burials of all ages and both sexes was an iron knife, normally located at the waist. In female graves, jewellery was equally popular. The most richly furnished burial comprised that of a middle-aged female, evidently of some status. She wore a necklace of silver wire rings, glass, amethyst and shell beads. A small bag, probably of leather, containing miniature toilet implements and other items was placed under her right elbow; above her head was a padlocked leather-bound wooden box. A small spearhead with a blunted point had been placed on the box. One young adult male was accompanied by a sword: three adolescents/young adults were buried with large fighting seaxes. Considering the fact that the cemetery falls within the Anglo-Saxon conversion period, there is no evidence to suggest that any of the burials were Christian.

Analysis of the skeletal assemblage has determined that the stature of the adults buried at Wolverton was slightly greater than those from other contemporary cemeteries in the region. Evidence of the general state of health, trauma and disease among the cemetery population would be typical of people leading a settled but physically demanding agricultural existence at that time. The most common disease noted was osteoarthritis: frequent incidences were also present of cribra orbitala, coupled with dental enamel hypoplasia, both related to problems of diet and malnutrition. One individual revealed evidence of violent trauma, a blow to the head with a pointed implement which appears to have been the cause of death. Another individual, a young adult female, appeared to have been decapitated after death and the onset of decomposition: how and why this took place remains unclear.

Despite the above evidence relating to the nature of the cemetery population, there are some surprising hints of wealth and connections to the wider world. Some of the jewellery present in the graves, as well as the pattern-welded sword and seaxes, must have been made by skilled craftsmen and therefore cost a high price. The cowrie shell and amethyst beads originate in the Mediterranean region, while a penannular brooch and hanging bowl escutcheon suggest links with the Celtic West.

The Wolverton Anglo-Saxon cemetery is the largest yet discovered in Buckinghamshire. Its proximity to the contemporary enclosed settlement at Wolverton Turn strongly suggests the two sites are related. The Wolverton Turn settlement is itself the precursor of the Wolverton medieval village, to the north, and the Victorian railway town of Wolverton to the east.

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Résumé

Des recherches ont été conduites en 2007 et 2008 sur deux sites archéologiques situés à Wolverton, Milton Keynes, avant le réaménagement d'une partie du campus de la Radcliffe School. Le site 1 a révélé une exploitation agricole du Premier Age du Fer et de l'époque romano-britannique qui a été publiée séparément (Hancock 2015). Les fouilles du site 2, *autrefois un jardin potager au sud de l'école, ont mis à jour quelques éléments datant de l'époque romano-britannique et une grande nécropole de l'époque anglo-saxonne. Le mobilier et les datations radiocarbone obtenues sur six inhumations et une incinération* situent cette nécropole à la fin du VIe et au VIIe siècle apr. J.-C., c'est-à-dire *pendant la «période de conversion» des Anglo-Saxons. Soixante-seize sépultures contenant quatre-vingt inhumations ont été fouillées; cinq sépultures vides, deux incinérations en urne et deux incinérations probables car endommagées ont également été relevées. La nécropole se situait le long d'un ancien tracé de route orienté d'est en ouest datant de l'époque médiévale ou même plus ancienne.*

Bien qu'il ait été possible d'identifier les limites ouest et nord de la nécropole, la nécropole s'étendait probablement plus loin au sud (où elle a été tronquée par la construction d'une route) et vers l'est, où l'on peut s'attendre à des vestiges encore en place. Aucune limite formelle n'a été identifiée et les sépultures étaient dispersées au hasard à travers la zone de fouilles, avec cependant une concentration vers le nord. Au sein de cette concentration, une rangée de sépultures, peut-être associées les unes aux autres, a été relevée. Quatre sépultures contenaient chacune deux inhumations: le sexe et l'âge des individus ensevelis étaient très variables. Vers la limite sud de la nécropole, quatre sépultures étaient arrangées autour d'une structure à quatre poteaux, ce qui avait certainement une signification particulière. Les orientations des sépultures étaient fort diverses: les plus fréquentes avaient la tête à l'ouest et les pieds à l'est, suivies par celles orientées du sud-est au nord-ouest, et enfin celles orientées du nord-ouest au sud-est. Il n'y avait aucun recoupement de sépultures, ce qui suggère que des marqueurs au-dessus du niveau du sol signalaient leur présence.

Cinquante-et-une inhumations contenaient du mobilier, les femmes et les non-adultes étant plus souvent pourvus de mobilier que les hommes adultes. Un couteau en fer, généralement relevé au niveau de la taille, était l'objet le plus fréquemment retrouvé dans les sépultures avec mobilier, qu'elles soient masculines ou féminines et quel que soit leur âge. Les bijoux étaient tout aussi populaires parmi les sépultures féminines. La sépulture la plus richement fournie était celle d'une femme d'âge moyen, fort certainement d'un certain rang. Elle portait un collier composé d'anneaux de fil d'argent et de perles de verre, d'améthyste et de coquillages. Une petite bourse, probablement en cuir, contenait des instruments de toilette miniature; d'autres objets ont été retrouvés sous son coude droit et une boîte en bois recouverte de cuir et close par un cadenas avait été placée au-dessus de sa tête. Un petit fer de lance à pointe émoussée avait été déposé sur cette boîte. Un jeune adulte mâle était accompagné d'une épée et trois adolescents ou jeunes adultes étaient ensevelis avec de grandes lames de combat (scramasaxes). Quoique chronologiquement la nécropole appartienne à l'époque de la conversion des Anglo-Saxons, il n'y a aucun indice qui puisse faire penser qu'une sépulture ou autre soit chrétienne.

L'analyse des squelettes nous a permis d'établir que la stature des adultes ensevelis à Wolverton était légèrement plus élevée que celle d'autres individus inhumés dans les nécropoles contemporaines de la région. Quant à l'état de santé général et les traumatismes ou maladies au sein de la population de la nécropole, on pourrait s'attendre à rencontrer des cas typiques d'une population menant une vie sédentaire mais physiquement épuisante d'agriculteurs. L'arthrose est la maladie relevée le plus souvent et des cas fréquents de cribra orbitalia *ainsi que d'hypoplasie de l'email dentaire ont également été notés; les deux sont liés à des problèmes d'alimentation et de malnutrition. Un individu avait souffert d'un traumatisme violent: un coup à la tête avec un instrument pointu qui semble avoir causé sa mort. Un autre individu, une jeune femme adulte, avait apparemment été décapitée après son décès et après que son corps ait commencé à se décomposer; pourquoi et comment on a agi ainsi reste peu clair.*

Malgré ces données sur la nature de la population ensevelie dans cette nécropole, plusieurs indices surprennent par leur richesse et révèlent des liens avec un monde plus lointain. Une partie des bijoux retrouvés dans les sépultures, ainsi que les épées et scramasaxes damassées, ont été produits par des artisans qualifiés et auraient donc coûté fort cher. Quant aux perles de coquillages (cauris) et d'améthyste, elles provenaient de la Méditerranée, tandis qu'une fibule penannulaire et une applique d'un bassin à suspension (ou hanging bowl*) suggèrent des relations avec les pays celtiques de l'ouest.*

La nécropole anglo-saxonne de Wolverton est la plus étendue des nécropoles du Buckinghamshire découvertes à ce jour. Vu sa proximité avec l'enceinte d'habitat de Wolverton Turn de la même époque*, il y a de fortes chances que les deux sites soient reliés. Le site d'habitat de Wolverton Turn est le précurseur du village médiéval de Wolverton plus au nord et de la ville de Wolverton à l'est, une ville née de l'essor des chemins de fer au dix-neuvième siècle.*

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Zusammenfassung

In 2007 und 2008 haben archäologische Untersuchungen im Voraus der Neuentwicklung eines Teiles des Schulgeländes der Radcliffe School in Woverton, Milton Keynes, auf zwei Stätten stattgefunden. Das erste Ausgrabungsareal 1 (Site 1) hat Angaben über früheisenzeitliche und romano-britische landwirtschaftliche Anlagen geliefert und wurde separat veröffentlicht (Hancock 2015). Die Ausgrabungen des zweiten Fundortes (Ausgrabungsareal 2, Site 2), ein ehemaliger Schrebergarten südlich der Schule, haben einige frühe romano-britische Elemente und ein umfangreiches angelsächsisches Gräberfeld freigelegt. Die Grabbeigaben und die ^{14}C Datierungen von sechs Körperbestattungen und einer Brandbestattung deuten darauf hin, dass das Gräberfeld im späten 6. Jh. und 7. Jh. n. Chr. benutzt wurde, also in der Zeit der „Bekehrung" der Angelsachsen. Sechsundsiebzig Gräber wurden ausgegraben. Diese enthielten achtzig Körperbestattungen; fünf leere Gräber, zwei Brandbestattungen in Urnen und zwei mögliche, zerstörte Brandbestattungen wurden auch erfasst. Das Gräberfeld liegt an einer Ost-West orientierten Straße, die im Mittelalter oder sogar früher angelegt wurde.

Obschon man den westlichen und nördlichen Umfang des Gräberfeldes nachweisen konnte, erstreckte sich offenbar die südliche Grenze weiter nach Süden, wo das Gräberfeld von einem Straßenbau abgeschnitten ist, und nach Osten, wo weitere Belege möglicherweise noch vorhanden sind. Keine formelle Grenze konnte bestimmt werden und die Gräber waren scheinbar regellos über die Ausgrabungsfläche verstreut, obschon eine Konzentration gegen Norden festgestellt wurde. Innerhalb dieser dichteren Streuung gab es eine Reihe von Gräber, die vielleicht in Zusammenhang zueinander lagen. Vier Gräber enthielten je zwei Bestattungen mit ganz verschiedenen Alters- und Geschlechtsprofilen. In der Nähe der südlichen Grenze des Ausgrabungsareals waren vier Gräber um eine Vier-Pfosten Struktur gruppiert, was sicher eine Bedeutung hatte. Die Orientierung der Gräber war sehr unterschiedlich; am häufigsten kamen West-Ost (von Kopf zu Fuß) Orientierungen vor, gefolgt von Südost–Nordwest Richtungen und dann Nordwest-Südost Ausrichtungen. Es wurden keine Überschneidungen von Gräber beobachtet; es liegt also nahe, dass die Lage der Gräber markiert war.

Einundfünfzig Körperbestattungen waren mit Grabbeigaben ausgestattet; die weiblichen Bestattungen und diejenigen der Minderjährigen hatten öfters Beigaben als die erwachsenen männlichen Bestattungen. Der am häufigsten angetroffene Gegenstand in Gräber aller Altersgruppen und beiderlei Geschlechtes war ein eisernes Messer, das normalerweise im Bereich der Taille gefunden wurde. Unter den weiblichen Bestattungen war Schmuck ebenso beliebt. Die am reichsten ausgestattete Bestattung war das Grab einer Frau mittleren Alters, die offensichtlich einen gewissen Status besaß. Sie hatte eine aus Silberdrahtringen, Glas- und Amethyst-Perlen gefertigte Halskette, eine kleine Tasche, die wohl aus Leder war und die miniaturisierte Toilettengeräte enthielt. Andere Artikel wurden unter ihrem rechten Ellbogen gefunden und, über ihrem Kopf, wurde ein ledergebundenes und mit einem Vorhängeschloss gesichertes Holzkästchen geborgen. Eine kleine abgestumpfte Speerspitze lag auf diesem Kästchen. Ein junger Erwachsener hatte ein Schwert und drei Jugendliche oder junge Erwachsene wurden mit großen Sachsen (Kampfwaffen) bestattet. Obwohl das Gräberfeld in den Zeitraum der Bekehrung der Angelsachsen fällt, gibt es keinerlei Angaben, dass irgendeine Bestattung christlich war.

Die Untersuchung der Skelettreste hat gezeigt, dass die Erwachsenen, die in Wolverton bestattet wurden, etwas großwüchsiger als andere Bevölkerungen in den gleichzeitigen Gräberfeldern der Gegend waren. In Bezug auf den allgemeinen Gesundheitszustand, die Verletzungen und Krankheiten, die man bei einer sesshaften aber arbeitsamen Bauerngemeinschaft erwarten könnte, ist bei der Bevölkerung des Gräberfeldes von Wolverton zu bemerken, dass Arthrose am häufigsten belegt ist. Fälle von cribra orbitala *sowie von Hypoplasie des Zahnschmelzes kamen auch oft vor; beide sind mit Problemen der Ernährung und Unterernährung verbunden. Ein Individuum erlitt ein gewaltiges Trauma: ein Schlag auf den Kopf mit einer gespitzten Waffe, die wahrscheinlich den Tod verursachte. Eine andere Person, diesmal eine junge, erwachsene Frau, war scheinbar enthauptet, und zwar nach dem Tod und nach dem Beginn der Zersetzung ihrer Leiche; warum und wie das geschah, bleibt unklar.*

Trotz der oben verzeichneten Angaben über den Charakter der Bevölkerung des Gräberfeldes von Wolverton gibt es einige eher überraschende Hinweise auf Reichtum und auf Beziehungen mit der weiteren Welt. Ein Teil des Schmucks und auch die damaszierten Schwerter und Sachsen waren von erfahrenen Handwerkern hergestellt worden und waren deswegen wahrscheinlich auch sehr teuer. Die Perlen aus Kaurimuscheln und Amethyst kamen aus dem Mittelmeerraum, während die Ringfibel und der Beschlag eines Hängebeckens (sogenannter hanging bowl*) auf Beziehungen mit dem keltischen Westen deuten.*

Das angelsächsische Gräberfeld von Wolverton ist das größte, das bislang in Buckinghamshire entdeckt worden ist. Da es in der Nähe einer gleichzeitigen eingefriedeten Siedlung in Wolverton Turn liegt, sind die zwei Stätten wahrscheinlich miteinander verbunden. Die Siedlung von Wolverton Turn ist der Vorgänger des nördlich davon gelegenen mittelalterlichen Dorfes Wolverton und der Stadt Wolverton, die östlich davon mit der Entwicklung der Eisenbahn im neunzehnten Jahrhundert entstand.

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Acknowledgements

Archaeological investigations at Radcliffe School were undertaken by Archaeological Services & Consultancy Ltd (ASC). The work was commissioned by NJL Consulting Ltd, planning consultants for the development, and was wholly funded by Milton Keynes Council and the Radcliffe School Partnership. The project was monitored by the Milton Keynes Council Senior Planning Archaeologist, Nick Crank, on behalf of the local planning authority. The authors would like to acknowledge his assistance, along with that provided by Rob White (NJL), Robert Isaac, Jonathan Lee and Mark McKinlay (MKC). Excavating plant was provided by Lynch Plant Hire.

The project was managed for ASC by Alastair Hancock, who also led the fieldwork. The field team comprised Ralph Brown, Zoe Clarke, David Kaye, Janice McLeish, Jennifer Richards and Chris Swain, with assistance from other ASC staff. Initial finds identification and reporting was by Alex Thompson.

This report was prepared for Bancroft Heritage Services by Bob Zeepvat and Alastair Hancock. Much of the specialist post-excavation analysis and conservation work was undertaken at the Archaeology Department, Leicester University, by Nick Cooper (Roman pottery), Alistair Hill (environmental), Harriet Anne Jacklin (human remains) and Graeme Morgan (conservation). Thanks are also due to the following external specialists for their analysis and reporting: Paul Blinkhorn (Anglo-Saxon pottery) and David Parsons (runes). The authors would also like to thank James Graham-Campbell for commenting on penannular brooch **51**. Radiocarbon dating was undertaken by the Scottish Universities Environmental Research Centre (SUERC). DNA analysis is being undertaken on a sample of burials as part of a national study by Dr Tom Booth of the Natural History Museum. Illustrations were prepared by Mike Hawkes (pottery), Alex Thompson (finds) and the authors.

Finally, the authors are indebted to Mike Farley, who edited the report on behalf of the Buckinghamshire Archaeological Society and also provided much useful comment and sections of text on Structure 2378, hanging bowl escutcheon **21** and penannular brooch **51**. Madeleine Hummel translated the synopsis into French and German: the index was prepared by Bob Zeepvat. Typesetting and layout were undertaken by Paul Medcalf of Avocet Typeset.

Figure 0.1 Wolverton cemetery excavation: general view looking south

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CHAPTER 1: INTRODUCTION

Bob Zeepvat

In the spring of 2008 Archaeological Services & Consultancy (ASC) completed targeted open-area excavations on a 26-hectare development site to the west and south of Radcliffe School, Wolverton, Milton Keynes. The excavations were required by the Milton Keynes Council Senior Archaeological Officer following initial site investigations by ASC, comprising a desk-based assessment, geophysics and trial trenching (Zeepvat & Rouse 2006; Hancock 2007; Wilson 2007 respectively). The work was commissioned by NJL Consulting on behalf of Milton Keynes Council and the Radcliffe School Partnership, in advance of mixed development on the fringes of the playing fields and redevelopment of the school. The project was funded by Milton Keynes Council.

The initial investigations identified two areas within the development for further study. Site 1, in playing fields c.250m west of the school, was excavated by ASC in 2007–8. It contained Iron Age and early Roman features and has been published separately (Hancock 2015). Site 2, described in this report, comprised a roughly rectangular plot, formerly allotments, extending over c.1.4 hectares to the south of Wolverton Recreation Ground, c.500m south-east of Site 1, centred on NGR SP 8086 4049. Site 2 was bounded to the west by existing sports facilities belonging to the school, to the south by Great Monks Street and to the east by another area of former allotments (Figs 1.1 & 1.2). The excavation of Site 2 was carried out in accordance with written schemes of investigation prepared by ASC (Zeepvat 2007; Hancock 2008), approved by the Milton Keynes Council Senior Archaeological Officer.

The event number allocated to the project in the MKC Historic Environment Record (HER) is EMK1161. On completion of this report, the project archive will be deposited with Buckinghamshire County Museum: the accession number is AYBCM 2007.72. Copies of the 'grey literature' project reports can be accessed at the MKC HER, and online through the Archaeology Data Service (ADS: ref. 105263). Following the closure of ASC in March 2014, this report was completed for MKC by Bancroft Heritage Services and published by the Buckinghamshire Archaeological Society in their monograph series, originally established to publish the work of the former Milton Keynes Archaeology Unit within the new city.

TOPOGRAPHY AND GEOLOGY

Radcliffe School Site 2 lies *c*.1.5km south of the river Great Ouse (Figs 1.1 & 1.2); the modern ground surface slopes gradually from 84m OD at the south of the site to 81.7m OD at the north. The natural soils of the area belong to the *Badsey 1 Association* (Soil Survey 1983, 511h), and overlie a poorly sorted Pleistocene glaciofluvial deposit of silty clay containing pockets of sand and gravel, which in turn covers the underlying Blisworth limestone.

Topsoil on the site was shallow, comprising c.0.22m depth of brown-black, organic soil. This overlay subsoil c.0.38m deep, probably a former plough-soil. The subsoil in turn covered the archaeological features, which were cut into the underlying silty, stony clay. Prior to excavation the site was scrubland, with a footpath crossing it from south-west to north-east.

ARCHAEOLOGICAL BACKGROUND

The earliest evidence of human activity in the Wolverton area is provided by a scatter of Mesolithic flints found in the Loughton Brook valley in parkland at Bancroft, *c*.2km east of Site 2 (Fig. 1.3; 1). A late Neolithic to early Bronze Age settlement was excavated at Stacey Bushes (Fig. 1.3; 2), *c*.1.5km to the south-east (Green & Sofranoff 1985). Evidence of possible Bronze Age settlement was also located in excavations at the training college at Wolverton Turn (Fig. 1.3; 3), immediately west of Site 1 (Preston 2007), and a late Bronze Age/early Iron Age farmstead was excavated at Blue Bridge (Fig. 1.3; 4), 1.5km to the east of Site 2 (Williams & Zeepvat 1994).

Ring ditches – the ploughed-out remains of Bronze Age burial mounds – are a common feature of the prehistoric landscape of the Great Ouse valley and have been the subject of detailed study (Field 1974; Green 1974). Three are recorded in the study area, at Bushfield School, 1km west of Site 2, at Wolverton Turn and at Warren Farm, 0.5km to the west (Fig. 1.3; 5, 6 & 7 respectively). All three have been excavated.

Agriculture and settlement in the Milton Keynes area expanded from an earlier riverine focus onto areas with heavier soils during the middle Iron Age (Croft & Mynard 1993). The closest recorded site of this period is a middle Iron Age farmstead located *c*.2km to the east at Blue Bridge (Williams & Zeepvat 1994). By the late Iron Age, large numbers of farmsteads were present in a wide variety of locations (Kidd 2009) and settlement continuity into the post-conquest period is often evident (Radford & Zeepvat 2009).

Roman villa estates were established shortly after the conquest in this part of the Great Ouse valley, probably influenced by proximity to the Roman road latterly known as Watling Street, which passes c.2.5km west of Site 2, linking small towns at Fenny Stratford (*Magiovinivm)* and Towcester *(Lactodorvm),* to the south-east and north-west respectively. The nearest villa complexes are located

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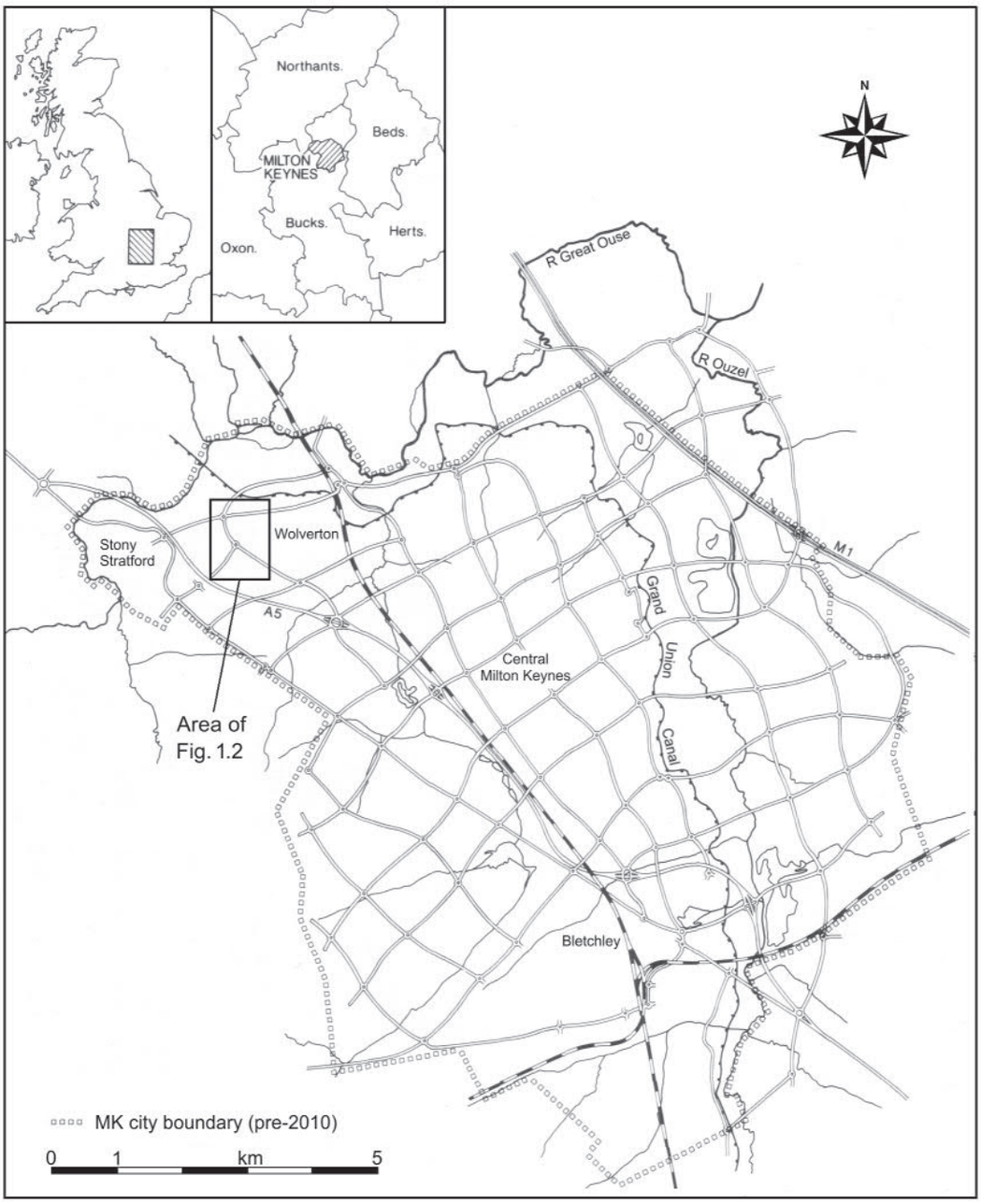

Figure 1.1 General location

at Bancroft (Williams & Zeepvat 1994) and at Cosgrove (Fig. 1.3; 8), *c.*2km to the north-west (Quinnell *et al* 1991). Other villas are recorded *c.*4km to the west at Deanshanger (Brown 2006), *c.*3.6km to the east at Stantonbury (Zeepvat *in* Mynard 1987, 97–104) and *c.*4km to the north-east at Stanton Low (Woodfield & Johnson 1989). Evidence of a possible Roman building has also been recorded at Manor Farm Cottages, 1km north of Site 2 (Fig. 1.3; 9). Small amounts of Roman material were recovered during excavations at Wolverton Turn (Chapman *et al* 2015) and on the adjacent Site 1 (Hancock 2015: Fig. 1.3; 10). A number of occupation sites are also known in the area, with examples at Kiln Farm, 1km south-west of Site 2, and Stonebridge Farm, *c.*1.25km to the north-east (Fig. 1.3; 11 & 12 respectively). It has been suggested (Croft & Mynard 1993) that the manors of Wolverton and Little Loughton, which were held jointly in the 11th century, represent the survival of a Roman estate, with Bancroft villa as its centre and a satellite farm at Wymbush (Zeepvat *in* Mynard 1987, 82–90; Zeepvat 1988), which is in Little Loughton, 2.5km south-east of Site 2.

Early Saxon finds previously recorded in the vicinity of Site 2 (e.g. Williams & Zeepvat 1994; Chapman *et al* 2015) were interpreted as identifying ephemeral settlement activity, showing no continuity with earlier patterns. However, aggregated settlement was re-established during the mid-Saxon period, the closest evidence of this phenomenon being a large ditched enclosure located at Wolverton Turn (Preston *et al* 2007; Chapman *et al* 2015). Excavations at the north-east end of this enclosure (Chapman, *op cit.*) revealed two early to middle-Saxon grübenhauser (sunken-featured buildings), postholes of late Saxon timber buildings with associated pits, a

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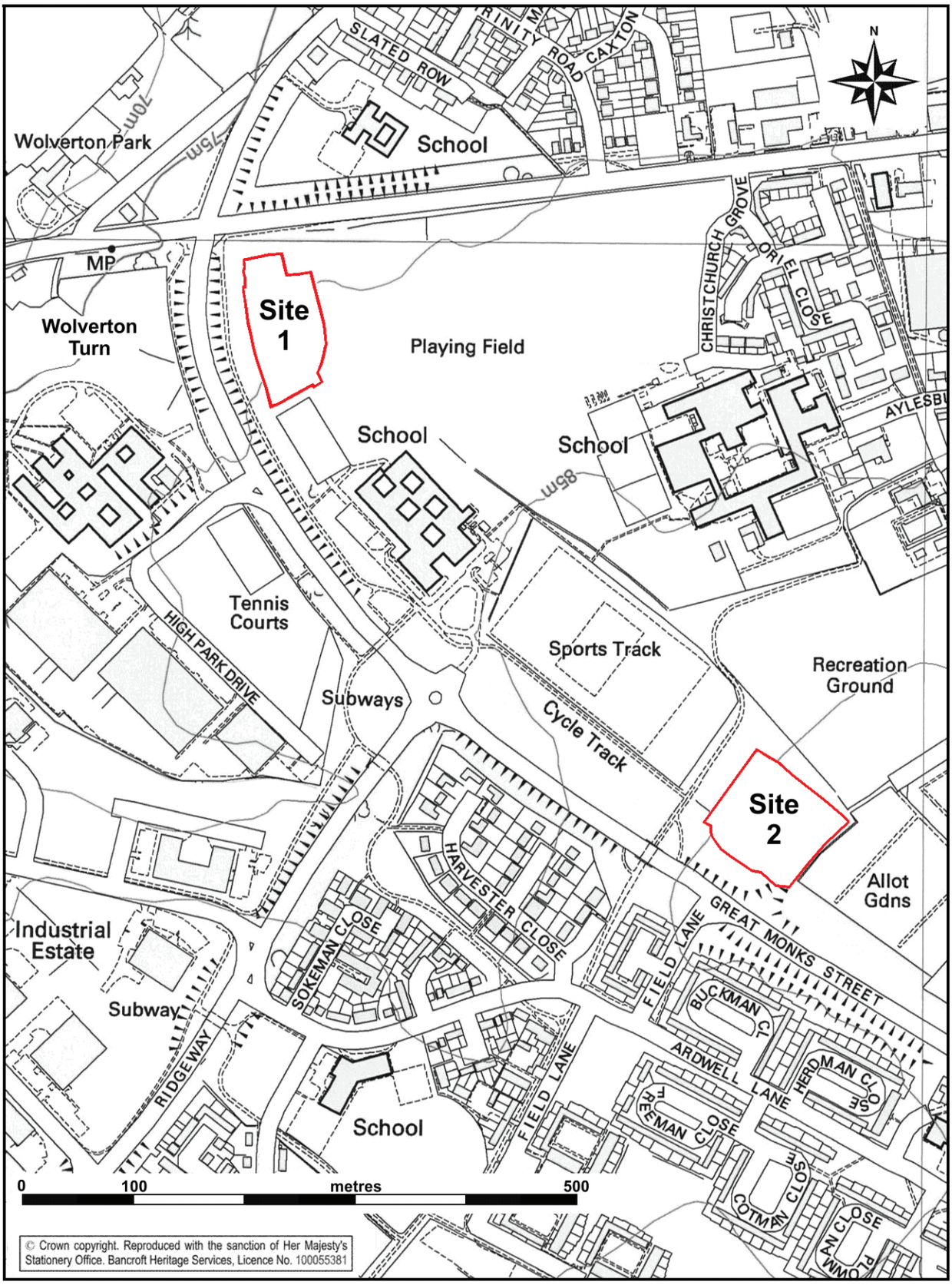

Figure 1.2 Location of Radcliffe School Sites 1 and 2

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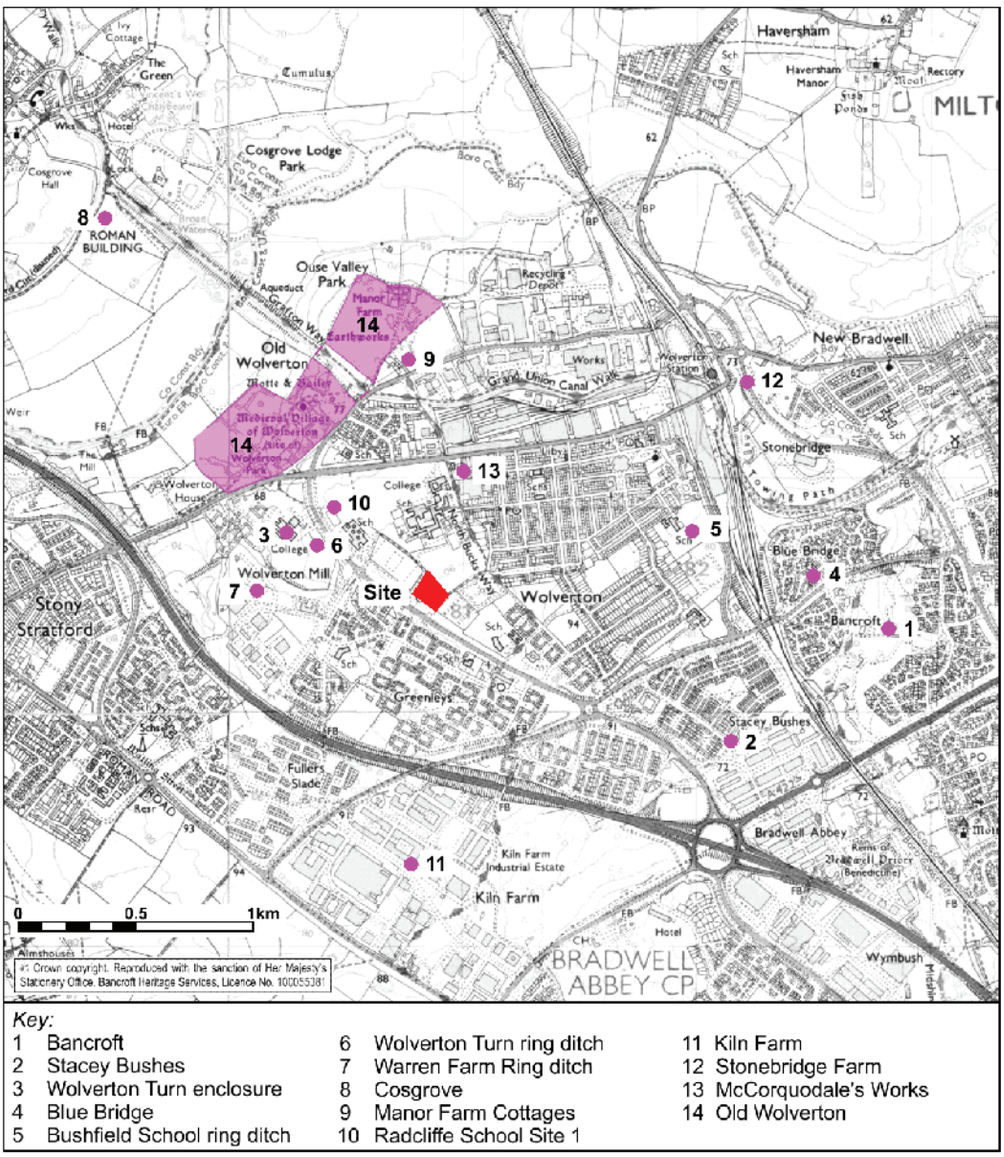

Figure 1.3 Radcliffe School Site 2 in its archaeological context

well, a number of cess pits and a malting/drying oven. Late Saxon finds, including coins and metalwork, have also been found to the north, near Old Wolverton parish church. Several burials suggested to be Saxon were found in 1956 at McCorquodale's works, east of the school playing fields (Green 1957: Fig. 1.3; 13), though more recent investigations in advance of redevelopment in this area did not reveal any archaeological features (Fell 2000; Crank 2005).

The place-name 'Wolverton' is probably of Saxon origin (*Wulfheres tûn*) and may be translated as 'Wulfhere's estate' (Croft & Mynard 1993, 191). Apart from the similar name there is no obvious connection with Wulfhere, the first Christian king of Mercia, who ruled from c.AD 658 to 675. The Domesday Survey of 1086 records that the manor of Wolverton was held under Edward the Confessor in a free tenure by three thegns: Godvin, a man of Earl Harold, Tori, a housecarl of King Edward, and Alvric, a man of Queen Edith. After the Conquest it was held by Mainou the Breton, along with the adjoining manor of Little Loughton and other holdings in north Buckinghamshire, Northamptonshire and Leicestershire, which together formed the barony of Wolverton.

During the latter part of the Saxon period the settlement appears to have shifted northwards, to the area which became the medieval village of Wolverton, now a scheduled ancient monument known as 'Old Wolverton' (Fig. 1.3; 14). This settlement in turn declined during the post-medieval period, partly as a result of the expansion of Stony Stratford and partly because of piecemeal land enclosure by the Longville family, who held the manor at that time. Hyde's 1742 map of Wolverton parish (Hyde 1945, 13) shows that Site 2 lay then in one corner of a land parcel then known as *Ardwell Fields,* a name which survives as Ardwell Lane on the present Greenleys housing estate, south of Wolverton (Fig. 1.4). Hyde's map also reveals that the footpath crossing the site formed part of a route traversing Wolverton parish from Watling Street in the west, where it is named as 'Gib Lane' because of its proximity to the site of gallows on Watling Street, south of Stony Stratford (Croft & Mynard 1993, 183), to

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Figure 1.4 Hyde's map of Wolverton, 1742 (after Croft & Mynard 1993), showing site location

Stonebridge Farm in the east, where it joined the Newport Pagnell road at the bridge crossing Bradwell Brook. Part of this route, which may be of some antiquity, is marked in Wolverton by Green Lane.

Site 2 appears to have remained in agricultural use during the mid to late 19th century, when the present town of Wolverton was established following the construction of the London to Birmingham Railway (Fig. 1.5). In the 20th century the site was turned into allotments, probably during or shortly after the Second World War. Following the advent of Milton Keynes, in the early 1970s Great Monks Street was built to the immediate south-west of the site, as part of the new city's primary road network.

Site 2 now lies beneath modern housing, bounded by Wilkinson Crescent, Syward Row and Carter Grove. Site 1 lies beneath the north end of the same development, in the area bounded by Morgan Way, Twistleton Heath, Wodell Drive and Butter Row.

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Figure 1.5 Extract from the Ordnance Survey First Edition 6" sheet Bucks IX, 1881, showing the excavation site in relation to Wolverton

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CHAPTER 2: THE EXCAVATION

Bob Zeepvat

METHODOLOGY

The geophysical survey of Site 2, covering an area 60m square in the centre of the former allotments, revealed no significant anomalies (Hancock 2007). The presence of a significant amount of magnetic disturbance tallied with the past use of the site as allotments. However, subsequent trial trenching uncovered a grave containing a single inhumation burial, apparently crouched (Wilson 2007). At the time this burial was believed to be of Bronze Age date in view of the proximity of other burials of that period nearby at Wolverton Turn and Warren Farm (Fig. 1.3). Accordingly, a staged approach to the removal of topsoil and overburden was devised, to locate the ring ditch that should have accompanied it. Initially a 30 x 30m square area, centred on the grave (Fig. 2.1, Grave 2008), was stripped under archaeological supervision. By the time the initial phase of stripping had been completed it was apparent that the site contained a number of burials, all of Anglo-Saxon date. The excavation area was therefore enlarged in 10m-wide increments until the northern and western limits of the cemetery had been determined: to the south and east, the limits of excavation were defined by the modern boundaries of the site. All subsequent excavation was undertaken by hand.

SITE DESCRIPTION

The excavated area of Site 2 was roughly rectangular, measuring about 90 x 100m, aligned north-west to south-east (Fig. 2.1). Within it were found seventy-six graves, containing a total of eighty inhumation burials. Five empty grave cuts and two urned cremations were also identified, along with two possible disturbed cremations. In addition, a number of non-funerary features, including pits, postholes and ditches, were present. A list of grave cuts and their associated burials appears in Appendix 1.1: non-funerary contexts are listed in Appendix 3.

The Cemetery

In the cemetery the graves were scattered randomly across the excavated area, with a slightly heavier concentration to the north. The two cremations (2246, 2436) were located towards the south-western side of the site, among random inhumations and non-funerary features. The cemetery does not appear to have had a formal boundary, though its north-western and north-eastern extents were identified by the excavation. It is apparent from Fig. 2.1 that it originally extended to the south-west, where it was almost certainly truncated by the construction of Great Monks Street, and possibly also to the south-east, into the adjoining area of former allotments, now scrubland, where it presumably survives.

A range of grave orientations was noted across the cemetery, the most frequent being with the head to the south-west and west quadrants, or to the north-east and east (*i.e.* reversed). Only a few burials were aligned north-west/south-east, two had heads facing the south quadrant and none faced north. Allowing for differences in alignment resulting from seasonal variations in the position of the sun, or its absence due to cloud cover, it appears that the favoured orientation for burials was with the head aligned roughly south-west to west. No distinction in orientation appears to have been made between different age and gender groups. No intercutting graves were found, suggesting that grave locations were probably marked above ground, that existing graves were respected and that space for burials in the cemetery was not a problem.

On the whole the grave cuts were shallow. Most survived to a depth of 0.1–0.4m into the natural stony clay: about 20% were shallower (0.05–0.1m): one grave (2436), containing a possible adolescent burial, reached a depth of 0.7m. While the generally shallow grave cuts encountered in the cemetery and the location of some bones and artefacts within their graves suggest post-depositional truncation and disturbance, probably by repeated ploughing, it should be noted that the natural stony clay is not easy to cut into, even when using modern hand tools, so the graves may have relied more on mounds or cairns to protect their contents. The cremation pits were also shallow. In 2246 the cremation vessel was complete though shattered, but in 2436 the cremation pit survived to a depth of only 70mm and the cremation vessel had been heavily truncated.

Towards the southern edge of the site, four graves (2212, 2215, 2227, 2235) had been placed around a four-post structure (Group 2378: postholes 2370, 2372, 2374, 2376), evidently of some significance (Fig. 2.2). The posts had been set at c.1.7m centres, forming a square aligned with its corners facing roughly north, south, east and west: the burials were parallel to and c.1m from the sides of the structure. The graves were between 0.17–0.35m deep: each contained the burial of a 'middle adult' (*i.e.* 36-50 years of age). One (Inhumation 2226) was female, the others were sex undetermined, and the grave goods provided no clues as to gender. Three of the graves (2212, 2215, 2227) contained Saxon finds and one (2215: Inhumation 2214) was radiocarbon-dated to the late 6th to mid-7th century (AD 575–660). None of the postholes contained any dating evidence, but their association with the four graves indicated that they were almost certainly contemporary.

The only other possible grouping of burials noted was a row of five graves (2154, 2156, 2151, 2166, 2197), aligned west-east (Fig. 2.3). The northernmost (2197) contained a middle-aged female accompanied by a bucket (represented

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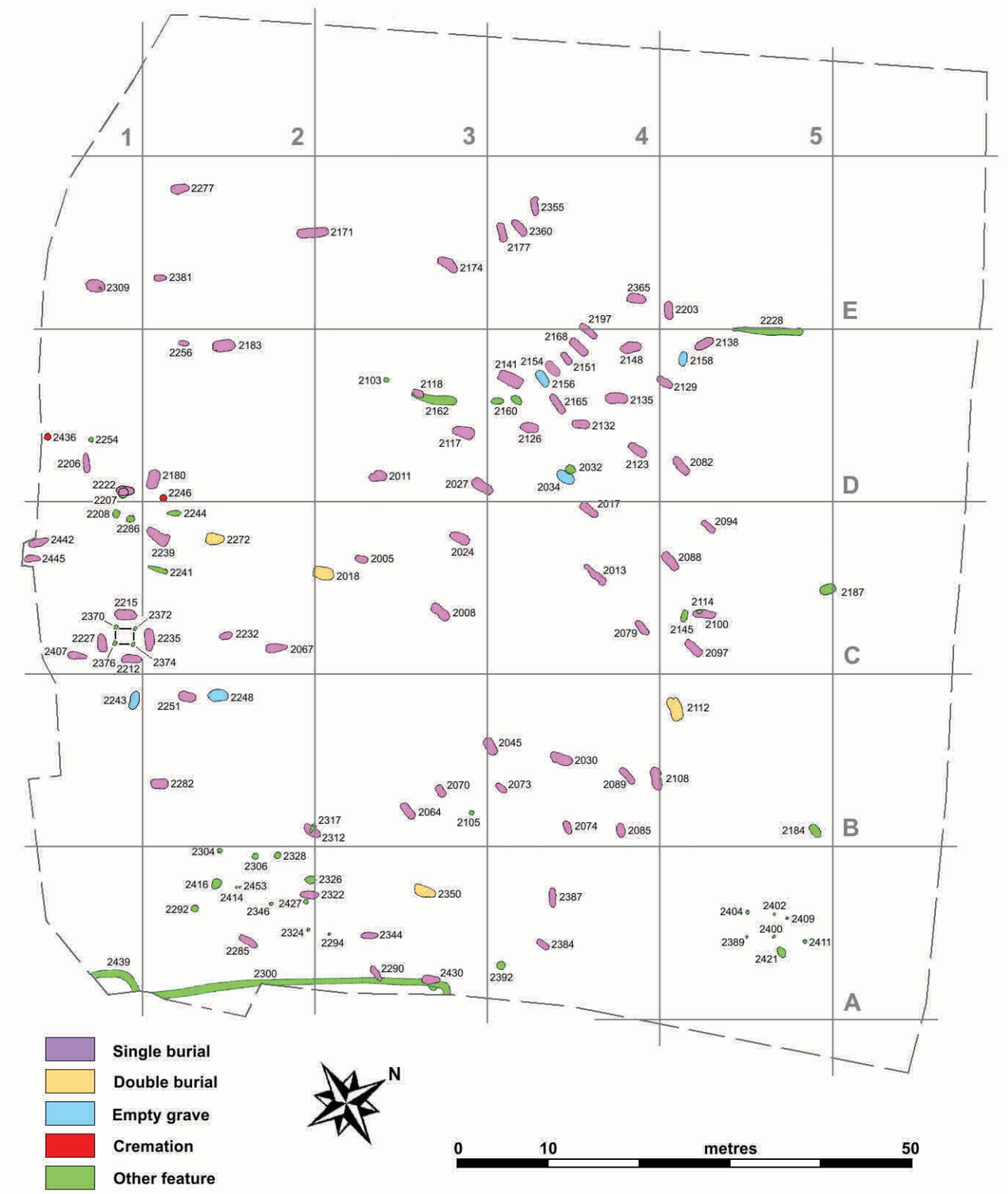

Figure 2.1 Overall plan of the excavation

by fragmentary iron fittings), a knife and a collection of fossils and geological specimens. To the south of this was grave 2168, containing an adolescent burial accompanied by a copper-alloy workbox, silver pendants, glass and shell beads and shears, possibly contained originally in a wooden box. Of the remaining three graves the southern one (2156) was empty, its fill containing only a knife fragment, while 2151 contained a child burial accompanied by a knife and 2154 a fragment of a child's skull, also accompanied by a knife. The adult and adolescent burials had their heads to the west: the child's head (2151) was to the east. The adult burial (2197) was radiocarbon-dated to the mid-7th to early 8th century (AD630–720). It is tempting to suggest that the individuals in this row of graves were related in some way.

Other Features

Apart from the graves and those features described above that were obviously related to them, the excavation revealed only a few non-mortuary features comprising pits, postholes and gullies, located mostly on the south-

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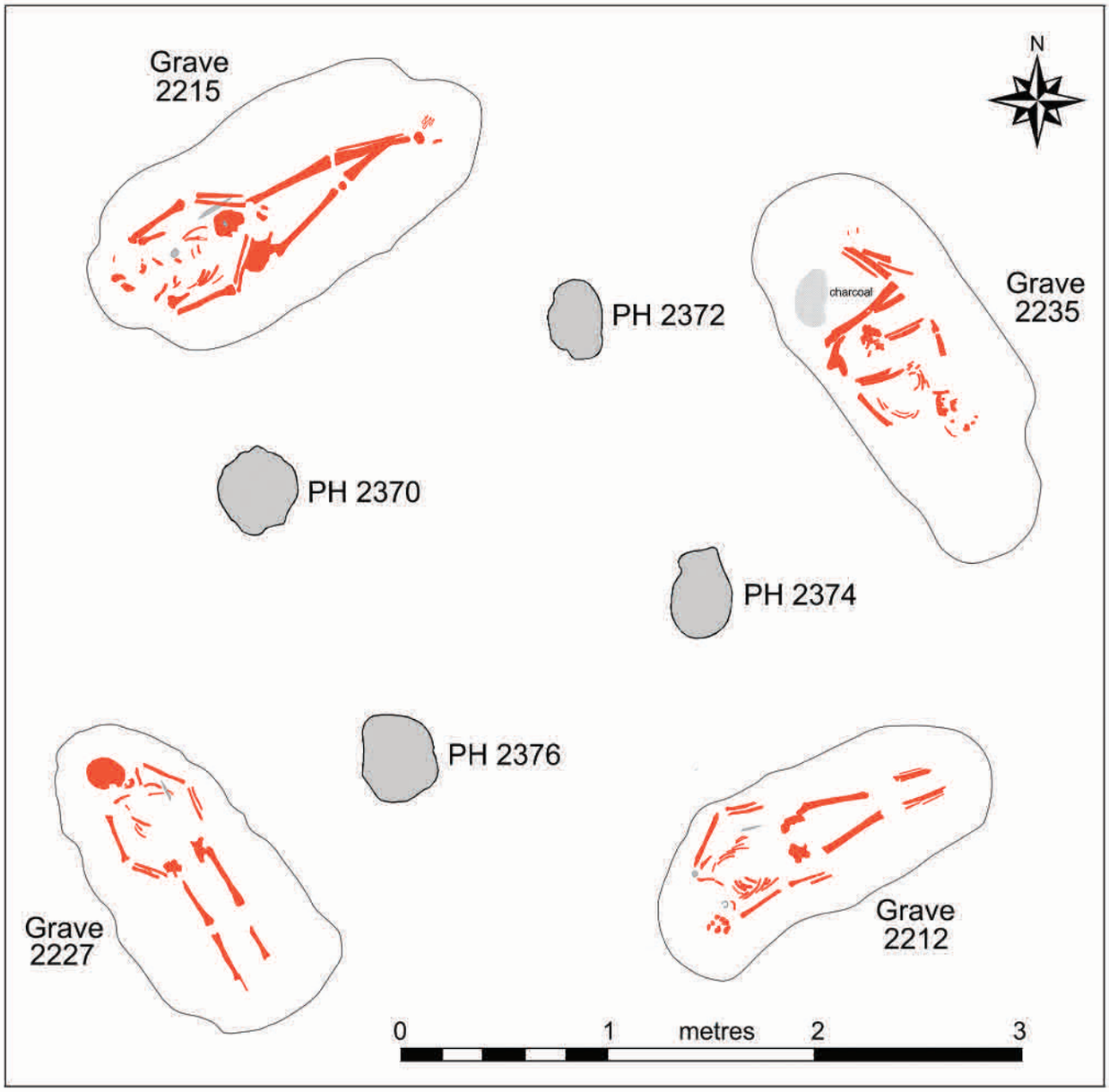

Figure 2.2 Four-post structure 2378 and associated inhumations

east side of the excavated area. These features were all shallow: few contained any dating evidence, and their intended functions and relationships to each other, and to the cemetery, remain on the whole enigmatic.

Ditch 2300 extended north-eastwards for c.30m along the south-east side of the site from the south corner of the excavated area, turning through 90° at its north end and extending beyond the site. Ditch 2439, a curving feature at its south end, may be related. Ditch 2300 was c.0.6m wide and c.0.2m deep, with steep sides and a concave base. Its grey-brown silty fill (2299) contained a single flint and a sherd of early to mid-1st century Roman pottery. The ditch was cut by graves 2290 and 2430.

In the area west of ditch 2300, a number of shallow pits and postholes were interspersed randomly with the small number of Saxon burials in this part of the site. Of the former features only two, pits 2416 and 2292, contained any dating evidence, comprising sherds of mid to late 1st-century Roman pottery. These features did not appear to form any recognisable pattern, as might indicate some form of structure. A similar group of pits and postholes (2389, 2400, 2402, 2404, 2409, 2411, 2421) near the east corner of the excavated area were also enigmatic. Only one of these features, posthole 2404, contained dating evidence, a sherd of early to mid-1st-century Roman pottery.

Across the site a number of pits, gullies and postholes were interspersed with the graves. On the whole these features were discrete, contained single fills with no associated dating evidence and were not apparently related to any adjoining graves. Exceptions to this were two pits, 2207 and 2208, located near the south-west edge of the site. Pit 2207 contained seven sherds of 6th to 7th-century AD date, five of them from a single jar. This feature was cut by Grave 2222. Pit 2208, c.1m to the south, was a discrete feature containing five quartz-tempered sherds of a similar date range.

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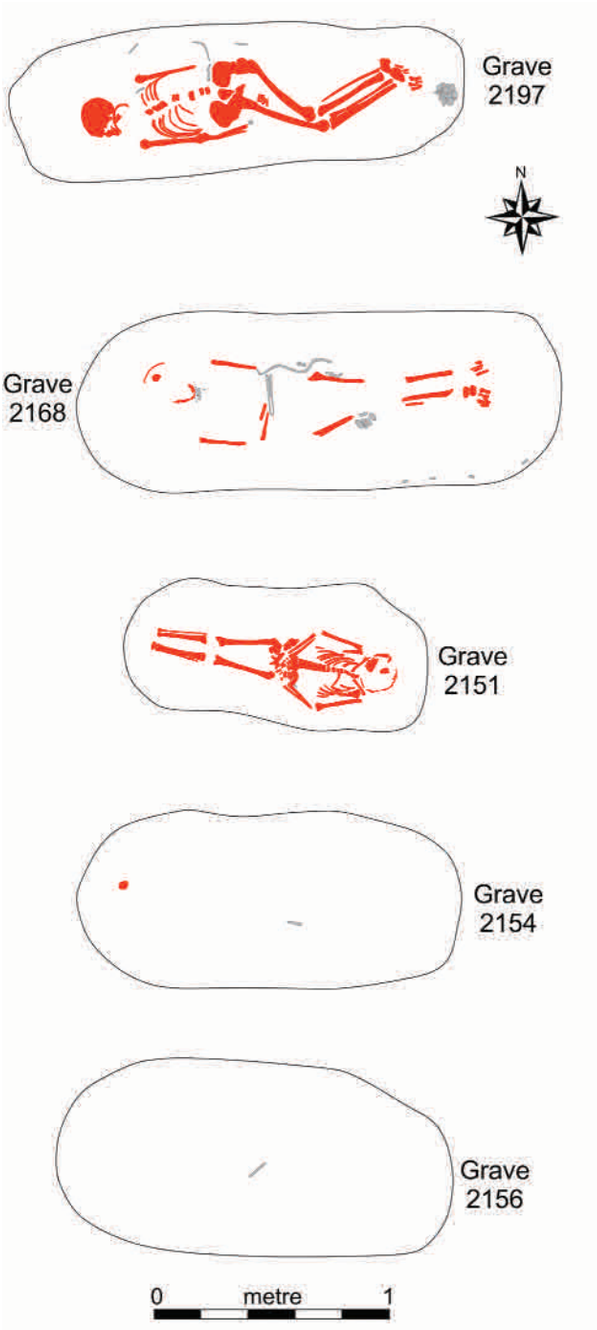

Figure 2.3 Row of graves (2154, 2156, 2151, 2168, 2197)

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CHAPTER 3: THE GRAVES AND THEIR CONTENTS

Alastair Hancock, with Bob Zeepvat

INTRODUCTION

A total of eighty-one graves were excavated at Wolverton. Five of them (2034, 2156, 2158, 2243, 2248) were empty, the remainder contained eighty inhumation burials, four of them double inhumations (2018, 2112, 2272, 2350). Two urned cremation burials (2252, 2436) were also recorded, along with two possible disturbed cremations. A detailed analysis of the cemetery population, by age and sex, appears in Chapter 4. A summary list of the burials appears in Appendix 1.1.

Graves are identified in the catalogue by their cut number. Below this appears the context number for the grave fill and the number(s) assigned to the human remains, prefixed 'Inhumation', 'Cremation' or 'Charnel' (disarticulated bones within the graves, unrelated to any inhumations present). Following this is an alpha-numeric grid reference, to enable location of the graves on Fig. 2.1, and finally the figure number(s) for illustrations of the burial and any relevant finds.

Each grave is illustrated at a scale of 1:20: the cremation burials are illustrated by photographs. The following grave-related information is given where relevant: shape, dimensions and truncation; orientation of body (head-feet); stratigraphic relationships; related structures. For each inhumation or cremation, the information comprises age and sex, position of skeleton and height, analysed bone (i.e. surviving) and pathology, where determinable. Scientific dating is also included, where relevant. The presence and location of any grave goods is noted. The figure number(s) for burial drawings and the illustrated finds from that grave appear alongside the 'Grave' and 'Artefact' descriptions.

Artefacts found with the burials are described in detail: artefact numbers appear in bold in the text. As finds numbering during the excavation was somewhat idiosyncratic, due in part to the degree of corrosion encountered, all finds have been re-numbered in the report. A full list of finds, with original and revised numbering, appears in Appendix 2. Where items form part of a more complex artefact (e.g. beads from a necklace) they have been grouped together for ease of description. The majority of artefacts have been illustrated: the few that are not are labelled 'NI' in the catalogue. For discussion of particular artefact types and groups, see Chapter 5. Drawing scales used are indicated in italics in figure headings: relevant scale bars appear on all figures.

Abbreviations: D = depth; dia = diameter; ext = external; L = length; und = undetermined; W = width; NI = not illustrated.

Object-type references used in this chapter:
Buckles: Marzinzik 2003
Knives: Evison 1987
Pendants: Høilund Nielsen (*in* Bayliss *et al* 2013)
Spears: Swanton 1974

INHUMATIONS

Grave 2005
Fill 2003 / Inhumation 2004
C3 Figs 3.1 & 3.2

Grave: Sub-rectangular with rounded ends. Very truncated, surviving dimensions L. 1.63m, W. 0.80m, D. 0.15m.
Orientation of body: E-W.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adolescent – Adult, est. range 13-50 years. Sex undetermined.
Body / Height: Flexed on right side. Right arm flexed with hand at waist. Left arm flexed (left humerus disturbed) with hand lying over upper right arm. Legs flexed to north. Height = und.
Surviving bone / Condition: Scapula, humeri, radii, ulnas. Fragments of femurs, tibias and fibulas. Some hand bones. Condition fair.
Pathology: None.
Artefacts: Components of a dismantled workbox (**1**), along with a ring (**7**), a bangle (**8**) and the components of a chatelaine (**9**) were found by the right upper arm. Two fragments of an unidentified implement (**6**) were located in the waist area.

1 **Workbox**, copper-alloy. Two plain, domed box ends (**2 & 3**: dia. of both c.52mm) found stacked together. Six fragments of curved copper-alloy sheets (**4**: W. 18-22mm) decorated with chevrons formed from punched dots, and pierced along their edges with rivet holes. Two small chain links and suspension loop of thin copper-alloy wire (**5**), perhaps associated with the workbox. The undamaged state of the workbox components suggest that it may have been disassembled prior to burial. Late 7th–early 8th century.

6 **Fitting,** iron, two pieces. One piece comprises an oval plate 26 x 65mm, with rounded ends and cranked rod projecting at one end, pierced by

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two, possibly three rivet holes. The second piece comprises a strip 56 x 16mm, bent through 90° and broken at one end, with rivet hole and fragments of wood remaining.

7 **Ring**, leaded copper-alloy, ext. dia. 20mm, W. 4mm. Three parallel raised bands encircle the external face. Probably a finger ring.

8 **Bangle**, shale. Complete, ext. dia. 110mm, circular cross-section, W. 14mm. Originally identified as a purse ring, though on reflection shale does not seem a sufficiently robust material for this function, and no parallels could be found.

9 **Chatelaine**, comprising at least six fragments of chain and related fittings (**10**), along with miscellaneous small fragments of strip and rod, functions unknown. Includes one iron ring, ext. dia. 27mm. Also a disc of antler (**11**), dia. 52-44mm. The surface is worn, although a single row of ring-and-dot decoration is visible on one face and two concentric rows on the other. An oval (17-14mm) perforation is present at the centre, and three smaller perforations are irregularly spaced around its rim. An external iron suspension loop is present, fastened to the disc with a copper-alloy rivet. Part of an iron chain is also present, comprising four to eight interconnected oval or s-shaped links. The rear of two complete links is covered with mineralised wood.

Grave 2008
Fill 2006 / Inhumation 2007
C3 Fig. 3.3

Grave: Sub-rectangular with rounded ends. L. 2.00m, W. 0.89m, D. 0.23m.
Orientation of body: E-W.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 21-35 years. Male.
Body / Height: Supine. Legs and left arm extended. Right arm flexed with right hand overlying right femur / pelvis. Height = 167-175cm.
Surviving bone / Condition: Fragments of skull, ribs, vertebrae and pelvis. Humeri, radii, ulnas, femurs, tibias and fibulas. Condition fair. A small area of copper-alloy staining was present at the left part of pelvis (iliac crest), but no object was recovered. A small area of iron corrosion was present on the right ulna, mid diaphysis.
Pathology: Dental hypoplasia. Schmorl's nodes present on thoracic vertebrae (T5, T8, T9, T10 and T11).
Scientific Dating: Calibrated radiocarbon date of AD550–650 from left distal radius at 95.4 % probability. SUERC-31577 (GU-22533).
Artefact: A seax (**12**) was found by the waist, on the right side.

12 **Seax**, iron. Length overall 462mm, double-edged blade L. 312mm and W. max 42mm, tapered on both edges. On X-rays there is a possible raised section along the top of the blade which appears to be a pattern-welded insert. Top of blade waisted to flat central tang, L. 144mm, which tapers from c.30-5mm and has extensive mineralised wood traces from handle and no pommel. Similar form to a seax from Baexam, Holland (Gale 1989, 75 & fig. 6.6). 7th century.

Grave 2011
Fill 2009 / Inhumation 2010
D3 Fig. 3.4

Grave: Sub-oval. Very truncated, surviving dimensions L. 1.65m, W. 0.94m, D. 0.06m.
Orientation of body: SW-NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adolescent, est. range 13-20 years. Sex undetermined.
Body / Height: Supine with head facing north. Legs flexed to the north. The left humerus, or the left radius and ulna, appear to have been displaced. Height = und.
Surviving bone / Condition: Fragments of skull, ribs, vertebrae, humeri, left radius and ulna, pelvis and femurs. Condition poor.
Pathology: Localised active osteomyelitis on the left femur – three cloacae (entry sites for pus-producing bacteria), all situated at the distal, anterior surface of the bone (above the knee). The distal epiphysis was unaffected.
Artefacts: A knife (**13**) and sharpening steel (**14**) were found in the waist area.

13 **Knife**, iron. Parallel-sided, single-edged blade, tip missing. Surviving L. 102mm, W. of blade c.15mm. Flat tang, c.10mm wide, broken. A small piece of textile impression of a heavy, linen zz-spun 2/1 twill with 10/10 threads per cm is present on the blade.

14 **Sharpening Steel**, iron. Blade parallel-sided, rectangular section, squared-off end. L. 136mm overall, W. of blade 13mm. The top end of the blade is necked to form the rod-like tang, which is incomplete. See also Grave 2154, object **73**.

Grave 2014
Fill 2012 / Inhumation 2013
C4 Fig. 3.5.

Grave: Long shallow sub-rectangular grave with narrower west end. L. 2.14m, W. 0.63m, D. 0 15m.
Orientation of body: W-E.
Stratigraphic relationships: None
Structures: None.
Age / Sex: Adult, est. range. 36-46 years. Sex undetermined.
Body / Height: Supine and extended with head turned to the south. Hands in front of the pelvis. Height = 163-169cm.
Surviving bone / Condition: Fragments of skull, spine, pelvis and os sacrum. Occasional teeth, ribs, and bone from hands and feet. Long bones in relatively good condition, although the right humerus was absent. Condition good.
Pathology: Schmorl's nodes on thoracic vertebrae. Recession of alveolar bone and severe dental attrition evident, although not affecting the wisdom teeth. Spina Bifida Occulta in os coxae and sacrum.
Artefacts: None.

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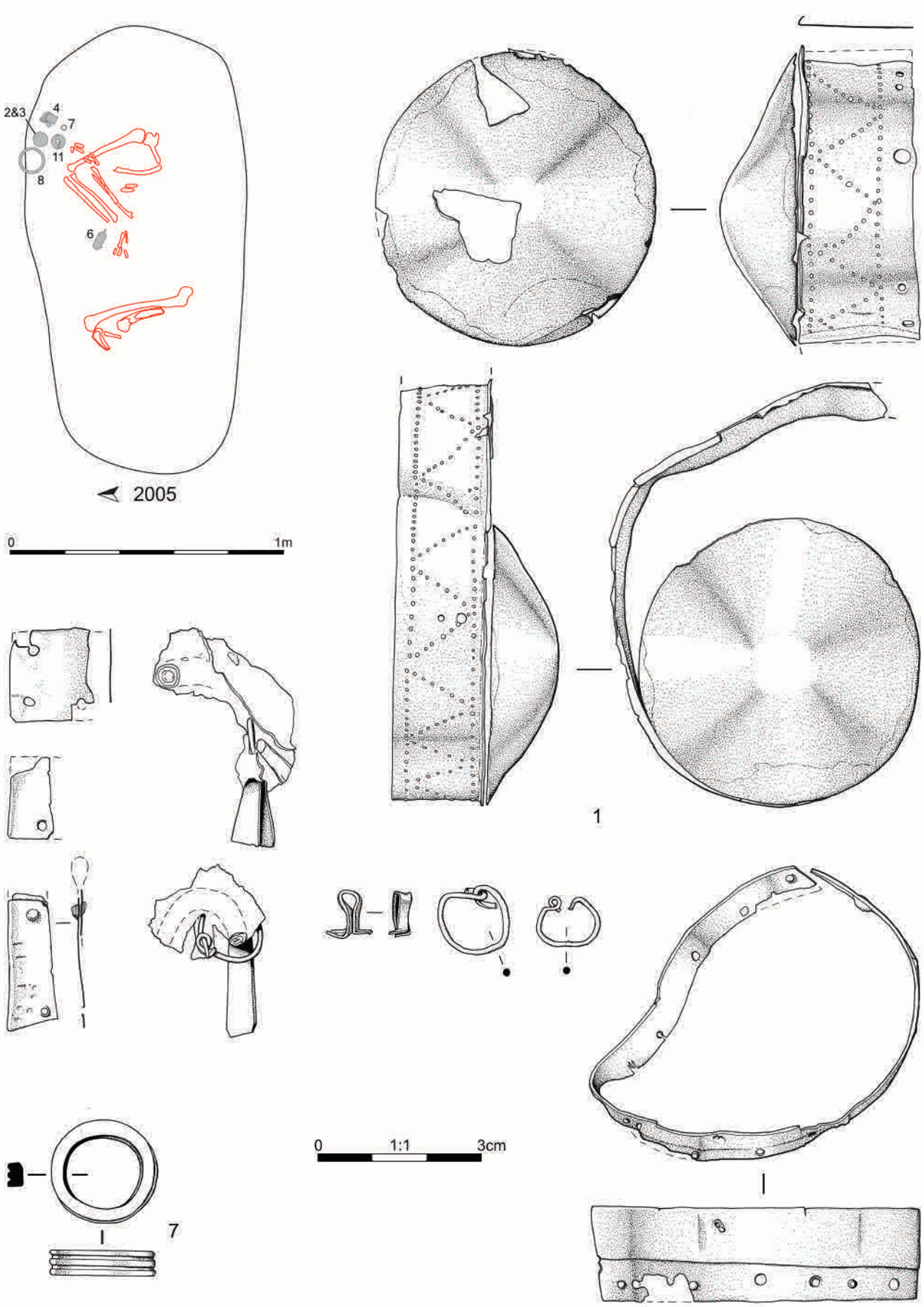

Figure 3.1 Grave 2005 *(1:20)*: workbox **1,** ring **7** *(1:1). See also Fig. 3.2.*

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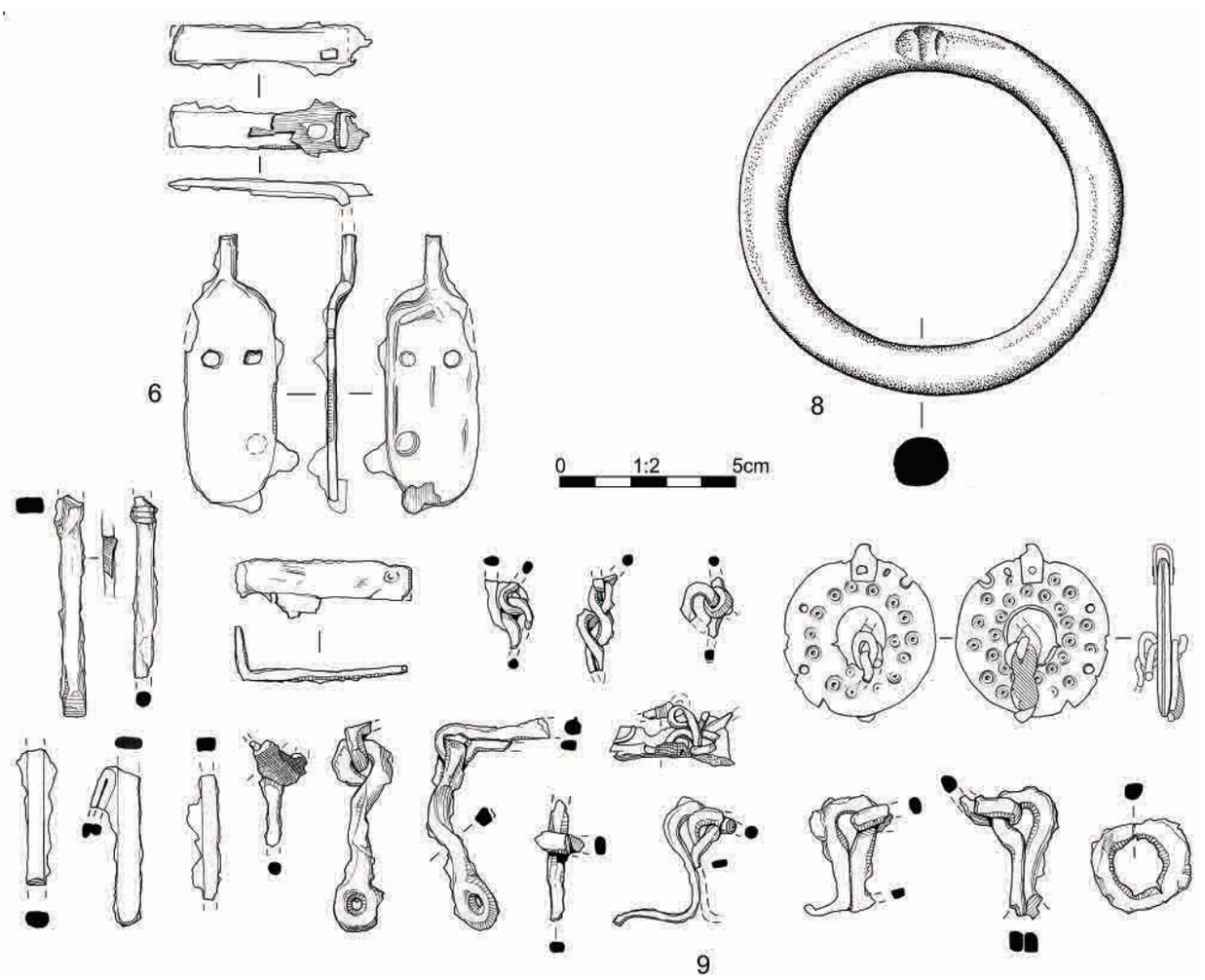

Figure 3.2 Grave 2005 finds: fitting? **6**, bangle **8**, chatelaine **9** *(1:2). See also Fig. 3.1.*

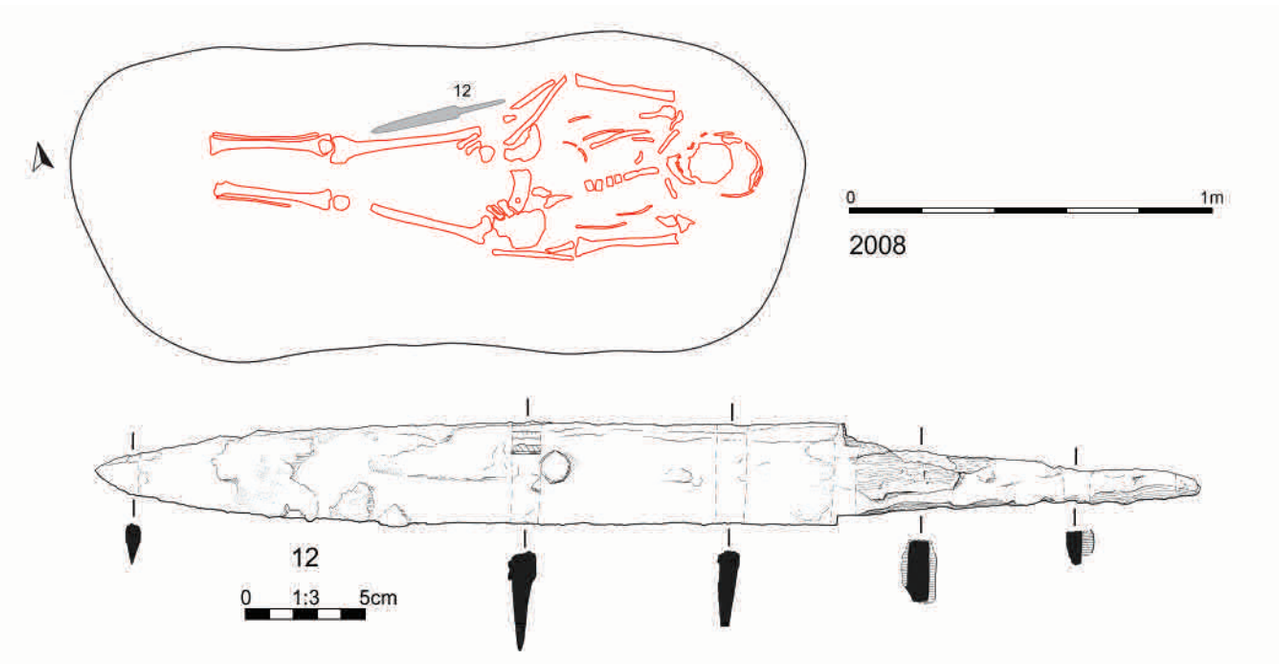

Figure 3.3 Grave 2008 *(1:20)*: seax **12** *(1:3).*

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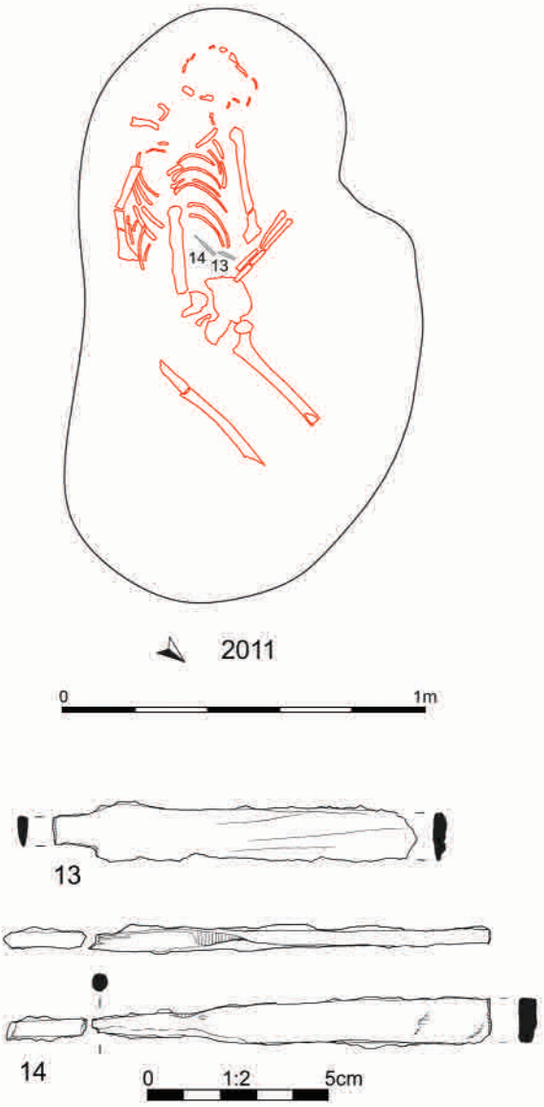

Figure 3.4 Grave 2011 *(1:20)*: knife **13,** sharpening steel **14** *(1:2).*

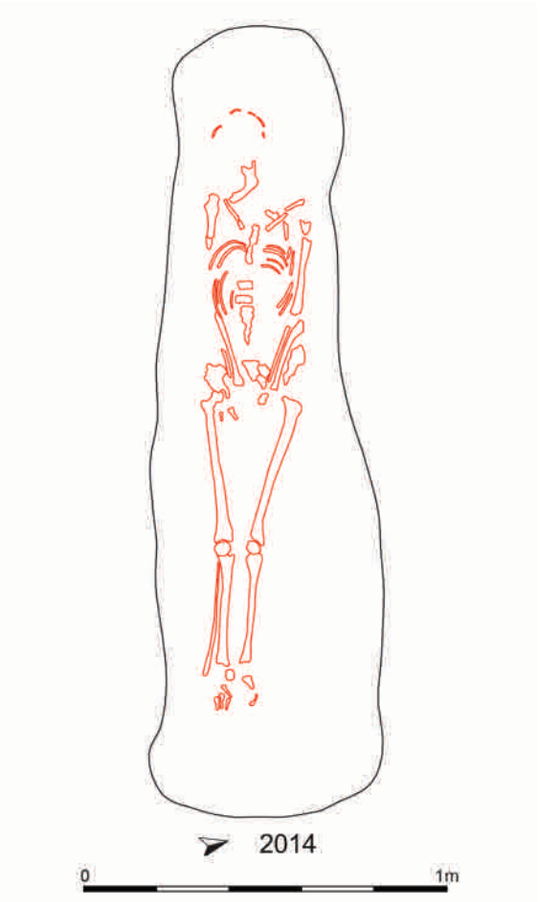

Figure 3.5 Grave 2014 *(1:20).*

Grave 2017
Fill 2015 / Inhumation 2016
C4 Fig. 3.6

Grave: Sub-rectangular with rounded ends. Very truncated, surviving dimensions L. 1.90m, W. 0.73m, D. 0.10m.
Orientation of body: W-E.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 21-50 years. Male.
Body / Height: Supine and extended. Height = und.
Surviving bone / Condition: Fragments of ribs, left humerus, radii, ulnas, pelvis, femurs and tibias. Condition fair. Copper-alloy staining on left os coxae near auricular surface, but no object recovered.
Pathology: None.
Artefacts: A knife (**15**) and copper-alloy binding (**16**) were found in the waist area.

15 Knife, iron. L. 137mm overall, blade tip and tang broken. Single-edged blade, W. 22mm. Flat tapered tang.

16 Binding, copper-alloy, undecorated. L. 57mm surviving, W. 10mm. Three iron rivets, set equidistantly along centre of strip.

Grave 2018
Fill 2021 / Inhumations 2019 & 2020
C3 Fig. 3.7

Grave: Sub-rectangular. Very truncated, Surviving dimensions L. 1.99m, W. 1.16m, D. 0.05m.
Orientation of bodies: NE-SW.
Stratigraphic relationships: None.
Structures: None.
Artefacts: A staple (**17**) was found on the northern edge of the grave. Inhumation 2019 had a buckle (**18**) and knife (**19**) at the waist. A bead was found by the right shoulder of Inhumation 2020.

Inhumation 2019 (left)

Age / Sex: Adult, est. range 36-51+ years. Male.
Body / Height: Supine. Right arm extended, left arm flexed with left hand over pelvis. Legs extended. Height = 161-169cm.

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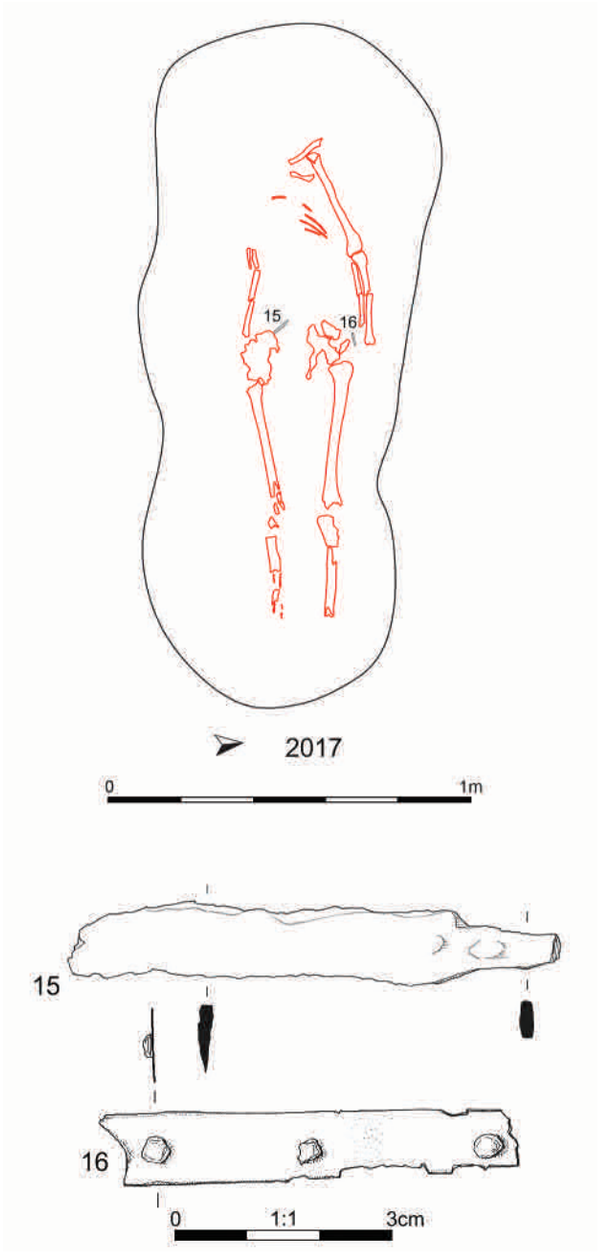

Figure 3.6 Grave 2017 *(1:20)*: knife **15** *(1:2)*, binding **16** *(1:1)*.

Surviving bone / Condition: Fragments of spine and pelvis. Ribs, clavicle, humeri, ulnas, radii, femurs, tibias and fibulas. Some hand and foot bone. Copper staining on left hand bones, left side of sacrum and right ilium. Condition good.
Pathology: Osteoarthritis affecting left hand, lower thoracic and lumbar vertebrae. Also severe Schmorl's nodes affecting lower thoracic and lumbar vertebrae.

Inhumation 2020 (right)
Age / Sex: Adult, est. range 21-35 years. Female?
Body / Height: Supine. Arms flexed, crossing with both hands over pelvis. Legs extended. Height = und.
Surviving bone / Condition: Fragments of ribs, clavicles, spine and pelvis. Humeri, ulnas, radii, femurs, tibias and fibulas. Some hand and foot bone. Condition poor.
Pathology: Well-healed fractures of right arm. One at distal end of ulna and a spiral/oblique fracture at mid shaft of humerus.

17 **Staple**, iron. W. 50mm, made from c.5mm square-section bar with ends (one broken) tapered to chisel points. Surviving point L. 35mm.

18 **Buckle and plate**, copper-alloy, Marzinzik type II.24a. Elongated oval buckle, 25 x 10mm, with two iron tongues and copper-alloy plate, 18 x 15mm, fastened to strap by three rivets of the same material. One side of the plate is decorated with a semi-circle of incised cordoned cross-hatching and with two more substantial punched transverse lines at the rear of the rivets. Traces of leather between the plates, and fragments of plain woven z-spun linen, 24x24 threads per cm, around the tongues. Late 7th century.

19 **Knife**, iron. Curved back, straight cutting edge, tip missing. L. 115mm overall, max blade W. 15mm. Tapered tang, offset in line with the cutting edge. It is uncertain whether this object is definitely associated with Inhumation 2019, but it was closer to the former than to Inhumation 2020.

20 **Disc**, bone. Plain disc, dia. 22mm, with central hole, 5mm dia. It only weighs 5g, and so is too small and light to be a spindle whorl.

Grave 2024
Fill 2022/ Inhumation 2023
C3 Fig. 3.8

Grave: Sub-rectangular, with slightly rounded ends. Dimensions L. 1.88m, W. 0.48m, D. 0.32m.
Orientation of body: E-W.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adolescent, est. range 13-20 years. Sex undetermined.
Body / Height: Supine. Legs extended with left tibia crossing right at ankles. Both arms flexed with hands on pelvis. Height = und.
Surviving bone / Condition: Fragments of skull, ribs and pelvis. Vertebrae, humeri, radii, ulnas, femurs, tibias and fibulas. Some hand and foot bones. Condition good.
Pathology: Hypoplasia of dental enamel. Healed cribra orbitalia. Schmorl's nodes affecting lower lumbar (L1, L2, L4) and thoracic (T9, T10, T11, T12) vertebrae. Also pathological change to L3 vertebra: perhaps disc herniation or early tuberculosis.
Artefacts: A disc mount (**21**) was found to the right of the head: a knife (**22**) was found at the waist.

21 **Disc mount**, copper-alloy, dia. 30mm. with a band of *millefiori* decoration around the circumference comprising two concentric rings of polychrome floral motifs with seven petals, set on a blue background. The central fitting/setting is missing. On the rear face are remains of the body of the silver-plated vessel from which the mount was removed. Almost certainly an escutcheon from a hanging bowl. 7th century.

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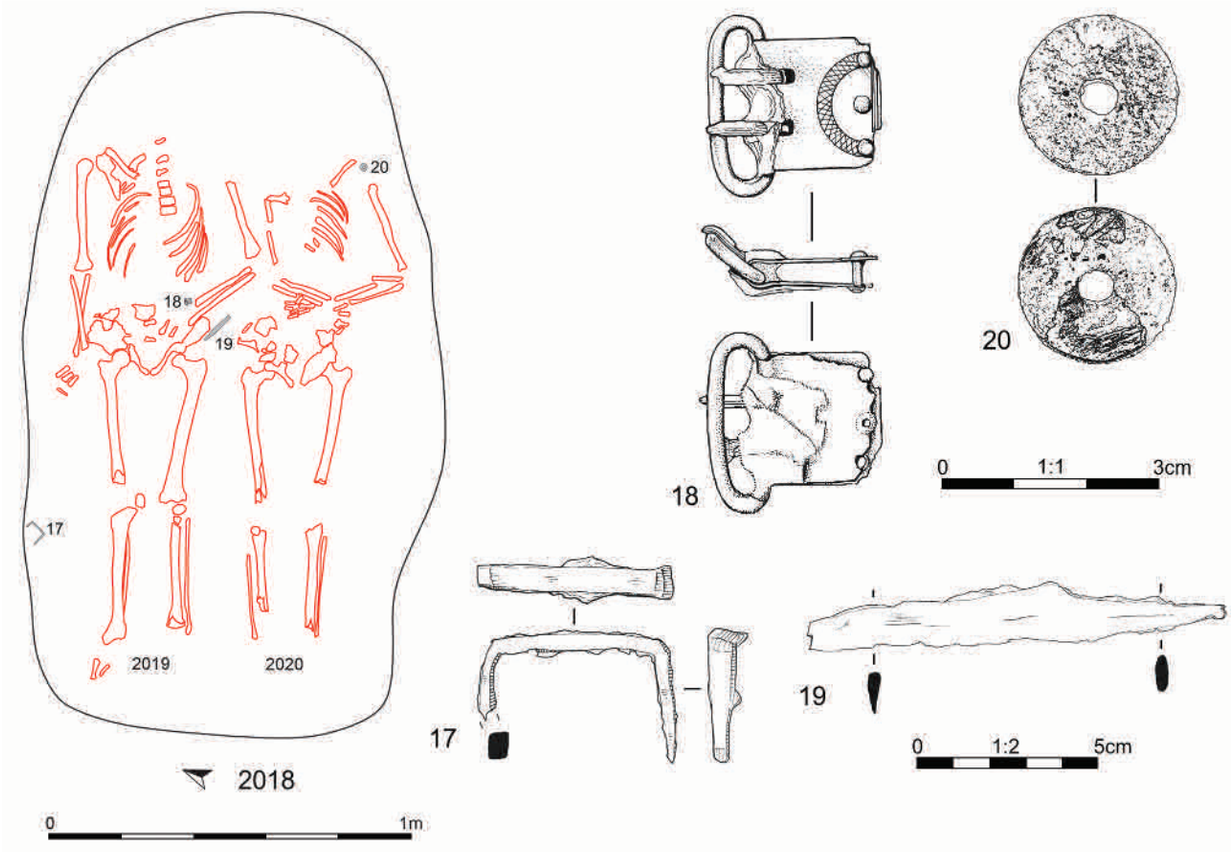

Figure 3.7 Grave 2018 *(1:20):* staple **17**, knife **19** *(1:2);* buckle **18**, disc **20** *(1:1).*

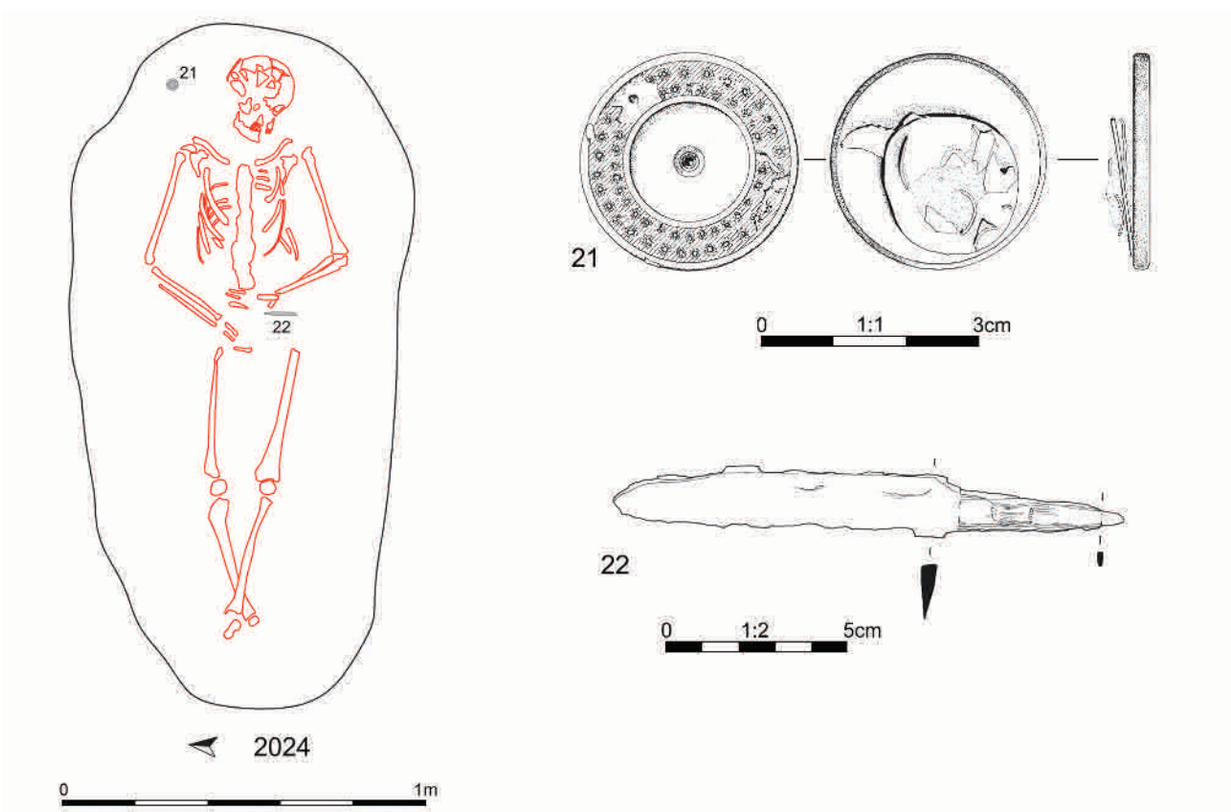

Figure 3.8 Grave 2024 *(1:20)*: disc mount **21** *(1:1)***,** knife **22** *(1:2).*

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22 **Knife**, iron. Straight cutting edge, final third of back curves to tip. Tapered tang in line with the cutting edge and offset from the back. Wood/horn impressions from handle survive on tang. L. 141mm overall, blade W. 15mm max.

Grave 2027
Fill 2025 / Inhumation 2026
D3 Fig. 3.9

Grave: Sub-rectangular, but irregular with rounded ends. Dimensions L. 2.14m, W. 0.93m, D. 0.25m.
Orientation of body: E-W.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Sex undetermined.
Body / Height: Supine. Left arm tightly flexed. Right arm slightly flexed outward from torso. Legs extended. Height = und.
Surviving bone / Condition: Fragments of skull, vertebrae, rib, pelvis, clavicles and scapulae. Humeri, radii, ulnas, femurs, tibia and fibula. Some hand and foot bone. Condition poor.
Pathology: Severe dental hypoplasia. Osteophytes present in both thoracic and lumbar vertebrae.
Artefacts: A buckle (**23**), knife (**24**) and spearhead (**25**) were found at the waist, on the left side. By the right shoulder was a lead weight (**26**): above the head were a balance (**27**) and bucket fittings (**30**).

23 **Buckle and plate**, copper-alloy. Marzinzik II.24a. Oblong D-shaped loop, 31 x 16mm overall, two waisted tongues and a rectangular plate, 22 x 18mm. There are four rivets toward the end of the plate, the two outer rivets having larger heads. The front of the plate is decorated with two bands of punched lines: a thin band runs across the width at the rear of the rivets and a thicker one in front. The plate hinge is also decorated with punched lines running perpendicular to the bands of decoration on the plate. There are traces of leather between the plates and fragments of plain woven z-spun linen, 24x24 threads per cm, on the back of the buckle plate. Late 7th century.

24 **Knife**, iron. Final quarter of back steeply angled to straight cutting edge (tip missing). Tang (incomplete) in line with cutting edge and offset from back. L. 116mm overall, blade W. 17mm. Possible leather trace (sheath?) on blade.

25 **Spearhead**, iron. Swanton C2. Leaf shaped blade and broadly cleft socket which comprises approximately a third of the total length. Wood inside socket, and a square-headed rivet for securing the shaft is present on the outside of the socket. Overall L. 270mm, blade L. 160mm, W. 25mm. 7th century.

26 **Weight**, lead. Conical: Height 34mm, max. dia. 24mm. Oval hole, 4-6mm dia., through long axis. Point of cone damaged. Weight 59g.

27 **Balance**, copper-alloy. The arm (**28**) is made from 2mm diameter rod with hammered flanges and holes at each end, one retaining its circular suspension ring. There are several file marks on the arm. The pointer is made from 1mm sheet folded around the arm and riveted through the upper of two drilled holes. The stirrup (**29**) made of hammered sheet, was originally attached to the pointer by the lower rivet hole, and traces of an iron rivet survive. Small fragments of a partially mineralised z-spun fibre thread, probably linen, survive around the rivet, probably part of the suspension cords for the pans. Two dished circular pans of 0.5mm thick copper-alloy sheet survive, with three drilled/punched holes for suspension. The interiors of the pans are both heavily striated. Arm and pointer 132 x 22 x 4mm: stirrup 52 x 3 x 8mm: pans 38mm dia. A similar example was found in Buckland Grave C3a-b (Evison 1987, 273 & fig. 2). 6th–7th century.

30 **Bucket handle** and hoops, iron. Flattened central grip with circular-section sides and ends along with fragments of iron hoops and/or uprights. Width of handle and diameter of hoops suggest a vessel c.145mm high, c.138mm ext. dia. Traces of wood on the hoop fragments: one also has fabric traces on its outer face. Mid-6th to 8th century.

Grave 2030
Fill 2028 / Inhumation 2029
B4 Fig. 3.10

Grave: Sub-rectangular with rounded ends. L. 2.14m, W. 0.96m, D. 0.38m.
Orientation of body: W-E.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 21-35 years. Female.
Body / Height: Supine and extended. Height = und.
Surviving bone / Condition: Fragments of skull, ribs, vertebrae, pelvis, humeri, radii, ulnas, femurs, tibias and fibulas. Some hand and foot bones. Condition fair.
Pathology: None
Artefact: A fragmentary knife (**31**) was found at the waist.

31 **Knife,** iron. Two small fragments, L. overall c.80mm, W. 12mm.

Grave 2034
Fill 2033
D4 Fig. 3.11

Grave: Sub-oval and truncated. L. 1.75m, W. 0.95m, D. 0.0.6m.
Orientation of grave: E-W axis
Stratigraphic relationships: Cut by undated posthole (Fill 2032).
Structures: None.
Artefacts: None

This was a possible grave cut, containing no inhumations.

Grave 2045
Fill 2043 / Inhumation 2044
B4 Fig. 3.12

Grave: Sub-rectangular, with slightly rounded ends. Dimensions L. 1.70m, W. 0.88m, D. 0.20m.

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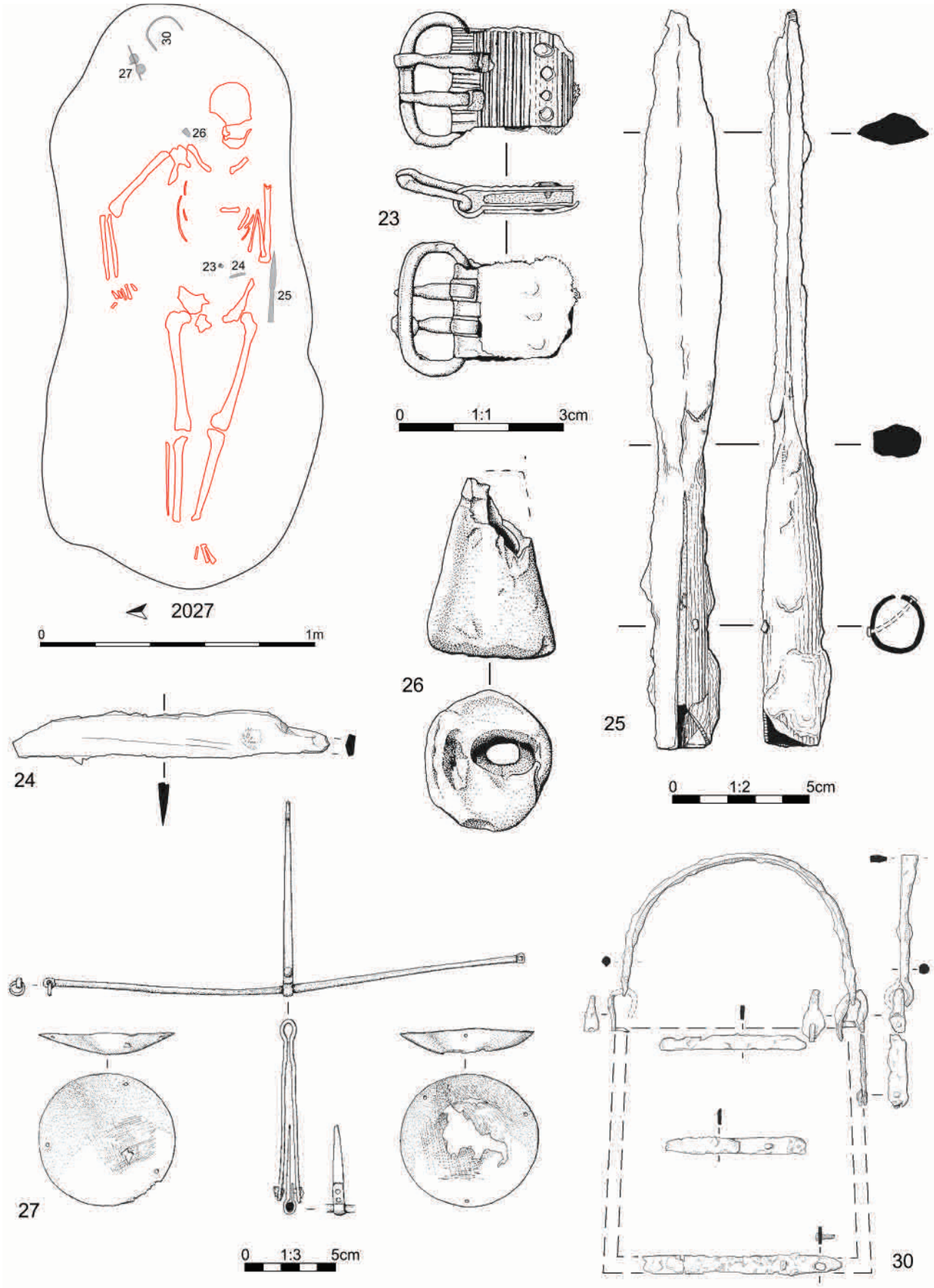

Figure 3.9 Grave 2027 *(1:20)*: buckle **23**, weight **26** *(1:1);* knife 24, spearhead **25** *(1:2);* balance **27**, bucket fittings **30** *(1:3).*

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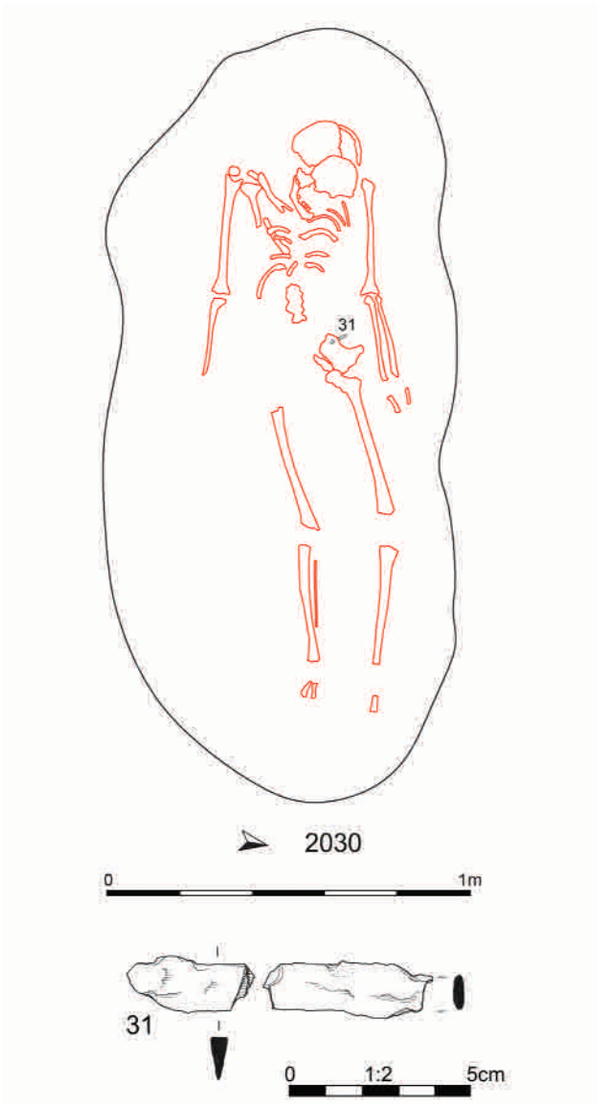

Figure 3.10 Grave 2030 *(1:20)*: knife **31** *(1:2).*

Orientation of body: NW-SE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 21-35 years. Female.
Body / Height: On left side with head facing north-east. Legs flexed and both arms flexed with hands in front of skull. Height = 165-174cm.
Surviving bone / Condition: Fragments of skull, ribs, vertebrae and pelvis. Humeri, radii, ulnas, femurs, tibias and fibulas. Some hand and foot bones. Condition }fair.
Pathology: Hypoplasia of dental enamel.
Artefact: Necklace and pendant **32** were found in the neck area.

32 Necklace & pendant, silver. Scutiform pendant, c.29 x 35mm, with a perforated central boss, possibly originally the setting for a semi-precious stone, surrounded by a four-lobed star formed from punched dots, with four chevrons of punched dots around the circumference. The back of the pendant is undecorated. Suspension loop broken. Associated with one complete and three fragmentary slip-knot rings, diameters ranging from 20-23mm, made of drawn silver wire with bands of incised transverse lines. 7th century.

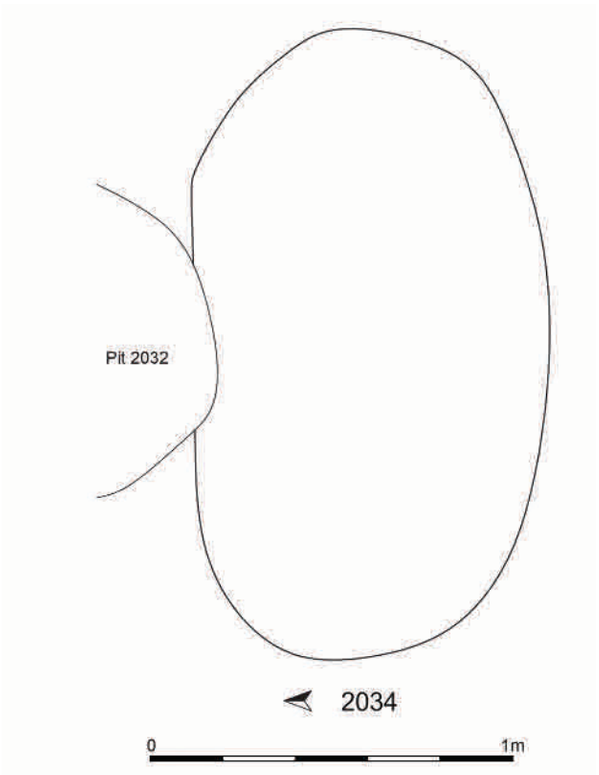

Figure 3.11 Grave 2034 *(1:20).*

Grave 2064
Fill 2062 / Inhumation 2063
B3 Fig. 3.13

Grave: Sub-rectangular with rounded ends. L. 1.73m, W. 0.74m, D. 0.30m.
Orientation of body: SE-NW.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Sex undetermined.
Body / Height: Supine. Legs and right arm extended. Left arm flexed with left hand over pelvis. Height = und.
Surviving bone / Condition: Fragments of skull, ribs and vertebrae. Humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Some hand and foot bones. Condition fair.
Pathology: Osteophytosis of lumbar vertebrae (L5).
Artefact: A knife (**33**) was found at the waist.

33 Knife, iron. Blade fragment, curved tip, surviving L. 44mm, W. 13mm.

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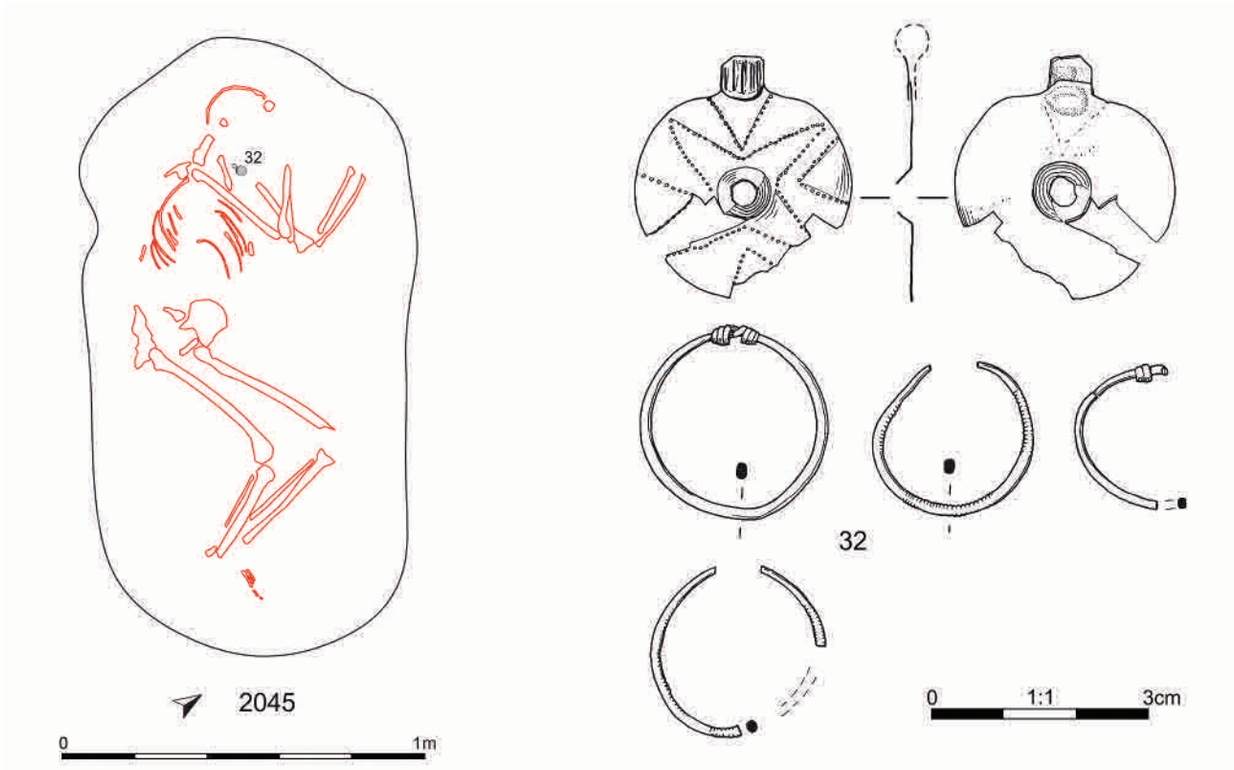

Figure 3.12 Grave 2045 *(1:20)*: pendant & necklace **32** *(1:1)*.

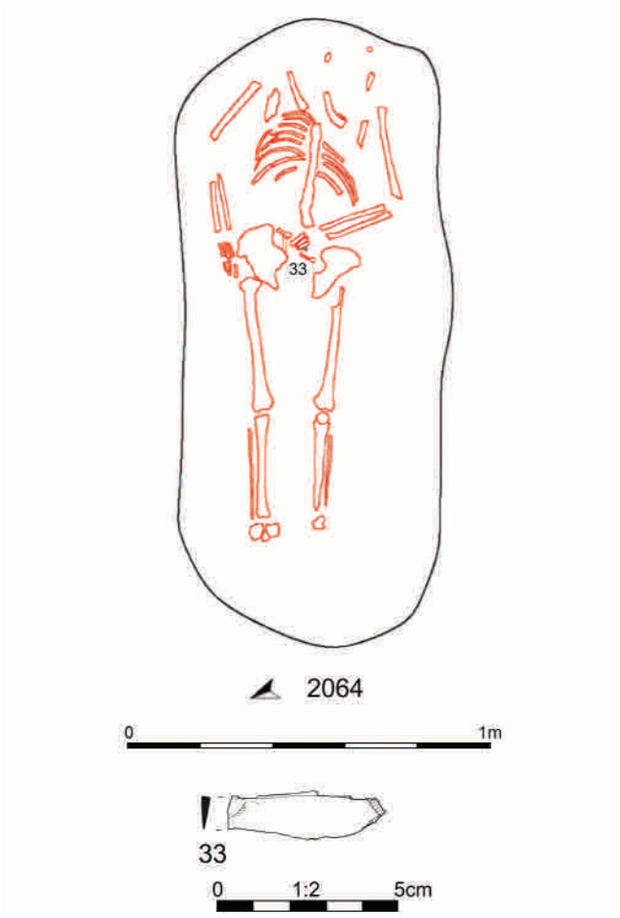

Figure 3.13 Grave 2064 *(1:20)*: knife **33** *(1:2)*.

Grave 2067
Fill 2065 / Inhumation 2066
C2 Fig. 3.14

Grave: Sub-rectangular with narrower north east end. L. 1.96m, W. 0.79m, D. 0.20m.
Orientation of body: SW-NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Male.
Body / Height: Supine. Legs and right arm extended. Left arm slightly flexed with left hand over left femur. Right tibia and fibula crossed over left leg. Height = 174-182cm.
Surviving bone / Condition: Skull, fragments of ribs and pelvis. Humeri, radii, ulnas, femurs, tibias and fibulas. Some hand and foot bones. Copper-alloy staining present at the pelvis, centre of right ilium. Condition fair.
Pathology: Area of active periostitis present at the pelvis – right external, acetabular rim. Osteoarthritis affecting the cervical vertebrae (C3 – C6). Healed cribra orbitalia in both orbits.
Artefact: A knife (**34**) was found at the waist, on the left side.

34 Knife, iron. Complete blade, straight back and cutting edge. The final quarter of the back descends sharply to the tip. Centrally offset flat tang, broken. L. 104mm overall; blade W. 16mm.

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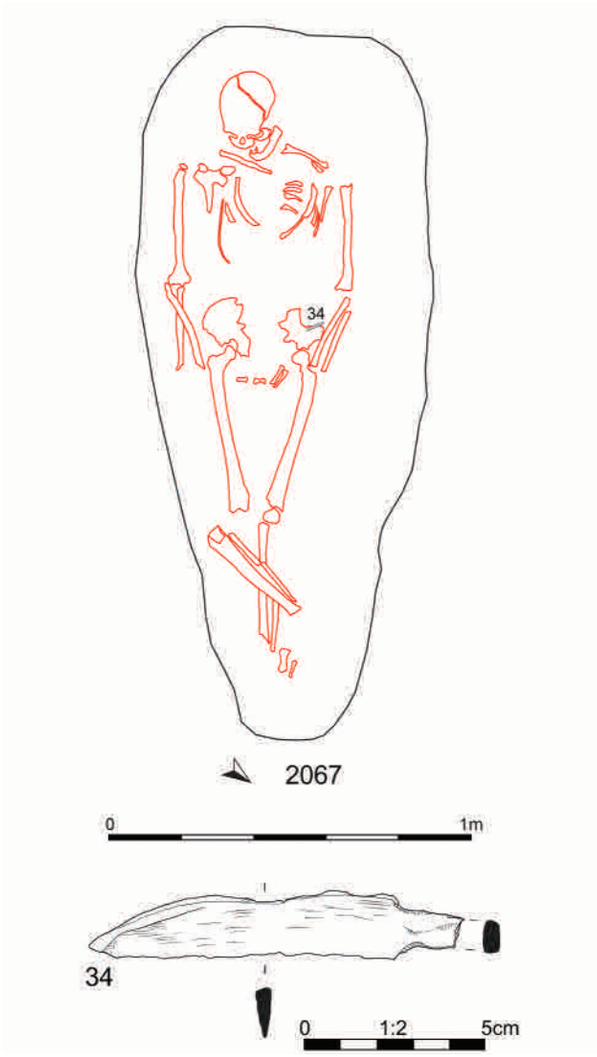

Figure 3.14 Grave 2067 *(1:20)*: knife **34** *(1:2)*.

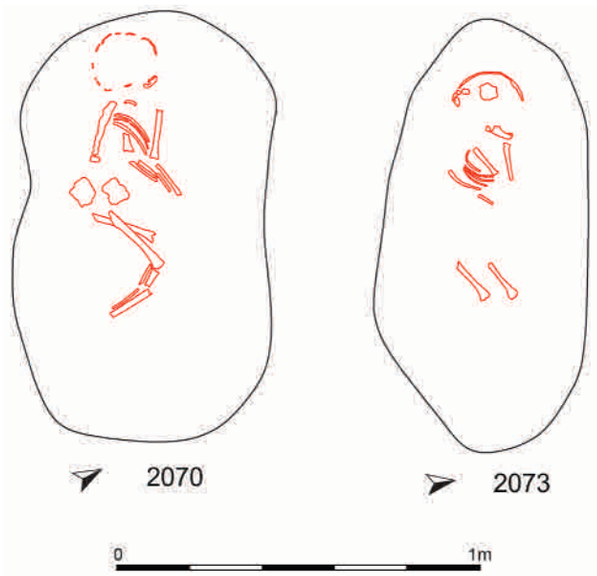

Figure 3.15 Graves 2070 & 2073 *(1:20)*.

Grave 2070
Fill 2068 / Inhumation 2069
B3 Fig. 3.15

Grave: A short, shallow sub-rectangular grave. L. 1.19m, W. 0.69m, D. 0.23m.
Orientation of body: NW-SE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: On left side with legs slightly flexed and head facing NE. One surviving ulna suggests that hands may have been in front of head. Height = und.
Surviving bone / Condition: Fragments of skull, spine and pelvis. Occasional teeth and ribs. Long bones generally in poor condition or absent, although femurs better preserved. Condition poor.
Pathology: None.
Artefacts: None.

Grave 2073
Fill 2071 / Inhumation 2072
B4 Fig. 3.15

Grave: A short, shallow sub-rectangular grave. L. 1.13m, W. 0.57m, D. surviving to 0.15m.
Orientation of body: W-E.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Infant, est. range 1-3 years. Sex undetermined.
Body / Height: On left side with legs slightly flexed and head facing NE. The position of a surviving humerus and ulna suggests that hands may have been placed under the head. Height = und.
Surviving bone / Condition: Fragments of skull and ribs. Long bones in poor condition or absent, although femurs better preserved. Condition fair.
Pathology: None.
Artefacts: None.

Grave 2076
Fill 2074 / Inhumation 2075
B4 Fig. 3.16

Grave: Sub-rectangular, with slightly rounded ends. Dimensions L. 1.26m, W. 0.88m, D. 0.65m.
Orientation of Body: SE-NW.
Stratigraphic Relationships: None.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Supine. Right leg extended, left leg flexed. Both arms sharply flexed with right hand at right shoulder and left hand at upper chest. Height = und.
Surviving bone / Condition: Fragments of skull, ribs, humeri, radii, ulnas, femurs, tibias and fibulas. Some hand bones. Condition poor.
Pathology: Healed cribra orbitalia in both orbits.
Artefacts: A flint arrowhead (**35**) was found just above the waist, with a buckle (**37**) just below it and a knife fragment (**36**) by the upper right thigh.

35 Arrowhead, flint, leaf-shaped. L. 25mm, W. 17mm. Neolithic: either a chance residual find or an *objet trouvé*.

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36 Knife, iron. Fragment, tapered – unsure whether blade or tang. L. 50mm, max. W. 12mm.

37 Buckle and plate, iron and copper-alloy. Marzinzik II.22b-ii. Oblong loop, 25 x c.13mm, tongue and tongue-shaped plate, c.69 x 21mm, all of iron. The plate is edged with twisted copper-alloy edging and has a central, slightly curved copper-alloy rib fixed with a rivet at either end. The rib is flattened to a broad wedge at the end of the plate and appears to form the head of an animal near the loop (obscured by mineralised textile, description from X-ray). May have been wrapped in Z-spun cloth, 20 x 20 threads per cm: traces of mineralised braid and leather present. Later 6th to early 7th century.

Grave 2079
Fill 2077 / Inhumation 2078
C4 Fig. 3.17

Grave: Very truncated. Surviving dimensions L. 1.58m, W. 0.68m, D. 0.12m.
Orientation of Body: NW-SE.
Stratigraphic Relationships: None.
Structures: None.
Age / Sex: Adolescent, est. range 13-20 years. Sex undetermined.
Body / Height: On right side with legs slightly flexed. Height = und.
Surviving bone / Condition: Fragments of ribs, pelvis, one ulna and hand bones. Both femurs present and fragments of tibia and fibula. Condition fair.
Pathology: None.
Artefacts: None.

Grave 2082
Fill 2080 / Inhumation 2081
D5 Fig. 3.18

Grave: Sub-rectangular, with slightly rounded ends. Dimensions L. 1.99m, W. 0.78m, D. 0.22m.
Orientation of Body: W-E.
Stratigraphic Relationships: None.
Structures: None.
Age / Sex: Adult, est. range 21-35 years. Female.
Body / Height: Supine with legs flexed to north east. Arms flexed with left hand on chest and right hand on pelvis. Height = 156-164cm.
Surviving bone / Condition: Fragments of skull and ribs. Humeri, radii, ulnas, vertebrae, pelvis, femurs, tibias and fibulas. Some hand and foot bone. Condition fair.
Pathology: None.
Artefacts: A bead/pendant (**38**) and spindle whorl (**39**) were found to the right of the head.

38 Bead/Pendant, composite construction. Rolled tubular core of copper-alloy sheet with four projecting plates and two end plates, one copper-alloy, one silver,

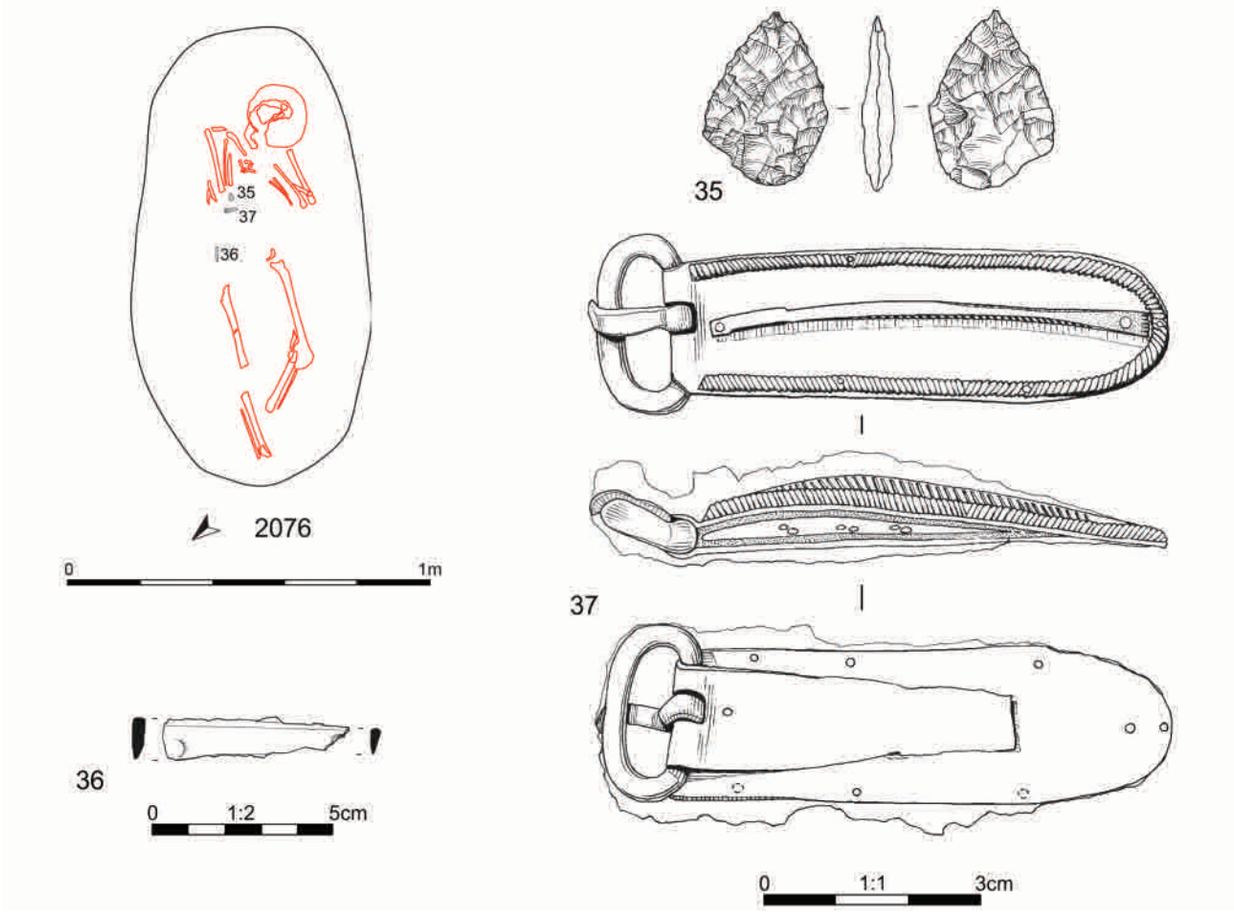

Figure 3.16 Grave 2076 *(1:20)*: arrowhead **35,** buckle **37** *(1:1);* knife **36** *(1:2).*

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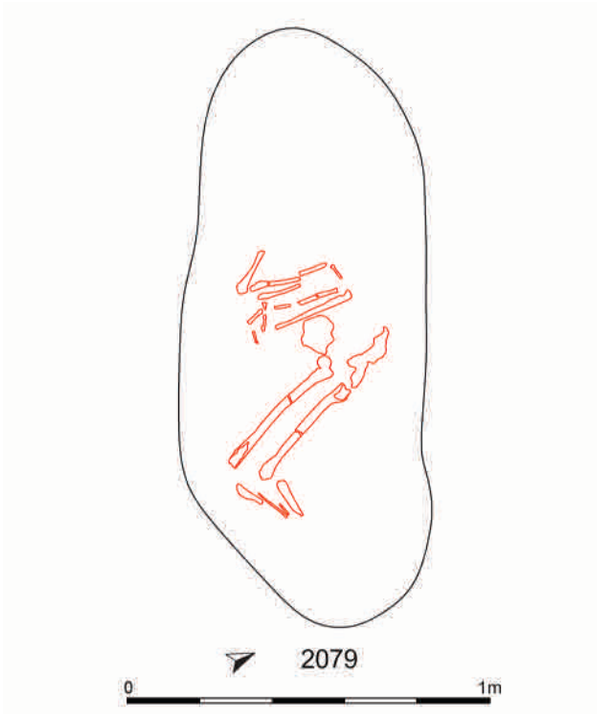

Figure 3.17 Grave 2079 *(1:20).*

rather like a four-bladed paddle wheel. Set around the core, sandwiched between the plates, are four rectangular plates of mother-of-pearl (one missing), set in a lime-rich cement-like adhesive, the whole forming a cylindrical bead, dia. 18mm, L. 21mm. The core projects about 2mm beyond this either end.

39 **Spindle Whorl**, bone, made from a femur terminal. Disc, dia. 40mm, thickness 15mm, three concentric incised lines on the upper face and incised zig-zag decoration around the edge. Slightly off-centre hole, 9mm dia. Weight 16g.

Grave 2085
Fill 2083 / Inhumation 2084
B4 Fig. 3.19

Grave: Sub-oval. L. 1.28m, W. 0.78m, D. 0.29m.
Orientation of body: NW-SE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Supine with head facing SW and right leg slightly flexed. Height = und.
Surviving bone / Condition: Fragments of skull, ribs and pelvis. Humeri and femurs partly preserved. Fragments of tibia and fibula also present. Condition good.
Pathology: Cribra orbitalia in left and right orbits.
Artefacts: None.

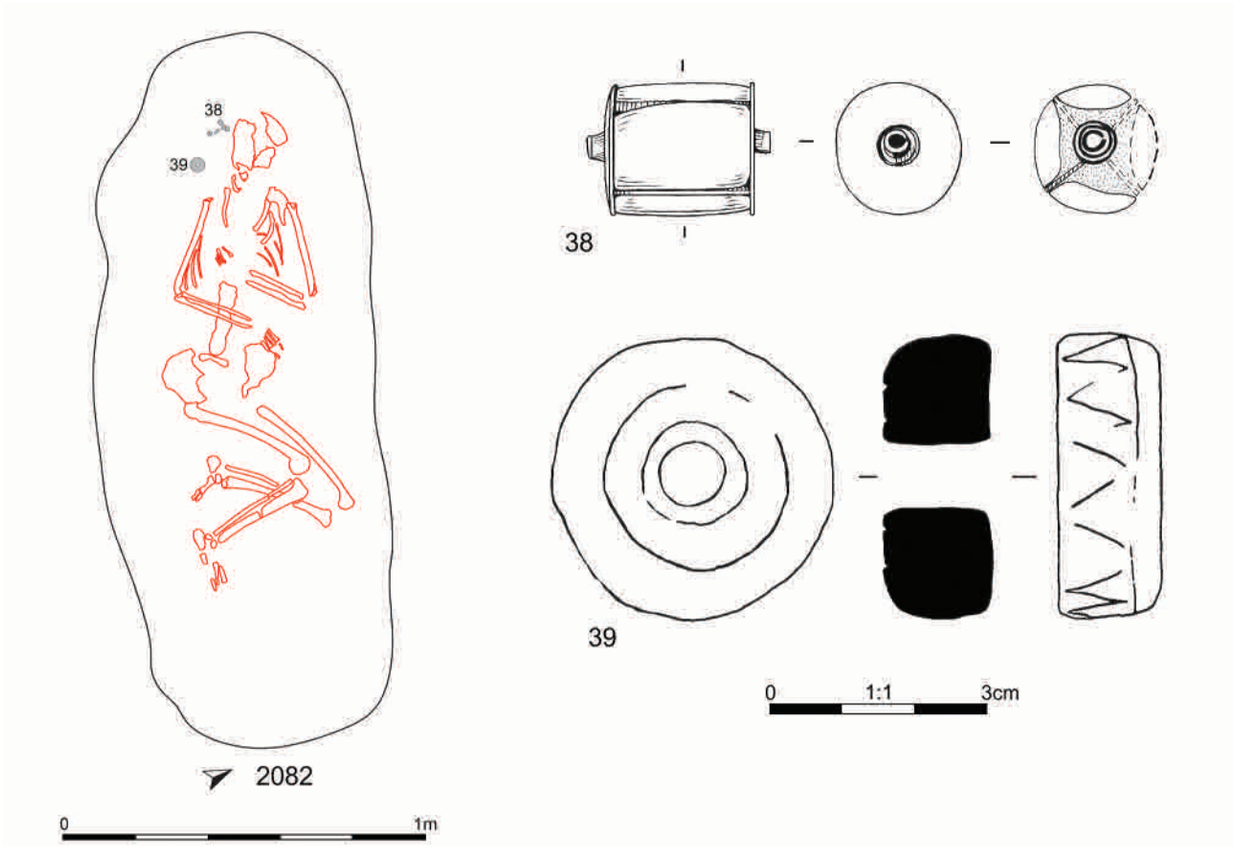

Figure 3.18 Grave 2082 *(1:20)*: composite bead **38**, spindle whorl **39** *(1:1).*

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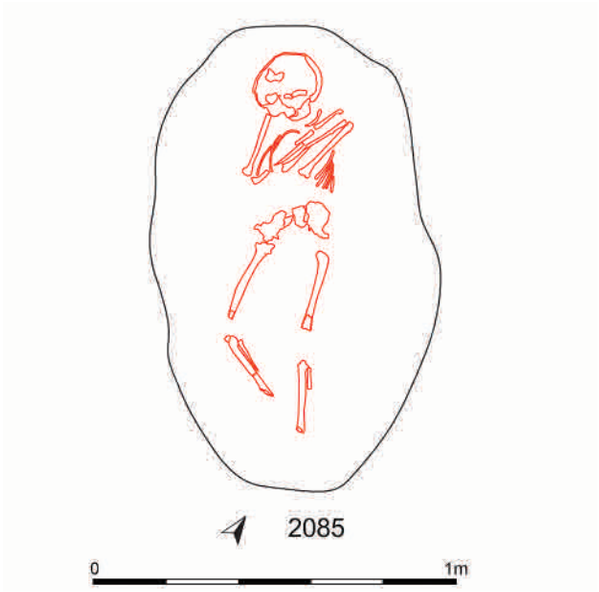

Figure 3.19 Grave 2085 *(1:20).*

Grave 2088
Fill 2086 / Inhumation 2087
C5 Fig. 3.20

Grave: Sub-rectangular. Dimensions L. 1.95m, W. 0.85m, D. 0.30m.
Orientation of body: NW-SE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 21-35 years. Female.
Body / Height: Supine. Mandible in correct anatomical position, but cranium removed post-mortem then placed on upper left chest. Left arm flexed with hand over pelvis. Right arm flexed with hand over right femur. Height = 164-171cm.
Surviving bone / Condition: Skull, clavicles, ribs, humeri, radii, ulnas, vertebrae, pelvis, femurs, tibias and fibulas. Some hand and foot bones. Condition good.
Pathology: Destructive lesions on right frontal bone of cranium, sacral (S1) and lumbar (L1) vertebrae, suggest tuberculosis. Osteophytes also present on lumbar vertebra (L1), perhaps compensatory growth resulting from destructive lesions.
Scientific Dating: Calibrated radiocarbon date of AD580–660 at 95.4 % probability from right radius, mid diaphysis. SUERC-31578 (GU-22534).
Artefact: A spindle whorl (**40**) was found by the lower right leg.

40 Spindle Whorl, fired clay, made from the base of a Roman pottery vessel in soft-pink-grogged ware (MK Fabric 2), dating to the 2nd–3rd century (Marney 1989, 64–69). D. 40mm, central hole D. 10mm, Weight 19g.

Grave 2091
Fill 2089 / Inhumation 2090
B4 Fig. 3.21

Grave: Sub-rectangular with rounded ends. L. 1.84m, W. 0.64m, D. 0.40m.
Orientation of body: NW–SE.

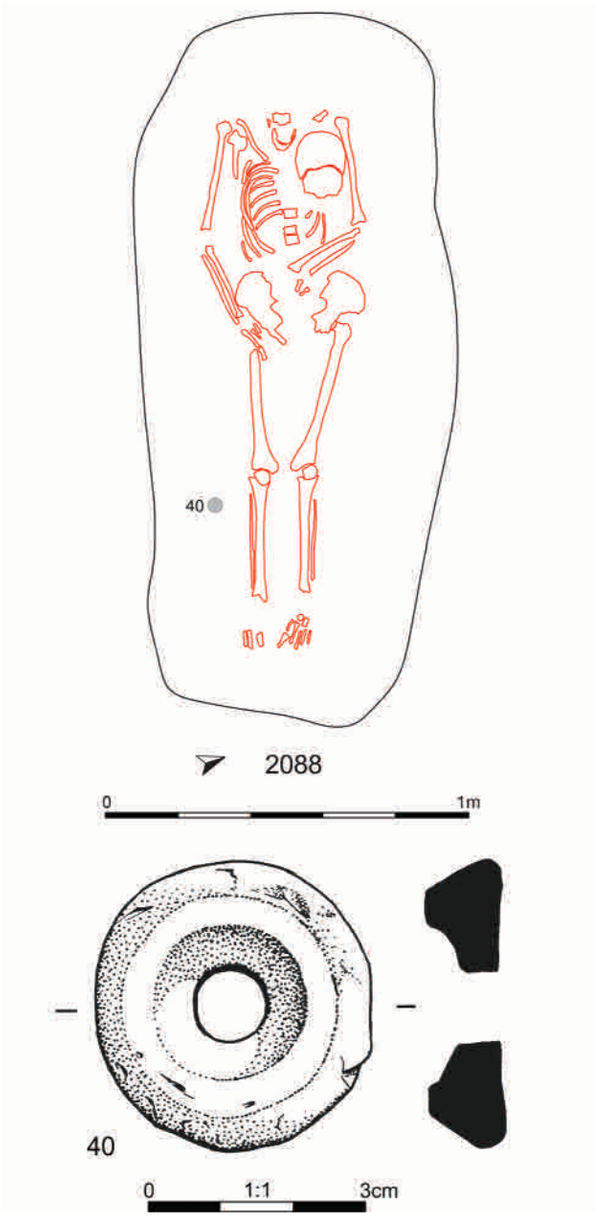

Figure 3.20 Grave 2088 *(1:20)*: spindle whorl **40** *(1:1).*

Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 21-35 years. Male.
Body / Height: Prone with head facing north. Left arm extended with lower arm and hand beneath pelvis. Right arm tightly flexed with hand by face. Legs slightly flexed to north. Height = 169-175cm.
Surviving bone / Condition: Skull, teeth, arms, pelvis, os sacrum and legs. Some ribs, spine and foot bone. Condition good.
Pathology: Cribra orbitalia affects left and right orbits. Teeth in good condition, but severe dental calculus.
Artefacts: None.

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Grave 2094
Fill 2092 / Inhumation 2093
C5 Fig. 3.21

Grave: Sub-rectangular, slightly rounded ends and truncated. L. 1.75m, W. 0.95m, D. 0.09m.
Orientation of body: W-E.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Supine with head facing south. Both arms. Legs slightly flexed to south. Height = und.
Surviving bone / Condition: Fragments of skull, ribs and pelvis. Humeri, radii and one ulna. Femurs, tibias and fibulas. Condition fair.
Pathology: Active cribra orbitalia in both orbits and active porotic hyperostosis on the right parietal near the suture with the occipital bone.
Artefacts: None.

Grave 2097
Fill 2095 / Inhumation 2096
C5 Fig. 3.21

Grave: Sub-rectangular. Slightly wider at east end. L. 1.89m, W. 0.78m, D. 0.42m.
Orientation of body: W-E.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 21-35 years. Female.
Body / Height: Supine with head turned to south. Left arm flexed with hand over upper, right chest. Right arm tightly flexed with hand to south of face. Legs extended. Height = 157-164cm.
Surviving bone / Condition: Fragments of skull, rib and pelvis. Humeri, radii and one ulna. Femurs, tibia, fibula and feet. Condition good.
Pathology: Healing cribra orbitalia in right orbit (left orbit not present). Healing fracture near posterior end of one right rib (R5, R6 or R7). Spondylolysis of lumbar vertebra (L5).
Artefacts: None.

Grave 2100
Fill 2098 / Inhumation 2099
C5 Fig. 3.21

Grave: Sub-rectangular with rounded ends. Truncated with poorly defined ends. L. 2.13m, W. 0.73m, D. 0.07m.
Orientation of body: SW-NE.
Stratigraphic relationships: Grave 2100 cuts the fill of undated possible posthole 2114.
Structures: None.
Age / Sex: Adult, est. range 30-32 years. Male?
Body / Height: Supine. The position of part of the right radius and hand bones suggests that this arm may have been extended. Legs extended. Height = 168-176cm.
Surviving bone / Condition: Fragments of jaw, ribs, pelvis, right radius and a few finger bones. Spine and tibias. Condition poor.
Pathology: None.
Artefacts: None.

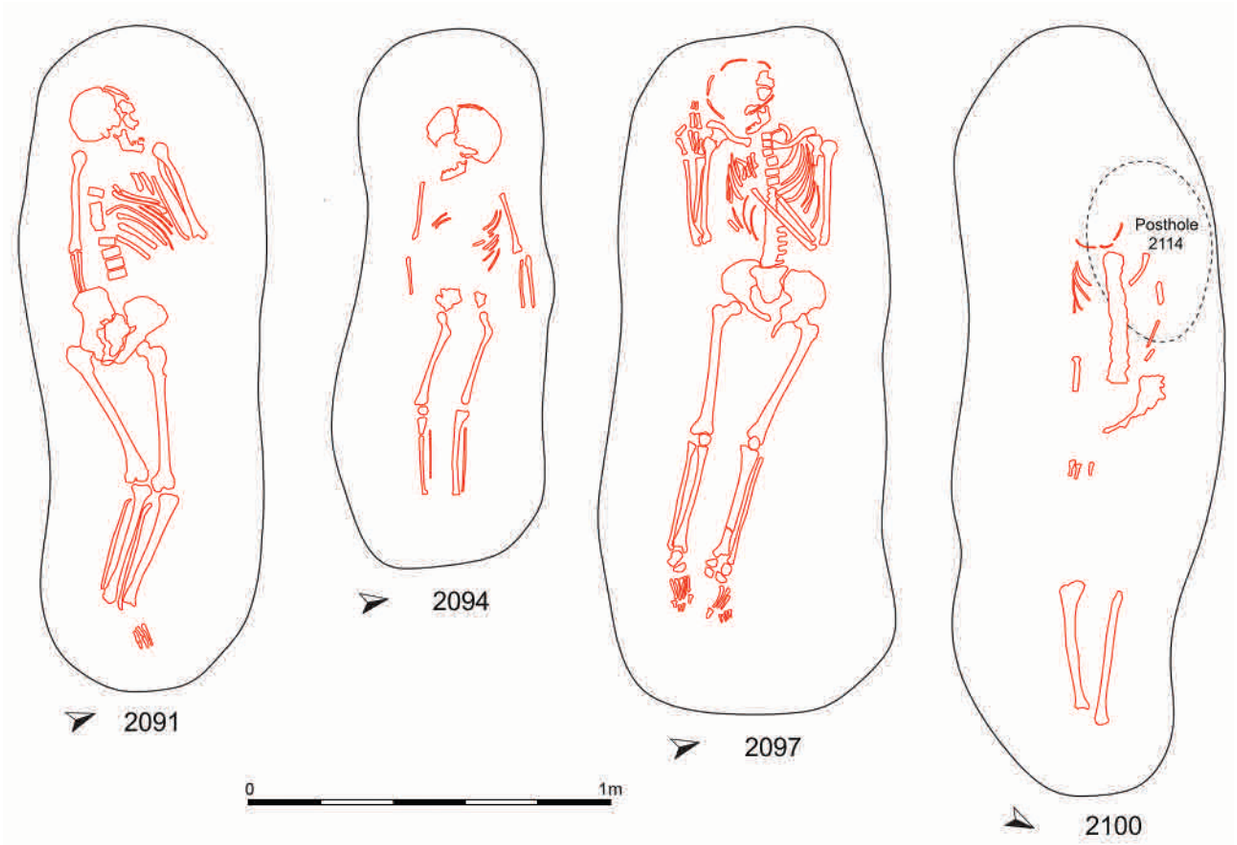

Figure 3.21 Graves 2091, 2094, 2097 & 2100 *(1:20).*

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Grave 2108
Fill 2106 / Inhumation 2107
B4 Fig. 3.22

Grave: Sub-rectangular, with rounded ends. L. 2.07m, W. 0.92m, D. 0.30m.
Orientation of body: NW-SE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Female.
Body / Height: Supine. Legs extended. Right arm flexed with hand at left side of pelvis. Left arm tightly flexed with hand on upper left chest. Height = und.
Surviving bone / Condition: Skull, ribs, humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Some hand and foot bones. Condition fair.
Pathology: Osteoarthritis affecting lower thoracic and lumbar vertebrae. Healed cribra orbitalia in both orbits.
Artefact: A knife (**41**) was found to the left of the upper body.

41 Knife, iron. Straight cutting edge and back. Final third of back curves to tip. Flat tang, mostly missing, offset from back and in line with the cutting edge. Overall L. 153mm, blade W. c.20mm max.

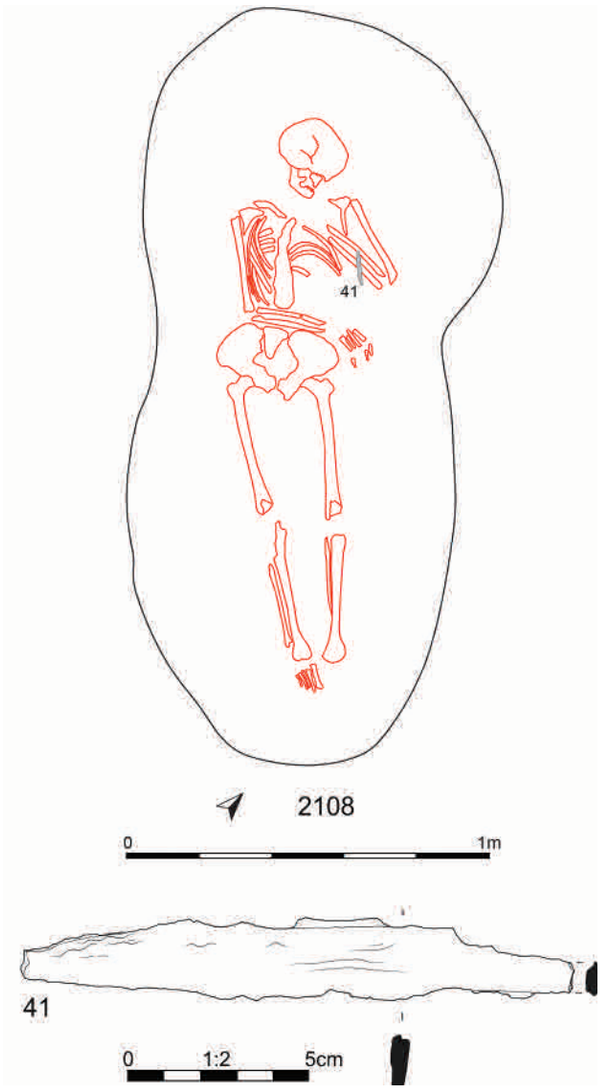

Figure 3.22 Grave 2108 *(1:20)*: knife **41** *(1:2).*

Grave 2112
Fill 2109 / Inhumation 2110 & Inhumation 2111
B5 Fig. 3.23

Grave: Sub-rectangular with slightly rounded ends. L. 2.20m, W. 1.13m, D. 0.50m.
Orientation of bodies: NW-SE.
Stratigraphic relationships: None, though it is possible that the unusual position of the right arm and hand of Inhumation 2110 could indicate that that individual was disturbed by the addition of Inhumation 2111 to the grave.
Structures: None.
Artefacts: None.

Inhumation 2110 (left)

Age / Sex: Adult, est. range 36-50 years. Female.
Body / Height: Prone. Head facing north east. Left arm flexed with forearm and hand under waist. The right scapula and right arm may have been disturbed, but the arm is articulated with the right hand bent under waist. Legs flexed to north east. Height = 161-168cm.
Surviving bone / Condition: Skull, ribs, humeri, radii, ulnas, hands, spine, pelvis, os sacrum, femurs, tibias, fibulas and feet. Copper-alloy staining at lateral end of the right clavicle. Condition good.
Pathology: Spina bifida occulta evident in sacrum. One extra vertebra (L6) and Klippel-Feil Syndrome (fusion of two or more cervical vertebrae, C6 and C7).

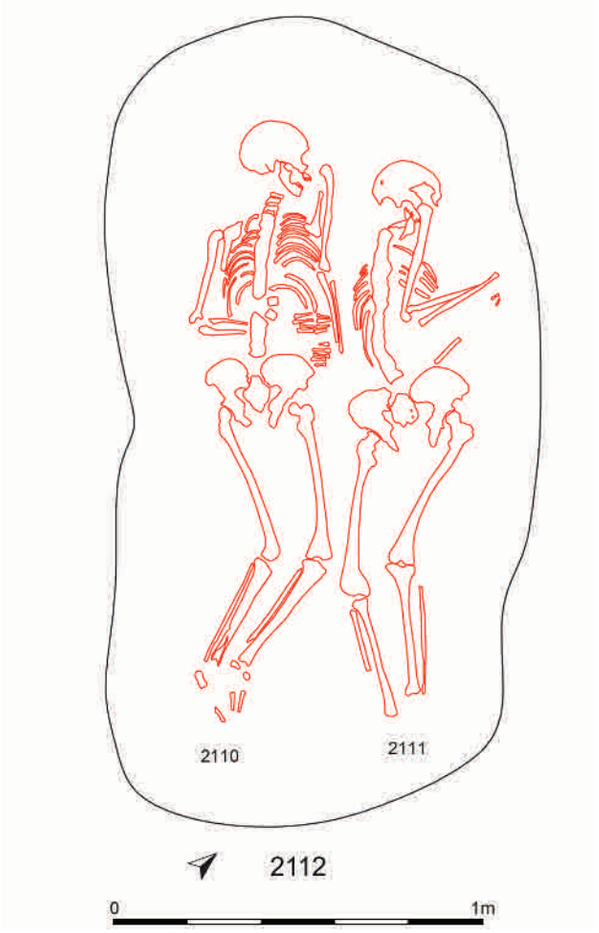

Figure 3.23 Grave 2112 *(1:20).*

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Inhumation 2111 (right)

Age / Sex: Adult, est. range 21-35 years. Female.
Body / Height: Prone. Torso rotated with left shoulder down and head facing north east. Arms flexed with hands in front of chest. Right leg perhaps slightly flexed to south west. Height = 160-168cm.
Surviving bone / Condition: Skull, ribs, humeri, radii, ulnas and a few finger bones. Spine, pelvis, os sacrum, femurs, tibias and fibulas. Condition good.
Pathology: Hypoplasia of dental enamel.

Grave 2117
Fill 2115 / Inhumation 2116
D3 Fig. 3.24

Grave: Sub-rectangular with narrower western end. Dimensions L. 2.06m, W. 0.99m, D. 0.30m.
Orientation of body: NE-SW
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Female.
Body / Height: Supine. Left arm slightly flexed with hand on left femur. Right arm and legs extended. Height = 162-169cm.
Surviving bone / Condition: Fragments of skull, vertebrae and ribs. Clavicles, scapulae, humeri, radii, ulnas, pelvis. Femurs, tibia and fibula. Some hand and foot bone. Condition good.
Pathology: Dental hypoplasia.
Artefacts: A group of artefacts comprising a knife (**42**), two cruciform mounts (**43**), a hinge (**44**), a scabbard chape (**45**) some edge binding (**46**) and two strip fragments (**47**) was found to the left of the waist.

42 Knife, iron. Straight cutting edge and back. Final fifth of back angles sharply to tip. Tang (incomplete) in line with back and offset from cutting edge. Overall L. 114mm, blade W. 11mm.

43 Mounts, two, cruciform, cut from sheet. 27 x 27mm overall, W. of arms 7mm. Each arm has a 1.5mm dia. fastening hole at its outer end. In addition to the complete mount there are fragmentary remains of a second, near-identical mount and three small copper-alloy tacks/rivets (NI), which may have fastened the mounts in place.

44 Hinge, oval, L. 19mm, W. 7.5mm, with two rivets in each plate. Traces of leather on the rear of one hinge plate.

45 Scabbard Chape Binding. U-section strip, overall L. c.150mm, bent into a U shape. Fastenings of bent sheet are present at one end and the middle of the binding: the other end is pierced by two iron rivets. In addition there is a strip fastening similar to those attached to the binding. Similar to items illustrated by Bayliss (2013, 188) and early Saxon finds from Kragehul, Denmark (Hines 1989, 32).

46 Edge binding: U-section copper-alloy strip similar to that described above, formed into a circle, dia. c.75mm. At each end of the strip are two closely-spaced rivets. Function uncertain.

47 Strip, copper-alloy, two fragments c.6mm wide, one with a central rivet hole.

Grave 2118
Fill 2120 / Inhumation 2119
D3 Fig. 3.25

Grave: Sub-oval, but very truncated. L. 1.11m, W. 0.63m, D. 0.05m.
Orientation of body: E-W.
Stratigraphic relationships: The grave had cut the fill of undated gully 2162.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Perhaps extended with arms flexed across waist, but preservation too poor to be certain. Height = und.
Surviving bone / Condition: Fragments of a radius, an ulna and a femur. Condition poor.
Pathology: None.
Artefacts: None.

Grave 2123
Fill 2121 / Inhumation 2122
D4 Fig. 3.26

Grave: Sub-rectangular, slightly rounded ends. Dimensions L. 1.86m, W. 0.84m, D. 0.30m.
Orientation of body: E-W.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Female.
Body / Height: Prone. Head facing south and legs flexed to south. Left arm loosely flexed under torso with hand to the south of the skull. Right arm tightly flexed with hand close to right shoulder. Height = 155-163cm.
Surviving bone / Condition: Fragments of skull. Ribs, humeri, radii, ulnas, vertebrae, pelvis, femurs, tibias and fibulas. Some hand and foot bone. Condition good.
Pathology: Alveolar bone loss and dental attrition evident. Early osteoarthritis affecting lumbar vertebrae. Destructive lesions on medial end of right clavicle and lumbar vertebra (L1, L3, L4, L5), suggest tuberculosis. Schmorl's nodes also present on lumbar vertebra (L3) and thoracic vertebra (T12).
Artefact: A comb (**48**) was found in the left hand of Inhumation 2122.

48 Comb, antler, incomplete. Tripartite construction, with central, double-edged toothed plate, W. c.48mm, sandwiched between central strengthening ribs, fastened together with iron rivets. The remaining ends of the central ribs are decorated with incised cross-hatching, well preserved on one side but badly degraded on the other. One edge of the comb has 4-5 teeth per cm, the other side slightly finer teeth at 5-6 per cm. Surviving length c.75mm. 7th-8th century?

Grave 2126
Fill 2124 / Inhumation 2125
D4 Fig. 3.27

Grave: Sub-rectangular, slightly rounded ends. Dimensions L. 1.67m, W. 0.91m, D. 0.25m.
Orientation of body: NE-SW.
Stratigraphic relationships: None.

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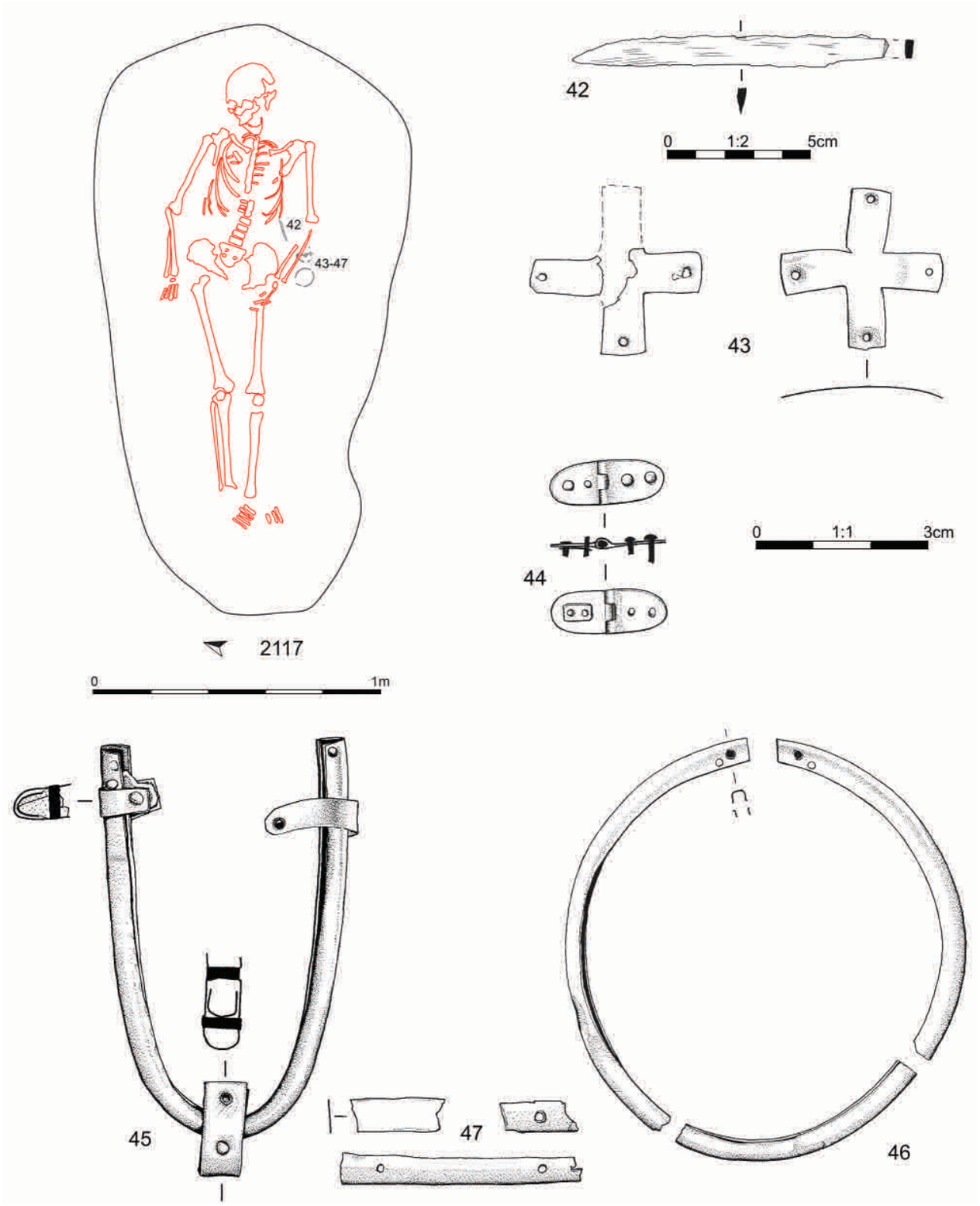

Figure 3.24 Grave 2117 *(1:20)*: knife **42** *(1:2)*, cruciform mounts **43**, hinge **44**, chape binding **45**, binding **46**, strip fragments **47** *(1:1)*.

Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Supine. Head facing northwest and legs flexed to north. Left arm flexed with hand on right side of pelvis. Right arm extended. Height = und.
Surviving bone / Condition: Fragments of skull, ribs, vertebrae and pelvis. Humeri, radii, ulnas, femurs, tibias and fibulas. Some hand and foot bone. Condition fair.
Pathology: Active cribra orbitalia in both orbits.
Artefacts: A possible chain link fragment (**49**), a knife (**50**) and a penannular brooch fragment (**51**) were found in the waist area.

49 Chain Link? iron. Open oval loop of 5mm rod, c.50 x 30mm.

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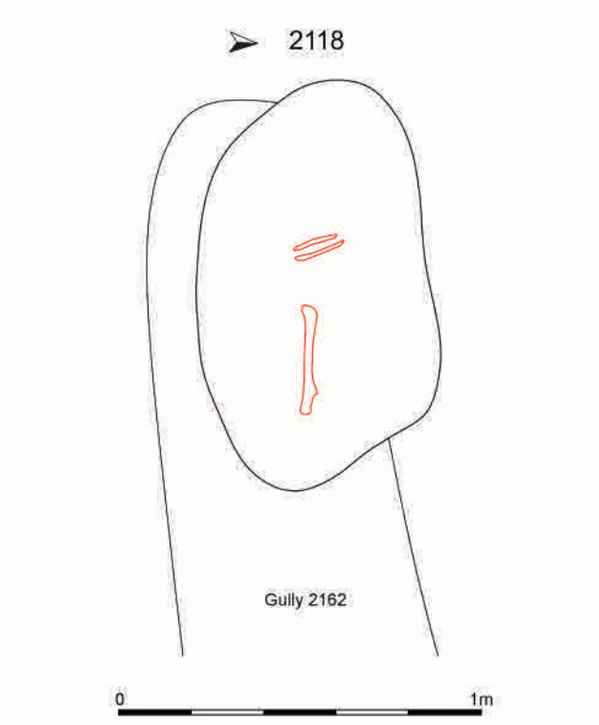

Figure 3.25 Grave 2118 *(1:20).*

50 Knife, iron. Too fragmentary to determine original form. Surviving dimensions: L. c.87mm, W. c.17mm.

51 Penannular Brooch, fragment, cast copper-alloy. Loop, round section, ext. dia. c.60mm, broken at one end. At the unbroken end is a trapezoidal terminal, 25 x 27 x 15mm, with indents at each corner and an open square set diagonally at the centre, containing four lobed decorations. The rear face of the terminal is flat and undecorated.

Grave 2129
Fill 2127 / Inhumation 2128
D5 Fig. 3.28

Grave: Sub-rectangular, with slightly rounded ends. L. 1.62m, W. 0.64m, D. 0.20m.
Orientation of body: W–E.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: On right side. Legs extended, but torso curved to south with head facing east. Left arm flexed across torso. Height = und.
Surviving bone / Condition: Fragments of skull, teeth, ribs, and pelvis. Left arm and fragments of right ulna and radius. Both femurs and tibia and fibula. Condition fair.
Pathology: None.
Artefacts: None.

Grave 2132
Fill 2130 / Inhumation 2131
D4 Fig. 3.28

Grave: Sub-rectangular, with rounded ends. Truncated, surviving dimensions L. 1.61m, W. 0.77m, D. 0.17m.
Orientation of body: NE-SW.

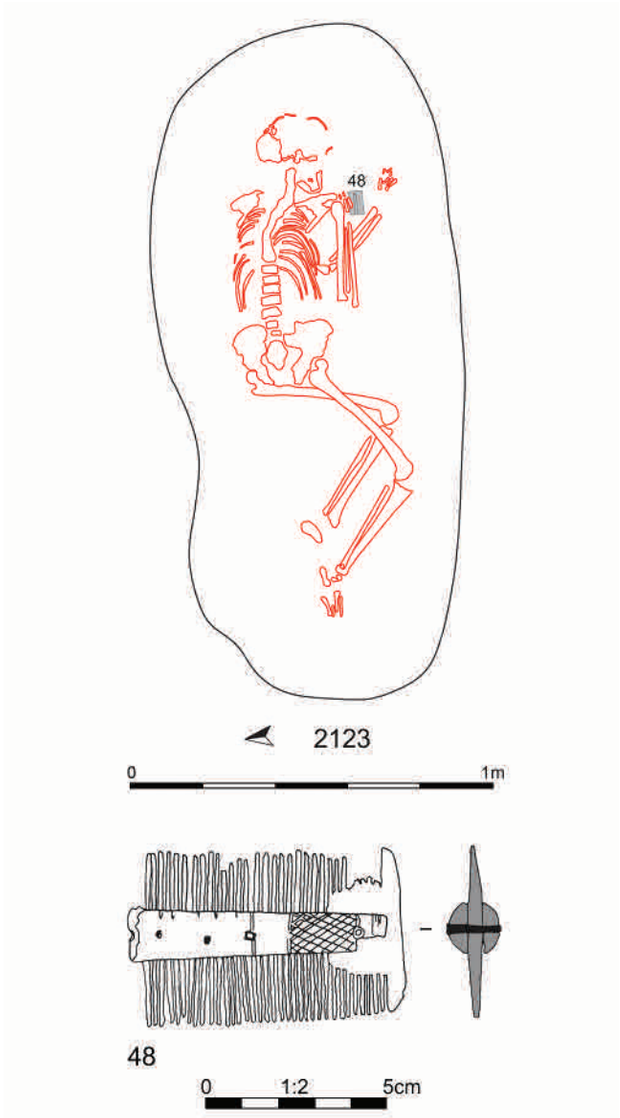

Figure 3.26 Grave 2123 *(1:20)*: comb **48** *(1:2).*

Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Female.
Body / Height: Supine. Legs extended. Right arm flexed with hand over right side of pelvis. Left arm flexed with hand on upper left chest. Height = und.
Surviving bone / Condition: Fragments of skull and pelvis. Humeri, radii, ulnas, femurs, tibias and fibulas. Some hand and foot bones. Condition fair.
Pathology: Significant dental attrition.
Artefacts: None.

Grave 2135
Fill 2133 / Inhumation 2134
D4 Fig. 3.29

Grave: Sub-rectangular with rounded ends. Very truncated, surviving dimensions L. 2.07m, W. 0.95m, D. 0.10m.
Orientation of body: SW-NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Female.
Body / Height: On left side. Head facing northwest. Left

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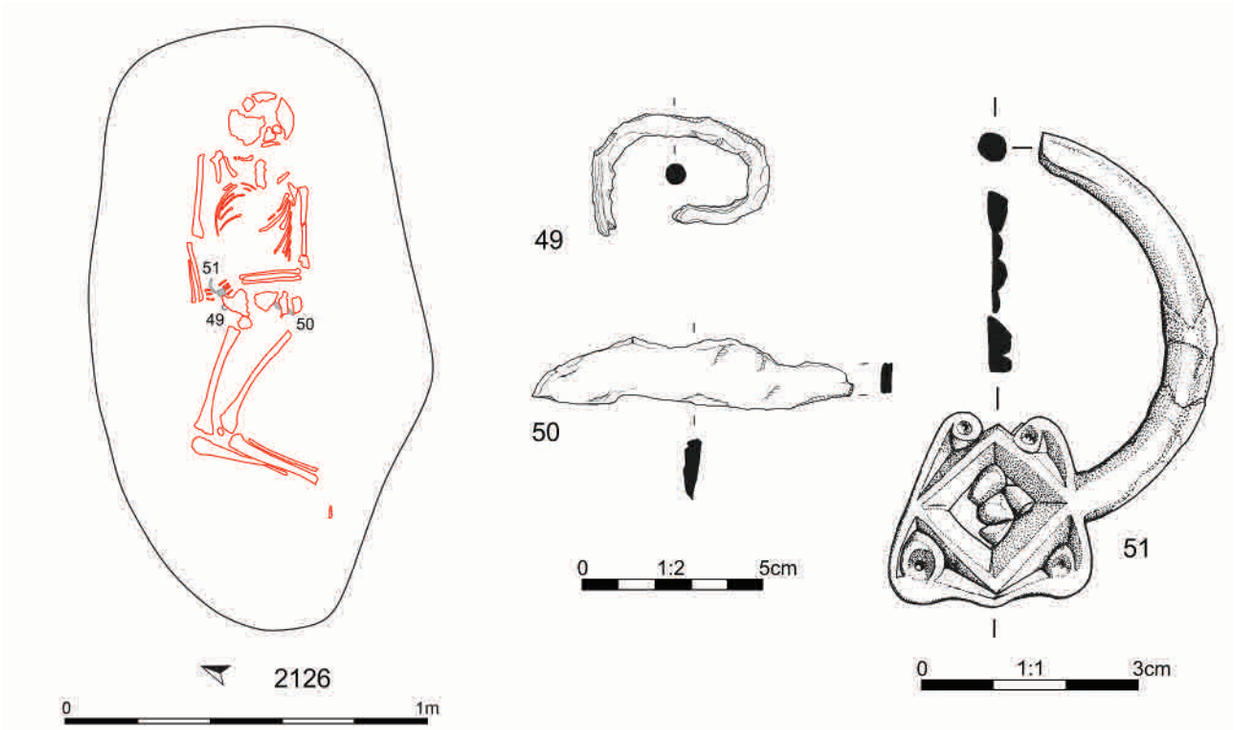

Figure 3.27 Grave 2126 *(1:20)*: link **49**, knife **50** *(1:2);* penannular brooch **51** *(1:1).*

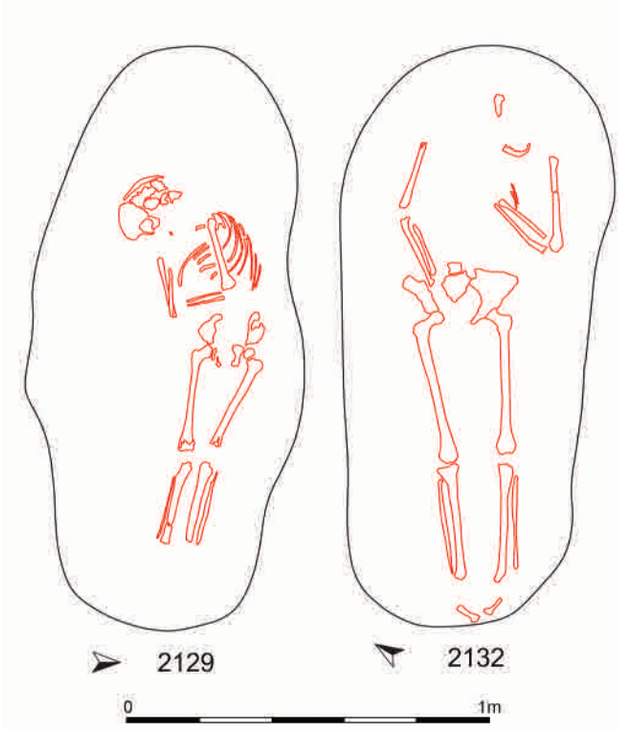

Figure 3.28 Graves 2129 & 2132 *(1:20).*

arm perhaps extended, right arm flexed. Legs flexed to the northwest. Height = 159-167cm.
Surviving bone / Condition: Fragments of skull, vertebrae, ribs, clavicles, humeri, radii, ulnas and pelvis. Femurs, tibia and fibula. Some hand and foot bones. Condition fair.
Pathology: Osteoarthritis present in right acetabulum: Osteoporosis in left clavicle and Schmorl's nodes present on vertebrae, T5-T10.

Artefacts: A necklace (**52**) comprised of three pendants (**53-55**), a glass bead (**56**) and two shell beads (**57**) was found at the neck. At the waist were the components of a chatelaine (**58**) and a knife (**61**). By the knees was a Roman coin (**62**).

52 Necklace, comprised of five elements. Three composite pendants, each comprising a copper-alloy backing disc with a pendant loop, are fronted by a glass setting held in place by a dentillated strip of copper-alloy. The setting in the largest pendant (**53**: dia. 22mm) is of white glass into which six dots of red glass have been pressed. The smaller settings (**54** & **55**: each c.17mm dia.) are of turquoise and blue glass respectively. These are accompanied by **56**, an annular, clear glass bead, ext. dia. 11mm and **57**, two rectangular beads made from cowrie shells. Both L. c.10mm.

58 Chatelaine, consisting of a length of chain (**59**) comprising two iron rings (ext. dia. 56mm & 33mm) and three chain link fragments, also half of a copper-alloy suspension loop or clip (**60**), 15 x 7mm.

61 Knife, iron, fragmentary, L. 44mm, W. 11mm.

62 Coin, copper-alloy. *As* or *Dupondius* of Marcus Aurelius (161-180) or Commodus (177-192). Dia. 27mm. Very worn. NI.

Grave 2138
Fill 2136 / Inhumation 2137 & Charnel 2142
D5 Fig. 3.30

Grave: Sub-rectangular, with rounded ends. L. 1.74m, W. 0.69m, D. 0.40m.
Orientation of body: SW-NE.

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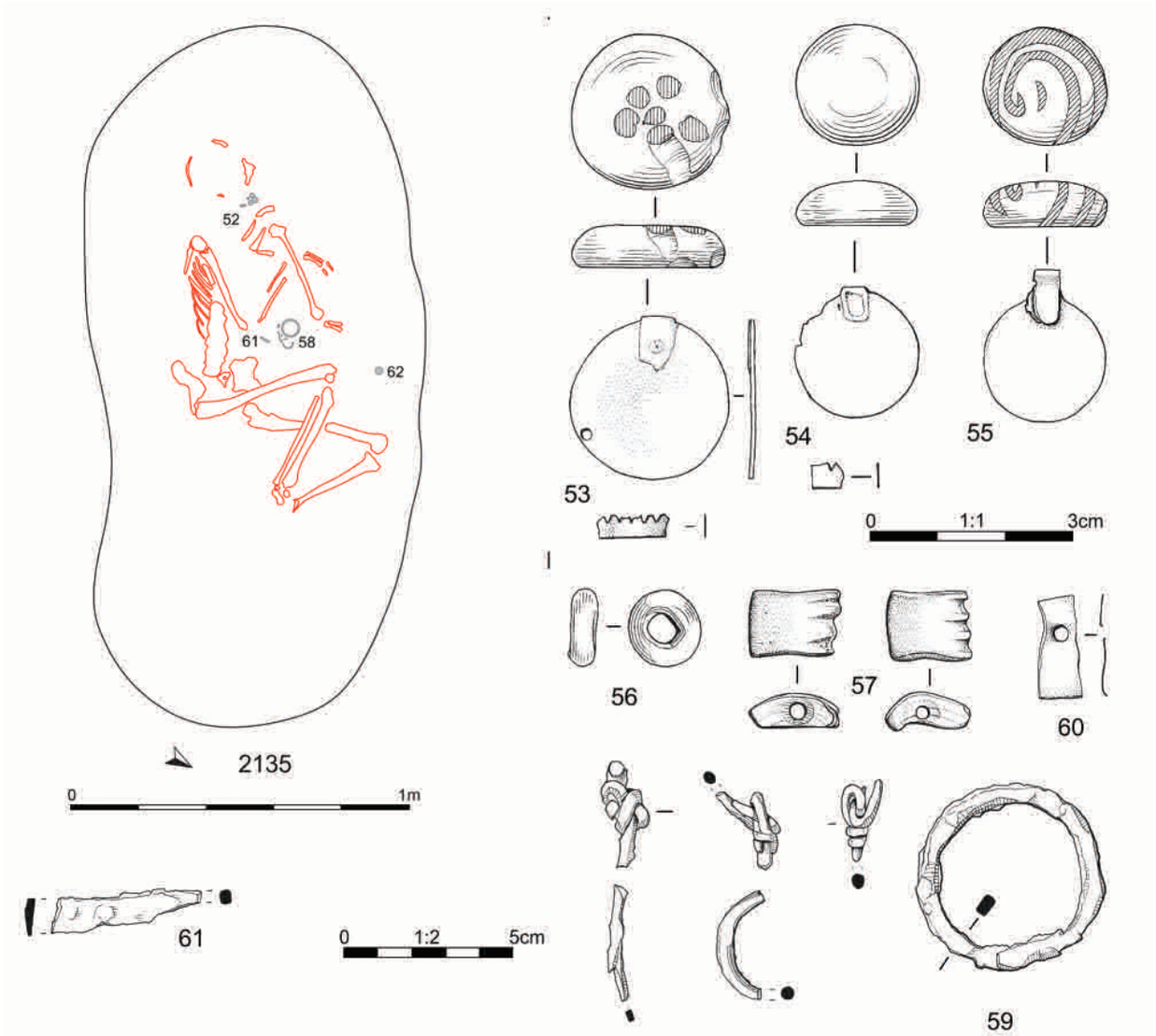

Figure 3.29 Grave 2135 *(1:20)*: composite pendants **53-55**, glass bead **56**, shell beads **57**, clip **60** *(1:1)*; chatelaine fragments **59**, knife **61** *(1:2)*.

Stratigraphic relationships: An additional skull (Charnel 2142) was present in the upper part of the grave fill at the north end. Evidence suggesting that the skull was within a later feature cut into the backfill of the grave was not observed during excavation. It was perhaps placed in the grave when it was only partially backfilled.
Structures: None.
Artefact: A seax fragment (**63**) was found at the waist.

Inhumation 2137
Age / Sex: Adult, est. range 36-50 years. Male.
Body / Height: On left side with head facing north-west. Left arm extended in front of body with right arm flexed across torso and right hand over left forearm. Legs flexed to north-west. Height = 167-175cm.
Surviving bone / Condition: Skull, humeri, radii and ulnas. Fragments of pelvis. Left femur, tibia and fibula. Right femur missing distal end and right tibia and fibula absent. Condition good.
Pathology: Healed cribra orbitalia in both orbits. Osteophytes present on lumbar (L4) and thoracic (T6) vertebrae.

Charnel 2142
Age / Sex: Child, est. range 4-12 years.
Surviving bone: Fragments of skull and vertebrae C1 to C3.
Pathology: None noted, although the presence of cervical vertebrae along with the skull suggests possible decapitation.

63 Seax, iron. Tang and upper part of blade only. Broad parallel-sided blade, W. 31mm, surviving L. 139mm. Incomplete offset tang, L. 65mm covered with wood traces of the handle. Slag lines throughout and a possible difference in metals parallel to and close to the edge visible on the x-ray.

Grave 2141
Fill 2139 / Inhumation 2140
D4 Fig. 3.31

Grave: Sub-rectangular. Truncated, surviving dimensions L. 2.29m, W. 1.15m, D. 0.22m.
Orientation of body: E-W.
Stratigraphic relationships: None.

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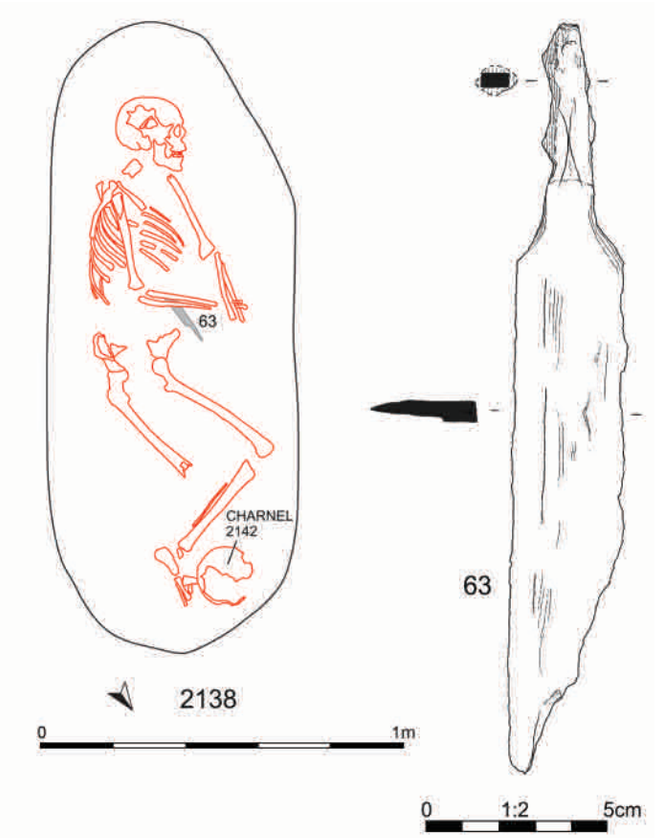

Figure 3.30 Grave 2138 *(1:20)*: seax frag **63** *(1:2)*.

Structures: None.
Age / Sex: Adult, est. range 36-50 years. Male.
Body / Height: Supine. Head facing south. Arms slightly flexed with left hand resting on left femur. Left leg slightly flexed to the south. Right leg extended. Height = 172-180cm.
Surviving bone / Condition: Skull, vertebrae, fragments of ribs. Scapulae, clavicles, humeri, radii, ulnas, pelvis, femurs, tibia and fibula. Some hand and foot bones. Condition good.
Pathology: Healed osteomyelitis on left tibia just above the ankle and significant difference in length between the left and right tibia (20mm), perhaps caused by contraction of polio during childhood? Unhealed fracture of left clavicle.
Artefacts: To the right of the head were found a spearhead (**64**), a bucket handle (**65**) and a pottery vessel (**66**). At the waist was a buckle (**67**) and a fragmentary knife (**68**).

64 Spearhead, iron. Swanton C2. Leaf-shaped blade and broadly cleft socket which comprises approximately a third of the total length. Wood in socket. Overall L. 316mm, blade L. 210mm, W. 32mm. Socket width (ext.) 22mm. 6th-7th century.

65 Bucket handle, iron. Rod handle, max. dia. c.8mm, tapered at ends and bent into closed loops, one of which has an S-shaped hook and staple with wood traces on it and was presumably for fastening to the bucket. Est. dia. of bucket 165mm.

66 Vessel, ceramic (Fabric F1), near-complete. Rim dia. 80mm, girth 130mm dia., rounded base. Variegated greyish-brown to black outer surface, decorated with a zig-zag line within two cordons on the neck and two cordons just above the waist. The inner surface shows light but even attrition throughout, apart from the inner neck and rim. The form of this vessel is typical of the later 6th or earlier 7th century, and is classified as 'high-necked' or 'low-bulbous' by Myres (1977, 7 and figs 56-8).

67 Buckle and plate, iron. Fragmentary. Oval loop, 26 x 15mm, plain rectangular plate 20 x 18mm with two rivets in place. Traces of leather belt inside plate.

68 Knife, iron. Only tip of blade present. Surviving L. 53mm, W. 14mm.

Grave 2148
Fill 2146 / Inhumation 2147
D4 Fig. 3.32

Grave: Sub-rectangular, slightly rounded ends. Dimensions L. 1.96m, W. 1.01m, D. 0.40m.
Orientation of body: NE-SW.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adolescent, est. range 13-20 years. Sex undetermined.
Body / Height: Supine. Legs splayed. Left arm flexed with hand on pelvis. Right arm flexed with lower arm/hand beneath right femur Height = und.
Surviving bone / Condition: Skull, ribs, vertebrae, pelvis, humeri, radii, ulnas, femurs, tibias and fibulas. Some hand and foot bone. Condition good.
Pathology: Hypoplasia of dental enamel.
Artefacts: A seax (**69**) and a knife (**70**) were found by the upper right arm.

69 Seax, iron. Narrow blade, L. 276mm, max. W. 35mm. Two-thirds of the back of the blade is gently angled and the final third has a slightly convex curve to the tip. The cutting edge is straight, but may curve slightly very near the tip. Central flat tapered tang, L. 143mm, no pommel. The object is poorly preserved, but the X-ray suggests the blade may have been pattern welded. Wood on tang, leather on end of blade. Similar in form to an example from Baexam, Holland (Gale 1989, 75, fig. 6, 6.1).

70 Knife, iron, incomplete (blade tip missing). Central flat tang. Overall L. 87mm, W. c.16mm.

Grave 2151
Fill 2149 / Inhumation 2150
D4 Fig. 3.33

Grave: Sub-rectangular, slightly rounded ends. Dimensions L. 1.29m, W. 0.59m, D. 0.30m.
Orientation of body: SE-NW.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Supine. Legs extended. Arms flexed with hands on pelvis. Height = und.
Surviving bone / Condition: Fragments of skull, ribs and pelvis. Vertebrae, humeri, radii, ulnas, femurs, tibias and

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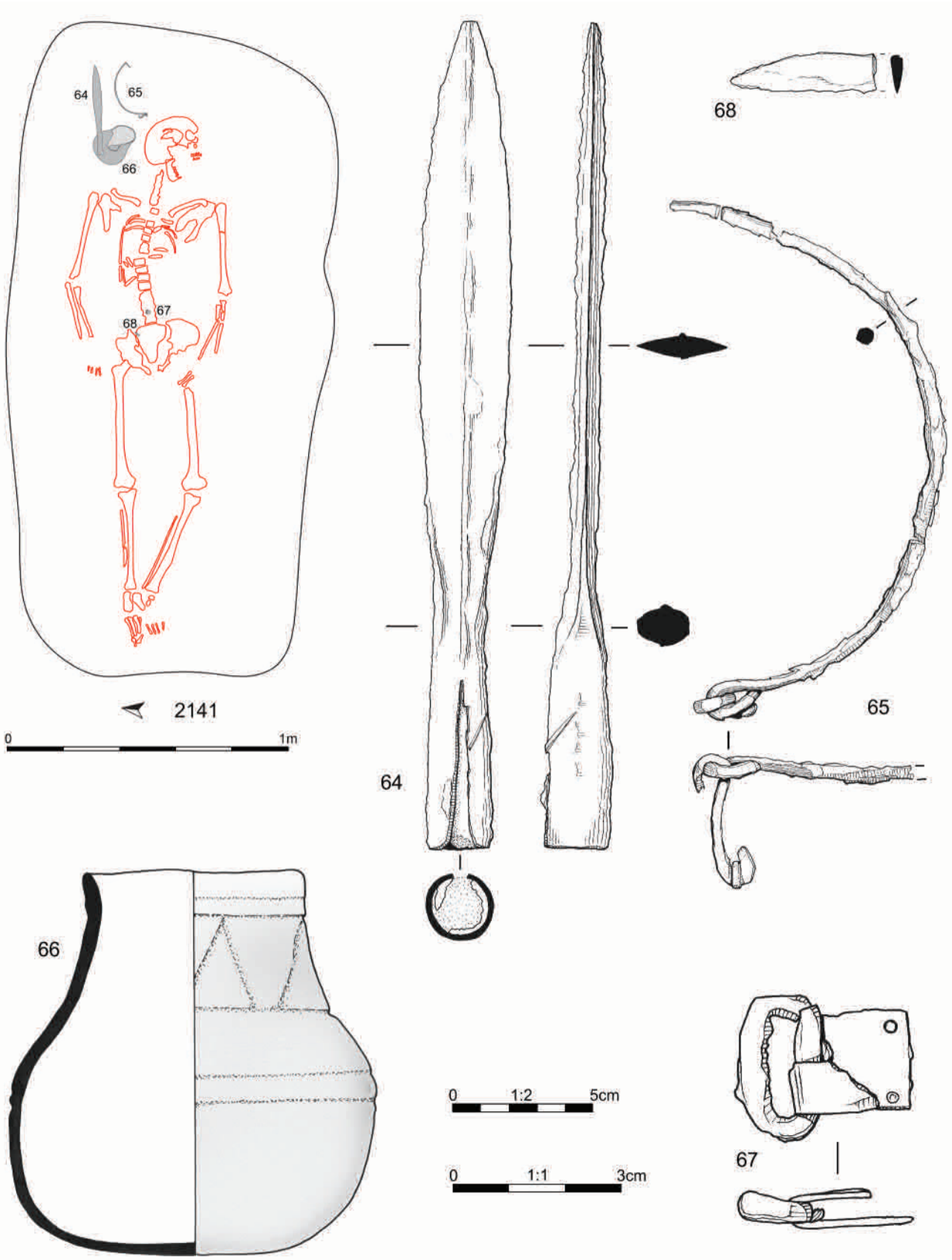

Figure 3.31 Grave 2141 *(1:20)*: spearhead **64**, bucket fittings **65**, pot **66**, knife **68** *(1:2)*; buckle **67** *(1:1)*.

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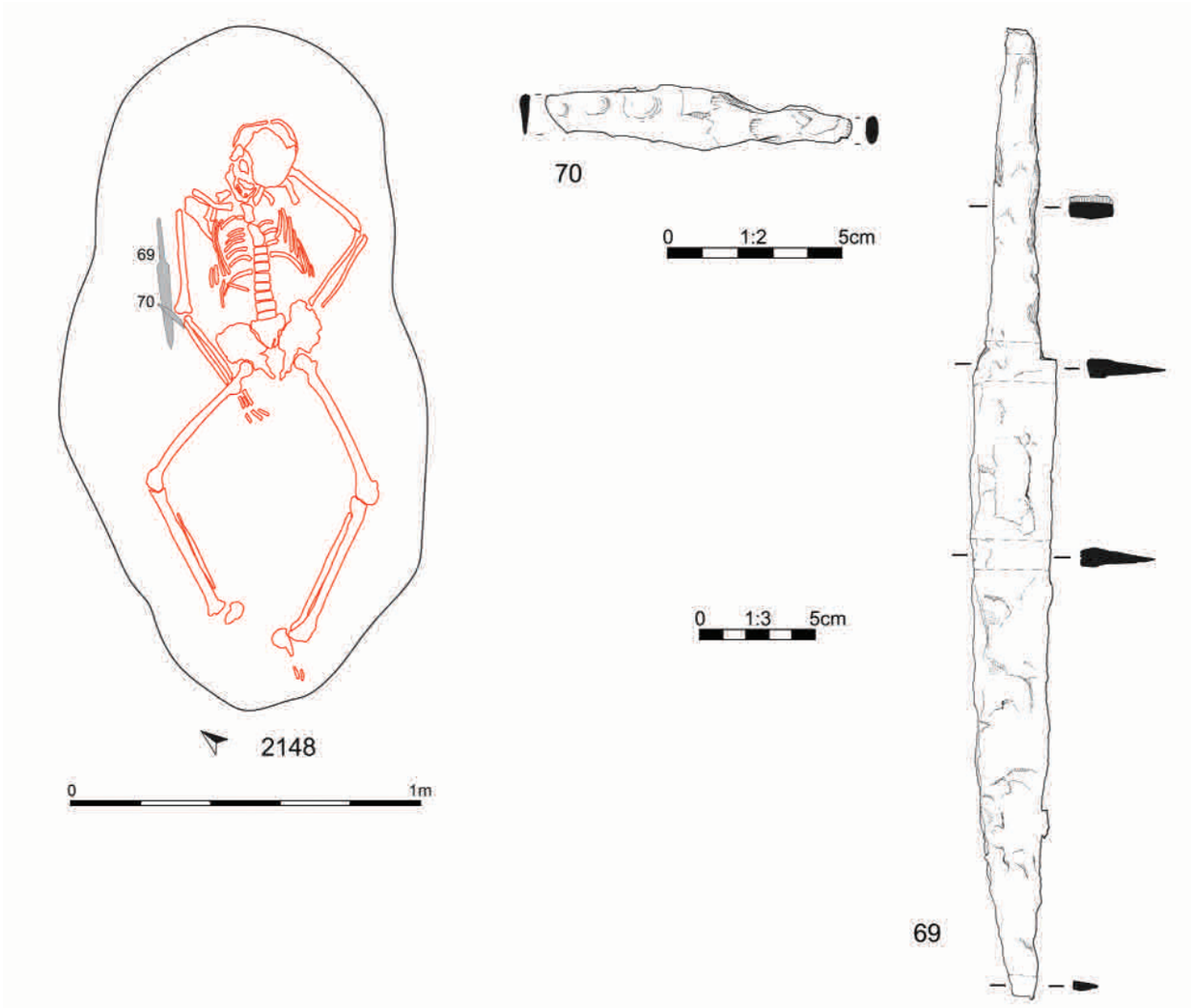

Figure 3.32 Grave 2148 *(1:20)*: seax **69** *(1:3)*; knife **70** *(1:2).*

fibulas. Some hand and foot bone. Condition good.
Pathology: Healing cribra orbitalia in both orbits.
Artefact: A knife (**71**) was found by the left side of the waist.

71 **Knife,** iron. Straight cutting edge, back of blade curves to tip. Flat tapered tang, incomplete. Overall L. 83mm, max. blade W. 12mm. Leather impressions on blade.

Grave 2154
Fill 2152 / Inhumation 2153
D4 Fig. 3.34

Grave: Sub-rectangular, slightly rounded ends. Dimensions L. 1.63m, W. 0.75m, D. 0.30m.
Orientation of body: NW-SE?
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Infant / child, est. range birth –12.
Body / Height: unknown
Surviving bone / Condition: Only a small skull fragment was recovered. Condition poor.
Pathology: None.
Artefacts: A knife (**72**) was found in the centre of the grave. A number of other objects including a sharpening steel (**73**), blade fragment (**74**), nail (**75**) and chain links (**76, 77**) were recovered from the fill.

72 **Knife**, iron, incomplete. Tapered blade, tip missing, max. W. 15mm. Flat central tang, W. 7mm. Overall length 72mm.

73 **Sharpening Steel,** iron. Parallel-sided, rectangular section 'blade' with squared end, tapers to round tang. Overall L. 93mm, W. 10mm. See also Grave 2011, **14**.

74 **Blade**, iron, curved, cutting edge to inside, max. W. 10mm, length c.70mm.

75 **Nail,** iron. Tapered shaft only, L.33mm, max. dia. 5mm.

76 **Chain link**, iron, fragments of two S-links, heavily corroded. L. 19mm.

77 **Chain link,** copper-alloy, S-shaped, L. 16mm. Traces of organics.

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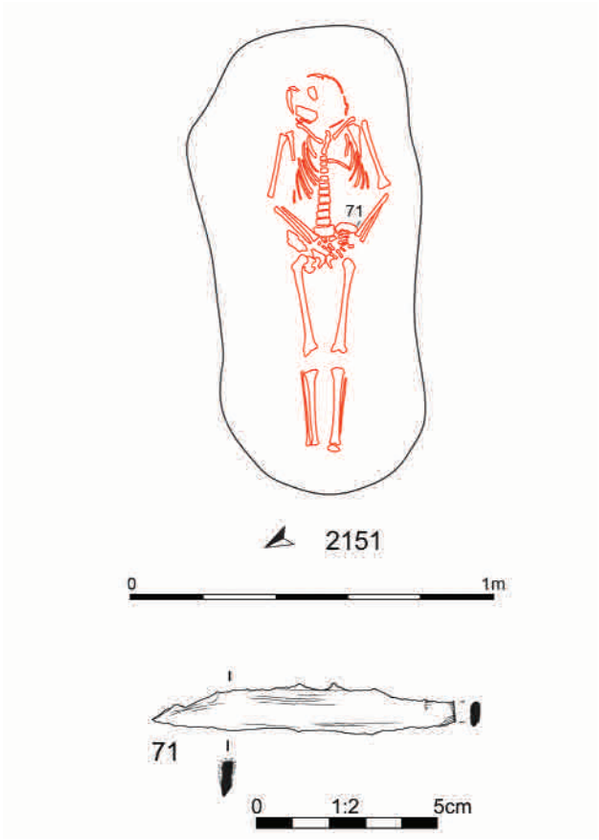

Figure 3.33 Grave 2151 *(1:20)*: knife **71** *(1:2).*

Grave 2156
Fill 2155
D4 Fig. 3.35

Grave: Sub-rectangular, with rounded ends. Dimensions L. 1.69m, W. 0.83m, D. 0.32m.
Orientation of grave: NW-SE axis.
Stratigraphic relationships: None.
Structures: None.
Artefact: A knife (**78**) was found in the centre of the grave.

This was a possible grave cut, containing no inhumations.

78 Knife, iron, incomplete. Straight cutting edge, back of blade curves towards tip. Flat tang, mostly missing. Overall L. 114mm, max. blade W. 12mm.

Grave 2158
Fill 2157
D5 Fig. 3.36

Grave: Sub-rectangular with rounded ends. Dimensions L. 1.33m, W. 0.74m, D. 0.17m.
Orientation of grave: N-S axis.
Stratigraphic relationships: None.
Structures: None.
Artefacts: None.

This was a possible grave cut, containing no inhumations.

Grave 2165
Fill 2163 / Inhumation 2164
D4 Fig. 3.36

Grave: Sub-rectangular. L. 2.05m, W. 0.66m, D. 0.35m.
Orientation of body: NW–SE.

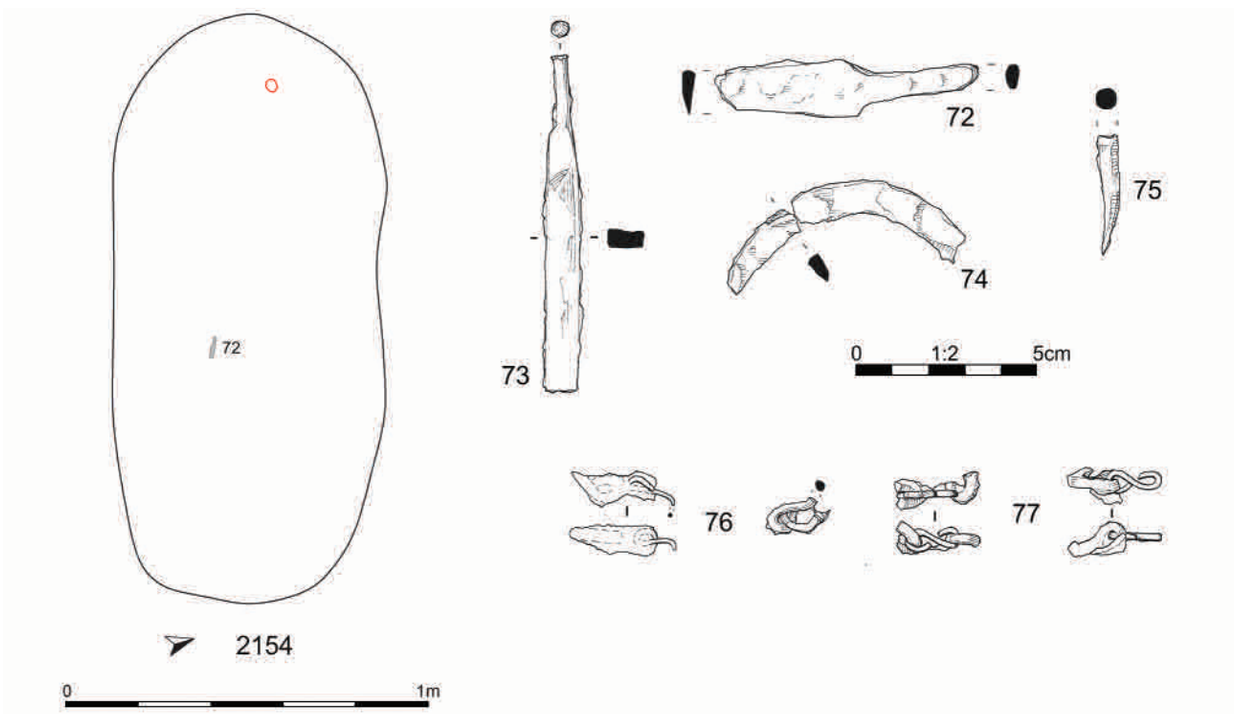

Figure 3.34 Grave 2154 *(1:20)*: knife **72**, sharpening steel **73**, blade **74**, nail **75**, chain fragments **76** & **77** *(1:2).*

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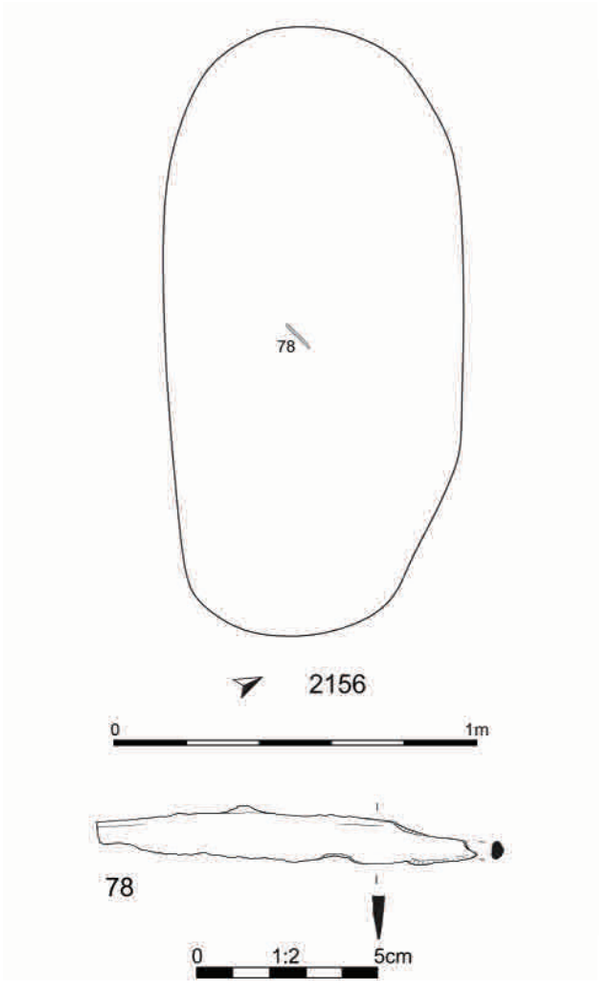

Figure 3.35 Grave 2156 *(1:20)*: knife **78** *(1:2).*

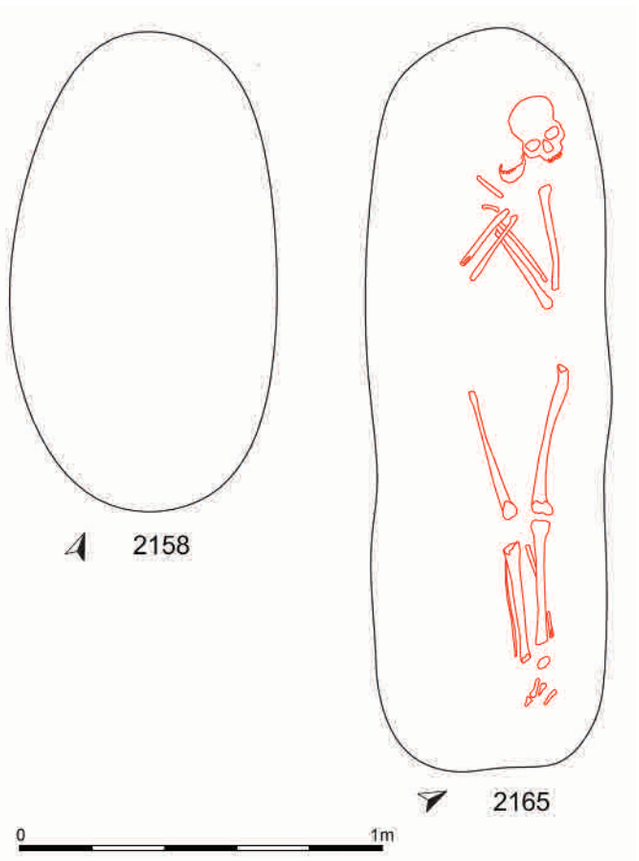

Figure 3.36 Graves 2158 & 2165 *(1:20).*

Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Male.
Body / Height: Supine. Legs extended, arms flexed with wrists crossed beneath jaw. Cranium displaced to north of jaw. Height = 179-189cm.
Surviving bone / Condition: Skull, teeth, left humerus, both radii and ulna. Femurs, and both tibia and fibula. Occasional foot bones. Condition fair.
Pathology: Hypoplasia of dental enamel and the cranium exhibits hyperbrachycrany, *i.e.* this individual was very broad headed. An oval (46.48 x 12.05mm) wound punctures the rear of the cranium (left parietal). Fractures radiate from the centre of the wound through the superior and inferior parts of the left parietal, with one of the fractures continuing through a suture into the occipital bone. The blunt edges of the wound and absence of bone remodelling suggest that this was a peri-mortem injury, perhaps inflicted by a pointed weapon thrust into the back of the cranium.
Artefacts: None.

Grave 2168
Fill 2166 / Inhumation 2167
D4 Figs 3.37 & 3.38

Grave: Sub-rectangular with rounded ends. L. 2.06m, W. 0.76m, D. 0.40m.

Orientation of body: NW–SE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adolescent, est. range 13-20 years. Sex undetermined.
Body / Height: Prone. Right arm flexed with hand at waist. Left arm and legs extended. Height = und.
Surviving bone / Condition: Fragments of skull, humeri, right radius, right ulna, femurs, tibias and fibulas. Some foot bone. Condition poor.
Pathology: None.
Scientific Dating: Calibrated radiocarbon date of AD630–740 at 95.4 % probability. SUERC-31579 (GU-22535).
Artefacts: The components of necklace **79** (**80-86**) were found at the neck, along with a pin (**87**). A pair of shears (**88**) were found by the lower right arm and the components of chatelaine **89** (**90-94**) were located at the left hip. Workbox **95** was found by the upper right leg. Metal fittings, probably from a wooden box (**96**) were located along the south side of the grave, probably displaced from their original location.

79 Necklace(s), comprised of a number of pendants, slip-knot rings and beads. **80** is a silver bracteate pendant with decorated front and plain backing discs, dia. 23mm. The front disc is decorated with interlaced circles, each having a roundel in its centre. The edges are serrated. The suspension loop appears to have

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broken in antiquity as a crude hole has been punched through both discs, probably as a replacement means of suspension. Late 7th–early 8th century. There are also fragments of a hemispherical silver *bulla* pendant (**81**), 12mm dia., and of at least four copper-alloy *bulla* pendants, all c.11-14mm dia. (**82**). A disc fragment of silver (**83**), dia. 18mm, pierced for suspension near the outer edge, is decorated with an intricate Celtic knot design around a central circle, achieved by punching the reverse with a curved edged chisel or punch. The outer edge is grooved/raised. There are also fragments of at least four silver slip-knot rings (**84**), two with flattened sections. The most complete example (**85**) is c.23mm dia. A single bead (**86**), L. 11mm and made from cowrie shell, was found with this assemblage.

87 **Pin**, copper-alloy. Tip and head both missing. L. 48mm, dia. 2mm. Possibly for fastening a shroud or cloth covering the face?

88 **Shears,** iron, fragmentary. Curved bow and long arms with shouldered but not recessed blade tops. Overall L. 150mm. 5th-7th century?

89 **Chatelaine,** iron and copper-alloy, comprised of chain, rods, links and spacers (**90-92**). Fragments of iron chain rods, links, one circular iron spacer and several badly corroded unidentifiable iron objects. Five small cast copper-alloy S-links are also present: one (**90**) is illustrated. Areas of plain woven Z spun linen, 20x20 threads per cm, were preserved in iron corrosion and adjacent to some of the copper-alloy links. Also found in the same area, and therefore presumably attached to the chatelaine, were two beads. The first was a 'horned' glass bead (**93**), having an opaque red/brown annular body with five blobs of white glass overlaid with blobs of blue/black glass applied around the circumference. Dia. 22mm. Analogous to bead 10 (Type P23c), grave 14, Edix Hill (Malim & Haines 1998) but lacking spiral decoration to body. Rare both in England and the continent, but there are late 6th or very early 7th century continental parallels (Koch 1977). The second was a melon bead (**94**) of turquoise glass with fine ribs, heavily worn: perhaps a reused Roman item (Guido 1978, 100). L. 18mm, dia. 20-21mm.

95 **Workbox,** copper-alloy, in at least fourteen fragments. Approx. size of reconstructed box: dia. 50mm, L. 55mm. Two domed ends and hinged cylinder, originally riveted together. The cylinder is decorated with lines of repoussé dots: lines of repoussé dots also radiate from the centre of the domed ends. A runic inscription (*m b u g i ? t n ?*) is scratched on one of the cylinder fragments (see Chapter 5 for discussion of runes). The hinges are made of thicker sheet than the body, and are located one on each half of the object. Remains of iron loops are present in both of the hinges. The larger example has been repaired with a smaller sheet riveted over the broken end with copper-alloy rivets. On at least four points on the exterior of the workbox were found impressions of plain woven Z-spun linen, 24x24 threads per cm, with linen fibres 5µm-15µm. Late 7th – early 8th century.

96 **Box Fittings,** iron. Seven fragments of badly corroded rectangular fittings with fastening holes and small bent nails (**97-100**), possibly corner mounts and other fittings (**99** may be part of a lock plate) from a wooden box. Mineralised leather and wood are preserved in the iron corrosion on most of the fittings.

Grave 2171
Fill 2169 / Inhumation 2170
E2 Fig. 3.39

Grave: Sub-rectangular but very truncated. Surviving dimensions L. 2.30m, W. 0.86m, D. 0.05m.
Orientation of Body: SW–NE.
Stratigraphic Relationships: None.
Structures: None.
Age / Sex: Adolescent – Adult, est. range 13-35 years. Sex undetermined.
Body / Height: Perhaps supine with legs extended. Height = und.
Surviving bone / Condition: Fragments of left femur and both tibia. Condition fair.
Pathology: None.
Artefacts: None.

Grave 2174
Fill 2172 / Inhumation 2173
E3 Fig. 3.40

Grave: Sub-rectangular, although very irregular on north side. Slightly rounded ends. Dimensions L. 2.06m, W. 0.89m, D. 0.10m.
Orientation of body: E–W.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 21–35. Male.
Body / Height: Prone. Left leg flexed with left ankle and foot overlying the lower part of the extended right leg. The left arm is tightly flexed with the hand under the left shoulder. The right arm may have been flexed with the right hand near the head, but this is uncertain as this limb has been disturbed. Height = 163-169cm.
Surviving bone / Condition: Fragments of skull, ribs and vertebrae. Humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Condition fair.
Pathology: Hypoplasia of dental enamel.
Artefacts: A hooked tag (**101**) was found in the upper body area. Sword **102** lay alongside the upper right leg, beneath the right pelvic bone with the pommel at the base of the sternum. Alongside the sword were a whetstone (**103**), ring-headed pin (**104**), fragments of copper-alloy sheet (**105**), a knife (**106**) and a buckle (**107**), the latter wrapped in cloth.

101 **Hooked tag**, copper-alloy. Slightly trapezoidal mounting plate, 13 x 9mm, with two rivet holes. The other end of the object is tapered to a point by folding in the edges and then forming into a hook. 7th century onwards.

102 **Sword,** iron. Parallel double-edged blade, tapered tang and narrow oval pommel. X-ray examination confirms that the blade is pattern welded with an iron core repeatedly twisted through ninety degrees (Lang & Parry Pattern Type B2b), the harder steel cutting

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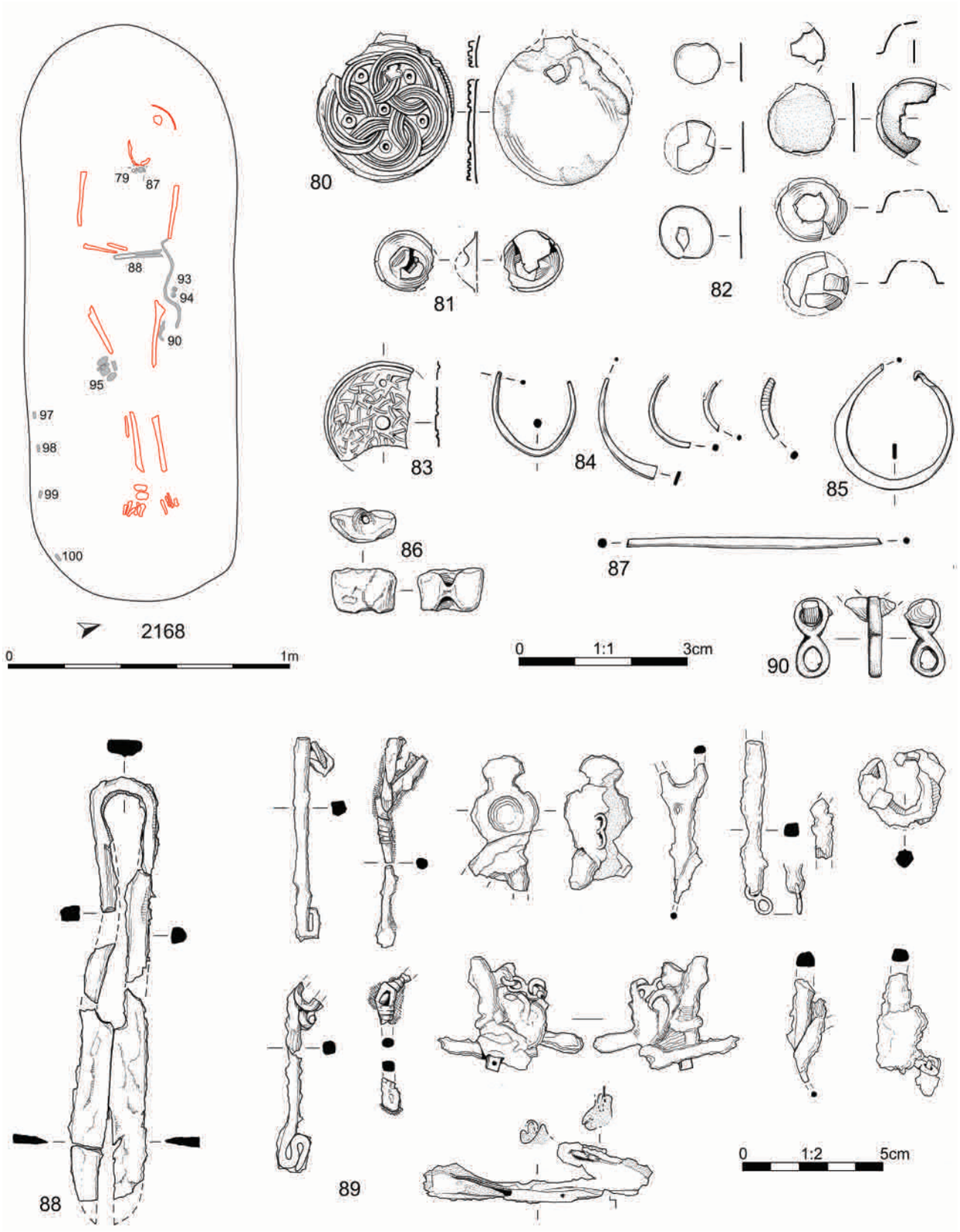

Figure 3.37 Grave 2168 *(1:20)*: Bracteate pendant **80**, *Bulla* pendant **81**, *Bulla* pendant fragments **82**, disc fragment **83**, Slip-knot rings **84** & **85**, cowrie shell bead **86**, copper-alloy S-link **90** *(1:1); s*hears **88**, chatelaine **89** *(1:2). (See also Fig. 3.38)*

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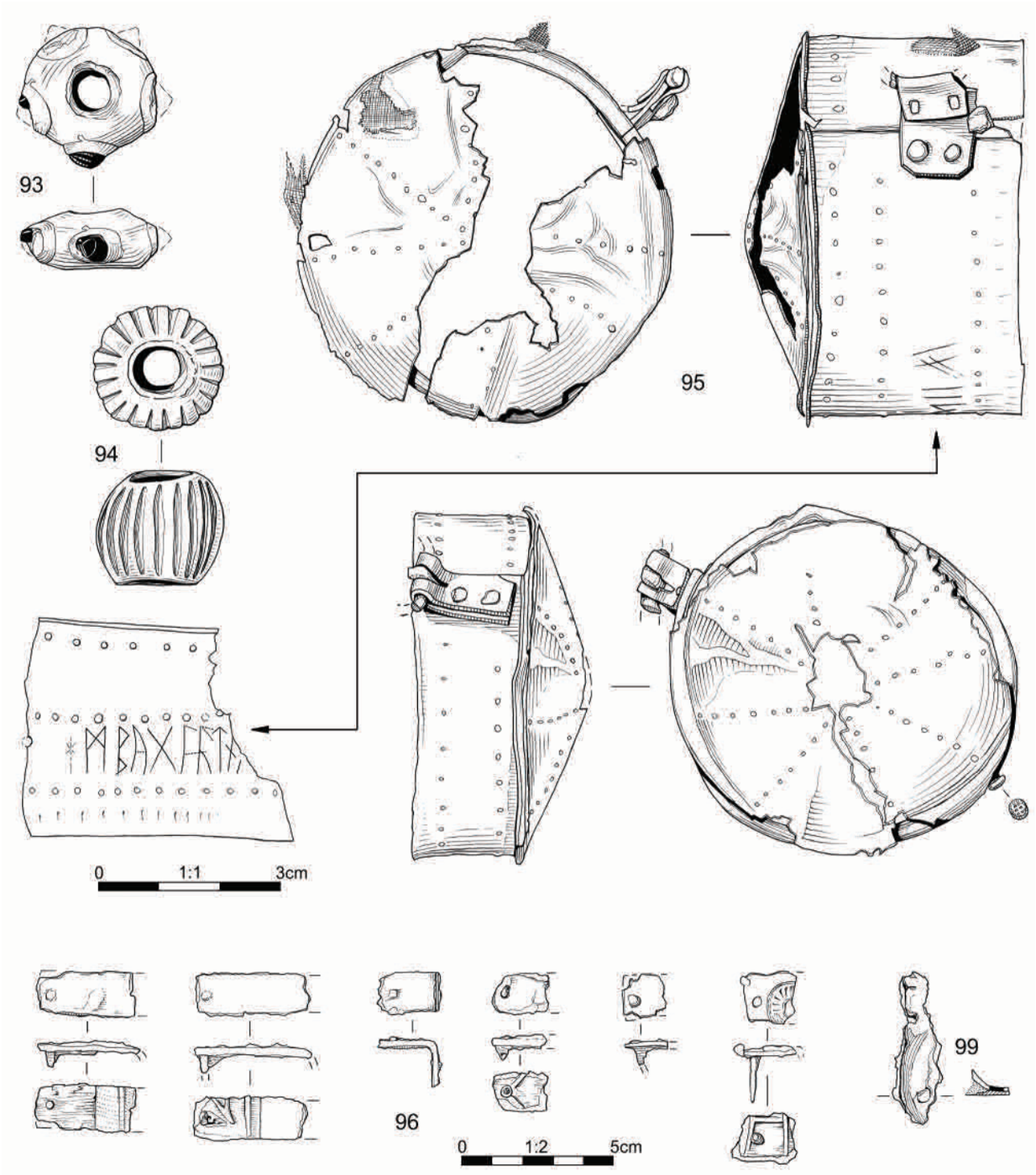

Figure 3.38 Grave 2168 finds: horned bead **93**, melon bead **94**, workbox **95**, *(1:1);* box fittings **96** *(1:2). (See also Fig. 3.37)*

edges being added by hammer welding. X-rays also show that the blade probably has a full-length fuller. No trace of the cross guard or hilt remain: presumably these were organic. The leather of the scabbard is partially preserved but no scabbard fittings were recovered. Blade L. 810mm, W. 40mm; tang L. 108mm, pommel 10 x 35mm. 6th-7th century.

103 **Whetstone,** micaceous schist (Norwegian ragstone), square-section with unfinished ends. All four sides worn and show dark areas of glossy grey/brown iron marks from the sharpening of ferrous objects. L. 110mm, W. 29 x 29mm.

104 **Ring-headed pin,** iron. Well-formed oval head with 17 x 10mm central perforation, rounded shank with pointed end. Overall L. 123mm, W. 25mm.

105 **Fittings,** copper-alloy. Two joining sheet fragments, plus a separate piece of sheet. The joining fragments are each decorated with two rows of punched holes parallel to their long edges: one is joined by rivets at one end to a plain piece of sheet. Function unknown. The other sheet fragment is undecorated, but has rivet holes. Joining sheets: L. 80mm, W. 17mm. Plain sheet; 32 x 40mm.

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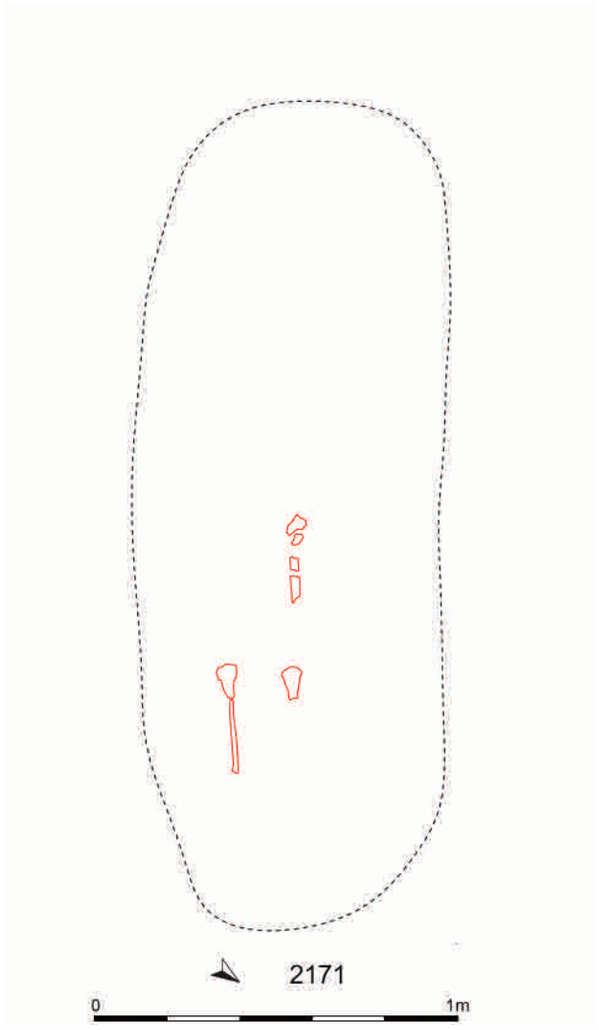

Figure 3.39 Grave 2171 *(1:20).*

106 **Knife**, iron. Slender blade with tapered back and offset, incomplete tang. Remains of mineralised wood of haft on the tang. L. 96mm, blade W. 12mm.

107 **Buckle and plate.** Copper-alloy. Marzinzik II.24a. Oval loop, tongue and plain rectangular copper plate with two rivets at the rear. All of copper-alloy. Poorly preserved textile on the loop. Late 6th to early 8th century.

Grave 2177
Fill 2175 / Inhumation 2176
E4 Fig. 3.41

Grave: Sub-rectangular, with rounded ends. L. 1.79m, W. 0.68m, D. 0.40m.
Orientation of Body: SE-NW.
Stratigraphic Relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Female.
Body / Height: Supine with head facing north east. Right arm flexed with hand in front of face. Left arm flexed across chest with left hand holding right forearm. Legs extended. Height = 157-165cm.
Surviving bone / Condition: Skull, spine, humeri, radii, ulnas, pelvis and os sacrum. Left hand bones. Femurs, tibias and fibulas. Some foot bones. Condition good.
Pathology: Very pronounced occipital bone.
Artefacts: None.

Grave 2180
Fill 2178 / Inhumation 2179
D2 Fig. 3.42

Grave: Sub-rectangular with slightly rounded ends. Very truncated, surviving dimensions L. 1.79m, W. 1.05m, D. 0.07m.
Orientation of body: S-N.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adolescent – Adult, est. range 13-50 years. Sex undetermined.
Body / Height: Supine. Upper body perhaps rotated slightly with head facing east. Left arm flexed with hand over pelvis. Right arm and legs extended. Height = und.
Surviving bone / Condition: Fragments of skull, clavicles, ribs, humeri, radii, ulnas, vertebrae, femurs, tibias and fibulas. Condition poor.
Pathology: None.
Artefacts: A comb (**108**), knife (**109**) and fossil ammonite (**112**) were all found in the waist area.

108 **Comb,** antler. Fragments of a double sided comb. Comprises an end-plate, W. 48mm, one tooth-plate and four fragments of one of the connecting plates. Only vestiges of teeth are present, possibly at 5 per cm on both sides. The connecting plate is tapered with a squared terminal, plano-convex in section. The square end plate has rounded corners. Due to the degree of erosion it is difficult to assess whether the comb was ever decorated. The object has probably been repaired, as there are two rivet holes and a small pilot hole that was never completed on the end plate. Iron staining suggests that only the larger of the holes contained an iron rivet at the time of deposition. Middle Saxon, 7th–8th century.

109 **Knife,** iron. Blade (**110**) straight-edged with angled back. L. 89mm, W. 16mm. Tang (**111**) offset centrally, surviving L. 37mm, width 7mm. There are possible leather scabbard impressions on the blade.

112 **Fossil,** Ammonite, *Cadoceras sublaeve* (J. Sowerby). Lower Callovian, Oxford Clay. Not usually found in the soils local to the site, so presumably an *objet trouvé*. 52 x 49 x 37mm. NI.

Grave 2183
Fill 2181 / Inhumation 2182
D2 Fig. 3.43

Grave: Sub-rectangular with slightly rounded NE end. Truncated, surviving dimensions L. 2.02m, W. 1.08m, D. 0.12m.
Orientation of body: SW-NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adolescent, est. range 13-20 years. Sex undetermined.
Body / Height: Supine. Extended. Height = und.
Surviving bone / Condition: Fragments of skull, ribs and vertebrae. Clavicles, humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Some hand and foot bone. Condition fair.
Pathology: Healed cribra orbitalia in both orbits.

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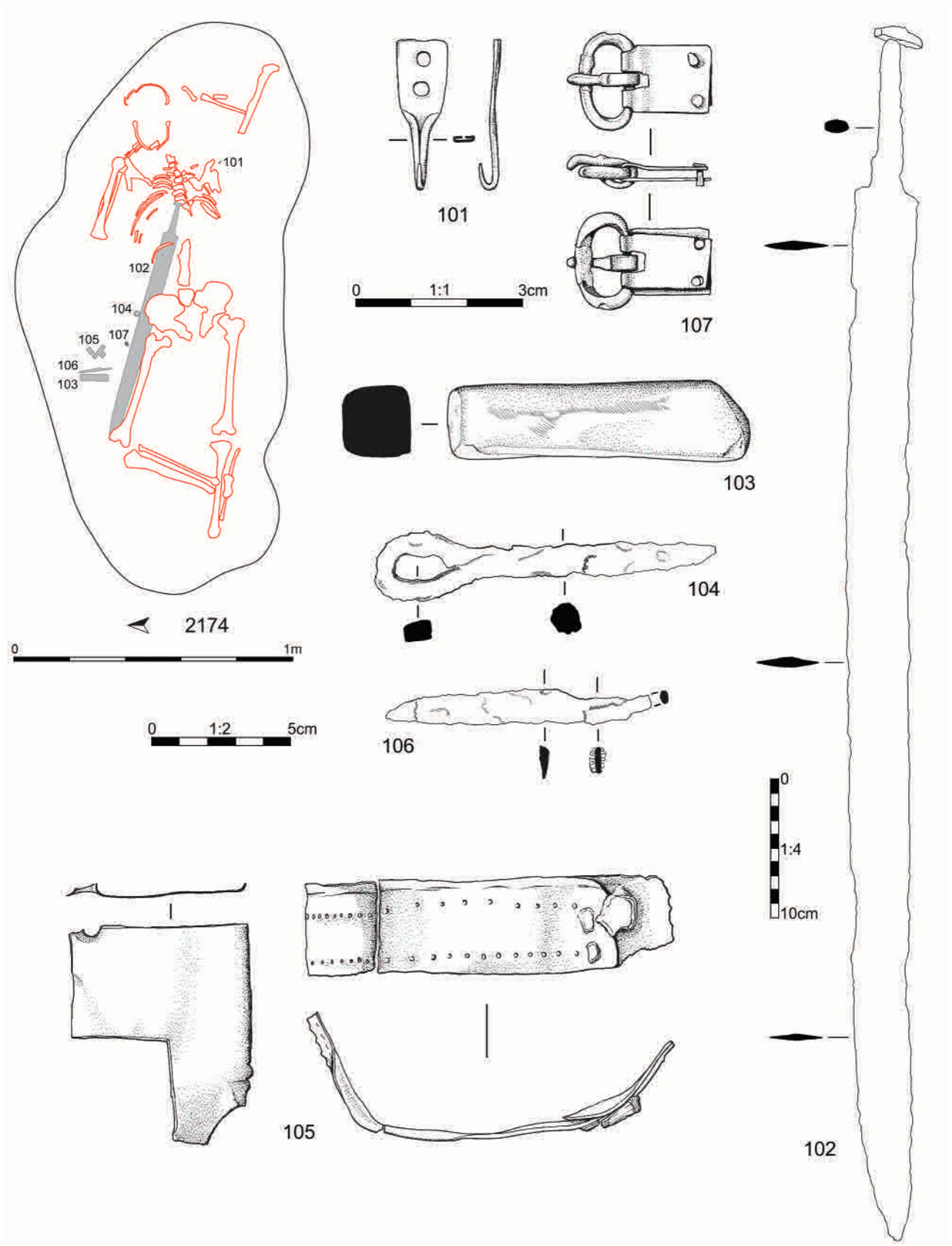

Figure 3.40 Grave 2174 *(1:20)*: hooked tag **101**, sheet fittings **105**, buckle **107** *(1:1)*; whetstone **103**, ring-headed pin **104**, knife **106** *(1:2)*; sword **102** *(1:4)*

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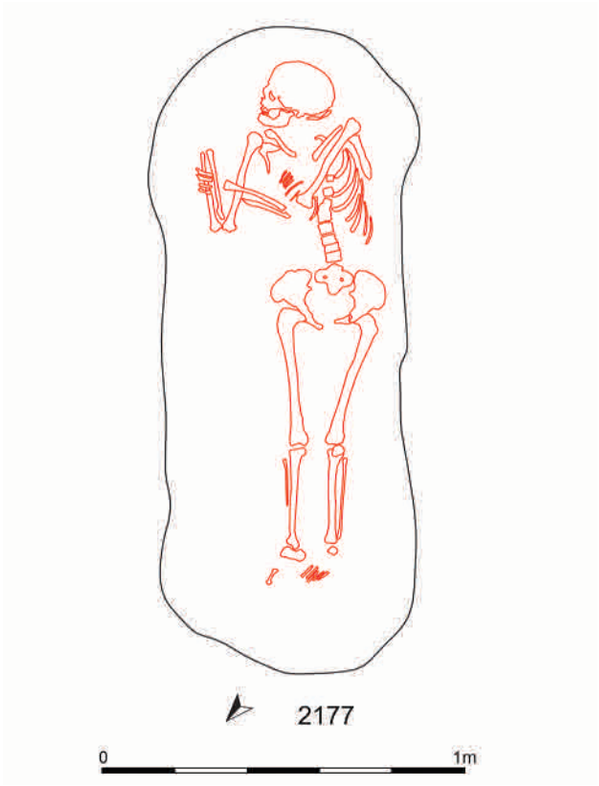

Figure 3.41 Grave 2177 *(1:20).*

Scientific Dating: Calibrated radiocarbon date of AD600–675 at 95.4 % probability from right radius, mid diaphysis. SUERC-31583 (GU-22536).
Artefacts: A spearhead (**113**) found at the eastern edge of the grave had almost certainly been disturbed. Three nail fragments (**114-116**) were located to the right of the skull and a knife (**117**) and buckle (**118**) were found in the waist area.

113 **Spearhead,** iron**.** Swanton C2. Leaf shaped blade and broadly cleft socket which comprises slightly less than a third of the total length. Blade and socket are bent. X-ray shows a cored and piled structure. Overall L. 321mm, blade L. 228mm, W. 32mm. 7th century.

114-6 **Nails,** iron. Three fragments of hand-made nails, the most complete of which (**115**) is 31mm in length, and is the only one illustrated.

117 **Knife,** iron. Angled back, offset oval-section tang with end missing. Top of blade fullered? Traces of wooden grip survive and there is a sharp line in the corrosion product at the junction of the blade/ tang. Some slag lines visible in the lower part of the blade. L. 171mm, blade W. 24mm.

118 **Buckle and plate,** iron and copper-alloy respectively, tinned. Probably Marzinzik II.24a. The plate comprises an undecorated square sheet with central rectangular slot and three iron rivets at the rear edge, the plate folded over to accommodate a leather belt 16mm wide and up to 3mm thick. The tongue and loop are fragmentary, so their form is unclear. Remains of the mineralised leather strap survive folded around the buckle. Late 6th to early 8th century? L. 17mm, W. 17.5mm.

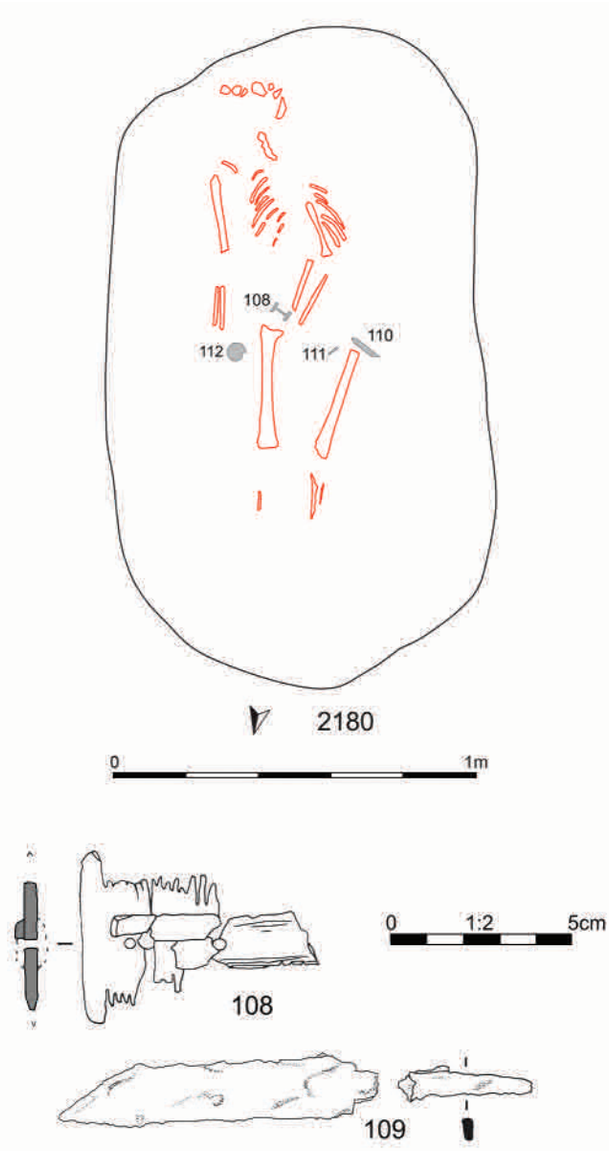

Figure 3.42 Grave 2180 *(1:20)*: comb **108,** knife **109** *(1:2).*

Grave 2197
Fill 2195 / Inhumation 2196
D4 **Fig. 3.44**

Grave: Sub-rectangular. Truncated, surviving dimensions L. 1.92m, W. 0.64m, D. 0.37m.
Orientation of body: W-E.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-51+ years. Female.
Body / Height: Prone. Head facing south. Arms extended. Legs flexed to the south. One rib in a disturbed position resting on the base of the skull. Height = 163-171cm.
Surviving bone / Condition: Skull, vertebrae, ribs, humeri, radii, ulnas, pelvis, femurs, tibia and fibula. Some hand and foot bone. Condition good.
Pathology: Erosive lesions affecting lumbar (L2, L4, L5) and sacral (S1) vertebrae. Ankylosis of thoracic and lumbar vertebrae T11, T12, L1, L2. Loss of bone density

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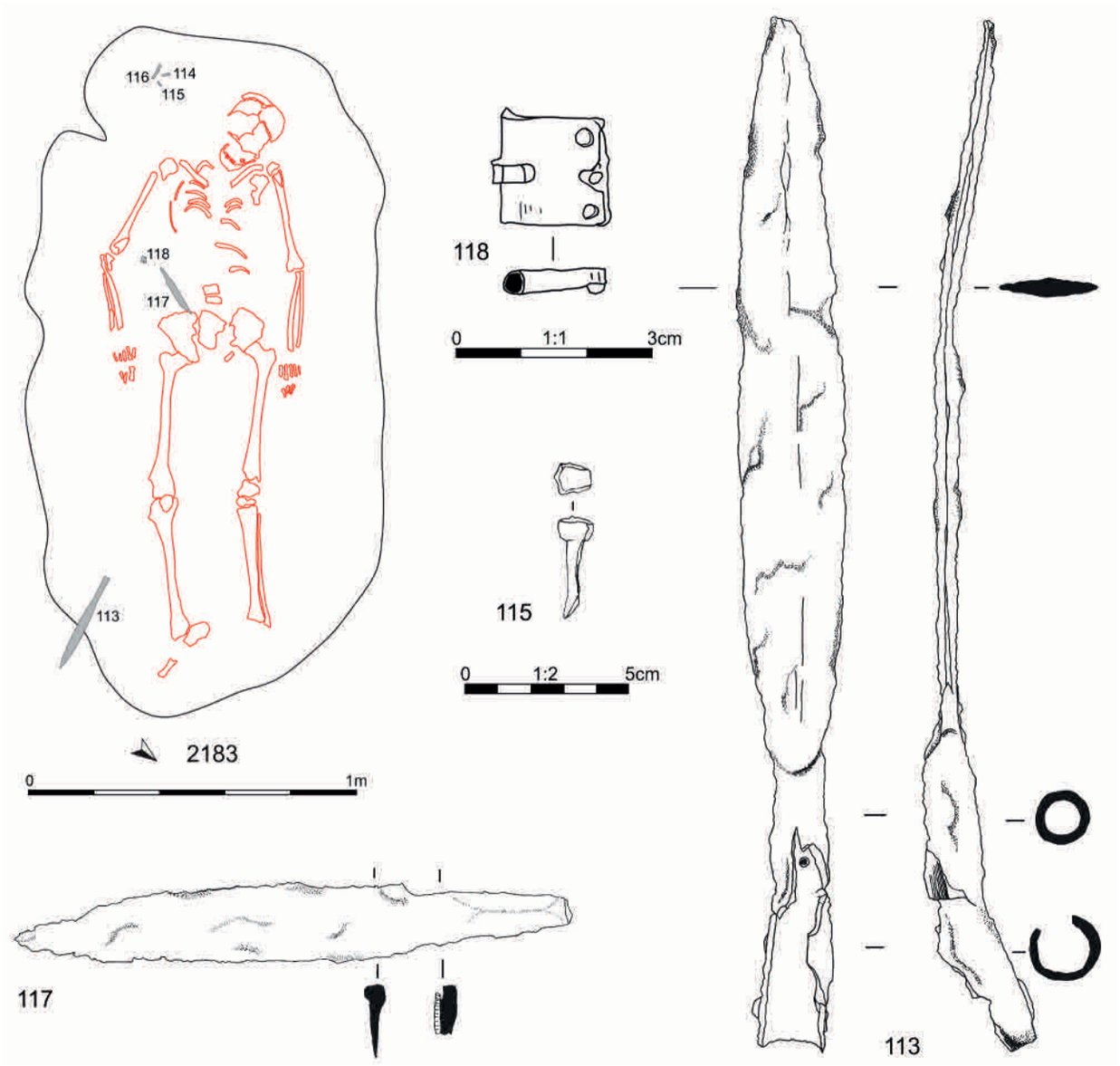

Figure 3.43 Grave 2183 *(1:20)*: spearhead **113**, nail **115**, knife **117** *(1:2)*; buckle plate **118** *(1:1).*

was evident throughout the skeleton and a bone growth affected the proximal left tibio-fibula joint. The cause of the pathologies is uncertain, but perhaps a combination of age related osteoporosis and psoriatic arthritis.

Artefacts: A group of strip fittings, probably from a bucket (**119**) were found to the left of the deceased, by the waist. To the right of the waist was a bead (**127**). At the foot of the grave was found a large group of *objets trouvés* (**128, 129**), possibly originally in a cloth or leather bag.

119 **Bucket fittings,** iron. Thirteen poorly preserved strip fragments (**120-126**), some of them joining, widths vary between 7-13mm. Slight traces of wood on one fragment. Also a small fragment of rod, possibly from a handle.

127 **Bead,** glass. Annular bead of opaque grey glass with darker brick-red/brown veins and small air bubbles. Off-centre hole. Ext dia. 19mm, thickness 8mm.

128 **Objets Trouvés**. Seven fossils, one piece of amber and thirteen geological specimens, none of which are common to the area. For discussion, see Chapter 5 and Fig. 5.16. NI.

- Nodule of Baltic amber.
- Sea urchin, *Micraster coranguinum*. Upper Chalk.
- Ammonite, unidentified upper Cretaceous or Oxfordian species.
- Two sea urchins, *Echinocorys (sp)* Upper Chalk.
- Unidentified sponge, Upper Chalk.
- Bivalve, *Lopha gregarea* (J. Sowerby). Bathonian to Oxfordian.
- Part of a fossil bivalve colony, e.g. *Lithophaga inclusa* (Phillips). Oxfordian, Corallian Beds.
- Natural piece of granite with conical shape. Banded with white quartz.
- Fragment of ironstone.
- Naturally perforated piece of river gravel (flint).
- Six roughly spherical natural flint nodules with thick white cortex, most of which contain fossil sponges, two giving a distinct rattle when shaken.

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- Small piece of fossiliferous limestone.
- Heart-shaped clear quartzite pebble.
- Brown quartzite pebble.
- Roughly spherical ironstone pebble.
- Irregular, pink and white quartzite pebble.

129 **Boar's tusk,** right-hand tusk from a large adult animal, broken at proximal end, suggesting that it was removed from the animal in its lifetime, perhaps as a hunting trophy. Distal end heavily worn by rooting action during the animal's lifetime. L. 110mm.

Grave 2203
Fill 2201 / Inhumation 2202
E5 Fig. 3.45

Grave: Sub-rectangular with rounded ends. L. 1.68m, W. 0.75m, D. 0.35m.
Orientation of body: SE–NW.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Supine with head facing north. Both arms slightly flexed with left hand over pelvis and right hand next to right hip. Legs extended. Height = und.
Surviving bone / Condition: Skull, teeth, clavicles, scapulas, humeri, radii, ulnas, pelvis, os sacrum, femurs, tibias and fibulas. Some ribs, spine, hand and foot bone. Condition good.
Pathology: Periostitis: very slight active periosteal reaction observed at the right ilium (anterior surface).
Artefacts: The components of necklace **130** (**131-137**) were found at the neck. At the waist was a knife (**138**) and by the upper left leg was chatelaine **139**, comprised of a group of objects (**140-145**), along with a ferrule (**146**).

130 **Necklace(s),** silver and copper-alloy. The centrepiece of this appears to have been a *bulla* pendant of copper-alloy (**131**), with possible traces of silvering on some parts of the surface. Small domed disc with a flat backing plate. The suspension loop is part of the domed front piece. The rear of the suspension loop is missing and owing to corrosion it is unclear if the front and back were soldered or crimped together. Dia. of pendant 11mm, thickness 4.5mm. It is possible that the pendant was hung from the necklace cord by a small ring of copper-alloy wire (**132**), dia. c.11mm. With the pendant were at least ten slip-knot rings of silver wire (**133**, **134**), both complete and fragmentary. Two of the complete rings and one fragment have suspended annular glass beads (one blue, one yellow, one clear, all approx. 10mm dia). Four of the rings are decorated with discrete zones of transverse incised lines. Ring diameters range from 19-26mm: all are made from 1.0-1.5mm dia. wire. Three annular blue glass beads (**135**) may have been suspended from the incomplete slip-knot rings. Finally six bi-conical wire beads (**136, 137**),

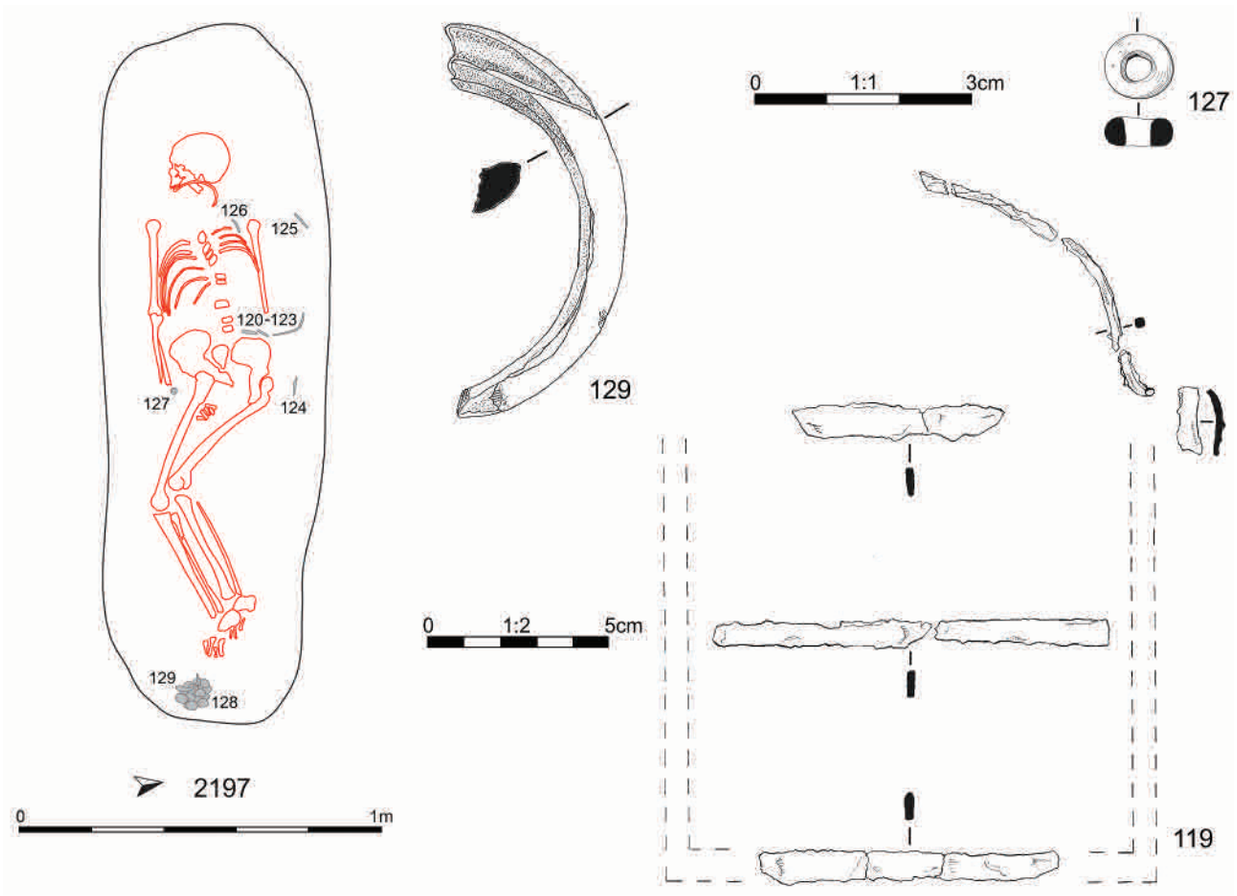

Figure 3.44 Grave 2197 *(1:20)*: bucket fittings **120-126** (**119**) *(1:2)*; bead **127**, boar's tusk **129** *(1:1)*

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made from drawn silver wire in two coiled halves, soldered together, may have been part of the same necklace as the above, or strung separately. Four of the beads (**136**) are c.13mm long and 6mm dia; two (**137**) are smaller at c.5mm long and 4mm dia. For a possible reconstruction of the necklace, see Fig. 5.5.

138 **Knife,** iron. Incomplete, but has start of distinctive angled back which slopes towards the missing blade tip. Straight shoulder with flat tang on level with the back of the blade with slight neck on the lower side. Part of lower side of blade missing. L. 83mm, blade W. 10mm. NI.

139 **Chatelaine,** comprised of thirty-one fragments of relatively fine chain (**140, 141**: not all illustrated), mostly made of iron and in a poor state of preservation. Two cast figure-of-eight copper-alloy chain links were also present. Two antler spacer discs were found in association with the chain, both decorated with ring-and-dot motifs and quite worn. Disc **142** has an overall dia. of 64mm; W. 4mm and a central hole, 26mm dia. Disc **143** is similar, with an overall dia. of 67mm; W. 4mm and a central hole, 10mm dia. Both are dated to the 6th-7th century. A copper-alloy ring (**144**), dia. 23mm, thickness c.5mm, was also found with this assemblage. Two linen suspension cords are looped around the ring and another cord is wrapped around them at least three times, presumably to keep them in place. Each cord is composed of approximately twenty z-spun threads each 0.5mm in diameter. Finally, an annular bead of blue glass (**145**), dia. 10mm, W. 7mm, may have been suspended from the chatelaine.

146 **Ferrule?** iron, fragmentary. Remains of possible organics inside the object. L. 19mm, W. 20mm.

Grave 2206
Fill 2204 / Inhumation 2205
D1 Fig. 3.46

Grave: Sub-rectangular with rounded ends. Very truncated, surviving dimensions L. 1.81m, W. 0.55m, D. 0.04m.
Orientation of body: SE-NW.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adolescent – Adult, est. range 13-50 years. Sex undetermined.
Body / Height: Supine. Height = und.
Surviving bone / Condition: Fragments of femurs, left patella and some left hand bone. Condition poor.
Pathology: None.
Artefact: A knife (**147**) was found at the south-east end of the grave and had probably been displaced.

147 **Knife,** iron. Short blade with angled back, tip missing, with offset, incomplete tang. Ridge in the corrosion product marks the end position of a former scabbard/ wooden handle. Multiple, wavy slag-lines throughout. L. 130mm, blade W. 16mm.

Grave 2212
Fill 2210 / Inhumation 2211
C1 Fig. 3.47

Grave: Sub-rectangular with rounded ends. Very truncated burial, surviving dimensions L. 1.83m, W. 0.74m, D. 0.12m.
Orientation of body: SW-NE.
Stratigraphic relationships: None.
Structures: One of four burials (2212, 2215, 2227 and 2235) placed around four-post structure 2378.
Age / Sex: Adult, est. range 36-50 years. Sex undetermined.
Body / Height: Supine. Left arm slightly flexed at left side of body. Other limbs extended. Height = und.
Surviving bone / Condition: Fragments of skull, clavicles, ribs, humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Condition poor.
Pathology: None.
Artefacts: A knife (**148**) was found to the left of the body above the waist. Ring **149** was located near the base of the skull, and flint nodule **150** was by the left shoulder. It is likely that all these objects had been displaced.

148 **Knife,** iron. Complete, but fragmented. Slender blade with angled back, offset and bent, now detached tang. Occasional slag lines in the upper part of blade and tang visible on both the x-ray and as clear weld-lines on the blade. L. 127mm, blade W. 12mm.

149 **Ring,** iron. Incomplete ring, D.26mm, passing through a folded-over length of rod/strip, W. 4mm. Textile impression in corrosion, comprising three warp threads and traces of 5 weft threads of a lightweight, ?linen textile in tabby 2/1 twill with approx. 20/10 threads per cm of indeterminate spin. Possibly from a suspension chain on a bucket or bowl.

150 **Nodule,** flint. Natural spherical nodule with thick white cortex, dia. 35mm. Not naturally occurring on the site, so presumably an *objet trouv*é. NI.

Grave 2215
Fill 2213 / Inhumation 2214
C1 Fig. 3.48

Grave: Sub-rectangular with rounded ends. Truncated, surviving dimensions L. 2.05m, W. 0.96m, D. 0.16m.
Orientation of body: SW-NE.
Stratigraphic relationships: None.
Structures: One of four burials (2212, 2215, 2227 and 2235) placed around four-post structure 2378.
Age / Sex: Adult, est. range 36-50 years. Male.
Body / Height: Supine. Arms flexed with hands over pelvis. Legs extended, with left leg crossed over right at ankles. Height = 181-189cm.
Surviving bone / Condition: Fragments of skull, clavicles, ribs and vertebrae. Humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Some hand and foot bone. Condition fair.
Pathology: Severe, destructive lytic lesions affecting the adjacent surfaces of lumbar vertebrae L3 and L4: no evidence of bone remodelling which suggests active tuberculosis.

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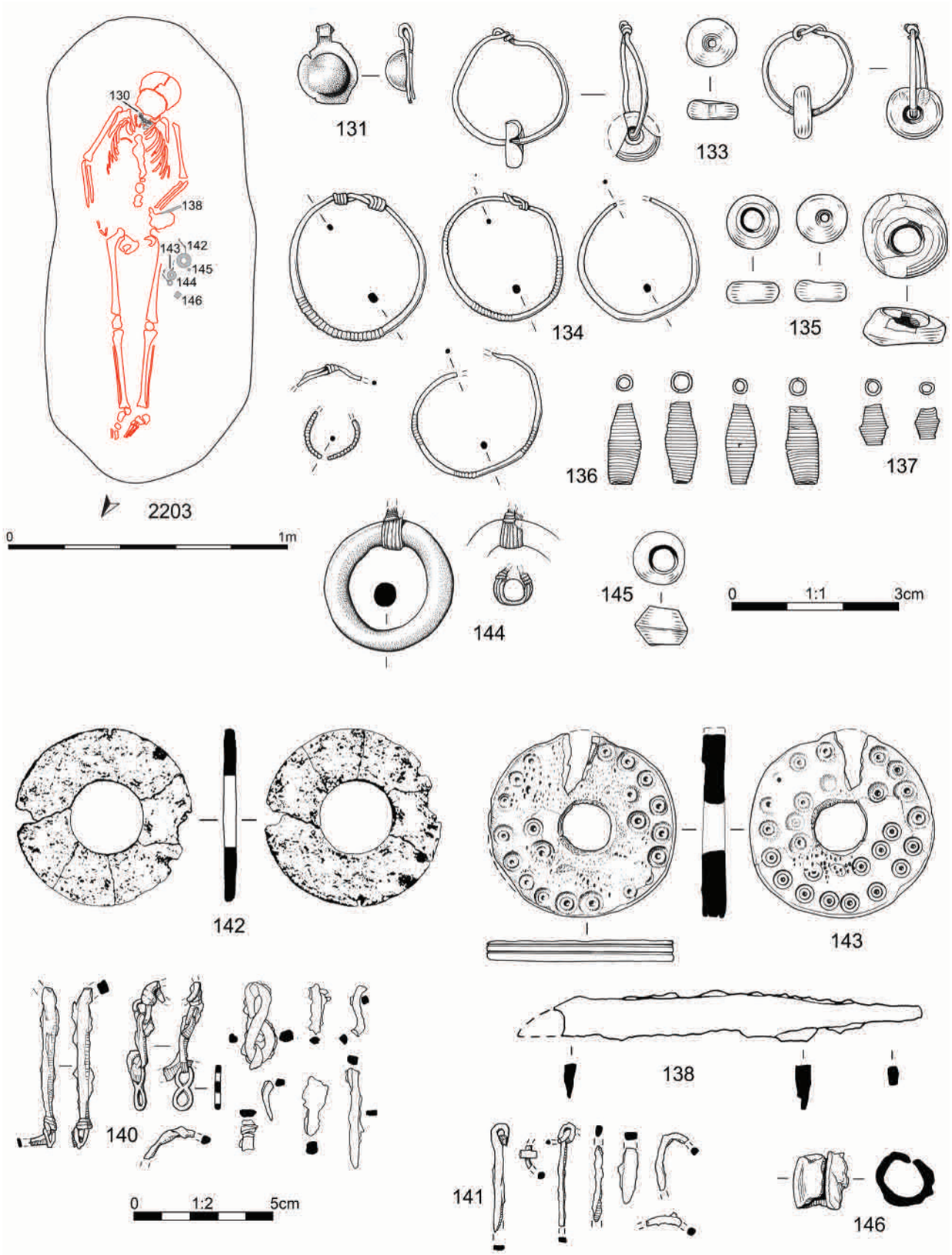

Figure 3.45 Grave 2203 *(1:20)*: *bulla* pendant **131**, slip-knot rings with beads **133**, slip-knot rings **134**, glass beads **135**, biconical wire beads **137**, ring **144**, biconical glass bead **145** *(1:1)*; knife **138**, chatelaine fragments **140** & **141**, chatelaine rings **142** & **143**, ferrule **146** *(1:2)*

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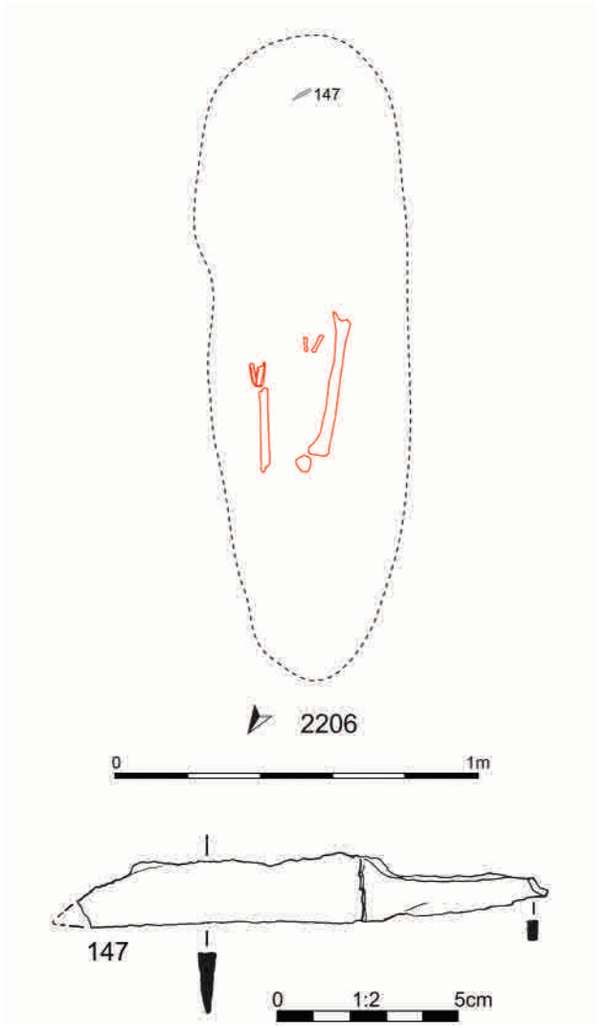

Figure 3.46 Grave 2206 *(1:20)*: knife **147** *(1:2).*

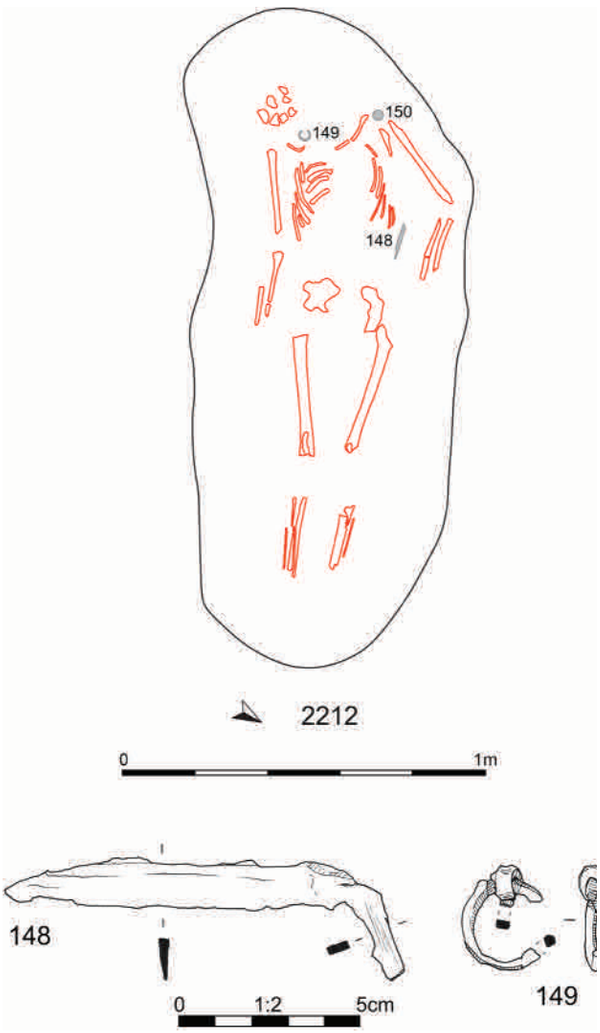

Figure 3.47 Grave 2212 *(1:20)*: knife **148**, ring **149** *(1:2).*

Scientific Dating: Calibrated radiocarbon date of AD575–660 at 95.4% probability from proximal right radius. SUERC-31584 (GU-22537).
Artefacts: A buckle (**151**) and knife (**152**) were found at the waist. Three potsherds (**153**) appear to have been placed deliberately beneath the upper body.

151 **Buckle plate,** iron, fragmentary. Probably Marzinzik II.24a. Bar and pin both partially present. The plate is roughly rectangular, 22 x 19mm, folded over the bar with a rounded cut out for the pin and fastened at the end with three dome-headed rivets. There are traces of mineralised leather belt between the plates which would have been 2-3mm thick and at least 19mm wide. Late 6th to early 8th century.

152 **Knife,** iron. Complete, with angled back, offset, square-section tang. Traces of leather sheath survive across the junction of the blade and tang, particularly on the reverse where there is part of an embossed pattern. Leather grain impressions also extend across most of the reverse of the blade. There is also a small piece of iron and bone adhering to the tang from another iron object, possibly **106**. There are no metallurgical features visible on the x-ray. L. 190mm, blade W. 20mm.

153 **Vessel,** ceramic (Fabric 4), three undecorated body sherds (total weight 25g), probably of late 6th to 7th-century date. NI.

Grave 2222
Fill 2220 / Inhumation 2221
D1 Fig. 3.49

Grave: Sub-rectangular with rounded ends. Very truncated, surviving dimensions L. 1.63m, W. 0.85m, D. 0.05m.
Orientation of body: SW-NE?
Stratigraphic relationships: The grave had cut pit 2207 and was cut in turn by a modern field drain.
Structures: None.
Age / Sex: Adolescent – Adult, est. range 13-50 years. Sex undetermined.
Body / Height: On left side. The arms may have been flexed across the chest with the legs tightly flexed. Height = und.
Surviving bone / Condition: Fragments of humeri, radii, ulnas, femur, tibias and fibulas. Condition poor.
Pathology: None.
Artefacts: A knife (**154**) was found approximately in the waist area. Seven undecorated Anglo-Saxon pottery

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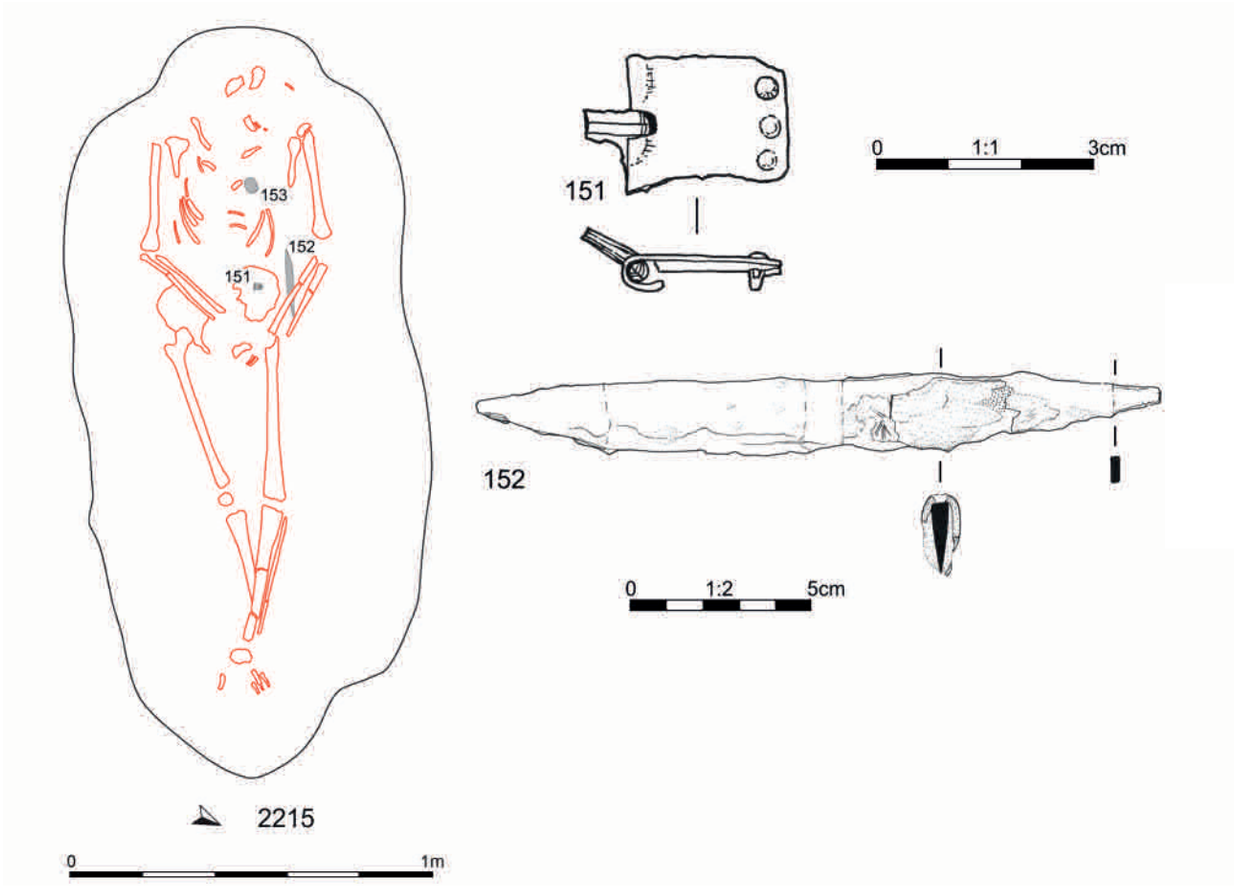

Figure 3.48 Grave 2215 *(1:20)*: buckle plate **151**, *(1:1)* knife **152** *(1:2).*

sherds (fabrics F1 & F4) were discovered beneath the right arm, but it was unclear if the pottery was associated with the inhumation or was within the upper part of the fill of Pit 2207.

154 **Knife,** iron. Near-complete. Angled back, tip and end of offset tang missing. Faint slag lines present at the tang on the x-ray. L. 85mm, blade W. 15mm.

Grave 2227
Fill 2225 / Inhumation 2226
C1 Fig. 3.50

Grave: Sub-rectangular with rounded ends. Dimensions L. 1.68m, W. 0.78m, D. 0.35m.
Orientation of body: NW-SE.
Stratigraphic relationships: None.
Structures: One of four burials (2212, 2215, 2227 and 2235) placed around four-post structure 2378.
Age / Sex: Adult, est. range 36-50 years. Female.
Body / Height: Supine. Arms slightly flexed at sides with legs extended. Height = und.
Surviving bone / Condition: Fragments of skull, clavicles, humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Condition fair.
Pathology: Hypoplasia of dental enamel.
Artefact: A knife (**155**) was found in the upper body area, to which it had probably been displaced.

155 **Knife,** iron. Complete. Slender blade with angled back, upward-pointing tip and offset tang. Slag lines faintly visible on the x-ray. Mineralised wood over the tang. L. 109mm, blade W. 17mm.

Grave 2232
Fill 2230 / Inhumation 2231
C2 Fig. 3.51

Grave: Sub-oval, but very truncated. L. 1.17m, W. 0.64m, D. 0.07m.
Orientation of Body: SW-NE.
Stratigraphic Relationships: None.
Structures: None.
Age / Sex: Adult, est. range 21-50 years. Sex undetermined.
Body / Height: On right side. Left arm flexed across body. Legs flexed to south-east. Height = und.
Surviving bone / Condition: Fragments of ribs. Parts of left ulna, right humerus, both femurs, tibias and fibulas. Condition fair.
Pathology: None.
Artefacts: None.

Grave 2235
Fill 2233 / Inhumation 2234
C2 Fig. 3.51

Grave: Sub-rectangular with rounded ends. L. 2.03m, W. 0.85m, D. 0.20m.
Orientation of body: NW-SE.
Stratigraphic relationships: A patch of charcoal-rich fill was located at the north-west end of the grave, but had no clear relationship with the grave cut or fill. It was tenta-

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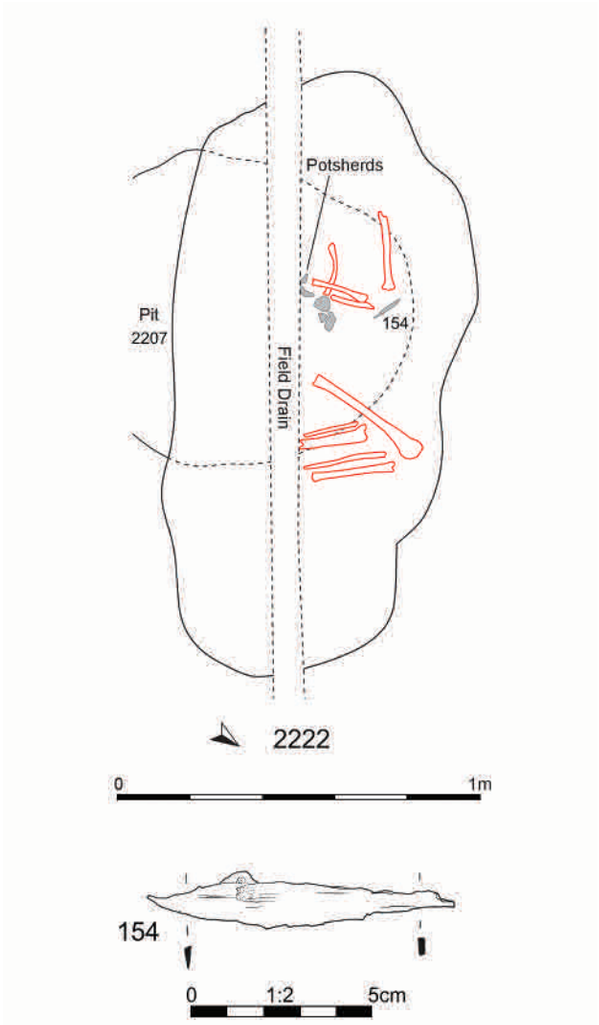

Figure 3.49 Grave 2222 *(1:20)*: knife **154** *(1:2).*

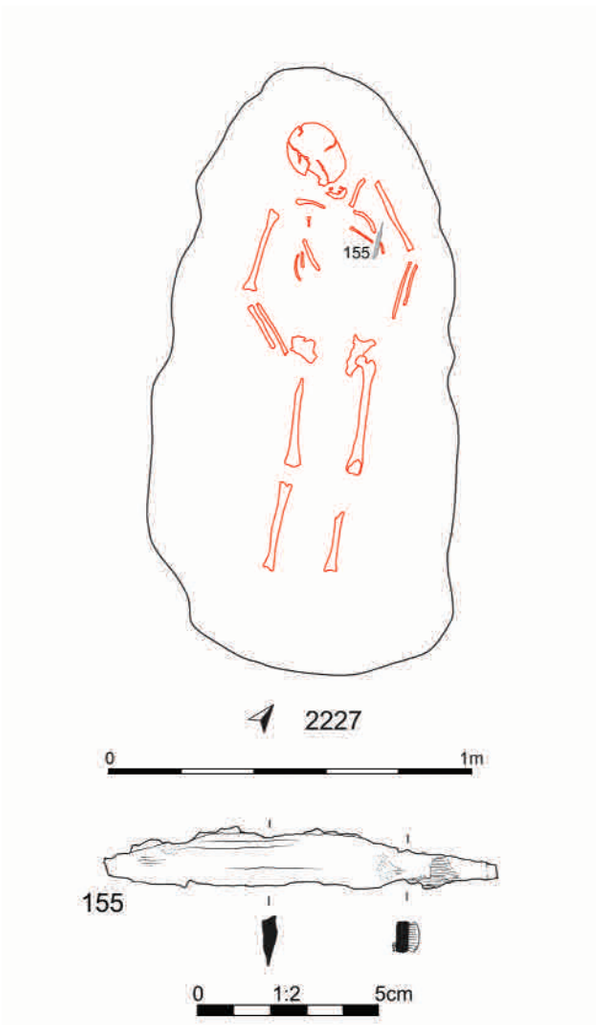

Figure 3.50 Grave 2227 *(1:20)*: knife **155** *(1:2).*

tively interpreted during excavation as the remains of a cremation, but subsequent assessment showed that no burnt bone was present.
Structures: One of four burials (2212, 2215, 2227 & 2235) placed around four-post structure 2378.
Age / Sex: Adult, est. range 36-50 years. Sex undetermined.
Body / Height: On right side with head facing north. Left and right arms flexed across torso. Legs sharply flexed to north east. Height = und.
Surviving bone / Condition: Fragments of skull and occasional teeth. Fragments of ribs, humeri, ulnas and radii. Parts of pelvis, femurs, tibias and fibulas. Some hand and foot bone. Condition fair.
Pathology: None.
Artefacts: None.

Grave 2239
Fill 2236 / Inhumation 2237
C2 Fig. 3.51

Grave: Sub-rectangular with wider eastern end. Dimensions L. 2.20m, W. 0.85–1.03m, D. 0.20m.
Orientation of body: W-E.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adolescent, est. range 13-20 years. Sex undetermined.
Body / Height: Supine. All limbs extended. Height = und.
Surviving bone / Condition: Skull, fragments of ribs and vertebrae. Clavicles, humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Some hand and foot bones. Condition fair.
Pathology: The existence of pathology was noted, but no details survive.
Artefacts: The articulated skeleton of a hare was found at the centre of the southern side of the grave, within the fill although not at the base of the grave cut. Thirteen non-joining rim and body sherds (Fabric F4), probably from a single high-necked, low-bulbous ceramic vessel of late 6th to 7th-century date, were distributed throughout the grave fill.

Grave 2243
Fill 2242
B1 Fig. 3.51

Grave: Sub-rectangular with rounded ends. Dimensions L. 1.63m, W. 0.76m, D. 0.15m.
Orientation of grave: N-S axis.
Stratigraphic relationships: None.
Structures: None.
Artefacts: None.

This was a possible grave cut, containing no inhumations.

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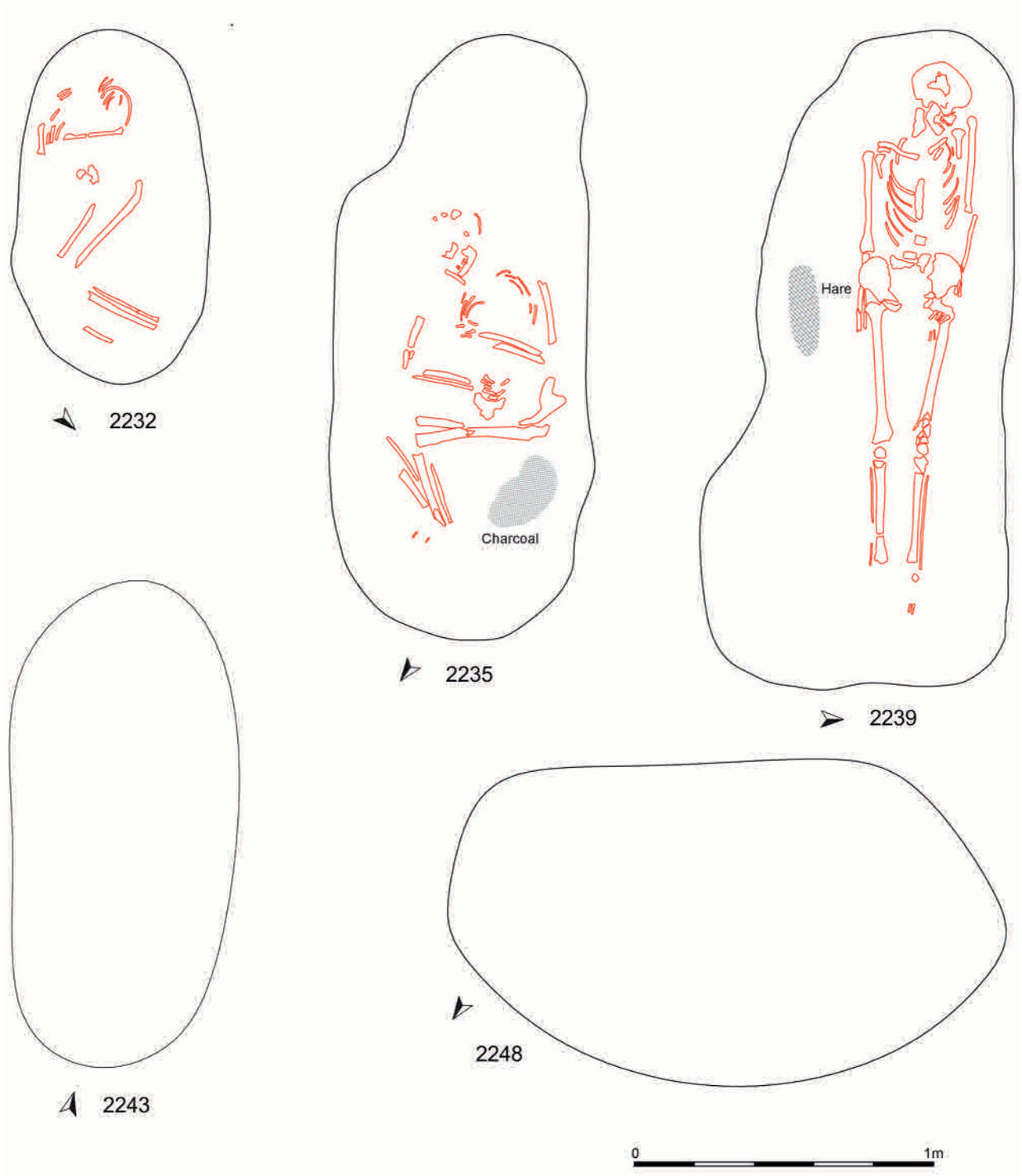

Figure 3.51 Graves 2232, 2235, 2239, 2243 & 2248 *(1:20).*

Grave 2248
Fill 2247
B2 Fig. 3.51

Grave: Oval. Dimensions L. 1.87m, W. 1.08m, D. 0.26m.
Orientation of grave: SW-NE axis.
Stratigraphic relationships: None.
Structures: None.
Artefacts: None.

This was a possible grave cut, containing no inhumations.

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Grave 2251
Fill 2249 / Inhumation 2250
B2 Fig. 3.52

Grave: Sub-rectangular with slightly rounded ends. Dimensions L. 1.59m, W. 0.86m, D. 0.27m
Orientation of body: SW-NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Sex undetermined.
Body / Height: Supine. Upper body slightly rotated with head facing south. Left arm flexed with hand on pelvis. All other limbs extended. Height = und.
Surviving bone / Condition: Fragments of skull, ribs and vertebrae. Clavicles, humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Some hand and foot bone. Condition poor.
Pathology: The existence of pathology was noted, but no details survive.
Artefacts: A knife (**156**) was found on the left side of the waist: to the right of the waist was vessel **157**. An unidentified copper-alloy object (**158**) was located next to the lower right leg.

156 Knife, iron. Incomplete. Angled back, tip and tang on level with the back mostly missing. Slag lines present on the x-ray and two apparent weld lines visible on the blade itself. The upper of these is parallel to the back and turns at the tang, suggesting the blade is fullered. L. 69mm, blade W. 15mm.

157 Vessel, ceramic (Fabric 2), near-complete undecorated accessory vessel with old damage to rim, which has a diameter of 86mm and is 75% complete. Uniform black fabric with light brown patches on the body, smoothed outer surface. Probably of late 6th to 7th-century date.

158 Object, copper-alloy. One arm, cut from sheet, waisted profile. L. 23mm, W. 3mm. Function undetermined.

Grave 2257
Fill 2255 / Inhumation 2256
D2 Fig. 3.53

Grave: Sub-oval, very truncated. Surviving dimensions L. 0.95m, W. 0.47m, D. 0.10m.
Orientation of body: SW–NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Uncertain, but perhaps interred on left side with legs flexed. Height = und.
Surviving bone / Condition: Fragments of ribs, one humerus, radius, ulna and pelvis. Also fragment of leg bones. Condition fair.
Pathology: None.
Artefacts: None.

Grave 2272
Fill 2269 / Inhumation 2270 & Inhumation 2271
C2 Fig. 3.54

Grave: Sub-rectangular with wider south west end. L. 1.67m, W. 1.08m, D. 0.30m.
Orientation of bodies: SW-NE.
Stratigraphic relationships: None.
Structures: None.
Artefact: A knife (**159**) was found near the upper body of Inhumation 2270.

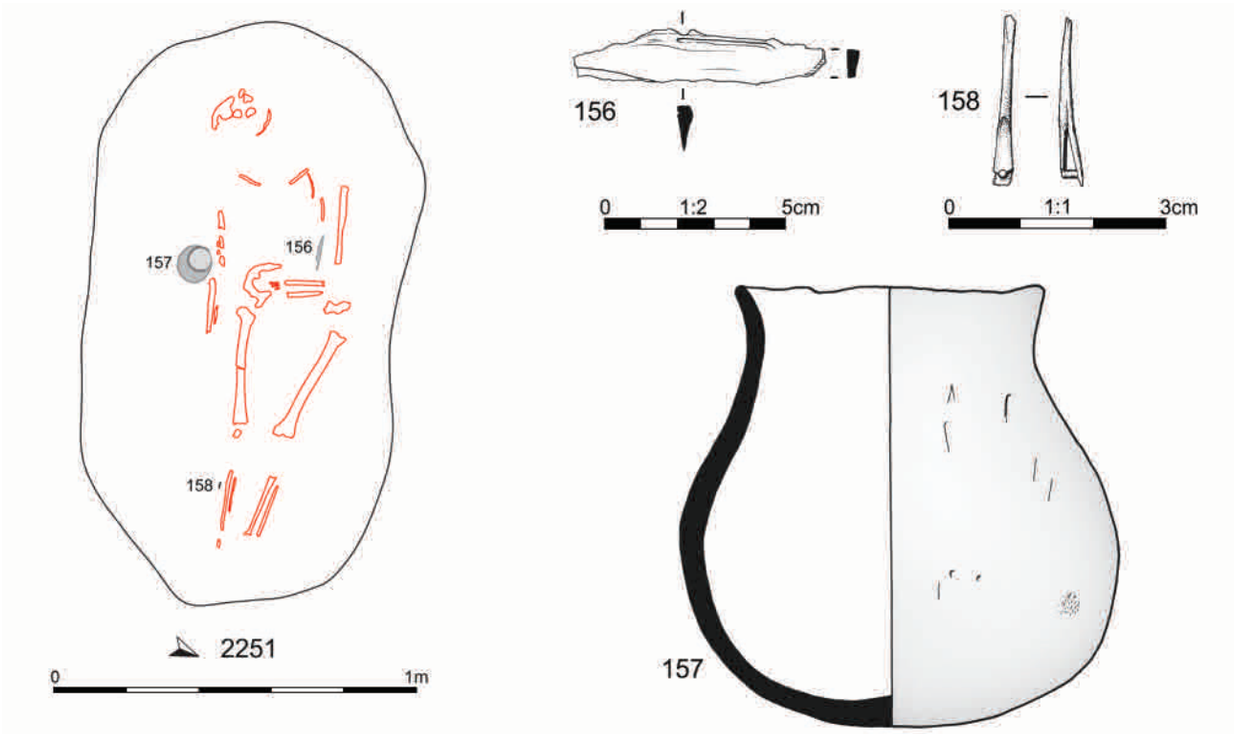

Figure 3.52 Grave 2251 *(1:20)*: knife **156**, pot **157** *(1:2)*; copper-alloy object **158** *(1:1)*.

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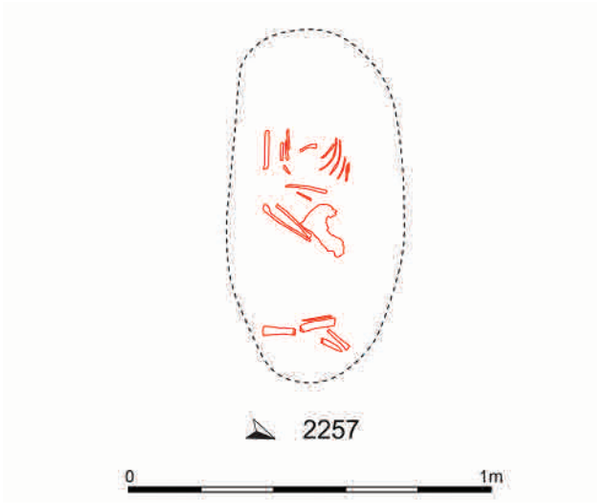

Figure 3.53 Grave 2257 *(1:20).*

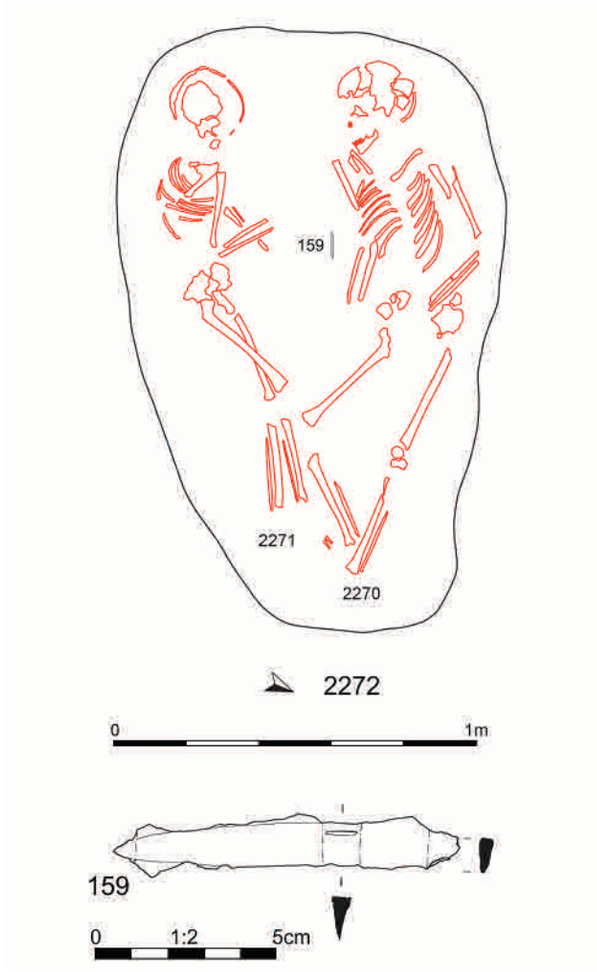

Figure 3.54 Grave 2272 *(1:20)*: knife **159** *(1:2).*

Inhumation 2270 (right)

Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Supine, with head facing SSE. Arms flexed with left forearm and hand over pelvis. Left leg extended, right leg flexed to south. Height = und.
Surviving bone / Condition: Fragments of skull, jaw and occasional teeth. Ribs, clavicles, humeri, ulnas and radii. Parts of pelvis, femurs, tibias and fibulas. Some foot bones. Condition fair.
Pathology: None.

Inhumation 2271 (left)

Age / Sex: Child, est. range 4-12 years.
Body / Height: On right side with head facing NNW. Left arm extended, right arm flexed with right forearm overlying left forearm. Left leg extended, right leg slightly flexed, overlying and in front of left leg. Height = und.
Surviving bone / Condition: Fragments of skull, scapula, ribs, humeri, ulnas and radii. Parts of pelvis, femurs, tibias and fibulas. Condition fair.
Pathology: None.

159 **Knife,** iron. Slender, sloped blade with offset tang absent. A narrow, short fullered line is present on the area of cleaned blade parallel with the blade back. There are no metallurgical features visible on the x-ray. L. 96mm, blade W. 14mm.

Grave 2277
Fill 2275 / Inhumation 2276
E2 Fig. 3.55

Grave: Sub-rectangular with rounded NE end. Dimensions L. 1.71m, W. 0.59m, D. 0.12m.
Orientation of body: SW-NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Female.
Body / Height: Supine. Head facing south. Right arm tightly flexed with hand upper chest. All other limbs extended. Height = 151-159cm.
Surviving bone / Condition: Fragments of skull, ribs and vertebrae. Clavicles, humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Some hand and foot bones. Condition fair.
Pathology: Healing cribra orbitalia in both orbits. Pathology also noted on the pubic bone, but no details survive.
Artefacts: A comb (**160**) was found to the right of the inhumation. Ring-headed pin **161** was also located on the right side, but closer to the body.

160 **Comb,** antler. Double-sided composite comb, incomplete, comprising an end-plate, three tooth-plates and about half of the two connecting plates, secured with six iron rivets. Most teeth are missing. The connecting plates are tapered with squared terminals, plano-convex in section and are decorated with three rows of ring-and-dot decoration, made prior to cutting the teeth. The square end plate has rounded corners and is also decorated with ring-and-dot motifs. The teeth are of a single size, spaced at 4 per cm, on line with the ends of the connecting plates. Surviving L. 113mm, surviving W. 48mm. 7th–8th century?

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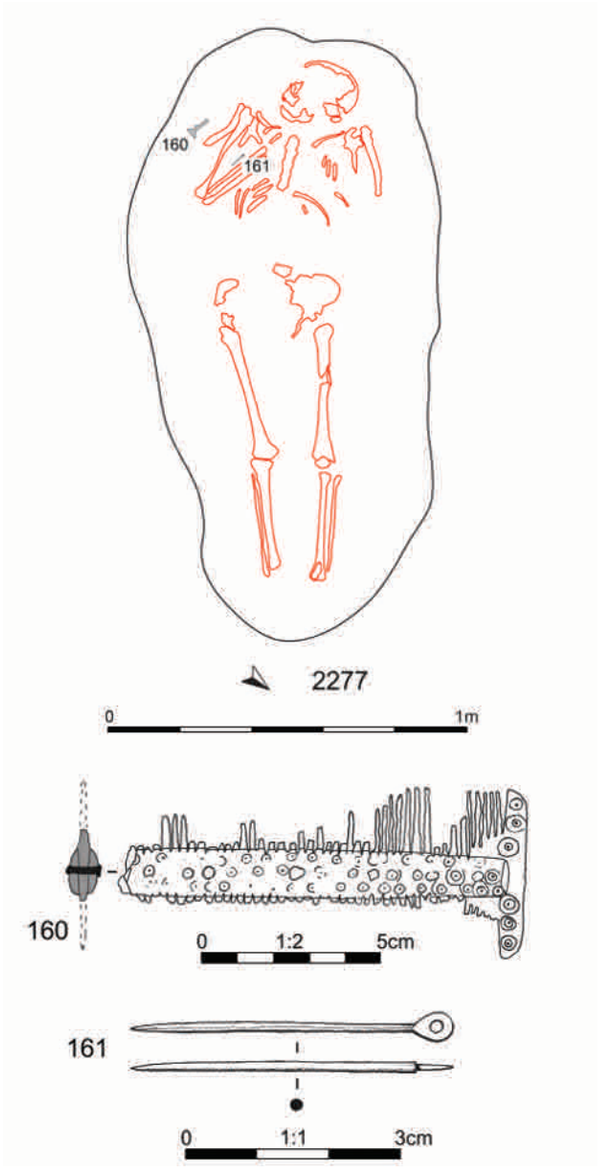

Figure 3.55 Grave 2277 *(1:20)*: comb **160** *(1:2);* ring-headed pin **161** *(1:1).*

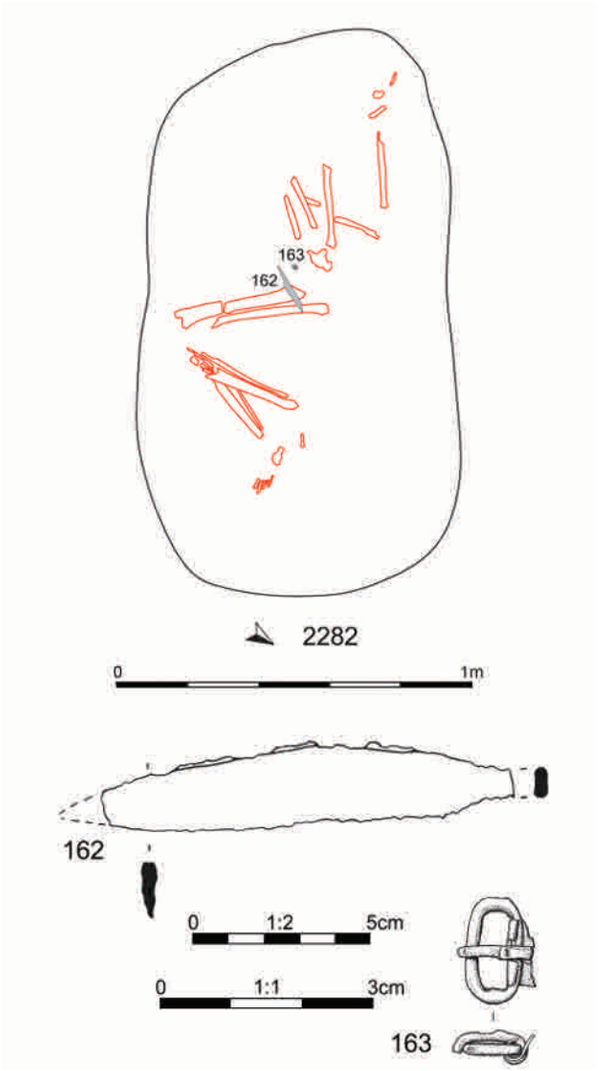

Figure 3.56 Grave 2282 *(1:20)*: knife **162** *(1:2);* buckle **163** *(1:1).*

161 Ring-headed pin, copper-alloy. Flared, flattened head with drilled perforation and a round-section shank. Lateral cracks indicate that it has been hammered from a sheet. L. 45mm, head 4mm across, shaft dia. 1.5mm. 'Later-phase' migration period, 6th-7th century.

Grave 2282
Fill 2280 / Inhumation 2281
B2 Fig. 3.56

Grave: Sub-rectangular with slightly rounded ends. Truncated, surviving dimensions L. 1.57m, W. 0.89m, D. 0.10m.
Orientation of body: SW-NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Sex undetermined.
Body / Height: On right side. Arms flexed. Legs flexed. Height = und.
Surviving bone / Condition: Fragments of skull, humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Some hand and foot bones. Condition fair.
Pathology: None.
Artefacts: A knife (**162**) and buckle (**163**) were found at the waist.

162 Knife, iron. Blade with long curved back, point missing, with offset, incomplete tang. No metallurgical features visible on the x-ray. L. 116mm, blade W. 22mm.

163 Buckle and plate, copper-alloy. Fragmentary. Possibly Marzinzik type II.24a (Marzinzik 2003, 453–9). Oval buckle of round section, L. 15mm, W. 8mm, uncertain whether cast or of drawn rod. Slightly ridged pin and part of undecorated folded plate. Late 6th to early 8th century.

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Grave 2285
Fill 2283 / Inhumation 2284
A2 Fig. 3.57

Grave: Sub-rectangular with rounded ends. Very truncated. L. 1.87m, W. 0.64m, D. 0.06m.
Orientation of body: W-E.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adolescent, est. range 13-20 years. Sex undetermined.
Body / Height: Supine. Left arm extended, right arm slightly flexed with hand next to right femur. Legs extended. Height = und.
Surviving bone / Condition: Fragments of ribs, humeri, ulnas and radii. Parts of pelvis, femurs and tibias. Some bones from right hand. Condition fair.
Pathology: None.
Artefacts: None.

Grave 2290
Fill 2288 / Inhumation 2289
A3 Fig. 3.57

Grave: Sub-rectangular with rounded ends. Very truncated. Surviving dimensions L. 1.58m, W. 0.56m, D. 0.06m.
Orientation of body: NW-SE.
Stratigraphic relationships: The grave had cut the fill of undated ditch 2300.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Supine. Legs extended. Height = und.
Surviving bone / Condition: Fragments of rib and pelvis. Femurs and parts of tibias and fibulas. Condition fair.
Pathology: None.
Artefacts: None.

Grave 2309
Fill 2307 / Inhumation 2308
E1 Fig. 3.58

Grave: Sub-rectangular. L. 1.69m, W. 0.56m, D. 0.34m.
Orientation of body: SW-NE.
Stratigraphic relationships: The east end of the grave was cut by a field drain, which had truncated the lower legs.
Structures: None.
Age / Sex: Adult, est. range 21-35 years. Female.
Body / Height: Supine with head facing SSE. Arms extended with left hand over left femur. Legs extended. Two (thoracic?) vertebrae displaced toward left humerus. Height = 161-169cm.
Surviving bone / Condition: Fragments of skull, ribs and pelvis. Spine, humeri, radii and ulnas. Femurs and parts of right tibia and fibula. Some hand bones. Condition fair.
Pathology: Hypoplasia of dental enamel. Osteoarthritis in lumbar vertebra L5 (superior) and sacrum S1 (superior).
Artefact: A fragmentary knife (**164**) was found at the waist.

164 Knife, iron. Only two small fragments of the blade surviving. Overall L. 49mm, blade W. 12mm.

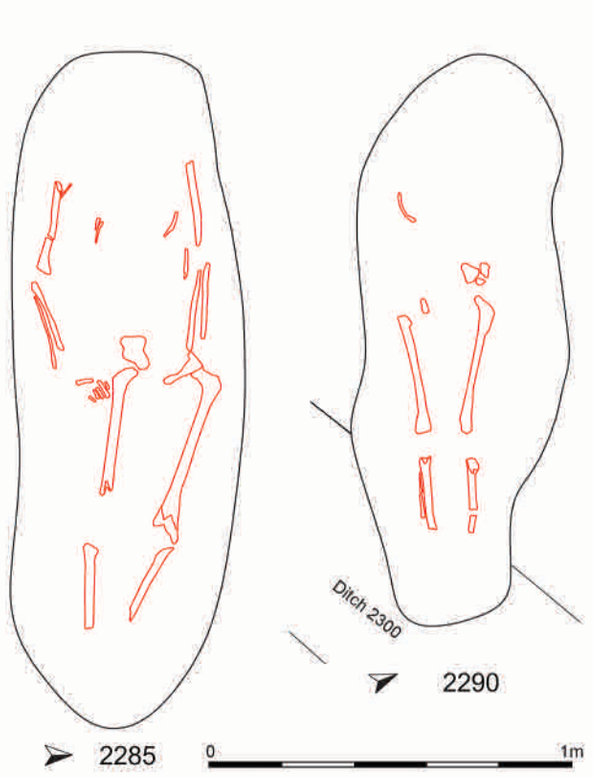

Figure 3.57 Graves 2285 & 2290 *(1:20).*

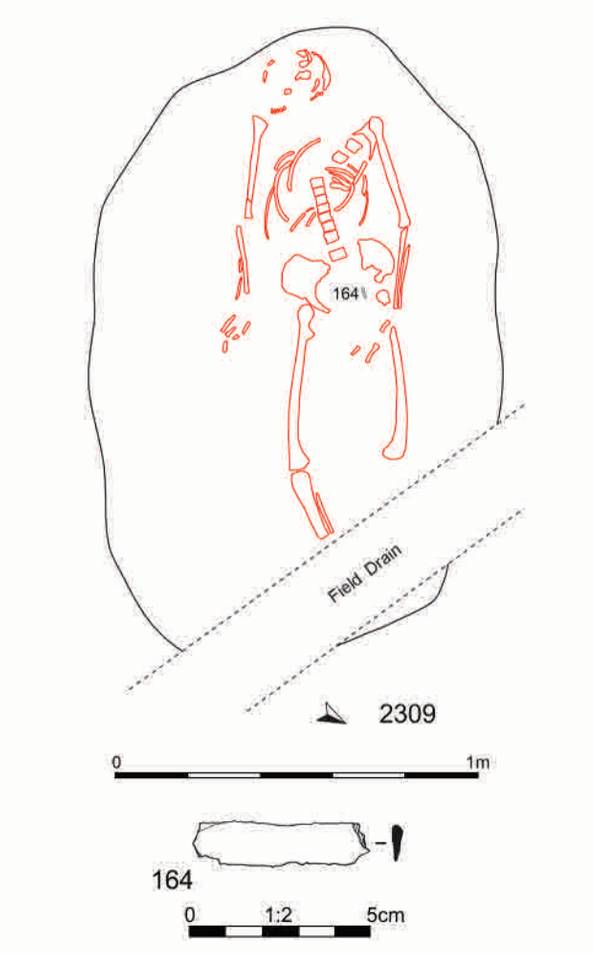

Figure 3.58 Grave 2309 *(1:20)*: knife **164** *(1:2).*

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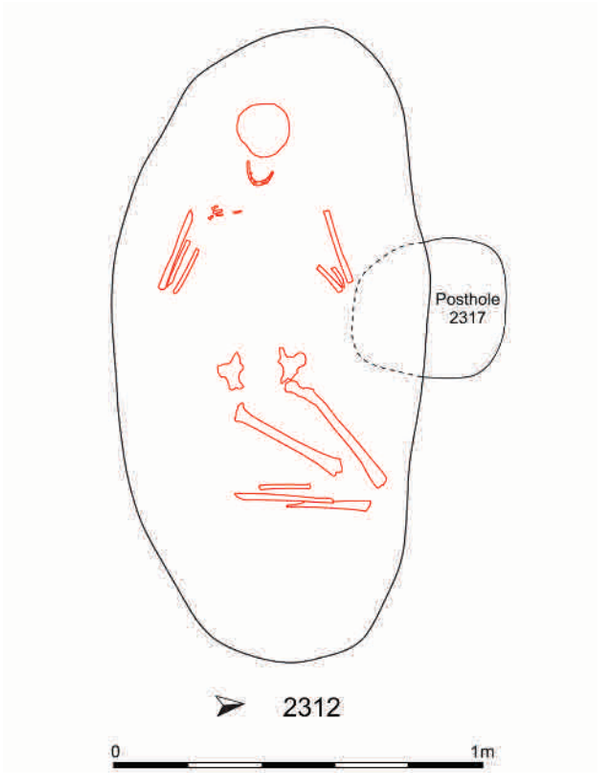

Figure 3.59 Grave 2312 *(1:20).*

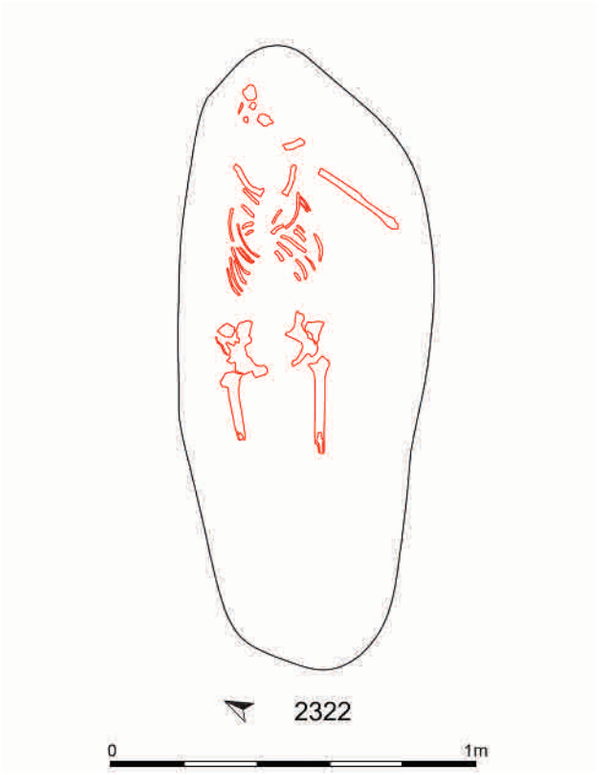

Figure 3.60 Grave 2322 *(1:20).*

Grave 2312
Fill 2310 / Inhumation 2311
B2 Fig. 3.59

Grave: Sub-rectangular with rounded ends. L. 1.69m, W. 0.56m, D. 0.34m.
Orientation of body: W-E.
Stratigraphic relationships: The grave had cut a possible posthole (Fill 2137).
Structures: None.
Age / Sex: Adult, est. range 21-50 years. Female.
Body / Height: Supine with head facing SSE. Arms extended with left hand over left femur. Legs extended. Two (thoracic?) vertebrae displaced toward left humerus. Height = und.
Surviving bone / Condition: Fragments of skull, ribs and pelvis. Spine, humeri, radii and ulnas. Femurs and parts of left tibia and fibulas. Some hand bones. Condition poor.
Pathology: None.
Artefacts: None.

Grave 2322
Fill 2320 / Inhumation 2321
A2 Fig. 3.60

Grave: Sub-rectangular with slightly rounded ends. Very truncated, surviving dimensions L. 1.72m, W. 0.70m, D. 0.07m.
Orientation of body: NE-SW.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Sex undetermined.
Body / Height: Supine. Legs extended. Left humerus splayed out from body, possibly disturbed. Height = und.
Surviving bone / Condition: Fragments of skull, ribs, Left humerus, pelvis and femurs. Condition fair. Copper-alloy staining of lateral superior end of left clavicle.
Pathology: None.
Artefacts: None.

Grave 2344
Fill 2342 / Inhumation 2343
A3 Fig. 3.61

Grave: Sub-rectangular, with rounded ends. Truncated, surviving dimensions L. 1.58m, W. 0.56m, D. 0.10m.
Orientation of body: SW-NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Supine. Legs slightly flexed to north. Right arm flexed with hand pelvis. Left arm flexed with hand on right side of chest. Height = und.
Surviving bone / Condition: Fragments of ribs and pelvis. Humeri, radii, ulnas, femurs, tibias and fibulas. Some hand bones. Condition fair.
Pathology: None.
Artefact: A knife (**165**) was found at the waist.

165 **Knife,** iron. Blade has straight cutting edge, curved back, with offset tang. Leather impressions on blade, wood impressions on tang. Some of tang missing. Overall L. 160mm, blade W. 22mm.

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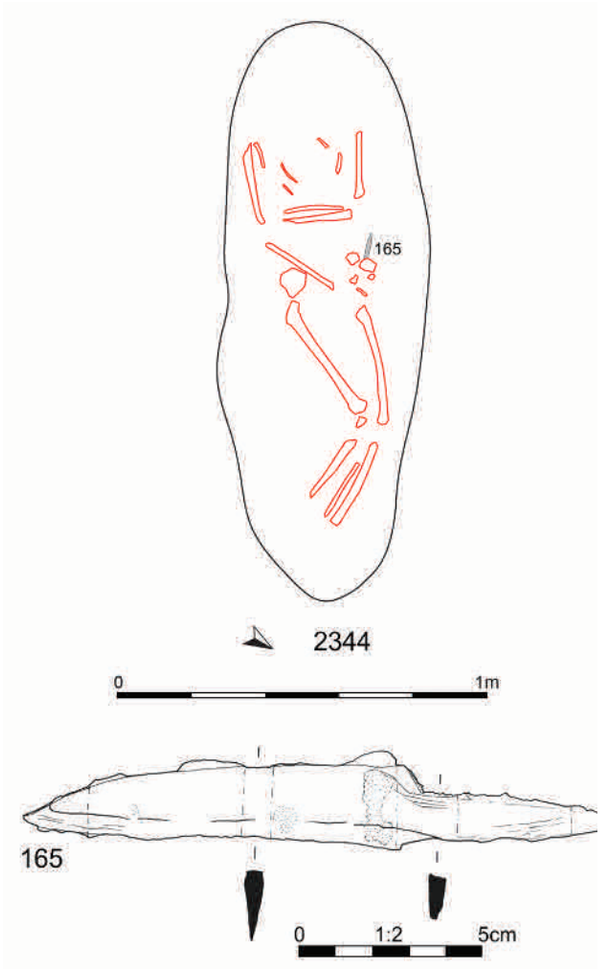

Figure 3.61 Grave 2344 *(1:20)*: knife **165** *(1:2).*

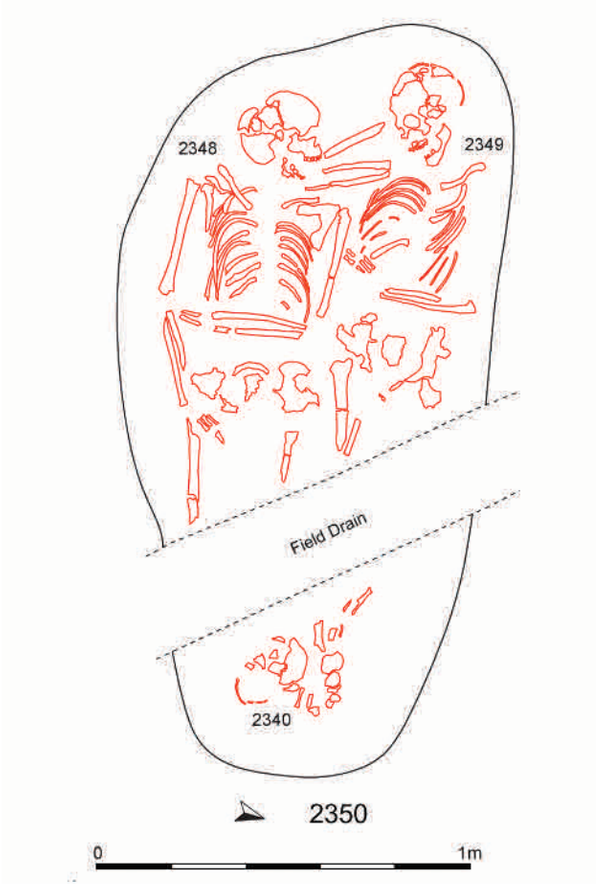

Figure 3.62 Grave 2350 *(1:20).*

Grave 2350
Fill 2347 / Inhumation 2348, Inhumation 2349 & Charnel 2340
A3 Fig. 3.62

Grave: Sub-rectangular with slightly rounded ends. Truncated, surviving dimensions L. 2.00m, W. 1.01m, D. 0.22m.
Orientation of bodies: W-E.
Stratigraphic relationships: Cut by modern field drain.
Structures: None.
Artefacts: None.

Inhumation 2348 (left)

Age / Sex: Adult, est. range 36-50 years. Male.
Body / Height: Supine. Head facing north. Left arm flexed with hand on right side of waist. Right arm slightly flexed with hand on right femur. Legs extended. Height = 167-177cm.
Surviving bone / Condition: Fragments of skull, vertebrae, pelvis and femurs. Clavicles, ribs, humeri, radii and ulnas. Some hand bone. Condition good.
Pathology: None.
Scientific Dating: Calibrated radiocarbon date of AD610–710 at 91.6 % probability. SUERC-31585 (GU-22538).

Inhumation 2349 (right)

Age / Sex: Adult, est. range 36-50 years. Male.
Body / Height: Supine. Head facing south. Left arm flexed with hand on waist. Right arm tightly flexed with elbow resting on left shoulder of Inhumation 2348. Legs extended with feet in close proximity to Charnel 2340. Height = 167-177cm.
Surviving bone / Condition: Fragments of skull and femurs. Clavicles, humeri, radii, ulnas, pelvis. Fragments of tibias and fibulas present to the east of the cut of the field drain. Some hand and foot bone. Condition fair.
Pathology: None.

Charnel 2340

Surviving bone / Condition: Only skull fragments present.
Pathology: None.

Grave 2355
Fill 2325 / Inhumation 2354
E4 Fig. 3.63

Grave: Sub-rectangular with rounded ends. Truncated, surviving dimensions L. 1.75m, W. 0.65m, D. 0.12m.
Orientation of body: NW-SE.
Stratigraphic relationships: None.
Structures: None.

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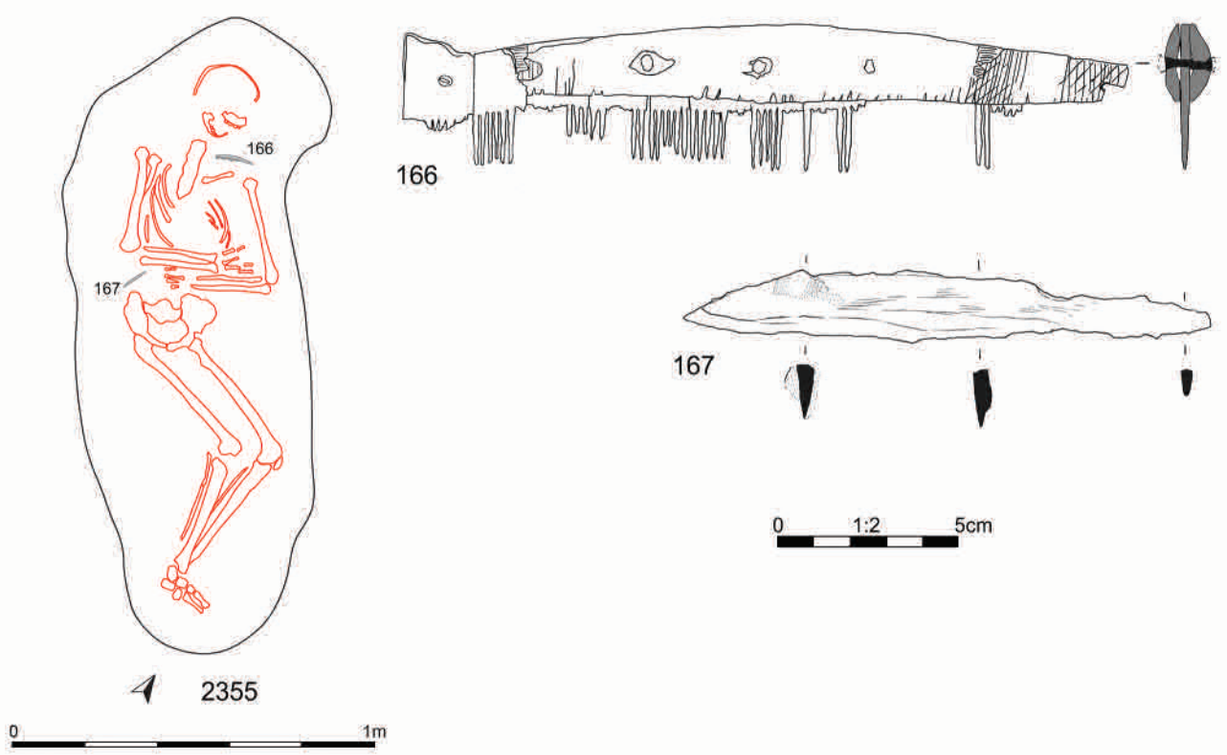

Figure 3.63 Grave 2355 *(1:20)*: comb **166**, knife **167** *(1:2)*

Age / Sex: Adult, est. range 21-35 years. Male.
Body / Height: On left side with head facing east. Arms flexed across torso with hands at either side of waist. Legs flexed. Height = 163-171cm.
Surviving bone / Condition: Fragments of skull and vertebrae. Clavicles, humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Some hand and foot bones. Condition good.
Pathology: None.
Artefacts: Comb **166** was found by the left shoulder. Knife **167** was located to the right of the waist.

166 **Comb,** antler. Single-sided, "hump-backed" comb. Incomplete, comprising fragment of one end plate, parts of nine tooth-plates (2 more missing) and parts of both connecting plates, secured with 7 iron rivets. About half the teeth are missing. The connecting plates of bone are tapered from either side of the central point with squared terminals, plano-convex in section and are decorated with two panels of incised vertical and transverse lines (which extends across one of the rivet heads). The end plate projects upwards from the connecting plates and has a double curved-shape. One remaining ring-and-dot motif survives on one face. The teeth are of a single size, spaced at 5 per cm. L. 202mm, W. c. 40mm. Middle Saxon, 7th–8th century?

167 **Knife,** iron. Complete, with angled back and offset tang. Some very fragmentary mineralised leather traces towards the end of the blade. Yellowish colouration at the tang may be the remains of a horn handle. Slag lines apparent on the x-ray. L. 145mm, blade W. 18mm.

Grave 2360
Fill 2358 / Inhumation 2359
E4 Figs 3.64 & 3.65

Grave: Sub-rectangular with rounded ends. L. 1.80m, W. 0.77m, D. 0.35m.
Orientation of Body: SE–NW.
Stratigraphic Relationships: None.
Structures: None.
Age / Sex: Female, est. range 36-50 years.
Body / Height: On left side. Arms flexed with hands in front of skull. Legs flexed to southwest. Height = 164-171cm.
Surviving bone / Condition: Skull, humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Fragments of ribs and spine. Some hand bones. Condition good.
Pathology: The existence of pathology was noted, but no details survive.
Artefacts: At the head of Inhumation 2359, excavation revealed a distinctly darker patch of grave fill. This appears to have represented the decayed remains of a wooden box with iron fittings (**168**), placed within the grave. A number of artefacts found in the same general area of the grave may have originally been on top of or within the box, including a padlock (**172**), an unidentified iron object (**173**), a spearhead (**174**) and ferrule (**176**). By the neck of the deceased were the components of necklace **178** (**179-183**), and by the elbows the contents of a possible bag (**184**). At the waist was a spoon (**175**), an antler disc (**177**), the component parts of chatelaine **189** (**190, 191**) and a knife (**192**).

168 **Box & Fittings.** Fragments from at least eight corner mounts (**169**) were recovered, similar to those from Grave 2168 (**97-100**). Traces of wood and thin embossed leather were noted on the inside faces of the fittings, the embossing comprising a series of

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indistinct vertical and diagonal lines, with crosses at intervals. There are also two fragments of a possible iron strap hinge with copper-alloy rivets (**170, 171**). These comprise a rectangular plate with rounded ends, 64 x 16mm, waisted and tapering towards one end and flared at the other. There are two nails for fixing at one end and a broken link at the other for articulation. Based on the excavated evidence, the box itself measured about 280 x 220mm externally. Its height was more difficult to determine, but as all the external fittings appear to be present it must have fitted within the grave, which has a surviving depth of 350mm.

172 **Barrel padlock**, copper-alloy and iron. The lock mechanism is made from iron; the external loop is incomplete. The two arms each have two springs and there seems to be a strip of metal wedged between them. Not part of a key: possibly inserted to prevent it being opened. The barrel cylinder casing, bolt collar and plate are manufactured from pieces of copper-alloy sheet, soldered together. The x-ray shows regular rows of dots on the sheets which are not apparent on the surfaces of the metal and may represent hammer-marks from manufacturing the sheet itself. The lock plate is absent. L. 36mm, W. 19mm, 16mm dia.

173 **Object**, iron. Rectangular-section shaft, bifurcating at one end to form a 'y' shape. L. 98mm, shaft W. 10mm. Function unknown. Traces of poorly preserved textile, a spun 2/1 twill, are present on the object.

174 **Spearhead**, iron. Swanton Type C1. The leaf-shaped iron blade is blunt near the neck. The point is damaged with part folded tightly back against the body of the blade, possibly deliberately. The broadly cleft socket comprises slightly more than a third of the total length, and has a single rivet hole for fixing the shaft. Surviving overall L. 177mm, blade L. 94mm, W. 24mm, socket dia. 18mm. 7th century. The location of the spearhead within the grave suggests that it may have been placed on top of the box and that no shaft was present. However, it is possible that it had been disturbed by relatively recent agricultural activity.

175 **Spoon,** iron. Fragment, comprising deep oval/pear-shaped bowl tapering to an incomplete squared shank. A small piece of grass or chaff is adhered in the corrosion product at the end of the bowl. Overall L. 61mm, bowl W. 19mm.

176 **Ferrule?** copper-alloy. Strip of copper-alloy bent into a crude circle with one end slightly projecting. A single rivet hole is present. L. c.100mm, int. dia. c.20mm.

177 **Disc,** antler. Fragment of a slightly domed disc 70mm dia. and up to 4.5mm thick, made from a transverse section of antler burr which had been almost completely smoothed. Based on the surviving fragment there is no evidence – and little room – for a central perforation (there is a small off-centre perforation), nor are there any around the edge of the object. Both surfaces are decorated with concentric rings of ring-and-dot motifs, up to four on the upper surface, and only two on the less well-preserved lower surface. The object is heavily worn, suggesting a long period of use.

There has been some debate regarding the function of this object. It was originally thought to be a spacer disc from a chatelaine, similar to (**5**). While superficially similar, the absence of a large central hole throws doubt on this interpretation. Alternatively it has been identified as an amulet (MacGregor 1985, 107), of a type commonly found in 6th to 7th-century female burials, for example at Wootton Fields, Northants, radiocarbon-dated to AD600–670 and Oundle, Northants, radiocarbon-dated to AD540–640 (Chapman *et al* 2005, 109).

178 **Necklace**, consisting of slip-knot rings and a range of bead types. Six silver slip-knot rings were found (**180**), five complete or near complete and one fragmentary, all between 25-18mm dia. These were associated with three annular beads of blue glass (**181**). The larger, dia. 16mm, is plain and was originally encircled by a 5mm-wide silver strip (**179**: now separated. For illustration of this bead, see Fig. 5.2) with serrated edges and dog-tooth and punched dot decoration; the smaller examples, 17 and 13mm dia., have a zig-zag band of inlaid white glass around the circumference. In addition, Two shell beads were recovered (**182**), one rectangular, one semi-cylindrical, respectively 12mm and 8mm in length. The larger example is made from cowrie shell. The assemblage also included two pear-shaped amethyst beads (**183**), L. of both 13mm, thickness 6-8mm.

184 **Bag and contents (?)**. By the elbows, south of body, was a small group of finds thought from their close proximity to have been in a bag. Five fragments of mineralised leather (**185**) were present. The largest (24 x 16mm) is from a thick belt or strap: three poorly preserved, indeterminate fragments may also be part of the same piece. A slip-knot ring (**186**) of copper-alloy – the only one found on the site in that material – has a dia. of c.26mm with two parallel strands of s-spun thread linen fabric surviving on one side. This was found in association with two strap-slides of copper-alloy (**187**). Each comprises a semi-circular section bar, L.c.14mm, with ridged decoration at either end, terminating in eyes for rivets, one of which remains in place in each object. The other two rivets were found separately. A fragment of mineralised leather remains attached to one bar. There were also elements of a copper-alloy toilet set (**188**), comprising an ear scoop and tweezers. Both are 22mm in length. A z-spun linen thread is preserved at the perforated end of the ear scoop.

189 **Chatelaine,** from which several sections of iron chain were recovered. **190** comprised three fragments comprising parts of six S-shaped links. The largest fragment consists of one complete link

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with parts of two further links at either end. One surface is coated with mineralised textile remains. In the central area there is a small patch of fabric, a 2/2 twill (see **147** for more detail). At the lower end a short strip of braid underlies a small piece of the aforementioned fabric. This is a 16 x 18 2/1 linen twill with z-spun warp threads which are over double the thickness of the weft threads. The other side of the piece is covered with diagonal striations which seem to be the negative impression of a wide-weave woollen tabby textile. **191** comprises two conjoining fragments forming a curve of eight connected s-shaped links. The piece is heavily corroded and its construction is only largely discernible from the x-ray. L. 82mm. The looped terminal is made of square-section rod, W. 8mm, in the shape of the letter P. L. 62mm. Both surfaces of **191** retain patches of two different textiles. One is a 2/2 twill with 10 x 12 threads per cm left as an impression. An apparent selvedge or fold in a mineralised section of the fabric occurs on the object. A 20mm length, 3mm wide and 1.5mm thick, of braid or cord is also present. There is a slight twist in the weave suggesting a plied cord but it is not well enough preserved to be certain. The constituent threads are z-spun and 1mm thick.

192 **Knife,** iron. Parallel-sided blade with tapering point and triangular section. Straight shoulder with tang on level with the back of the blade with slight neck on the lower side, rectangular section. Lines along the top of the blade may be a junction between differential iron/steel but could also be post-depositional cracking. L. 152mm, blade W. 25mm.

Grave 2365
Fill 2363 / Inhumation 2364
E4 Fig. 3.66

Grave: Sub-rectangular with rounded ends. Dimensions L. 1.74m, W. 0.84m, D. 0.22m.
Orientation of body: SW-NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Male.
Body / Height: Supine. Arms flexed across torso with hands over pelvis. Legs extended. Height = 169-177cm.
Surviving bone / Condition: Skull, clavicles, scapula, vertebrae, humeri, radii, ulnas, pelvis, femurs, tibias and fibulas. Some hand and foot bones. Condition good.
Pathology: Os acromiale affecting right scapula. Osteoarthritis present in lumbar vertebrae L3-L5.
Artefacts: A pottery vessel (**193**) was found to the right of the upper body and a knife (**194**) was present at the waist.

193 **Vessel,** ceramic (Fabric F3), undecorated. Black fabric with smoothed surfaces. Near-complete accessory vessel with old damage to rim and a large crack down one side, probably due to soil pressure whilst buried. Rim dia. 93mm: the rim is 90% complete. Late 6th to 7th century.

194 **Knife,** iron. Complete, with angled back. Welded steel edge with piled construction shown on x-ray. Triangular-section blade and square-section tang. L. 138mm, blade W. 20mm. 7th century (Gale 1989).

Grave 2381
Fill 2379 / Inhumation 2380
E2 Fig. 3.67

Grave: Sub-rectangular with slightly rounded eastern end. Very truncated, surviving dimensions L. 1.13m, W. 0.58m, D. 0.07m.
Orientation of Body: SW-NE.
Stratigraphic Relationships: None.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: On left side. Right arm flexed. Legs flexed to the NW. Height = und.
Surviving bone / Condition: Fragments of humeri, radii, ulnas, femurs and one tibia. Condition poor.
Pathology: None.
Artefacts: A knife (**195**) and buckle (**196**) were found in the approximate waist area of the burial.

195 **Knife,** iron. Fragmentary: the tang is slightly shouldered from the blade and is covered with mineralised wood traces. X-rays do not show any differential metals. Max. surviving L. 90mm, blade W. 14mm. Centre of grave.

196 **Buckle,** iron. Marzinzik II.18a. Oval loop, tongue and narrow plate, fragmentary. Remains of the mineralised leather strap, W. 9mm, survive folded around the buckle. L. 16mm, W. 12mm. late 6th to early 8th century. Centre of grave.

Grave 2384
Fill 2382 / Inhumation 2383
A4 Fig. 3.68

Grave: Sub-rectangular, with rounded ends. Truncated, surviving dimensions L. 1.31m, W. 0.58m, D. 0.12m.
Orientation of body: NW-SE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Child, est. range 4-12 years. Sex undetermined.
Body / Height: Supine. Head facing south. Left arm flexed with hand on torso. Right arm slightly flexed with hand on pelvis. Legs extended. Height = und.
Surviving bone / Condition: Fragments of skull, scapula, humeri, radii, ulnas, pelvis, femurs, tibia and fibula. Some hand bones. Condition poor.
Pathology: None.
Artefacts: None.

Grave 2387
Fill 2385 / Inhumation 2386
A4 Fig. 3.69

Grave: Sub-rectangular, with rounded ends. Dimensions L. 1.66m, W. 0.78m, D. 0.20m.
Orientation of body: NW-SE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adolescent, est. range 13-20 years. Sex undetermined.
Body / Height: Prone. Arms tightly flexed. Legs slightly

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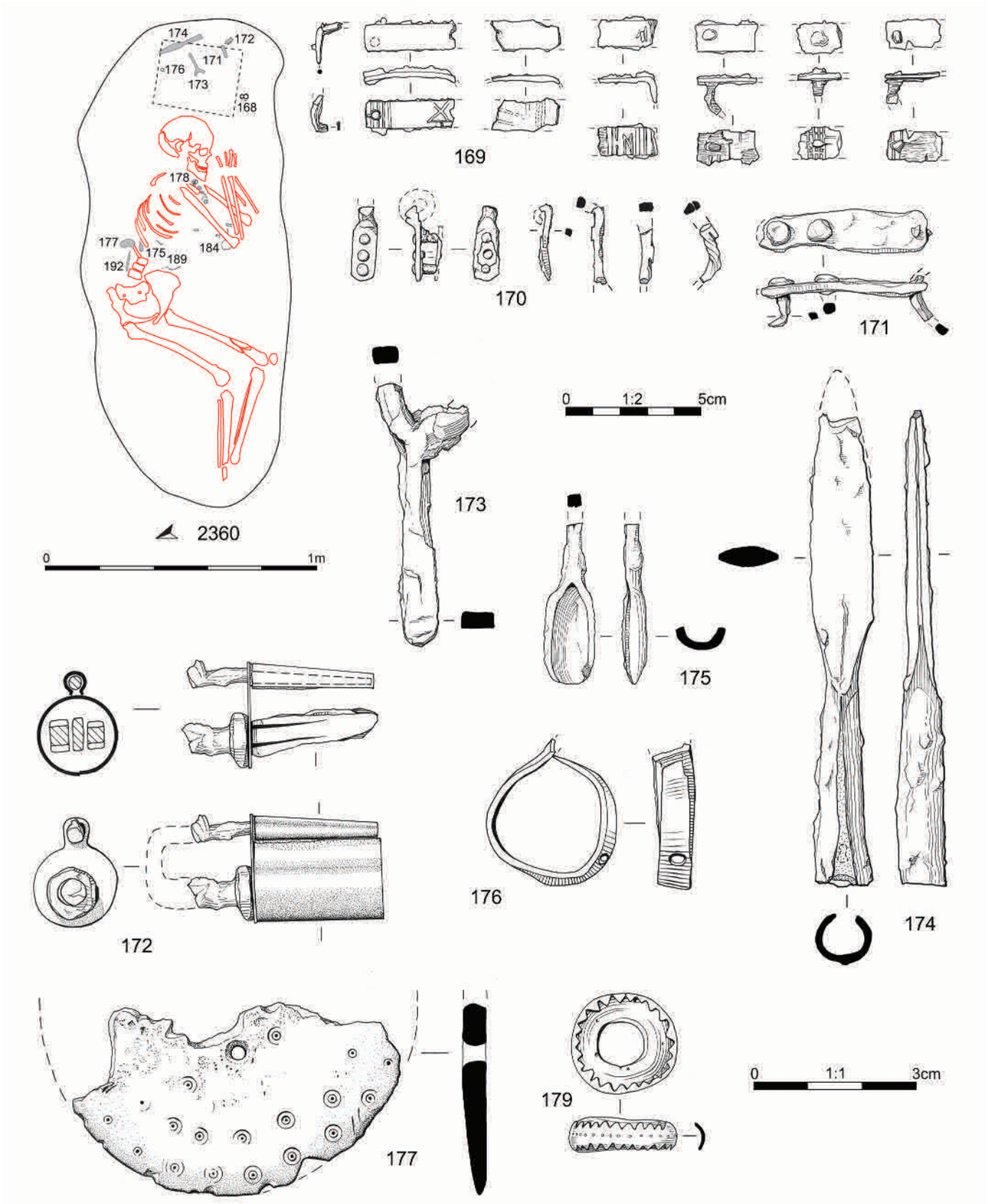

Figure 3.64 Grave 2360 *(1:20)*: box fittings, hinges etc. **169-171**, object **173**, spearhead **174**, spoon **175** *(1:2);* barrel padlock **172**, ferrule **176**, antler disc **177**, edged bead **179** *(1:1).* See also Fig. 3.65.

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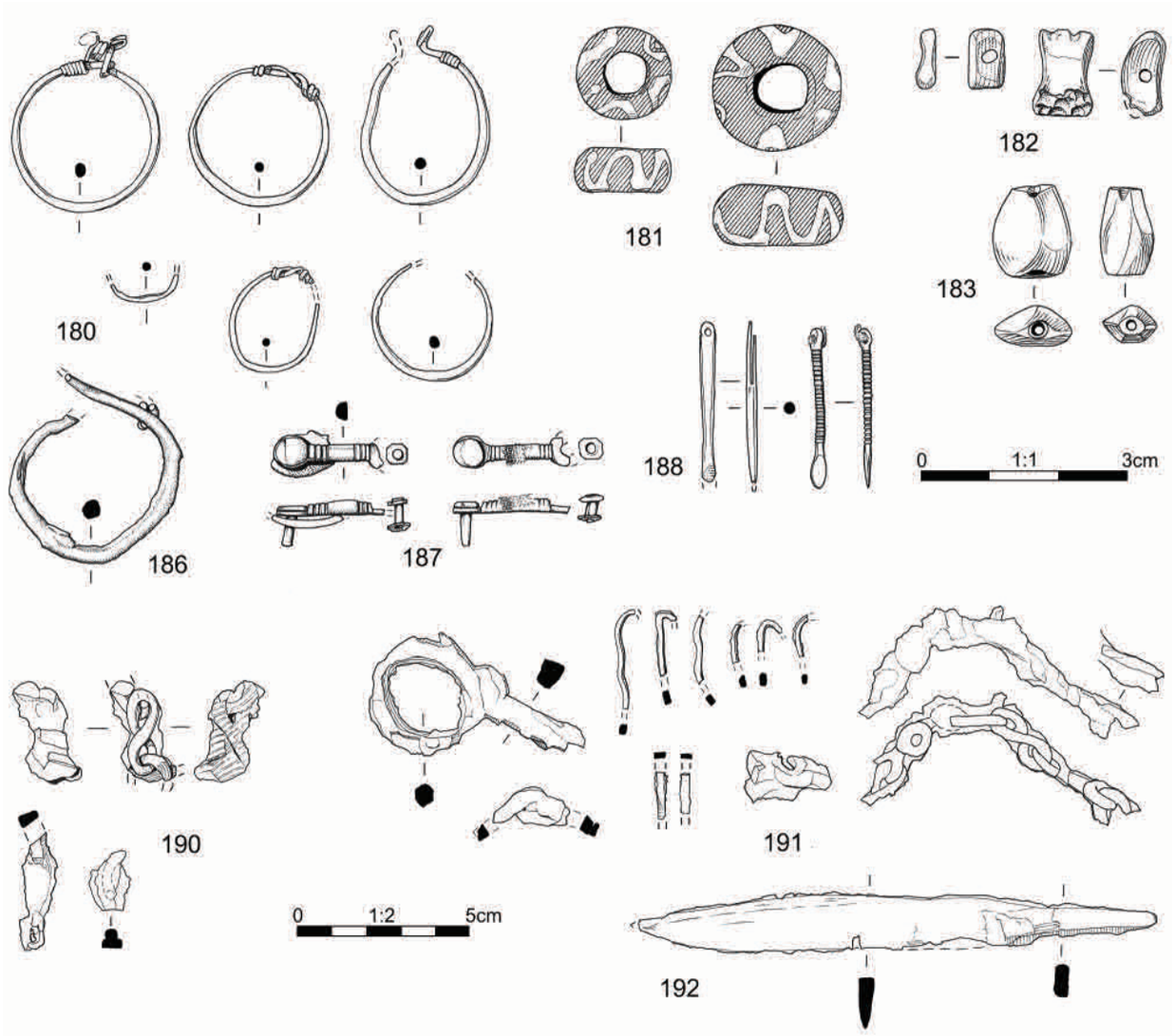

Figure 3.65 Grave 2360 finds: slip-knot rings **180**, bi-colour beads **181**, shell beads **182**, amethyst beads **183**, slip-knot ring **186**, strap slides **187**, toilet implements **188** *(1:1);* chain fragments etc. **190** & **191**, knife **192** *(1:2).* See also Fig. 3.64.

flexed to the east with left ankle over right ankle. Height = und.
Surviving bone / Condition: Fragments of skull, clavicles, scapulae, spine and ribs. Humeri, radii, ulnas, pelvis, femurs, tibia and fibula. Some hand and foot bone. Condition fair.
Pathology: Dental hypoplasia and healing cribra orbitalia. Other pathology was noted affecting the right scapula, but no details survive.
Artefacts: A spearhead (**197**) was found to the right of the upper body, overlying the right arm and a knife (**198**) was discovered at the waist.

197 **Spearhead,** iron. Elongated leaf-shaped blade with rounded point. Lentoid section. Traces of a wide circular socket with a square-headed rivet still in place and mineralised wood remains inside. Swanton type C2 or possibly a short C5 (Swanton 1974, 9–11). Overall L. 225mm, blade L. 140mm, W. 24mm, socket W. 20mm. 7th century.

198 **Knife,** iron. Point missing. Triangular-section blade. Offset, square-section tang in line with lower edge of blade. Possible weld-line suggesting a steel blade observed on the x-ray. Overall L. 92mm, blade W. 15mm.

Grave 2407
Fill 2405 / Inhumation 2406
C1 Fig. 3.70

Grave: Sub-oval but very truncated. Surviving dimensions L. 1.05m, W. 0.68m, D. 0.09m.
Orientation of body: SW–NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Female.
Body / Height: Supine, with head facing south, arms flexed and hands over waist. Height = und.
Surviving bone / Condition: Fragments of skull, ribs, humeri, radii and ulna. Also fragments of pelvis and left femur. Condition fair.
Pathology: None.
Artefacts: None.

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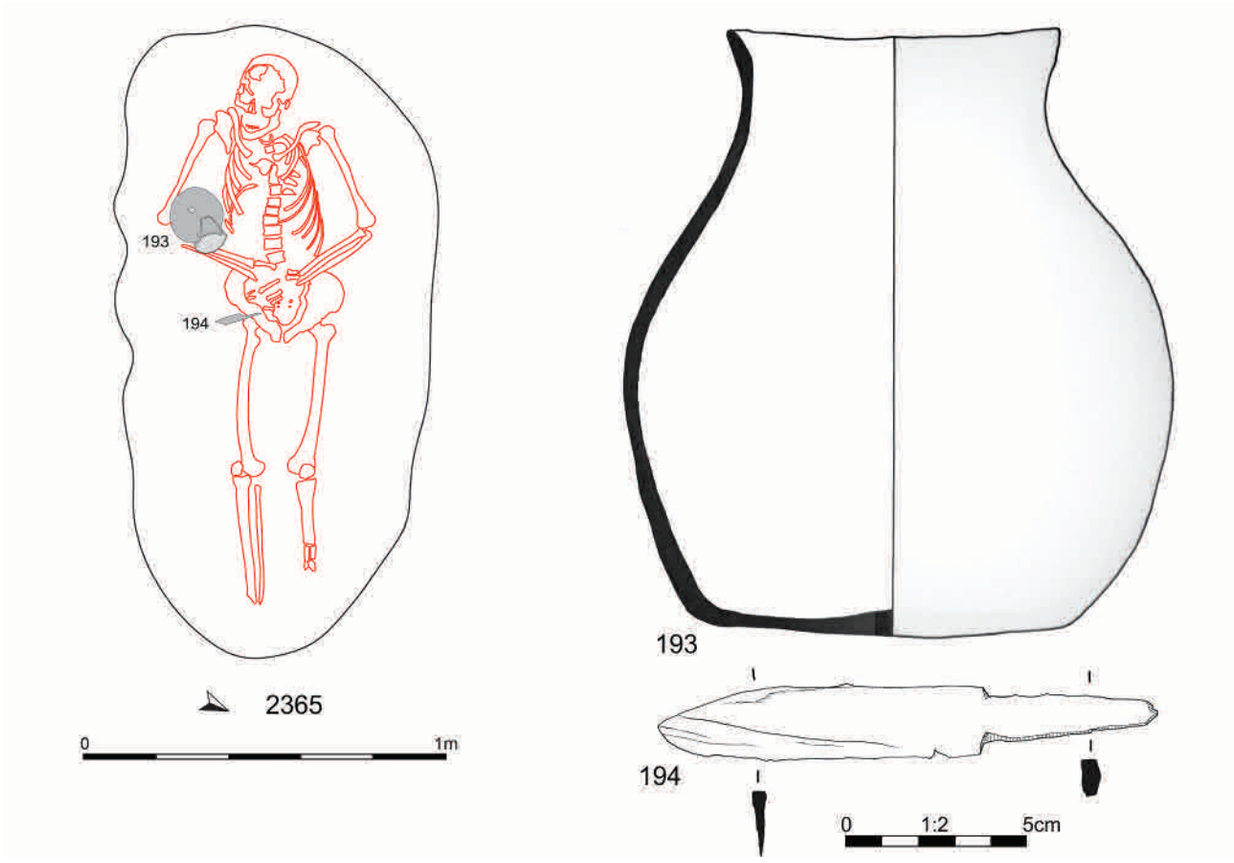

Figure 3.66 Grave 2365 *(1:20)*: pot **193,** knife **194** *(1:2).*

Grave 2430
Fill 2428 / Inhumation 2429
A3 Fig. 3.71

Grave: Sub-rectangular, with rounded ends. Dimensions L. 1.66m, W. 0.78m, D. 0.20m.
Orientation of body: SW-NE.
Stratigraphic relationships: The grave had cut mid-1st century ditch 2300, which in turn cut undated pit 2298.
Structures: None.
Age / Sex: Adolescent, est. range 13-20 years. Sex undetermined.
Body / Height: Supine. Arms flexed with hands over pelvis. Legs extended. Height = und.
Surviving bone / Condition: Fragments of skull, clavicles, scapulae, spine and ribs. Humeri, radii, ulnas, pelvis, femurs, tibia and fibula. Some hand and foot bone. Condition fair.
Pathology: None.
Artefacts: None.

Grave 2442
Fill 2440 / Inhumation 2441
C1 Fig. 3.72

Grave: Sub-rectangular, but thinner at eastern end. Dimensions L. 1.91m, W. 0.71m, D. 0.20m.
Orientation of body: SW-NE.
Stratigraphic relationships: None. A charcoal-rich area below the right ribs was thought to be remains of a cremation during excavation, but assessment showed no cremated bone present.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Male.
Body / Height: Supine. Left arm flexed with left hand above right side of pelvis. Right arm and legs extended. Height = 168-176cm.
Surviving bone / Condition: Fragments of skull, clavicles, scapulae, spine and ribs. Humeri, radii, ulnas, pelvis, femurs, tibia and fibula. Some hand and foot bone. Condition fair.
Pathology: The existence of pathology was noted, but no details survive.
Artefacts: A knife (**199**) and buckle (**200**) were found at the waist.

199 Knife, iron. Angled back, long thin blade with tip of blade missing. Tang on line with blade. Overall L. 128mm, blade W. 14mm.

200 Buckle and plate, copper-alloy. Marzinzik type I.10d-ii. Cast oval buckle, 28 x 18mm, with narrowed bar and fragmented tongue. Plate, 19 x 26mm, made from folded copper-alloy sheet with two punched rivet holes. Rust traces suggest that the rivets were of iron. Small traces of leather survive between the plates. The belt would have been 19mm wide and 2mm thick. Late 6th to early 8th century.

Grave 2445
Fill 2443 / Inhumation 2444
C1 Fig. 3.73

Grave: Sub-oval and truncated. L. 1.49m, W. 0.59m, D. 0.10m.

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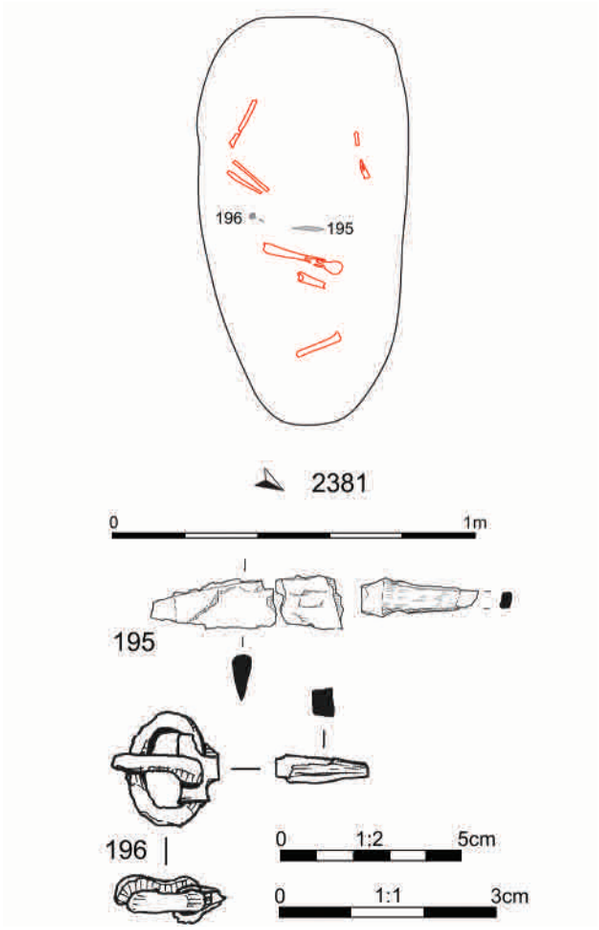


Figure 3.67 Grave 2381 *(1:20)*: knife **195** *(1:2);* buckle **196** *(1:1).*

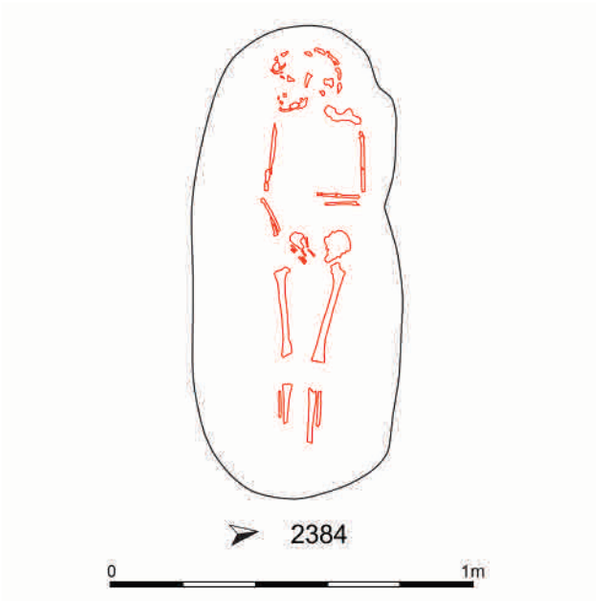


Figure 3.68 Grave 2384 *(1:20).*

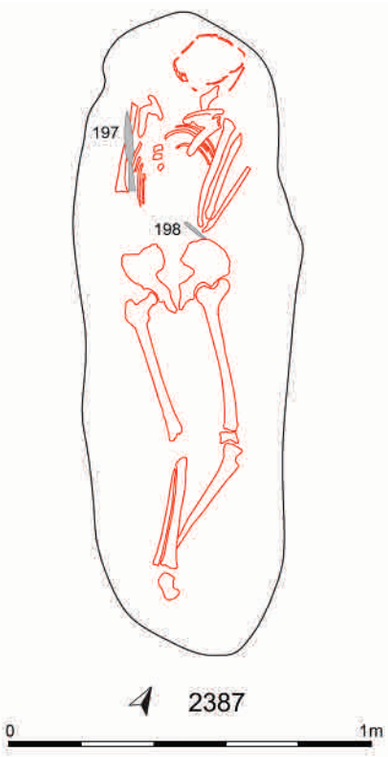
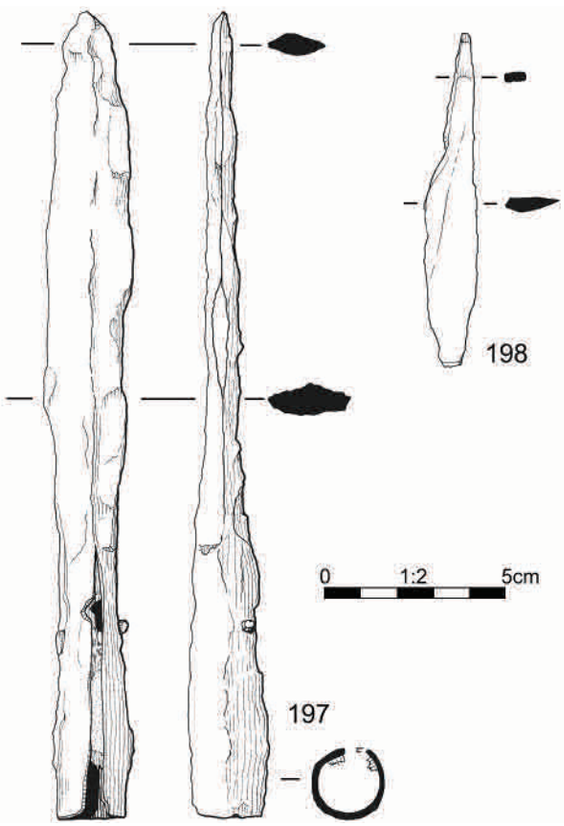


Figure 3.69 Grave 2387 *(1:20)*: spearhead **197,** knife **198** *(1:1).*



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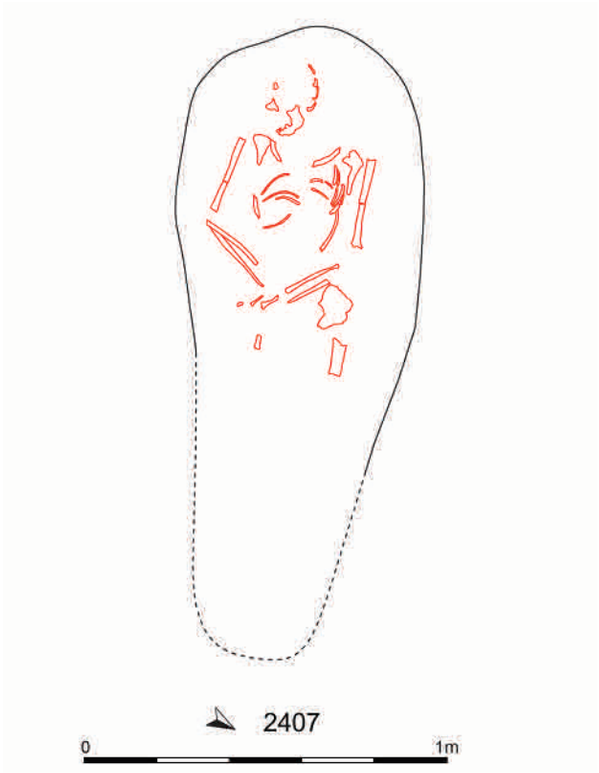

Figure 3.70 Grave 2407 *(1:20).*

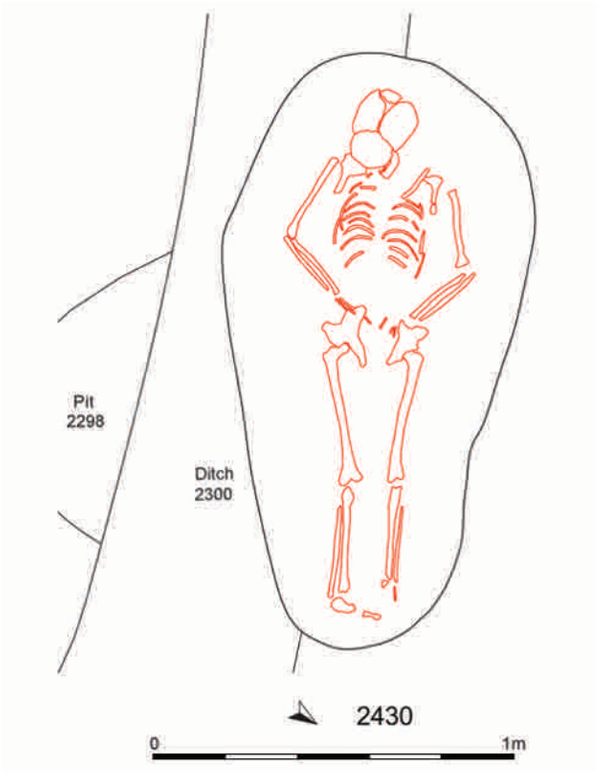

Figure 3.71 Grave 2430 *(1:20).*

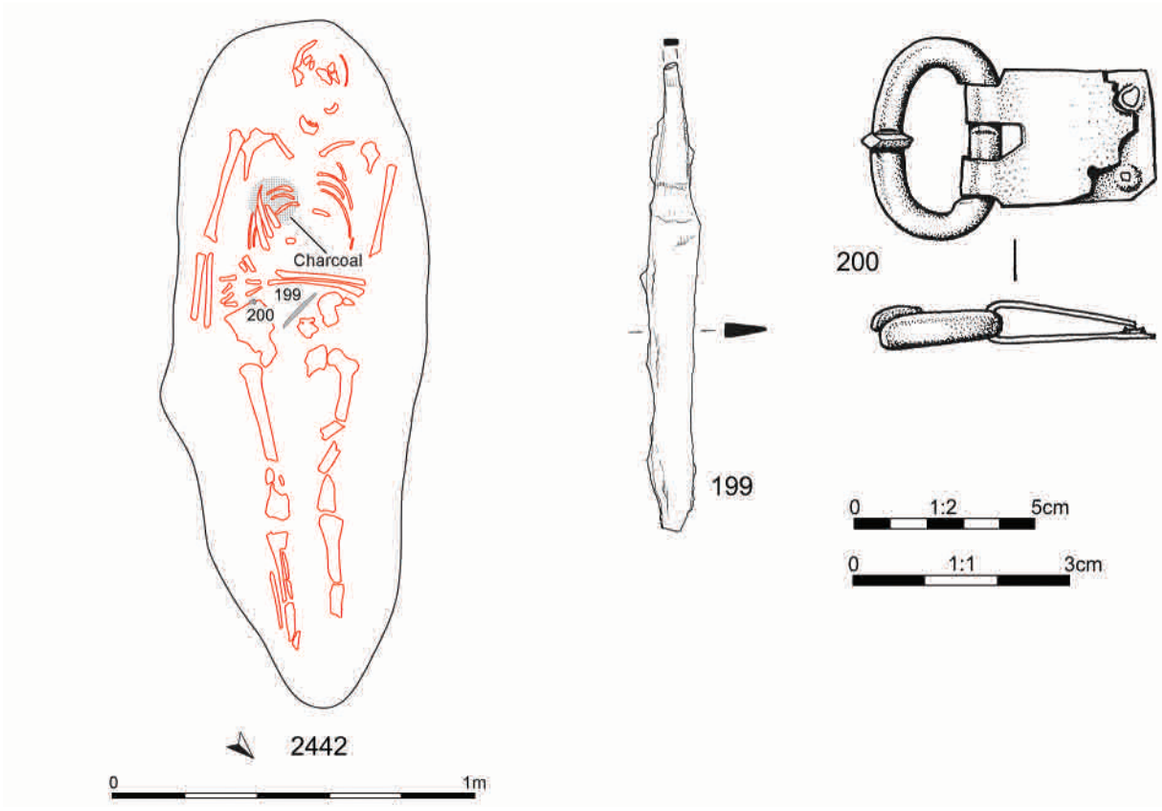

Figure 3.72 Grave 2442 *(1:20)*: knife **199** *(1:2);* buckle **200** *(1:1).*

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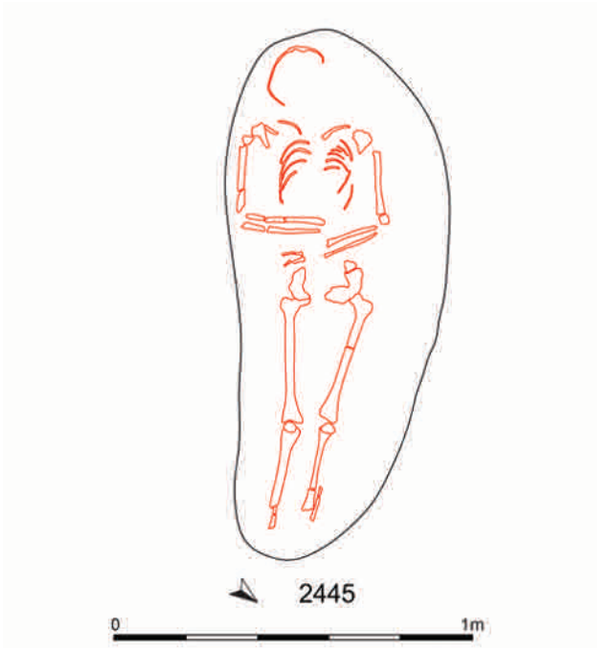

Figure 3.73 Grave 2445 *(1:20).*

Figure 3.74 Cremation 2252 *(scale as shown).*

Orientation of body: SW–NE.
Stratigraphic relationships: None.
Structures: None.
Age / Sex: Adult, est. range 36-50 years. Female.
Body / Height: Supine, legs extended, arms flexed with hands over waist. Height = 143-151cm.
Surviving bone / Condition: Fragments of skull, ribs, humeri, radii and ulna. Also fragments of pelvis. Both femurs and tibia with fragments of fibula. Condition fair.
Pathology: Extra bone growth on right mid-lateral tibia which was originally fused to the right fibula. Not caused by trauma, but due to a benign neoplasm (osteochondroma) resulting from developmental aberration.
Artefacts: None.

CREMATIONS

Grave 2252
Fill 2245 / Cremation 2246
D2 Fig. 3.74

Grave: Circular cut, dia. c.0.23m, depth 0.2m.
Stratigraphic Relationships: None
Structures: None
Colour: Cream-white
Temperature: 600°C+
Total weight: 135g
Identified bone: long bones, cranium, femoral diaphysis
Sex: undetermined
Age: undetermined
Artefacts: Cremation vessel **201**.

201 **Cremation vessel**, ceramic. Most of the upper half and a fragment of the base of this vessel are missing. There is also a non-joining rim sherd (c.120mm diameter, 11% complete). The base is flat with a diameter of 80mm. It was not possible to reconstruct the vessel to a full profile, but it appears to have a simple globular form. Black fabric with variegated brown and black smoothed outer surface (Fabric F3) quite unlike that of the accessory vessels. The surviving areas of the outer surface above the waist show traces of light sooting. NI.

Grave 2436
Fill 2435 / Cremation 2437
D1 Fig. 3.75

Grave: Circular cut, dia. c.0.25m, depth 70mm
Stratigraphic Relationships: None
Structures: None
Colour: Cream-white
Temperature: 600°C+
Total weight: 390g
Identified bone: Ulna, fibula, tibia, cranium, ribs, diaphysis, os coxae
Sex: female
Age: young adult (18-35)
Artefacts: Cremation vessel **202**; Comb **203** was inside **202,** but had been added post-cremation.

202 **Cremation vessel**, ceramic. Highly fragmented remains of a single vessel weighing 520g. The vessel has a flat base, dia. 160mm, and is probably one of the larger vessels from the site. No rim sherds were present, suggesting that the upper part had been removed by ploughing. Uniform grey fabric (Fabric 1). The pot is somewhat underfired and has completely disintegrated, making reconstruction impossible. NI.

203 **Comb**, bone/antler. Double-sided comb, L. 126mm, W.44mm. Fragmented but not burnt. Almost complete, comprising an end-plate, at least three tooth-plates, parts of the two connecting plates and nine loose teeth. The comb was secured with at least six iron rivets, fixed alternately from opposing sides. Most teeth are present on one side with 4 per cm on both sides, in line with the ends of the connecting plates. There are frequent, deep saw marks on the connecting plates and clear marks on the upper

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Figure 3.75 Cremation 2436 *(scale as shown)*: comb **203** *(1:2).*

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CHAPTER 4: HUMAN PATHOLOGY

Harriet Anne Jacklin

INTRODUCTION

This section details the results of the skeletal analysis of eighty inhumations and two cremation burials recovered from the Anglo-Saxon cemetery at Wolverton, Milton Keynes. The analysis was based upon recommendations made following initial post-excavation assessment of the assemblage (Jacklin 2008). The skeletal assemblage analysis results are summarised in Appendix 1.2: detailed results are retained in the project archive.

Analysis & Recording Methods

Each skeleton was laid out and reconstructed where necessary, and record photographs were taken. The remains were recorded using a skeleton recording form (Jacklin 2005a), and skeletal inventories and pictorial sheets (after Buikstra & Ubelaker 1994) were also compiled. The skeletons were then assessed pathologically. Photographs were taken of any pathological conditions and congenital anomalies identified. On completion of the skeletal analysis all the data recorded were entered on to the ULAS Skeletal Database, and the pictorial sheets were scanned and archived accordingly.

Statistical Analysis

A three-stage approach was taken during the statistical analysis of the congenital, pathological, traumatic and metabolic conditions affecting the Wolverton skeletal assemblage:

1 Statistical analysis of the entire skeletal assemblage in relation to the specified condition (CPR1)
2 Statistical analysis of the aged and sexed skeletons in relation to the specified condition (CPR2)
3 Statistical analysis of the specific skeletal location of the specified condition, in relation to the aged and sexed skeletons (TPR)

(NB: CPR refers to the crude prevalence rate %. TPR refers to the true prevalence rate %)

Where statistical calculations are made using a specified sample, the sample number is included in brackets. For example, if statistically analysing the number of males affected by periostitis in any skeletal location, then '(n45)' would appear after 'male' = male (n45). This means that a sample of 45 males were available for study. Or, if statistically analysing fractures affecting the left radius of the males within the assemblage, then '(n20)' would appear after 'male' = male (n20). This means that 20 males with their left radius present were available for study. Details of the samples used are included in each section.

RESULTS: THE INHUMATIONS

Completeness and Preservation

The completeness and preservation of the skeletal assemblage varied considerably. The completeness of the skeletons probably depended largely upon the date at which they were buried. Radiocarbon dates obtained for five skeletons indicated that the cemetery had been in use for at least 100 years. Their location within the cemetery, depth of the burial and soil acidity were probably also relevant factors. Finally, the preservation of undisturbed skeletal remains was better than those which had been damaged by root action, soil movement and more recent disturbance, such as land drains.

The completeness and the preservation of skeletal material has a direct impact on the amount and quality of data that can be recorded during skeletal analysis (such as whether age and sex can be determined). The state of preservation also impacts on the pathological analysis of bone: if the surface is severely eroded, then pathological conditions such as periostitis (which forms on the outer surface on bone) often cannot be diagnosed with any degree of certainty. During analysis and interpretation of the data, the completeness and preservation of the skeletons involved were taken into account.

The completeness of each skeleton (Fig. 4.1) was categorised after Buikstra & Ubelaker (1994, 8):

- '0-25%' (less than a quarter of the skeleton present)
- '25-50%' (between a quarter to half of the skeleton present)
- '50-75%' (between half and three quarters of the skeleton present)
- '75-100%' (between three quarters and all skeletal elements present)

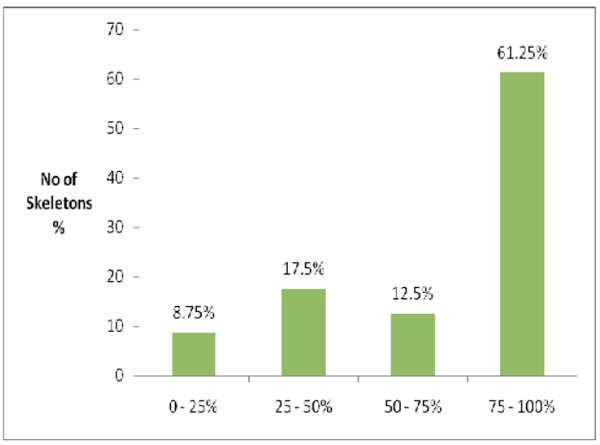

Figure 4.1 Completeness of skeletal assemblage (CPR1)

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The preservation of the skeletons (Fig. 4.2) was categorised as:

- 'Poor' (surface damaged, very fragmented, distal and/or proximal ends of long bones missing or damaged. Unable to record any bone changes related to pathology and trauma)
- 'Fair' (moderate condition, distal and/ or proximal ends of long bones damaged or missing)
- 'Good' (bone surface in good condition, most osteological information recordable)

Figure 4.2 Preservation of skeletal assemblage (CPR1)

Estimation of Sex

Specific references used during the analysis of the sex of each adult skeleton include Buikstra & Ubelaker (1994, 15–38; *Os coxae and cranial morphology)* and Bass (1995, 114, 159, & 231; *femoral/ humeral head maximum diameter, clavicle length and femoral circumference).*

The sex of each skeleton was assessed using defined criteria (Jacklin 2005b). The final sex estimation given for each skeleton took into account the several sexing methods used and the resultant estimation was based, not only on the results of the combined methods, but also with consideration of their reliability and accuracy. The sex of each skeleton was categorised as follows:

- 'Male' or 'M' (Where the most accurate of the sexing methods were available, and all point to a definite 'male' estimate)
- 'Female' or 'F' (Where the most accurate of the sexing methods were available, all point to a definite 'female' estimate)
- 'Possible Male' or 'M?' (Where almost all indicators point to a definite 'male' estimate but one or more indicators are absent or result in an 'indefinite' or 'possible male' estimate)
- 'Possible Female' or 'F?' (Where almost all indicators point to a definite 'female' estimate but one or more indicators are absent or result in an 'indefinite' or 'possible male' estimate)
- 'Non-Adult' (Below 21 years old). Sex estimation was not attempted on skeletons aged at less than 21 years owing to the lack of sexual dimorphism. For those on the cusp (c.18-21 years), assessment of sex was attempted, though in this instance none could be determined, and all were consequently recorded as 'non-adults'.
- 'Non-Sexable Adult' or 'NSA'. Of the assemblage, 13.75% was classed as 'non-sexable adults' (n11). Of the NSA, 81.82% had no indicators of sex available for study and 18.18% were unable to be sexed due to the sexual ambiguity of their remains.

For the purpose of this report the 'M' and 'M?' and the 'F' and 'F?' skeletons have been combined. The sex ratio of the Wolverton assemblage (n80) comprised 20% males, 30% females, 13.75% NSA and 36.25% non-adults (Fig. 4.3).

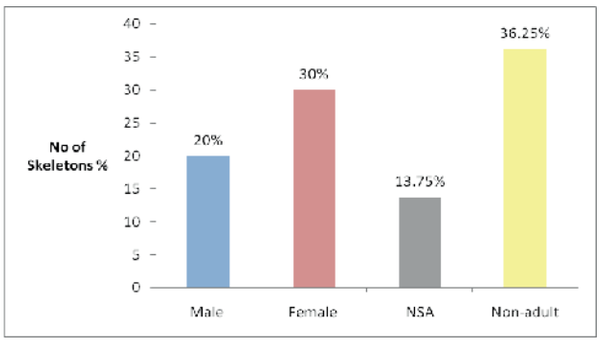

Figure 4.3 Sex of entire assemblage (CPR1)

Estimation of Age

Specific references used during the analysis of the age of each skeleton include Brothwell (1981, 72; *age estimation method*), Buikstra & Ubelaker (1994, 34–5; *dental attrition*.), Meindl & Lovejoy (1985, 32–8; *cranial suture closure),* Scheuer & Black (2000; *epiphyseal fusion, dental eruption and cranial/ post-cranial metrics) and* Schwartz (1995, 205; *rib end morphology:* used only when **Işcan** Rib Phase casts were not available). Also used were **Işcan**, Loth & Wright (1984 and 1985; **Işcan** *Rib Phase Casts*), (Loth & **Işcan** (1989; **Işcan** *Rib Phase Casts*) and Brooks & Suchey (1990; *Suchey-Brooks Female Age and Male Age Determination Sets*).

The age of each skeleton was assessed using defined criteria (Jacklin 2005b). The final age estimation given for each skeleton took into account the several aging methods used and the resultant estimation was based, not only on the results of the combined methods, but also with consideration of their reliability and accuracy. All the skeletons were placed in age categories based on the combined results of the various age indicators used.

The age categories used were adapted from Buikstra & Ubelaker (1994, 9) and are as follows:

- 'Infant' (birth to 3 years)
- 'Child' (4 to 12 years)
- 'Adolescent' (13 to 20 years)
- 'Young adult' (21 to 35 years)
- 'Middle adult' (36 to 50 years)
- 'Older adult' (51+ years)

Sometimes the age of a skeleton bridged two categories. The bridging of age categories was necessitated either by a lack of available age indicators, as in the case of 'adolescent to middle adult', or because the skeleton fell on the cusp between two age categories, such as 'infant to child' (often aged between three and four years),

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'adolescent to young adult' (often aged between eighteen and 25 years) and 'young to middle adult' (often aged between 30 and 42.5 years). All the skeletons were given specific ages and these can be found in the skeletal database.

The age range represented in the assemblage (CPR1) (Fig. 4.4) comprised one infant (1.25%), one infant to child (1.25%), sixteen children (20%), ten adolescents (12.5%), one adolescent to young adult (1.25%), four adolescent to middle adults (5%), thirteen young adults (16.25%), three young to middle adults (3.75%), twenty-nine middle adults (36.25%) and two middle to older adults (2.5%).

In summary, the Wolverton assemblage (CPR1) comprised 36.25% non-adults and 58.75% adults: 5% bridged the non-adult and adult categories. Those skeletons that bridged the non-adult and adult categories were aged between 13-50 years and could not be sexed. They were therefore omitted from any further statistical analysis.

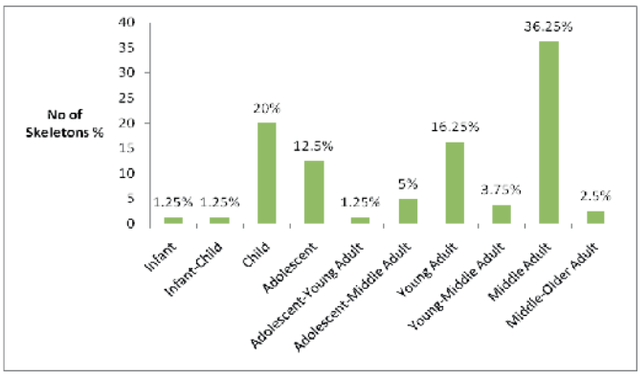

Figure 4.4 Age range of entire assemblage (CPR1)

Age of Non-Adult Assemblage

Statistical analysis (CPR2) revealed that the age at which death occurred most frequently within the non-adult population was between four and twelve years, followed by thirteen to twenty years (Fig. 4.5).

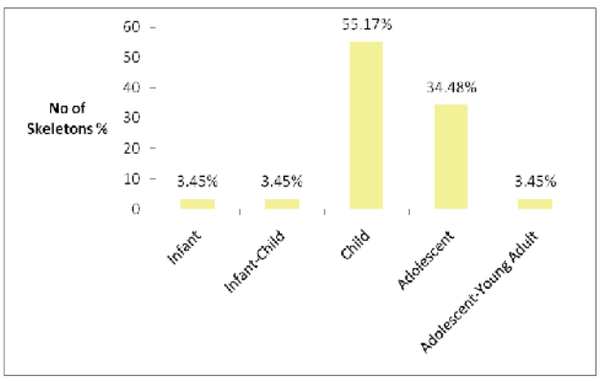

Figure 4.5 Age range of non-adult assemblage (CPR2)

Age and Sex of Adult Assemblage

Statistical analysis (CPR2) shows that the majority of males and females from the Wolverton assemblage passed away during middle age (Figs 4.6 & 4.7).

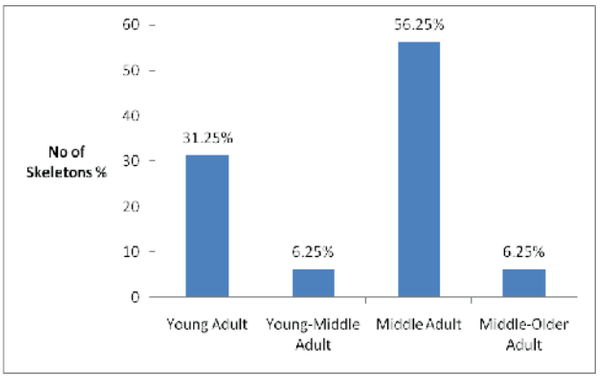

Figure 4.6 Age range of male assemblage (CPR2)

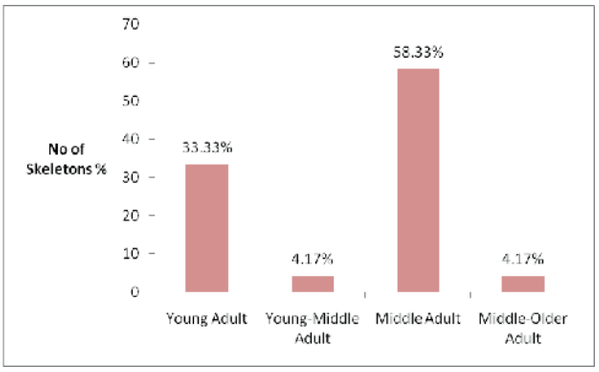

Figure 4.7 Age range of female assemblage (CPR2)

Stature of Adult Assemblage

References used during the assessment of the stature of each skeleton were Trotter & Gleser (1952 & 1958). The stature of fifteen males within the assemblage could be calculated, giving a mean height of 173cm (5'8"). The stature of sixteen females could also be calculated, giving a mean height of 163cm (5'4").

Cranial Metrics and Non-Metric Traits

The cranial metrics and non-metric traits recorded during analysis were based on recommendations by Brothwell & Zakrzewski (2004, 29–31). References used during the analysis of cranial metrics and non-metric traits included Bass (1995, 66–88), Brothwell (1981, 79–83, 87–89 and 98–99) and Buikstra & Ubelaker (1994, 87–91).

A total of 44 adults had cranial material present, comprising 23 females, 14 males and seven NSAs. Due to the fragmentary nature of the surviving cranial material, only a small proportion of the above sample could have their cranial metric and non-metric traits recorded.

Cranial Index

The cranial index calculates the overall size of the cranium (breadth to length ratio). It proved possible to record cranial index for only one male, Inhumation 2164, who was found to be *hyperbrachycrany* (very broad headed).

Facial Index

The facial index determines the overall size of the face (height to breadth ratio). Facial indices could not be

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calculated for the Wolverton assemblage, owing to a lack of complete facial bones and poor preservation of the surviving skeletal material.

Cranial Non-Metric Traits

For some skeletons a full list of cranial non-metric traits could be recorded, though for others only a few could be recorded, due to their fragmentary nature. No significant difference was found in cranial non-metric traits between males and females in the assemblage.

Platymeric & Platycnemic Index

Occasionally within skeletal assemblages, the tibia and the femur can show noticeable differences in their general shape between different populations, and also between males and females. The *platymeric* index calculates the anterior-posterior flattening of the femur, while the *platycnemic* index calculates the transverse flattening of the tibia. The following calculations of *platymeric* and *platycnemic* indices were possible on the males and females within the assemblage:

Ten females and nine males were able to have the *platymeric* index recorded based on their left femur, nine females and five males were able to have the *platymeric* index recorded based on their right femur and six females and five males were able to have the *platymeric* index recorded for both femurs. Seven females and four males were able to have the *platycnemic* index recorded based on their left tibia, eight females and three males were able to have the *platycnemic* index recorded based on their right tibia and five females and three males were able to have the *platycnemic* index recorded for both tibias.

Differences in the *platymeric* index may be due to a number of factors, including mechanical adaptation, pathological change, vitamin deficiencies and undue strain on the femora during childhood and early adolescence. Brothwell (1981) suggests that the *platymeric* range is more commonly found in females than in males, and there is also a tendency for it to be more pronounced in the left femur than the right. Analysis (TPR) showed that two-thirds of males (88.89% based on left femur and 66.67% based on right femur) and females (60% based on left femur and 66.67% based on right femur) fell within the *platymeric* (broad or flat from front to back) range. About one-third of females were classed as *eurymeric* (more rounded from front to back), whilst about 17% of males were classed as *eurymeric,* and a similar sample were *stenomeric* (narrow from front to back).

Reasons for differences in the *platycnemic* index are also varied, ranging from pathological to mechanical factors. Analysis (TPR) revealed that the majority of males (100% based on left tibia and 66.67% based on right tibia) fell within the '*mesocnemic*' range (*platycnemic* index of 63-69.9), while the majority of females (100% based on left tibia and 90% based on right tibia) fell within the '*Eurycnemic*' range (*platycnemic* index of 70+). However, it should be noted that these results are based on a small sample.

Robusticity Index

The robusticity index calculates the relative size of the femoral diaphysis (shaft of the femur). The results, obtained from only a small sample of the assemblage, were divided for ease of use. For four females and five males, robusticity was recorded based on their left femur, and for five females and two males robusticity was recorded based on their right femur. For the small sample analysed, the robusticity index for males averaged 66.6%, and for females, 50%.

Post-Cranial Non-Metric Traits

The post-cranial non-metric traits recorded during analysis are based on recommendations by Brothwell & Zakrzewski (2004). No significant difference between males and females was found in relation to post-cranial non-metric traits.

Developmental Conditions

References used in the diagnosis of specific developmental conditions include Anderson (2000), Aufderheide & Rodriguez-Martin (2003), Barnes (1994), Mann & Hunt (2005), Ortner (2003), Roberts & Manchester (1995) and Waldron (1993).

Within all societies, and during all time periods, developmental abnormalities occur affecting both the skeleton and the soft tissue. In the Wolverton assemblage, six females and one male had been affected by congenital conditions. All conditions recorded will have had little, if any effect on the individual's daily life. Inhumation 2364, a male aged between 36 to 42 years, had a condition known as *os acromiale* affecting his right scapula. Os acromiale is the non-fusion of the acromion process, and is a relatively common condition found within archaeological skeletal assemblages. This condition has not been included in the analysis below, as the available sample of intact male scapulae was too small to be even closely representative of the population. The females are discussed below.

Inhumation 2013, aged 36 to 46 years, was affected by Spina Bifida Occulta which showed itself by the non-fusion of the first sacral neural arch of the sacrum. She also had two extra facets below the left and right sacral articular surfaces, corresponding with extra facets located at the left and right os coxae. Inhumation 2096, aged between 30 and 32 years, had spondylolysis of her fifth lumbar vertebra (Fig. 4.8). Spondylolysis is identified by the non-fusion of the posterior part of the affected vertebra. The condition is sometimes referred to as 'shoveler's fracture', due to its appearance primarily in the lower back, and although a fracture, the condition is a result of a congenital weakness aggravated by repeated trauma. This weakness predisposes the individual to small fractures along the line of weakness resulting from continual stress and strain on the back, primarily through bending and lifting in an upright posture. Inhumation 2176, aged 36 to 50, had a very pronounced occipital bone (back of head), called an occipital bulge. Inhumation 2110, aged 36 to 50 years, was affected by three different developmental conditions: Spina Bifida Occulta (non-fusion of the sacrum's third to fifth neural arch and only partial fusion of the first to third neural arch), an extra vertebrae (L6) and Klippel-Feil Syndrome (ankyloses – immobility – of two

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Figure 4.8 Inhumation 2096, Spondylolysis of L5 vertebra, posterior

Figure 4.9 Inhumation 2444, Osteochondroma affecting left tibia, anterior

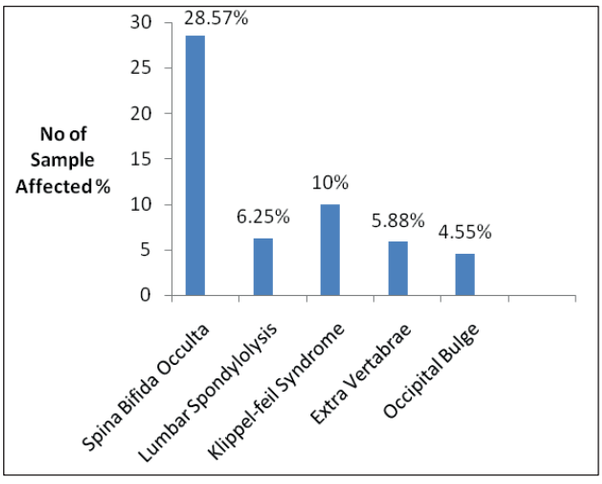

Figure 4.10 Developmental conditions (TPR)

or more cervical vertebrae, in this case C6 and C7). Also of interest is Inhumation 2444, a female aged between 36 and 50 years, although she is not included in the prevalence rates below. This individual was affected by extra bone growth on her right mid-lateral tibia, which was originally fused to her right fibula (Fig. 4.9). Analysis revealed that the growth was not caused by trauma to the bone, but due to a benign neoplasm (*osteochondroma*). The skeleton is recorded here in the developmental section of this report as Roberts & Manchester (1994, 187) state that the condition is 'strictly a developmental aberration'.

For the prevalence rate for the developmental conditions mentioned here (Fig. 4.10), it should be noted that the results are based upon a small sample, and as such may not accurately represent the developmental conditions affecting the Wolverton population.

Dental Health

References used during the analysis and diagnosis of dental disorders include Brothwell (1981), Buikstra & Ubelaker (1994), Hillson (1986), Ogden (2005), Ortner (2003), Roberts & Manchester (1995), Rose, Condon & Goodman (1985) and White (2000). Details of the analysis results relating to dental health are retained in the project archive.

Dental Caries

Dental caries is defined by Pindborg (1970) as an infectious and transmissible disease initiated by microbial activity on the tooth surface, leading to progressive destruction of the tooth structure, crown or root. Dental caries are often the most common dental pathologies found within archaeological human bone assemblages. Buikstra & Ubelaker (1994) explain that an association between increased frequencies of caries and the consumption of sugar/carbohydrate-rich foodstuff makes the recording and subsequent analysis of caries useful in dietary reconstruction. Within the Wolverton assemblage dental caries have been found to affect both the enamel (often as a result of poor dental hygiene) and the root (due to exposure to cariogenic bacteria by periodontal disease). All dental caries were scored between '0' (no lesion present) to '6' (large caries which cannot be assigned to a surface of origin) after Buikstra & Ubelaker (1994, 55). For the purpose of this report the specific scores assigned to each dental carie have not been statistically analysed, but the results are recorded in the skeletal database for future researchers.

The results represented here with regard to dental caries are based on both the maxilla and the mandible being present. It should be recognised that some individuals lost a number of teeth either *ante-mortem* or *post-mortem* and these results are not recorded here, although they can be found in the skeletal database. Analysis showed that 61.25% of the entire assemblage (CPR1) had both a maxilla and mandible available for study. Within this sample (CPR2), 33.33% had one or more teeth affected by dental caries. The results (CPR2) show that although based upon a small sample, females appear to have had a slightly higher prevalence rate of caries than males (Fig. 4.11). Analysis also revealed that no deciduous teeth were affected by dental caries, and only the adolescents from the non-adult age range were affected. No NSAs were affected. No significant link was found between an increase in caries and an increase in age. A number of skeletons also showed multiple cases of dental caries

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affecting a single tooth. Caries affecting two adjacent teeth was also a common finding.

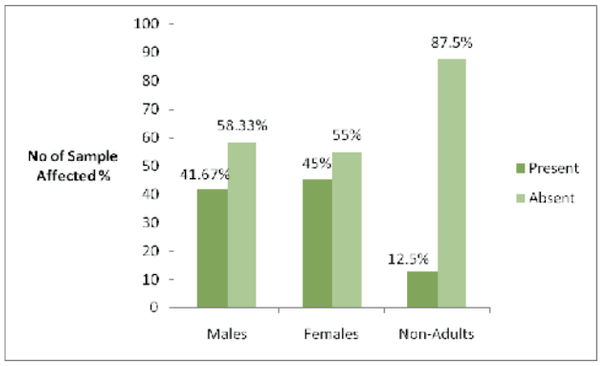

Figure 4.11 Incidence of dental caries (CPR2)

Dental Abscesses

A dental abscess can occur when dental caries and/or periodontal disease are present, due to the exposure of the pulp cavity and subsequent infection via bacteria. Out of the sample (CPR2), 6.25% had one or more dental abscesses (Fig. 4.12). No abscesses were found to affect the non-adults within the assemblage, or the NSAs. The results (CPR2) also show that 5% of females were affected by abscesses, compared with 16.67% of males. Only middle adults were affected. It should be noted that these results are based upon a small sample.

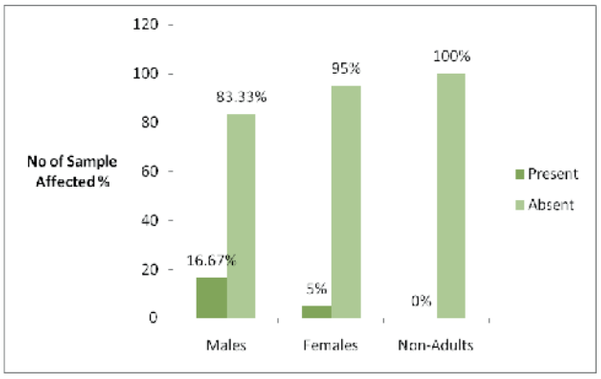

Figure 4.12 Incidence of dental abscesses (CPR2)

Periodontal Disease

Periodontal disease (a loss of aveolar bone and periodontal ligament) is a consequence of severe gingivitis, inflammation of the gums immediately surrounding a tooth/or teeth. Gingivitis is often caused by an excess of calculus (mineralised plaque) adjacent to the infected gum. Periodontal disease can also result in *ante-mortem* tooth loss owing to the loss of periodontal ligament which supports the structure of the teeth. Metabolic disorders such as scurvy can also result in inflammatory conditions which may adversely affect periodontal tissue. Within archaeological samples periodontal disease can often be difficult to score, owing to taphonomic damage. The skeletons within the sample were scored between '0' (no periodontal disease) and '4' (severe periodontal disease) after Brothwell (1981, 155, fig. 6.14) and Ogden (2005). Analysis showed that 6.25% of the assemblage (CPR2) had signs of periodontal disease and only females were affected. All were aged between 36 to 50 years (Fig. 4.13). For example, Inhumation 2013, a female aged between 36-46 years, had recession of alveolar bone and severe dental attrition, although this did not affect the wisdom teeth.

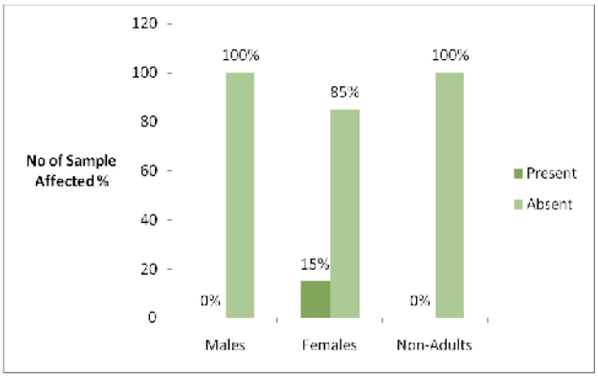

Figure 4.13 Incidence of periodontal disease (CPR2)

Dental Calculus

Dental calculus is caused by the mineralization of dental plaque, which is comprised of micro-organisms embedded in a matrix composed of proteins and saliva (Hillson 1986). During analysis, calculus was scored between '0' (no calculus present) and '3' (large amount of calculus present), after Brothwell (1981, 155, fig 6.14). Analysis revealed that 58.33% of the skeletons (CPR2) had calculus present. Females in the assemblage showed a higher frequency of dental calculus (80%) compared to males (66.67%). Non-adults were not as frequently affected (25%) and no NSAs were affected (Fig. 4.14).

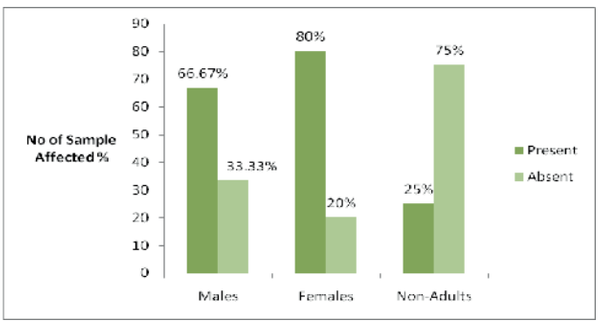

Figure 4.14 Incidence of dental calculus (CPR2)

Acquired Pathological Conditions

Infectious Disease

References used here in the diagnosis of specific infectious diseases include:

General: Ortner 2003, Roberts & Manchester 1995.
Encyclopedia: Resnick 1995, Aufderheide & Rodriguez-Martin 2003, Mann & Hunt 2005.
Tuberculosis: Dormandy 1999, Roberts 1999, Roberts & Buikstra 2003, Santos & Roberts 2006.
Infectious disease: Kelley 1989.
Infectious disease during childhood: Lewis 2007.

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Overview of infectious disease in Britain: Roberts 2000. *Archaeological data on infectious disease in Britain:* Roberts & Cox 2003.

Infectious disease can be attributed to four different agents; bacterial, viral, fungal and parasitic (Aufderheide & Rodriguez-Martin 1998). Bacterial infections found within the Wolverton assemblage are osteomyelitis and possible spinal tuberculosis. Statistical information on pathological conditions present in the assemblage can be found in the project archive.

Osteomyelitis

Osteomyelitis is an inflammation of the medullary cavity of a bone, caused by pus-producing bacteria. It can be classed as either 'acute', 'sub-acute' or 'chronic'. Osteomyelitis can be caused by direct infection through trauma, by direct extension from an adjacent soft tissue infection, or by the haematogenous route from a remote septic focus (Ortner 2003).

Of the entire skeletal assemblage (CPR1), only 2.5% were affected by osteomyelitis (Fig. 4.15). No NSAs were affected. Out of the sample of males, females and non-adults (CPR2), 6.25% of males and of 3.45% non-adults were affected. No osteomyelitis was observed in females.

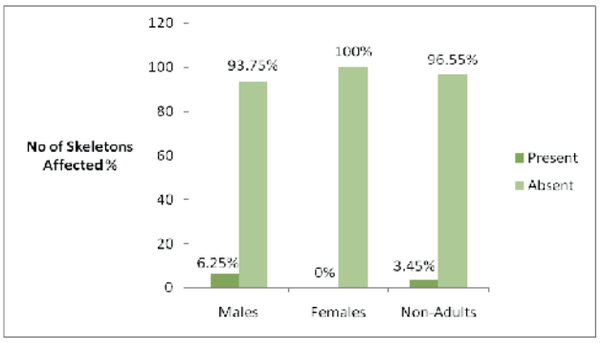

Figure 4.15 Incidence of osteomyelitis (CPR2)

Inhumation 2010, an adolescent aged between 16 and 18 years, was affected by localised osteomyelitis which was active at the time of his/her death. The adolescent's left femur was affected by three cloacae (entry sites for pus-producing bacteria), all situated at the distal anterior surface of the bone (above the knee). The distal epiphysis was unaffected. Taphonomic damage was visible which may have obscured the true extent of the infection. The cloacae measured 8.34 x 2.98mm, 6.98 x 2.99mm and 3.2 x 2.4mm. The cause of the localised infection is unknown, but may be related to trauma to the overlying tissue of the left knee, which subsequently became infected.

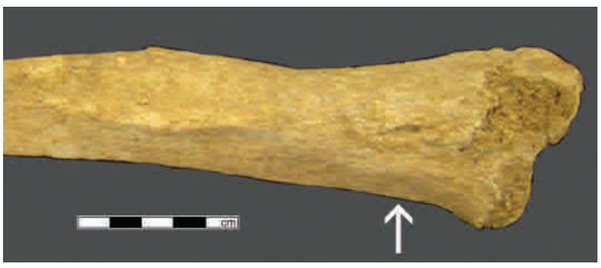

Figure 4.16 Inhumation 2014, Left tibia, medial view

Inhumation 2140, a male aged 36 to 50 years, seems to have recovered from a localised case of osteomyelitis. A healed, localised osteomyelitic reaction affecting the distal diaphysis of his left tibia (just above his left ankle) was observed. The condition was healed, although the entry site of the infection was still faintly visible at the time of death (Fig. 4.16). A significant difference in length between the left and right tibiae (20mm) was noted (Fig. 4.17). This

Figure 4.17 Inhumation 2014, Left and right tibiae, anterior view

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may have caused an unsteady gait, and as a possible consequence subsequent trauma may have ensued, causing the localised osteomyelitic reaction. The reason behind the difference in the leg length remains unclear. One possibility is the contraction of the Poliomyelitis virus (*poliovirus*) during childhood. The virus enters the body through the mouth, infecting the intestinal lining. If untreated, it makes its way through the blood stream and into the central nervous system, attacking the nerve tissues in the brain and spinal cord. This can cause paralysis and muscle weakness. In some cases, the virus may affect muscles on both sides of the body, but more often the paralysis is asymmetrical. As well as paralysis, the growth of the affected limb can be disrupted, as in the case of Inhumation 2140. An increased likelihood of fractures is another consequence of infection by the virus. Inhumation 2140 fractured his clavicle in the months prior to death. Whether this is, or is not related, cannot be established. Inhumation 2140's foot bones were examined for 'equinus foot', another sign of polio, but no evidence was found.

Possible Spinal Tuberculosis

Tuberculosis is a chronic infectious disease caused by a species of *mycobacterium*. *Mycobacterium tuberculosis* can be passed directly from human to human, whilst *Mycobacterium bovis* is transferred to humans via cattle products, primarily infected milk. The route of infection by *mycobacterium tuberculosis* is most commonly through the respiratory tract to the lungs through infected droplets (e.g. by sneezing and coughing). If the condition remains untreated, the bacilli spreads via the blood and lymphatic system to the rest of the body, including the skeleton. Rosencrantz, Piscitelli & Bost (1941) studied the regional distribution of bone and joint tuberculosis in 160 patients and found that the spine was most frequently affected. Resnick & Niwayama (1995) suggest that in 25-50% of cases of skeletal tuberculosis, the spine is involved, while Aufderheide & Rodriguez Martin (2003) suggest that 40% of people with skeletal tuberculosis have spinal involvement.

The classification of 'early stage tuberculosis' and 'advanced stage tuberculosis' has been used (after Jacklin 2009) to aid analysis. All possible cases within the Wolverton assemblage were classified as 'early stage tuberculosis'. All cases had spinal involvement, and in all a number of adjacent lumbar vertebra were involved. In order to examine prevalence rates of the disease, males, females and non-adults with L1 to 5 present for study were used (TPR). Of this sample, 9.68 % showed evidence of possible spinal tuberculosis (Fig. 4.18). No non-adults or NSAs were affected. Females and males were jointly affected (12.5%). These individuals are discussed below.

Only one male (Inhumation 2214), aged 36 to 50 years, was affected by possible spinal tuberculosis. Severe, destructive lytic lesions were found affecting the adjacent surfaces of L3 and L4 (Fig. 4.19). The lesions were very advanced and no remodelling was apparent, indicating that the disease was active at the time of death. The trabecular bone was also more loosely woven than normal. Alternate diagnoses considered yet discounted were; brucellosis, Scheuermann's disease or an aortic aneurism.

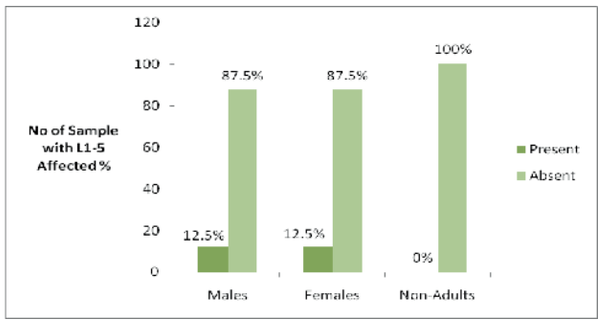

Figure 4.18 Incidence of possible, 'early stage' spinal tuberculosis (TPR)

Figure 4.19 Inhumation 2214, L4 vertebra, inferior surface

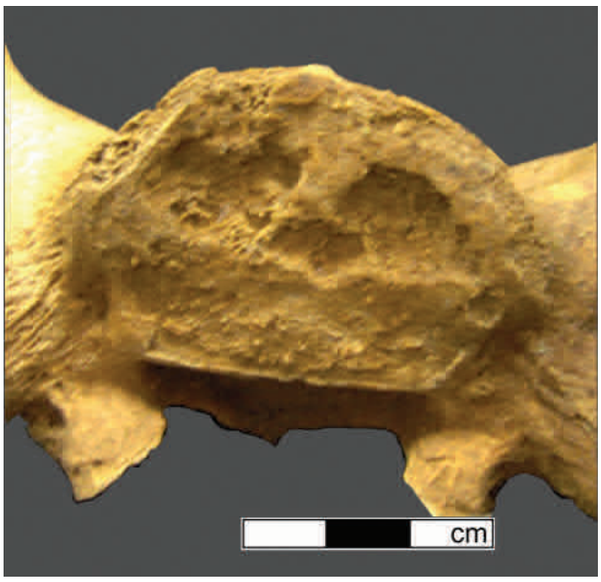

Figure 4.20 Inhumation 2087, S1 vertebra, superior surface

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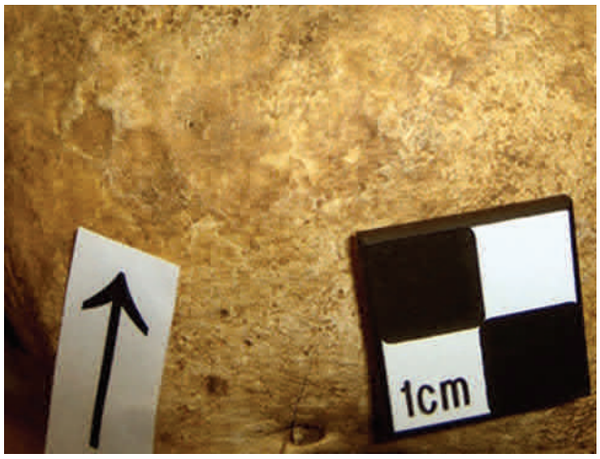

Figure 4.21 Inhumation 2087, frontal bone

Inhumation 2122, a female aged 42 to 50 years, also showed destructive 'tuberculosis-like' lesions affecting L1 and L3-5 (L1 inferior-posterior surface, L3 inferior surface, L4 inferior surface and L5 superior surface). The youngest female to be affected by possible 'early stage' spinal tuberculosis was Inhumation 2087, aged 30 to 32 years. Destructive 'tuberculosis-like' lesions (Fig. 4.20) were found affecting her sacrum (S1 superior surface) and her first lumbar vertebra (L1 inferior and anterior surface). Healed destructive lesions with a 'moth-eaten' appearance were also found located at her right frontal bone (forehead), but not clearly visible due to taphonomic damage (Fig. 4.21). These lesions may possibly be associated with '*Lupus Vulgaris'* (tuberculosis of the skin).

Non-Specific Infection: Periostitis

Periostitis is an inflammation of the bone membrane (periosteum). The condition can form part of a localised event, (e.g. as a result of trauma) or as a secondary condition indicative of an underlying condition, such as an infectious disease. Periostitis has been diagnosed by the presence of plaque-like new bone growth and micro/macroporosity. Just over 4% of males, females and non-adults (CPR2) showed signs of periostitis (Fig. 4.22). For the Wolverton assemblage (CPR1) as a whole, only 2.5% were affected.

Only two individuals showed signs of periostitis, in the form of active lesions affecting their right *os coxae* (pelvis). Inhumation 2202, a child aged between 10 and 12 years, showed a very slight active periosteal reaction located at his/her right ilium (anterior surface). Inhumation 2066, a male aged between 42.5 and 50 years, had an area of active periostitis located at his right external, acetabular rim. No other associated pathological changes were found to affect the skeletons.

Joint Disease & Spinal Disorders

References used in the diagnosis of joint disease and spinal disorders include Aufderheide & Rodriguez-Martin (2003), Bass (1995), Brothwell (1981), Maat, Mastwijk & van der Velde (1995), Mann & Hunt (2005), Ortner (2003), Resnick (1995), Roberts & Manchester (1995), Rogers (2000), Rogers & Waldron (1995), Rogers, Waldron & Watt (1987) and White (2000). Relevant analytical data can be found in the project archive.

Osteophytosis and Osteoarthritis

Osteoarthritis (OA) is the most common joint disease in both ancient and modern populations, and is characterised by a loss of articular cartilage and a subsequent reaction of the sub-chondral and marginal bone (Rogers & Waldron 1995). Osteoarthritis is primarily an age-related disorder. It is diagnosed through the presence of osteophytes, micro/macroporosity of the joint surface, eburnation (polishing) and, in some severe cases, changes in the morphology of the joint surface (for example; grooving). Osteophytosis (OP) is defined here by using the same criteria as for the diagnosis of osteoarthritis, but where signs of eburnation and grooving are absent. Most skeletons with osteoarthritis affecting some joint surfaces also show signs of osteophytosis affecting other joint surfaces. In the analysis of the Wolverton assemblage, when osteophytosis occurs alongside osteoarthritis (affecting the same skeleton) then osteophytosis has been classified as 'early stage' osteoarthritis. This is because, if the individual had lived longer, it is likely that all the indicators of osteoarthritis would have occurred. Osteoarthritis can also be triggered by traumatic conditions such as poorly-healed fractures, and in younger-age categories, where it is clear osteoarthritis is not due to the onset of age. The specific location of osteoarthritis may hint at the lifestyle of the individual.

Osteophytosis (Early OA)

The results (CPR2) reveal that both males (12.15%) and females (12.15%) were equally affected by osteophytosis. In all, 18.18% of NSAs were affected whilst non-adults remained unaffected by the condition (Fig. 4.23). All the skeletons with OP fell within the 'middle adult' age range (36 to 50 years) and in each case only one joint was affected. No individuals with OP had OA also present.

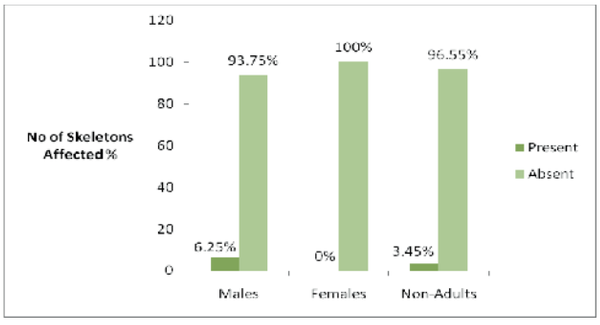

Figure 4.22 Incidence of periostitis (CPR2)

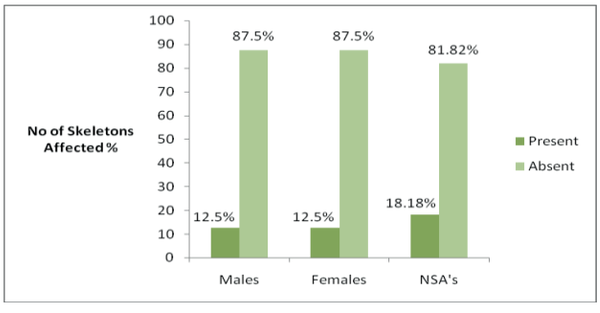

Figure 4.23 Incidence of osteophytosis (CPR2)

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Osteoarthritis

The results (CPR2) reveal that 18.75% of males compared with 12.5% of females suffered from osteoarthritis (Fig. 4.24). None of the NSAs or the non-adults were affected by the condition. In total, 11.76% of the adults were affected. All the skeletons fell within the 'middle adult' and 'middle-older adult' age range (36 to 50+ years). In three cases (not including multiple cases affecting adjacent vertebrae) more than one joint was affected.

The results of the statistical analysis of joints affected by osteoarthritis have been divided into general skeletal locations; the pelvis and legs, the spine, and, the hands and the feet. No skeleton had the joints in their arms or their shoulder girdle affected. Unless otherwise stated, the presence of osteoarthritis has been based on the condition and the joint surfaces being present (TPR). It should be noted that the following results are based on sometimes very small sample sizes, and as such should be regarded with caution. However, the results do show a marked difference in the location of OA between males and females.

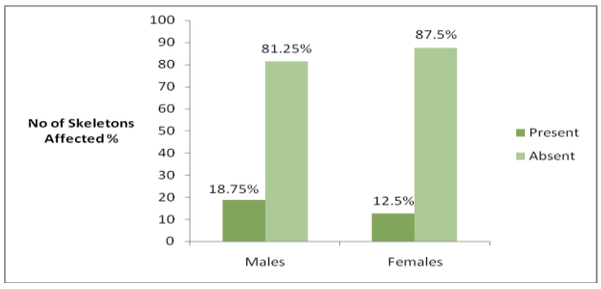

Figure 4.24 Incidence of osteoarthritis (CPR2)

OA Affecting the Pelvis and Legs

No males within the assemblage were affected by OA in their pelvis and legs. OA was however found in the female assemblage. Analysis (TPR) shows that 12.5% of females had OA located at their left acetabulum (part of the hip socket), and 13.33% had it located at their right acetabulum.

OA Affecting the Spine

No females within the assemblage were affected by OA in their spine. However, OA was found to affect the spinal column in males. Analysis (TPR) shows the commonest location of OA within the spine to have been the cervical vertebrae (neck and upper back), 22.22% of males being affected by the condition. The lumbar vertebrae (lower back) followed with 16.67% of males affected, and 8.33% of males had OA in their thoracic vertebrae (mid back).

OA Affecting the Hands and the Feet

OA was found to affect the hands of both males and females within the assemblage. A TPR of 14.29% of males were affected by OA in one or more of their phalanges (finger joints). Of the female sample, 7.14% were affected by OA in their metacarpals (finger joints). With regard to feet, OA was found to affect 25% of the metatarsals (toes) of the female sample. No male feet were affected.

Vertebral Lesions – A Case of Possible Spondyloarthopathy?

Analysis of Inhumation 2196, a female aged over 42 years, showed a number of lesions affecting her lower vertebrae. The cause and aetiology of the lesions were not ascertained. The lesions are described here, alongside a consideration of their possible cause. It is hoped that in providing as much information as possible, future researchers may reach a conclusion as to the exact cause of the condition. Due to the doubt over the actual aetiology of the disorder affecting Inhumation 2196, the results have been recorded, but have been omitted from further statistical analysis.

Pathological analysis revealed a number of erosive lesions affecting Inhumation 2196's lower vertebrae (L2 inferior surface, and superior and inferior surfaces of L4 and L5). The sacrum (S1 superior surface) was also affected (Fig. 4.25). The lesions were originally considered to be related to possible tuberculosis, but closer inspection revealed that they did not resemble typical 'tuberculosis-like' lesions. An alternate theory was the breakdown of the articular cartilage, possibly caused by inflammatory arthritis or similar. In addition to this, ankylosis (fusion) of T11, T12 (complete ankylosis of L1 and T12 at bodies and neural arches) and L1 (partial fusion of T11 and T12 at bodies) was discovered, with early ankylosis also affecting L1 to L2 (Fig. 4.26). In severe cases of vertebral destruction due to tuberculosis, the vertebrae can collapse and ankylosis of the affected vertebrae can occur. In the case of Inhumation 2196, the ankylosis is not due to spinal collapse

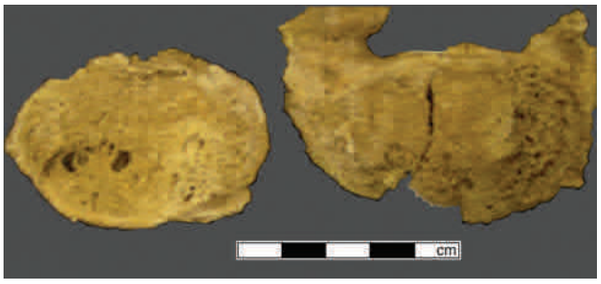

Figure 4.25 Inhumation 2196, L4 vertebra *(l)*, inferior surface and L5 vertebra *(r)*, superior surface

Figure 4.26 Inhumation 2196, T11, T12 and L1, anterior and posterior views

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and the affected vertebrae resembled a condition caused by ankylosing spondylitis in both location and form. Ankylosing spondylitis is one of a number of disorders, collectively called 'seronegative spondyloarthopathies', which can sometimes be difficult to differentiate between within archaeological assemblages, owing to their similar characteristics and often poor preservation and/or lack of completeness of the skeleton involved. The seronegative spondyloarthopathies are erosive, inflammatory polyarthropathies, which involve the entheses (ligament insertion points) and the joint's internal structure (Rogers & Waldron 1995).

Ankylosing spondylitis usually begins by ankylosis of the sacro-iliac joints and works its way upwards, in turn causing the ankylosis of S1 to L5, L5 to L4 and so on. However, in Inhumation 2196 no ankylosis was found to affect either the sacro-iliac joints or the lower lumbar vertebrae (L3 to S1). An alternate diagnoses which was considered was psoriatic arthritis (also a seronegative spondyloarthopathy). The female revealed a substantial loss of bone density (osteopenia) which affected the majority of her skeleton (see *Metabolic Conditions*, below). This is problematic if considering the diagnosis of psoriatic arthritis, as Ortner (2003, 580) states that the bone density of individuals with psoriatic arthritis should be normal, with the exception of the vertebrae. It should however, be borne in mind that the loss of bone density may be related to the individual's age, and not associated with the condition discussed here. Inhumation 2196 also showed evidence of an enthesopathy (a bone growth) affecting the proximal tibio-fibular joint of her left fibula. Enthesopathy is also a feature of psoriatic arthritis.

Trauma

References used in the diagnosis of trauma include Aufderheide & Rodriguez-Martin (2003), Lewis (2007), Lovell (1997), Ortner (2003), Resnick (1995), Roberts (2000) and Roberts & Manchester (1995).

Fractures

Fractures are amongst the most common pathological conditions seen in human skeletal populations, alongside dental and joint disease (Roberts & Manchester 1995). Evidence of angular or rotational displacement, shortening of affected bones and apposition of the fracture fragments, as well as the specific location of the fracture were recorded during analysis. A fracture (an incomplete or a complete break in the continuity to the bone) can result from either direct or indirect trauma (Lovell 1997). Direct trauma is where a break occurs at the point of impact. Examples of direct trauma are transverse, penetrating, comminuted and crush fractures. Indirect trauma is where a fracture occurs in a place other than the point of impact (Miller & Miller 1979). Examples of indirect trauma are oblique, spiral, greenstick (due to angular force), greenstick (due to compression), impaction and avulsion fractures (Lovell 1997).

Within the entire skeletal assemblage (CPR1), a total of four fractures were identified, affecting three individuals with a prevalence rate of 3.75%. One skeleton had experienced multiple fractures. Of the male sample (CPR2), 6.5% were affected by fractures, compared with 8.33% of the female sample (CPR2). No NSAs or non-adults from

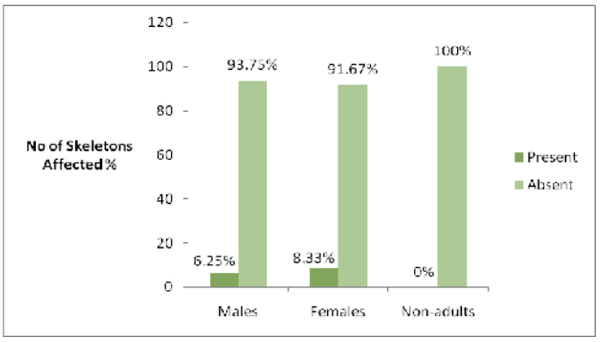

Figure 4.27 Incidence of fractures (CPR2)

the assemblage were affected (Fig. 4.27). Details of these individuals, one male and two females, appear below.

Inhumation 2140, a male aged between 36 and 50 years, experienced an oblique fracture to his left clavicle (Fig. 4.28). The fracture had been in the process of healing at death, and was damaged either during excavation, or during processing. Inhumation 2020, a female aged between 25 and 35 years, had experienced multiple oblique fractures to her right arm. The fractures were located at her right humerus (mid diaphysis) and the right ulna (distal diaphysis, just above the metaphysis): both were old and well-healed. It is possible that the fractures occurred at the same time. Inhumation 2096, a female aged 21 to 35 years, had experienced a transverse fracture to a right rib (either the 5th, 6th or 7th). The injury was located one-third of the way from the thoracic end of the rib (Fig. 4.29).

Inhumation 2164, a male aged 36-50 years at death, had a large oval wound puncturing the rear of the cranium (left parietal), with radiating fractures, one of which continued through the skull suture to the occipital bone. The blunt edges of the wound and the absence of bone remodelling suggest that the wound was peri-mortem and that a pointed weapon had been thrust into the back of the cranium, presumably being the cause of death.

Figure 4.28 Inhumation 2140, left clavicle, inferior view

Figure 4.29 Inhumation 2099, right rib

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Schmorl's Nodes

Lovell (1997) explains that Schmorl's nodes are a mild form of burst fractures, resulting from vertical compression that ruptures the inter-vertebral disc through the vertebral end plate, forcing the disc tissue into the vertebral body. Schmorl's nodes can affect both the superior and/or inferior surfaces of vertebral bodies.

Within the sample of males, females and adolescents (TPR), 31.03% of individuals were affected by one or more Schmorl's nodes. Males and females were equally affected, showing a prevalence rate of 27.27% for males and 26.67% for females (Fig. 4.30). Two adolescents were affected by Schmorl's nodes, but are not shown as the sample of adolescents for study (n3) was too small to be representative. A total of 25 individual vertebrae were affected by Schmorl's nodes. More were identified as present, but as the individual vertebra could not be identified due to poor preservation, only the general location was recorded (*i.e.* lumbar or thoracic bodies). Schmorl's nodes were found only to affect the thoracic and the lumbar vertebrae.

Figure 4.30 Incidence of Schmorl's nodes (TPR)

Metabolic Conditions

References used in the diagnosis of the metabolic conditions featured below include Aufderheide & Rodriguez-Martin (2003), Lewis (2007), Mann & Hunt (2005), Ortner (2003), Roberts & Manchester (1995) and White (2000).

Cribra Orbitalia

Cribra orbitalia is a term used for pathological changes affecting the orbit (eye socket). These can indicate the presence of iron-deficiency anaemia and also of general ill-health, blood loss through traumatic injury, chronic disease and biological stress. The condition only occurs during the growing period of an individual. In this study, cribra orbitalia has been classed as either 'active' (*i.e.* at time of death) or 'beginning/healing' where the lesions are slight and unable to be distinguished from the condition beginning or healing, or 'healed'. All adults affected had healed lesions.

Analysis revealed that 25.45% of the sample available for study (TPR) were affected by cribra orbitalia during their growth period. Non-adults were the most frequently affected (41.18%), and showed a mixture of active lesions, and lesions either beginning or healing. Males followed, 30.77% showing healed lesions, whilst the female sample showed 15% healed lesions. No NSAs were affected (Fig. 4.31). The non-adults with cribra orbitalia consisted of four children and three adolescents. Of interest is Inhumation 2093, a child aged between 6 and 8 years, who suffered from both active cribra orbitalia and active porotic hyperostosis (see below), both of which were present at his/her time of death.

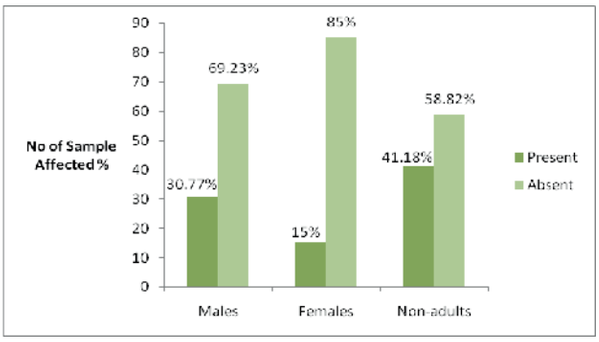

Figure 4.31 Incidence of cribra orbitalia (TPR)

Porotic Hyperostosis

Porotic hyperostosis is a term used for pathological changes affecting the cranial vault. Like cribra orbitalia, it can be indicative of iron-deficiency anaemia and other conditions. Analysis revealed that 1.54% of the sample available for study (TPR) was affected by porotic hyperostosis. Only Inhumation 2093, a child aged between 6 and 8 years, was found with active porotic hyperostosis lesions (Fig. 4.32). No males, females or NSAs were affected by the condition.

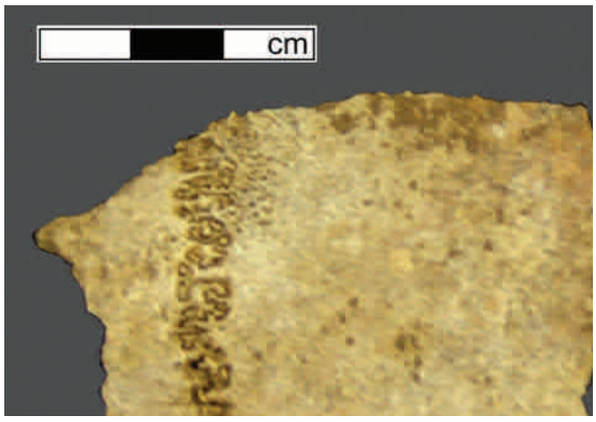

Figure 4.32 Inhumation 2093, right parietal bone

Osteopenia

Osteopenia is a term used to describe a disproportionate loss of bone mass. It may be caused by osteoporosis, rickets, hyperparathyroidism, cancer and severe malnutrition (Ortner 2003). Only one case of osteopenia was found within the Wolverton assemblage. The affected skeleton, Inhumation 2196, was that of a female aged 42+ years. All of her bones were exceptionally lightweight, and cross-sections of the long bones revealed a marked reduction in cortical bone and an increase in the size of the medullary cavity (Fig. 4.33). Most of her bones also showed signs of porosity, the vertebrae being exception-

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ally porous. It is possible that Inhumation 2196 suffered from either Type I post-menopausal osteoporosis or Type II senile osteoporosis.

Figure 4.33 Inhumation 2196, cross-section of right humerus, proximal

Dental Hypoplasia Lines

Hypoplasia lines are horizontal lines which affect the permanent dentition, and are a result of a disruption of the development of the enamel, owing to biological stress during childhood. Measurement of the lines can indicate the time at which the stress occurred, although measurements rely on modern data for enamel development, and so should be regarded as an estimate only. A total of 35.85% of skeletons (CPR2) had dental hypoplasia lines present, 78.95% of which had more than one hypoplasia line recorded, indicative of re-occurring biological stress. The skeletons were all affected between the ages of 1.5 years and 5.5 years. The most frequent age of onset recorded within the sample was between 2 and 3.5 years (Fig. 4.34).

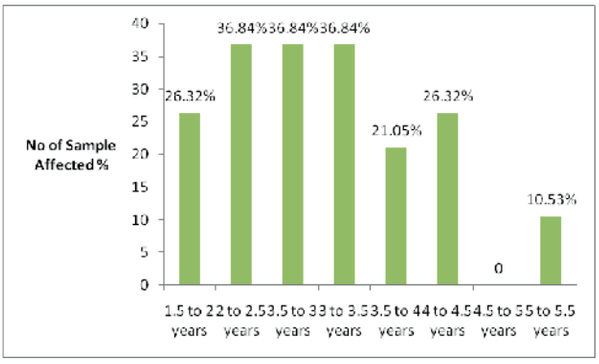

Figure 4.34 Hypoplasia lines – age of onset (CPR2)

RESULTS: THE CREMATIONS

Two urned cremation burials were found at Wolverton, Cremation 2252 and Cremation 2437. Cremation 2252 weighed 135g and had reached full oxidisation (more than 600°C). The remains appear to represent one individual, possibly an adult. No pathology or age related changes could be identified, and age and sex could not be established with any degree of certainty. Cremation 24437 weighed 390g and had also reached full oxidisation. The remains represent a young adult, aged between 18 and 35 years, possibly female.

DISCUSSION

Whilst the osteological analysis of the Wolverton assemblage has created a lot of valuable comparative data, we should consider the limitations of such data. Many non-life threatening diseases are short-lived, so they do not affect the skeleton. Other diseases are so serious that death occurs before bone changes have taken place. For example, diseases such as various cancers rarely affect skeletal material. It should be remembered that the health of the population as represented here is based on the skeletal material alone, and that many disorders and diseases may have been present, yet cannot be assessed or accounted for.

Mortality

Statistical analysis of the age at death of the sexed assemblage reveals that the majority of males and females passed away during middle age (36 to 50 years). The results imply that more females than males survived into old age, and that slightly more females than males passed away within the young age category (21 to 35 years), possibly reflecting problems during childbearing. Although there is no specific evidence within the Wolverton assemblage regarding obstetric problems, parallels can be drawn from other Anglo-Saxon assemblages. Roberts & Cox (2003, 165–6) draw together evidence for six sites where females were found with associated foetal bones, including Great Chesterford, Essex, where two females were found with foetal skulls in their pelvic areas (Waldron 1988).

The results for the non-adult assemblage reveal that most non-adults passed away during childhood (4-12 years) closely followed by adolescence (13-20 years). Very few deaths were found within the infant category (0-3 years), but this may not be truly reflective of the population on the whole. This may be due to bone loss relating to taphonomic factors and bone loss, and/or through modern disturbance, or that they were simply buried elsewhere.

Health and Disease

An overview of the health of the Anglo-Saxon population of Wolverton, based on age and sex is provided below. The diet, dental health, joint disease, trauma, infectious disease and lifestyle of the aged males, females and non-adults of the burial population have been investigated. Where viable, comparisons have been made with comparative osteological data. However, in many instances the sample numbers varied between sites and different recording methods were used, so any comparisons drawn should be viewed in this light. Roberts & Cox (2003) compiled

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osteological data from 72 Anglo-Saxon cemeteries dating between *c*.410–c.1050, representing a total of 7122 inhumation burials. A number of the sites collated by Roberts & Cox (*ibid*.) are within a 50 mile radius of Wolverton (Table 4.2). Comparable osteological data from these sites is referenced where relevant.

Stature

Roberts & Cox (2003, 195) calculated the mean stature of 996 males and 751 females from various Anglo-Saxon sites, finding similar results to those of the Wolverton assemblage (Fig. 4.35).

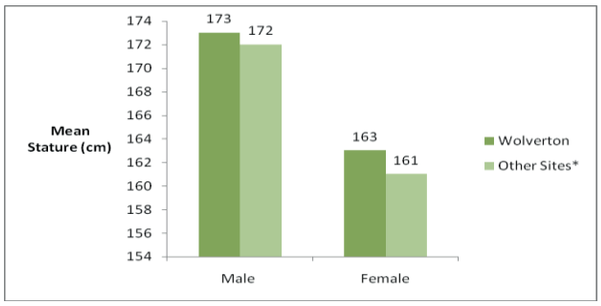

Figure 4.35 Stature of males and females from Wolverton, compared with other Anglo-Saxon assemblages

Diet

Cribra orbitalia, porotic hyperostosis and dental enamel hypoplasia are osteological expressions of metabolic disorders, partly related to diet and malnutrition, found within the Wolverton assemblage. Roberts & Cox (2003) suggest that although cribra orbitalia has a variety of potential causes, it is often associated with settled communities and an agricultural subsistence economy. Of the Wolverton assemblage, 28% (TPR) showed signs of cribra orbitalia, compared with 24.6% from other comparative sites Roberts & Cox (2003). Further work by Lewis (1999) on the non-adults from the Raunds (Northants) assemblage suggests 55% (TPR) were affected by cribra orbitalia. Initial results have shown that 35.85% (CPR2) of the Wolverton assemblage was affected by dental enamel hypoplasia, compared with 18.8% (CPR) from other sites (Roberts & Cox 2003). Data from Raunds Furnells (Northants) suggests 11.9% (CPR) of the population were affected. Lewis (1999) also found 32% (TPR) of non-adults affected by enamel defects. To enable comparison with Roberts & Cox (2003), the number of occurrences compared with the number of teeth has also been calculated, giving a total 4.84% (TPR) hypoplasia defects affecting the Wolverton population. This data can be compared with the 7.4% (TPR) from other sites (Roberts & Cox 2003), and with 1.9% (TPR) St Paul's Square, Bedford (*ibid*.).

Dental Health

During the Anglo-Saxon period, dental health and dental hygiene were little understood. Dental disease can also be a reflection of dietary quality (Roberts & Cox 2003). The original data analysis of the dental health of the Wolverton assemblage was based on both the maxilla and the mandible being present for study, and on the number of individuals affected/not affected (CPR2). Roberts & Cox (2003) based their calculations on the number of teeth affected/not affected or sockets affected/not affected (TPR). Further calculations on the Wolverton dental data have been provided to enable comparisons between the Wolverton data, and that of Roberts & Cox (2003). Where necessary the calculations will state whether CPR or TPR has been used.

Within the Wolverton assemblage 33.3% (CPR2) of the sample had one or more teeth affected by dental caries, with the suggestion that females were slightly more affected by caries than the males. The TPR results for dental caries within the Wolverton assemblage reveal a slightly smaller percentage of individuals affected, 3.91% compared with 5.2% (TPR) for various sites (Roberts & Cox 2003). The results for other sites are similar: 3.2% (TPR) at Berinsfield (Oxon), 4.4% (TPR) at Empingham (Rutland), 4.4% (TPR) at Raunds Furnells and 3% (TPR) at St Paul's Square, Bedford (*ibid*.). The Wolverton males, females and non-adults have also been compared in this manner. The Wolverton results reveal that 2.59% (TPR) of non-adult teeth, 4.78% (TPR) of female teeth and

Table 4.1 Selected Anglo-Saxon cemetery sites within a 50-mile radius of Wolverton (*after Roberts & Cox 2003*)

Site name and location	*Approx. distance from Wolverton (miles)*	*References*
Berinsfield, Oxon	30	Boyle *et al* (1995)
Bidford-on-Avon, Warks	30	Brash (1923–4), Brash *et al* (1935)
Didcot, Oxon	30	Boyle *et al* (1995)
Empingham 2, Rutland	45	Mays (1996)
Great Chesterford, Essex	50	Waldron (1988)
Marina Drive, Dunstable, Beds	10	Matthews (1962)
Oakington, Cambs	40	Taylor *et al* (1998)
St Paul's Square, Bedford	15	Isaac & Roberts (1998)
Raunds Furnells, Northants	25	Powell (1996)

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3.67% (TPR) of male teeth were affected by caries. This confirms the suggestion from the earlier calculations that the female population showed a higher prevalence of caries than the male.

Within the Wolverton assemblage, 9.38% (CPR2) of the males and females were affected by dental abscesses. The TPR revealed that 0.72% (TPR) of the males and females were affected. Roberts & Cox (2003) cite 3.92% (TPR) with reference to data from various sites. The results from other individual sites are similar: 2.9% (TPR) at Berinsfield, 4.3% (TPR) at Raunds Furnells and 0.3% (TPR) at St Paul's Square, Bedford. The Wolverton results also reveal that 0.21% (TPR) of female sockets and 1.08% (TPR) of male sockets were affected by abscesses. Calculus was found in 58.3% (CPR2) of the Wolverton assemblage. Females were more affected than males, whilst non-adults were less affected. Collated data (Roberts & Cox 2003) suggests that calculus affected 35% (CPR). The results for Great Chesterford (Essex) suggest 21.5% (CPR) and 41.5% (CPR) at Raunds Furnells. In all, 6.25% (CPR2) of Wolverton assemblage showed signs of periodontal disease, and only females were affected. This is very low compared to the collated data (Roberts and Cox 2003), which suggests that periodontal disease affected 27% (CPR). Other sites also show a higher rate of periodontal disease compared with the Wolverton assemblage. The results for Great Chesterford suggest 26.9% (CPR), for St Paul's Square, Bedford 16.1% (CPR) and 42.9% (CPP) at Raunds Furnells.

Joint Disease

Within the Wolverton assemblage a number of adults had joints affected by osteoarthritis. The total for the entire adult assemblage was 11.76% (CPR): it affected males more frequently and the disease was found to be more common within the middle to older age categories. This result is reflected by Roberts & Cox (2003), where the combined data on osteoarthritis reveals 8.82% (CPR), with males more frequently affected. Within the Wolverton assemblage, the spines of males were most frequently affected, but none was found in females. The collated data (Roberts & Cox 2003) indicates that spinal osteoarthritis affected a 6.12% (CPR) with more males affected. This is reflected by the Wolverton result of 7.15% (CPR).

Trauma

Within the Wolverton assemblage fractures were recorded for 3.75% (CPR) of individuals. The collated data (Roberts and Cox 2003) suggests 5.9% (CPR). At Wolverton, fractures were found to affect one clavicle, one humerus, one ulna and one rib. Fractures to the clavicle have been found at Berinsfield, a fractured humerus and ribs were found at Great Chesterford and a rib fracture was also found at St Paul's Square, Bedford. In addition, one individual exhibited a large puncture wound to the skull which appeared to be peri-mortem and was probably the cause of death. Schmorl's nodes are often purported to represent severe wear and tear on the spine, primarily through lifting, bending and carrying heavy loads incorrectly. Schmorl's nodes are relatively common in skeletal assemblages, and tend to increase with age. Within the Wolverton assemblage 31% (TPR) were affected by Schmorl's nodes, whilst Roberts & Cox (2003) found 16.6% (TPR) from collated sites. The evidence from Wolverton suggests that both females and males were equally affected.

Infectious Disease

Evidence for infectious disease within the Wolverton assemblage comes from the identification of possible tuberculosis, osteomyelitis and periostitis. Within the Wolverton assemblage, 4.35% (CPR) for possible 'early stage tuberculosis' and 9.68% (TPR) for possible 'early stage spinal tuberculosis' were found. The CPR for Wolverton is higher than that found by Roberts & Cox (2003); 0.9% (CPR) and for Raunds Furnells 0.6% (CPR) for tuberculosis. This discrepancy is due to a difference in categorisation, where previous researchers have only identified definitive, advanced cases of tuberculosis. However, as with all bone diseases there is always an early stage of the infection, where the bone changes are more subtle and not as advanced, and which should not be overlooked. The problem of the classification of 'early tuberculosis' and 'advanced tuberculosis' is discussed in Jacklin (2009, 21), with reference to Roberts (pers. comm.), who felt the classification of 'early stage tuberculosis' was a useful concept. It is also important to consider that tuberculosis only affects the skeleton in 5-7% of cases (Resnick 1995), and the true prevalence rate for tuberculosis within assemblages cited may be higher than indicated. No definitive, advanced cases of tuberculosis were identified within the Wolverton assemblage.

The Wolverton results reveal 2.5% (CPR) of individuals were affected by periostitis. Some of the periosteal reactions may have been associated with infectious diseases, such as tuberculosis and other more virulent undiagnosed disorders. Some periosteal reactions were associated with localised infections and some with non-specific infections. Osteomyelitis affected 2.5% (CPR) of the Wolverton assemblage, similar to the results achieved by Roberts & Cox (2003), with 1.34% (CPR) for their collated site data on osteomyelitis. Within the Wolverton assemblage one individual shows signs of possible poliomyelitis (1.25% CPR). Evidence for five possible cases of poliomyelitis from other Anglo-Saxon sites is discussed by Roberts & Cox (2003). The main identifying factor for the disease in all cases was wasted and atrophied limbs.

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CHAPTER 5: DISCUSSION OF THE ARTEFACTS

Bob Zeepvat, with contributions by Michael Farley and David Parsons

INTRODUCTION

The excavation at Wolverton produced a wide range of artefacts, almost all as grave goods deposited with the inhumation and cremation burials. These are listed, described and illustrated in Chapter 3 and Appendix 2. On the whole the objects are characteristic of the Anglo-Saxon 'conversion' period, *c.*7th century AD. In addition, a few objects of earlier periods and a number of natural items were recovered from some graves.

In this chapter, aspects of the artefactual assemblage are discussed. For the purposes of discussion, the artefacts from the cemetery have been divided into the following categories: personal adornment or dress, weapons and knives, tools and household items, personal items, keepsakes and fabrics.

Conservation

Following the excavation, the finds assemblage was submitted to the Conservation Laboratory in the Archaeology Department, University of Leicester, for consolidation and examination. The iron objects were found to be in generally poor condition and unlikely to respond well to intensive cleaning, so they were x-rayed and selectively cleaned in order to ascertain object profiles and any decorative details indicated by the radiography. Many of the drawings in the burial catalogue were prepared with information from the x-ray negatives. In contrast, the non-ferrous materials were in a far better state of preservation. Subsequent cleaning and stabilisation revealed a wide range of diagnostic objects. Preservation of mineralised organic material was also found to be extensive including linen, wood and leather.

Where possible, objects were cleaned using mechanical methods, following microscopic examination. Mud was removed using alcohol, containing water. Copper-alloy objects were stabilised with benzotriazole solution and coated with Incralac acrylic lacquer, which is soluble in acetone. Repairs were made using Paraloid B72 adhesive, also soluble in acetone.

Treasure

Under the provisions of the *Treasure Act 1996,* the finds from five graves (2045, 2082, 2168, 2203, 2360) were reported to the Buckinghamshire Portable Antiquities Officer and the Milton Keynes Coroner because of the presence of silver artefacts in those assemblages. After consideration they were declared not to be treasure.

PERSONAL ADORNMENT OR DRESS

Bangle, Brooch & Ring

Grave	*Find no.*	*Description*
2005	7	Ring
2005	8	Bangle
2126	51	Penannular brooch

A finger ring (**7**) and a shale bangle (**8**) were found in the grave of adult inhumation 2004, possibly a female. The ring, of copper-alloy with traces of tinning, can be identified with some certainty as a finger ring by the decoration on its outer edge, comprising three parallel raised bands. The bangle was originally identified as a purse ring, though shale seems a rather unusual material to use as a purse ring and Saxon purse rings were more commonly made of elephant ivory (*cf* Timby 1996, 62–63; Haughton & Powlesland 1999, 117). Shale bangles similar to this example are known from the Roman period (e.g. Williams & Zeepvat 1994, 368, 420) and from Saxon levels at Coppergate, York (Mainman & Rogers 2000, 2599 & fig. 1293): **8** could be of either date, used either for its intended function or maybe as a purse ring.

Penannular Brooch

Michael Farley

A possible penannular brooch (**51**) was recovered from Grave 2126, a child burial. It is incomplete, but appears to have had a plain cast ring with large trapezoidal terminals (Fig. 5.1). Its position, and the probability that it was incomplete when buried, indicates that it may have been a keepsake contained within a belt purse at the time of burial.

The classification of penannular brooches of the early medieval period in Britain seems to have last been discussed in detail by Dickinson (1982), based on earlier work by Fowler (1963, with extensive type lists) and some suggestions by James Graham-Campbell (1976). There appears to be no current database of such finds. The essential elements of the incomplete Wolverton brooch may be characterised as the possession of a plain hoop and a lozenge-shaped terminal containing pellets (there is a hole in the terminal, probably due to corrosion of a thin casting here, which may have removed some of these).

Dickinson helpfully illustrates several penannulars. It is notable that a number of these incorporate a lozenge-

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shape form in their terminals or include the shape within the design. Several of the lozenge forms contain multiple dots (Dickinson's group G1.4, fig. 4) and others (apparently) contain groups of pellets (mainly Dickinson group G1.3, fig. 6). The former mainly have ribbed hoops, the latter are mainly plain, as is the Wolverton penannular. Among the most closely-dated but late examples of the Type G tradition is a silver penannular brooch of simple form decorated with a lozenge containing pellets in its terminal, from the Cornish Trewhiddle hoard, which is coin-dated to the late 9th century (Wilson 1961). (Dickinson's illustrations show that, when complete, these penannulars had pins at least twice the diameter of the brooch itself).

The closest link between the Dickinson series and the basic form of the Wolverton brooch is therefore Dickinson's G1.3 group. However, an extra facet of the Wolverton example is the presence of two pairs of opposing decorative features that clasp the basic lozenge form. Each pair itself consist of two depressed circles and each pair is joined to the other by a tapering element. It is tentatively suggested that the pairs might represent opposed animal forms.

Penannular brooches are fairly rare element among Anglo-Saxon grave finds, although as some were certainly made of iron the type may be considerably under-represented. At Lechlade, for example, there were eight probable iron penannulars, but only two of copper-alloy. Of the latter, one had a simple folded back terminal, the other was simply expanded (Boyle *et al* 2011). In order to emphasise the general absence of penannulars from Anglo-Saxon graves and the general lack of elaborate decorative features when they are present, a few examples may be cited. At Morning Thorpe, Norfolk, where a wide range of brooches was present, many being annular, only three were penannular and these have simple rolled or expanded terminals (Green 1987, 165). Empingham II, in Rutland (Timby 1996), has several annulars but only one penannular: that also has a simple rolled terminal. Edix Hill, Cambridgeshire (Malim & Hines 1998), has one annular and three penannulars, two in graves and one unstratified. Of the latter, two have simple expanded terminals and one a rolled terminal. Spong Hill, Norfolk has twenty-three annulars, many in pairs, but no penannulars (Hills *et al* 1984). The cemetery at Norton, Cleveland, contains many more annulars than in any cemetery noted above, a 'possible grand total of 65 brooches, of which 55 are made in copper-alloy … nine of iron and one of lead', but only two penannulars. Of these, one is a fairly simple brooch with expanded terminals, the other – a very small example – has two simple lozenge-shaped terminals, each containing a four-pointed star. The author notes that the latter can be attributed to the 6th century and is of a group generally located in Scotland (Sherlock 1992, 40–41). Buckland in Kent had ten annular and one penannular with rolled terminal (Parfitt 2012, 74, 456 gr 214). Although this does not represent a systematic search of the literature, it does indicate that the relatively sophisticated Wolverton brooch is a particularly unusual item in an English grave.

Although penannulars of any form are rare in graves in southern and eastern England, where they do occur they nearly always have simple terminals. A few examples occur a little further west in Warwickshire, Gloucester and Somerset. Grave 405 at Cannington, Somerset, contained an unusually elaborate example with circular glass studs, suggested to be of 8th-century date. Two other small examples from the same cemetery had terminals containing lozenges with four punched dots (Rahtz 2000).

The penannular brooch form in Britain has a long history, but their most elaborate development from the 7th century onwards takes place in Wales, Scotland and Ireland, although apparently the brooches are rarely recorded from graves. A Welsh find from Llanmadog has a passing similarity to the Wolverton brooch in that its terminals are lozenge shape (with another lozenge within each terminal) and, as the Wolverton brooch, the lozenge is contained between two double-ended forms which lie across the axis of the hoop (Lewis 1982, plate V, no. D). The terminals of three other Welsh brooches from Newton Moor, Linney Burrows and Longbury Bank also have a lozenge shape in their terminals (Redknap 1995). On balance, it seems very likely that the Wolverton style of brooch lies with a western tradition. The character of the brooch therefore suggests a link, however tenuous, between the child and western Britain.

[The writer is very grateful to Professor James Graham-Campbell for commenting on a draft of his text and drawing attention to publications of which the writer was unaware.]

Figure 5.1 Penannular brooch **51**, suggested reconstruction

Beads

Twenty-six beads were recovered from six inhumations, of either females or unsexed individuals. The assemblage, which included beads of bone, glass, shell, semi-precious stone, wire and one composite bead, mostly came from necklaces, though a few were associated with chatelaines.

Glass

Glass beads account for half of the collection. The majority are annular beads of plain blue, clear or yellow glass, though two of the larger blue beads (**181**) are deco-

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Grave	*Find no.*	*Description*	*Material*
2018	20	?Bead, annular	Bone
2082	38	Bead	Composite
2135	39	Bead, annular	Glass
2135	57	Beads x2	Cowrie shell
2168	93	Bead, horned	Glass
2168	94	Bead, melon	Glass
2168	86	Bead	Cowrie shell
2197	127	Bead, annular	Glass
2203	133	Beads, annular x3 on wire	Glass
2203	135	Beads, annular x3	Glass
2203	136, 137	Beads, biconical wire x6	Silver wire
2360	183	Beads, pear-shaped x2	Amethyst
2360	180, 181	Beads, annular x3, blue glass	Glass & silver
2360	182	Bead	Cowrie shell

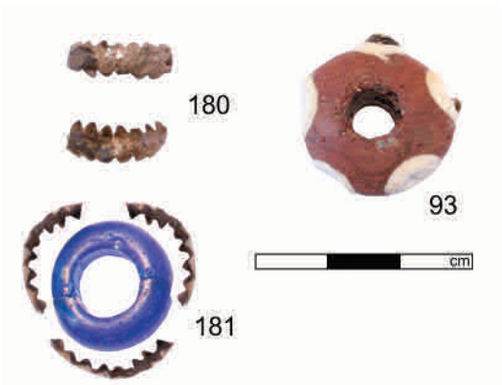

Figure 5.2 Beads **93, 181** and silver edging strip **180**

Figure 5.3 Composite bead **38**

rated with swirls of white glass, similar to examples in black glass with white waves from West Heslerton, Yorks (Haughton & Powlesland 1999, 110, type C2b). The third item in this assemblage, a large plain blue bead, appears to have been encircled by a thin silver strip with dog-tooth edges (**180**). This appears to be a unique piece (Fig. 5.2), involving a high degree of skill in its manufacture: no parallels have yet been found for it. In Grave 2203, three annular glass beads were found threaded onto silver slip-knot rings (see *Necklaces*, below) and it is likely that the loose glass beads accompanying them (**135**) had originally been similarly mounted. Other glass beads worthy of note, both associated with chatelaines, are **94**, a finely-made turquoise melon bead which is most likely of Roman date

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and **93**, a large red/brown annular bead with 'horns' made of white glass blobs around the circumference, overlain with blobs of blue/black glass (Fig. 5.2). Horned beads are rare in England and on the continent, but have continental parallels of late 6th or very early 7th-century date (Koch 1977).

Silver Wire

The next most common beads in the assemblage, with six examples, are biconical beads fashioned out of silver wire (**136, 137**). All were found in Grave 2203, that of a child, and with the accompanying glass beads and slip-knot rings probably formed part of a complex necklace – or one of several necklaces – buried with the deceased. Biconical beads of copper-alloy, silver or gold wire are known from other English sites, most notably the gold wire beads in the necklace from Desborough, Northants (Webster & Backhouse (eds) 1991, 28, fig. 13), and typically date to the second half of the 7th century (Geake 1997, 43).

Cowrie Shell

Of the remaining beads found at Wolverton, **57, 86** and **182** are fashioned from cowrie shells. Cowrie shells tend to occur in 7th-century contexts, both in England and on the Continent (Meaney 1981, 124), as complete shells or as beads made from them. Finds are concentrated in Kent and Cambridgeshire, with a scatter throughout the rest of England (*ibid,* 123). Two types of cowrie shell have been identified in English cemeteries: *Cypraea Europa,* the more common European variety and the panther cowrie (*Cypraea pantherina* Lightfoot), a rare import from the Red Sea and beyond, identified from the cemetery at Butler's Field, Lechlade, Glos (Boyle *et al* 2011, 88). Cowrie shell pendants and beads are most commonly found with the burials of adult women and children under ten: at Wolverton they were found with two adult females and the rich grave of an adolescent, probably female. The variety of shell used for the Wolverton beads was not identified. Cowrie shells are believed to have had amuletic properties, possibly related to the role of the female in society and as a fertility symbol (Meaney 1981, 181–189). As beads, they may have served as protection against the evil eye (*ibid*, 127: Lethbridge 1936, 31).

Other Beads

Bone bead **20** was originally identified from its shape as a spindle whorl, though its small size and weight make it unsuitable for this function. Beads of bone or antler have been found in cemeteries at West Heslerton (Haughton & Powlesland 1999, 114) and Lechlade (Boyle *et al* 2011, 52): Meaney (1981, 45) notes that they occur throughout the Saxon period. The two pear-shaped amethyst beads (**183**) were found with six silver slip-knot rings, two shell beads and three glass beads (see above), together probably constituting a necklace. Amethyst beads are generally dated late 7th to early 8th century (Geake 1997, 41). Composite bead **38** is possibly unique – no parallels have as yet been found – and from its complex structure of copper-alloy sheet and mother-of-pearl inserts it must have been an expensive object (Fig. 5.3). It was found near the head of Inhumation 2081, a young adult female, so she may have worn it around her neck on its own, as an amulet.

Pendants & Necklaces

Grave	*Find no.*	*Description*
2045	32	Scutiform pendant, silver
		Slip-knot rings x4, silver
2135	53	Composite pendant, white glass
	54	Composite pendant,turquoise glass
	55	Composite pendant, blue glass
2168	79	NECKLACE, comprised of:
		• Bracteate pendant, silver (80)
		• *Bulla* pendant, silver (81)
		• *Bulla* pendants x4, copper-alloy (82)
		• Disc pendant fragment, silver (83)
		• Slip-knot rings x4, silver (84, 85)
2203	130	NECKLACE, comprised of:
		• *Bulla* pendant, copper-alloy (131)
		• Twelve slip-knot rings, silver (133, 134)
2360	178	Necklace, six slip-knot rings, silver

Five individuals – three adult females, an adolescent and a child – were found with some form of necklace and/or pendant. Four necklaces were identified (Graves 2045, 2168, 2203, 2360), three of them in conjunction with pendants. Twelve pendants in total were found, seven in Grave 2168, with an adolescent and three in Grave 2135, with a middle-aged female. To this list should probably be added composite bead pendant **38** from Grave 2080, discussed above.

Slip-knot Rings

The principal element in the four necklaces was the slip-knot ring, of which a total of at least twenty-six, whole and fragmentary, was recovered at Wolverton. The largest number found in one grave was twelve, from Grave 2204, accompanying a child burial. All the rings were made out of silver wire c.1.5mm thick, and were between 18-26mm in diameter. In Grave 2204, at least three rings (possibly more) had annular glass beads threaded onto them. None of the rings found were joined together, suggesting that they were threaded separately onto a string and worn as a necklace rather than forming the individual links into a chain. A fragmentary copper-alloy slip-knot ring was found in Grave 2360, possibly forming part of the contents of a bag or purse (below).

Silver slip-knot rings are diagnostic of 7th-century dress (Hyslop 1963, 198–99; Dickinson 1976, 211–12), though they do occur occasionally in 6th-century contexts. A necklace including silver slip-knot rings, a silver disc pendant and beads of glass and amethyst found in the cemetery at Bottledump Roundabout, Milton Keynes, was dated to the 7th century (Parkhouse & Smith 1994, 112–3). Slip-knot rings are common on burial sites in East Anglia, Kent and

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Figure 5.4 Necklace & scutiform pendant **32,** Grave 2045

Figure 5.5 Necklace **130**, *bulla* pendant **131** and biconical beads **136/7**, Grave 2203

the Thames valley and are sometimes formed of copper-alloy wire (*c.f.* Boyle *et al* 2011, 50).

Pendants

Twelve pendants were found at Wolverton: one scutiform (**32**), one bracteate (**80**) and one disc (**83**), all of silver; three composite glass and copper-alloy (**53-55**) and six bulla pendants, five of copper-alloy (**82 & 131**) and one of silver (**81**).

The scutiform pendant (Fig. 5.4) is decorated with a star-shaped pattern of punched dots, and is therefore a variant of Høilund Nielsen's Type PE2e (Bayliss *et al* 2013, 212). Scutiform pendants are more commonly found in Anglian areas, where they frequently accompany female burials. One of the earliest occurrences of the scutiform pendant is from Holywell Row, Suffolk, dated to the early 6th century (Hines 1984, 227). The type continues to feature throughout the 6th century, although they do occur as late as the 7th century, for example at Shudy Camps, Cambs (*ibid.*). As their name suggests, scutiform pendants are thought to represent miniature shields and may have had amuletic significance (Haughton & Powlesland 1999, 114).

The bracteate pendant (Fig. 5.6) is comprised of a plain back-plate and a front plate decorated with Salin's (1904) Style II animal art, and falls within Høilund Nielsen's Type PE3-a (Bayliss *et al* 2013, 212). The pendant was evidently of some antiquity when it was buried, as its original suspension loop has been lost and replaced by a crude hole punched through both discs.

The fragmentary disc pendant, from the same burial as the bracteate pendant, comprises a disc with a rolled edge and an intricate punched Celtic knot design, executed from the back of the piece. No direct parallels can be found in the literature, and it seems likely that the disc originally had a different function, as the suspension hole has been punched randomly, some distance from the edge. The Celtic knot design may suggest that this piece is originally of Roman date, reused as a pendant.

Bullae or *bulla* pendants are circular, formed as a boss surrounded by a narrow rim, with a suspension loop attached on the edge. Only one of those found at Wolverton, from Grave 2203, is more or less complete (Fig. 5.5): in contrast, the four copper-alloy and one silver *bullae* from Grave 2168 are fragmentary. All fall within Høilund Nielsen's Type PE8 (Bayliss *et al* 2013, 213). *Bullae* typically date from the mid to late 7th century.

The three composite pendants found in Grave 2135 each

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Figure 5.6 Pendants: bracteate (**80**), disc (**83**) and components of composite pendant **53**

consist of a copper-alloy backing plate, formed into a hanging loop on one edge, with an imitation cabochon of glass fastened round the edge by a dog-toothed copper-alloy strip (Fig. 5.6). The two smaller examples have cabochons of blue and green glass, while the larger is white glass with fragments of red glass pressed into it. These pendants are similar to Høilund Nielsen's Type PE9-d (Bayliss *et al* 2013, 214), save that the cabochons are not of yellow/green glass. A similar pendant of this general type is recorded from Finglesham, Kent, dated to the 7th century (Hawkes & Grainger 2006, 138).

Buckles

Grave	*Find no.*	*Description*	*Type (Marzinzik 2003)*
2018	18	Buckle and plate	II.24a.
2027	23	Buckle and plate	II.24a
2076	37	Buckle and plate	II.22b-ii
2141	67	Buckle and plate	–
2174	107	Buckle and plate	II.24a
2183	118	Buckle and plate	?II.24a
2215	106	Buckle and plate	?II.24a
2282	163	Buckle and plate	?II.24a
2381	196	Buckle	I.18a.
2442	200	Buckle and plate	II.10d-ii

Ten buckles, nine of them with plates, were recovered at Wolverton, seven from adult male burials, one accompanying an adolescent and two from child burials. All were typically found in the waist area of the burials. Five had buckles and plates of copper-alloy, two had iron buckles and copper-alloy plates and two were wholly of iron, as was the one example (**196**) without a plate. Most fell into Marzinzik's (2003) category II.24a (buckles with small rectangular plates), though single examples of three other types were identified. All fall within the date range late 6th to early 8th century.

Two distinct sizes of buckle were present: the larger, having buckle plates 16-20mm in width, were presumably for belts. The smaller buckles, with strap widths of 10mm or less, were presumably for baldrics for hanging seaxes, or fastening knives to belts. Because of their location in relation to the inhumations, fabric traces were present on five of the buckles and many also had traces of leather within the two halves of the plate. One buckle (**37**) with a large, decorated tongue-shaped plate appeared to have been intentionally wrapped in cloth: traces of mineralised braid were also present.

Clothes Fittings

Grave	*Find no.*	*Description*
2174	101	Hooked tag, copper-alloy.
2360	187	Strap-slides x2, copper-alloy.

Hooked Tag Fastener

A copper-alloy hooked tag fastener was found on the upper body of the young adult male accompanied by the sword (Inhumation 2173). Such fasteners are commonly found in the Saxon and medieval periods, and it is generally assumed that they were used for fastening clothing in the absence of buttons. It has been suggested recently that they were used as purse fasteners (Rogers 2007, 134), though in this instance the location of the fastener in the burial points towards it being used to fasten an upper garment. On balance, both interpretations are equally plausible, depending on the location of the object in the burial.

Hooked tags were found in late 7th-century burials at Castledykes, Barton-on-Humber (Drinkall *in* Drinkall & Foreman 1998, 271). Drinkall observes that this type of fastener is typically associated with female burials and is often found in pairs, though that is clearly not the case at Wolverton.

Strap-Slides

Two strap-slides of copper-alloy were recovered from Grave 2360, containing a middle-aged female accompanied by an iron-bound box (Inhumation 2359). It is possible that they were interred within a bag, along with a slip-knot ring and a toilet set, both of copper-alloy (see below). A similar object from Riseley, Kent, is illustrated in Bayliss *et al* (2013, 185, fig. 5.102). The literature is not particularly forthcoming about the function of strap-slides, save that they were a form of belt fitting.

PERSONAL ITEMS

Bags & Purses

Excavations at Wolverton produced only slight evidence of bags and purses, though it is likely that at least two graves contained groups of objects originally deposited in some form of fabric container, of which no trace now remains.

Grave 2197, that of a middle-aged female, contained a large group of *objets trouvés* (**128**, below) placed at the feet of the deceased. While they could have been deposited loose, it seems more likely that they were originally in a bag. A similar case can be made for a group of objects found together in Grave 2360, to one side of the upper body of the deceased, also a middle-aged female. These

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objects (**184**) comprised a slip-knot ring, two strap-slides and a toilet set, all of copper-alloy, and some fragmentary iron chain links. In this instance several fragments of leather were recovered from the same area of the grave and may suggest that this bag/purse was of that material.

Balance

A copper-alloy balance beam with a suspension hoop, pointer and scale pans (**27**) was found in Grave 2027 by the head of an adult burial, probably male. From its small size, the balance (Fig. 5.7) was intended for weighing small, light objects. A similar example, found in Buckland Grave C3a-b (Evison 1987, 273 & fig. 2), was probably buried in a box or other container and was associated with twelve Roman coins of varying weights, the largest being two coins riveted together, obviously intended as weights. Evison (*ibid*, 270 & fig. 119) lists over a dozen similar balances recovered from cemeteries in Kent, the Thames valley, the East Midlands and Yorkshire, to which can be added a scale pan from Butler's Field, Lechlade (Clark *in* Boyle *et al* 2011, 89) and the complete balance from Wolverton. Dates of the balances range from the 5th to the 7th century: the Wolverton balance is associated with a buckle (**23**) and spearhead (**25**) both of likely 7th-century date.

A summary of the available evidence for Saxon balances and weights in England appears in Scull (1990), along with discussion of their likely function. Scull concludes (*ibid,* 209) that these balances were used for weighing coin or bullion for use as currency. He also suggests that the link with bullion provided by the presence of a balance may indicate a location or individual of considerable importance.

Also found in Grave 2027, about 350mm from the balance, was a small conical lead weight (**26**). This was originally identified as a fishing weight, because of the proximity (c.0.6km) of the river Ouse to the occupation site at Wolverton Turn, to which the Wolverton cemetery is most likely linked. It is possible that the weight could have fulfilled another function, such as a plumb bob, but its close proximity to the balance might suggest that these objects were related.

Chatelaines

Grave	*Find no.*	*Description*
2005	9	inc. Fe chain (**10**) and antler spacer ring (**11**)
2135	58	inc. Fe chain (**59**) and Ae suspension loop (**60**)
2168	89	inc. Fe & Ae chain (**90-92**) and beads (**93, 94**)
2203	139	inc. Fe & Ae chain (**140, 141**), antler spacer rings (**142, 143**), Ae ring (**144**) and bead (**145**)
2360	189	inc. Fe chain (**190, 191**)

Five graves contained the possible remains of chatelaines. Graves 2135 and 2360 contained burials of middle-aged females, 2005 held the remains of an adolescent-adult, 2168 an adolescent and 2203 contained a child burial. All the chatelaines were very poorly preserved, making description and interpretation difficult.

Figure 5.7 Balance **27**

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The chatelaines consisted of lengths of iron chain comprised of both oval and S-links: those from Graves 2168 and 2203 also included cast copper-alloy S-links. Accompanying the chains were miscellaneous small fragments of strip and rod, all too badly corroded for identification, which could have been items such as latch-lifters or girdle hangers, typically attached to a chatelaine. All were located alongside the thigh of the inhumation.

Also found in association with the chatelaines from Graves 2005 and 2203 were antler discs. The disc from 2005 (**11**) is c.50mm dia. with a central hole c.16mm dia., and has ring-and-dot decoration on both faces. To it is riveted an iron suspension loop and there are three small holes drilled around its rim. The two discs from 2203 (**142** & **143**) are 57 and 33mm dia. respectively, with central holes 10 and 24mm dia. Both have ring-and-dot decoration on both faces.

Similar objects have been found at Polhill, Kent (Hawkes 1973, 196 & 205, fig. 53) and Burwell, Cambs (Lethbridge 1931, 61-2, figs 31a & 32), while a larger (66mm dia.), plain example was recovered from Butler's Field, Lechlade (Boyle *et al* 2011, 58). The example from Polhill was associated with a workbox and chain. There has been some speculation regarding the function of these objects (*ibid*.), but the general consensus seems to be that they are associated with chatelaines as a spacer, part of a chatelaine bag, or as a girdle hanger.

In addition to the above, the chatelaines from Graves 2168 and 2203 are accompanied by objects that most likely were originally attached to them. The chatelaine from 2168 is associated with two glass beads (**93** & **94**) and a copper-alloy workbox (**95**). That from Grave 2203 is associated with a blue glass bead (**145**) and a copper-alloy ring (**144**), 23mm dia., with linen suspension cords still attached. The iron chain from Grave 2360 retained impressions of braid or cord, suggesting the presence of a fabric girdle, or a fabric attachment to the chatelaine.

Combs

Grave	*Find no.*	*Description*	*Type*
2123	48	Comb, antler	Double-sided
2180	108	Comb, antler	Double-sided
2277	160	Comb, antler	Double-sided
2355	166	Comb, antler	Single-sided
2436	203	Comb, bone/ antler.	Double-sided

Five combs were found at Wolverton, **48** and **160** with middle-aged females, **166** with a young adult male, **108** with an adolescent / adult of uncertain gender and **203** accompanying cremation 2437, that of a young adult female. The women's combs were in similar locations: **48** was next to the deceased's left hand, while **160** was by the right hand. **166** was found near the shoulders and **108** was by the waist. Comb **203** was inside the cremation jar but was not burnt, indicating that it had been inserted after cremation but prior to burial.

All but one of the combs (**166**) are double-sided. Comb **48** has finer teeth on one side, whereas the other double-sided combs have teeth at the same pitch on both sides. All are of similar construction, with toothed plates sandwiched between two ribs, fastened together with iron rivets. The ribs of **160** and **166** are decorated with ring-and-dot decoration. When complete, the double-sided combs would have been c.125-150mm in length. The double-edged comb was the most common type of comb used during the early Anglo-Saxon period, although such combs are known from the 3rd to the 13th centuries (Hawkes 1973, 198). Deliberate burial of whole combs was rare until the later 6th century, becoming a common practice in the late 7th century (Dickinson 1976, 218).

The single-sided or 'hump-backed' comb is probably slightly later in date than the more familiar double-sided comb. Two examples found at the Castledyke cemetery, Barton-on-Humber (Foreman *in* Drinkall & Foreman 1998, 288, figs 57 & 93) are dated to the 7th century.

Knives

(*See following page for table*)

Thirty-eight knives were found with the eighty individuals excavated at Wolverton. Until the 18th century the knife was an important multi-purpose implement carried by many people, used for eating as well as a cutting tool and also a weapon. Possession of knives does not appear to have been restricted by age or sex at Wolverton: of the cemetery population, 41% of children, 70% of adolescents and 44% of adults were found with knives. Among those adults where sex could be determined, knives were more commonly found with women than with men. All were found at the waist of an inhumation except **72** (Grave 2154), where only a skull fragment remained of the former occupant, a child.

Of the thirty-eight knives found, twenty-nine were sufficiently well-preserved to classify, using Evison's typology based on the assemblage from the Buckland cemetery, Dover (Evison 1987, 113). The most numerous were types 3 (angled back, curved cutting edge) and 4 (curved back, straight cutting edge). Five examples of Evison's type 1 (curved back, curved cutting edge) and two of type 5 (angled back, straight cutting edge) were also noted. Few of the knife blades/tangs were sufficiently complete to permit determination of the ranges of blade lengths present: overall lengths within the assemblage range from c.100-190mm, with an average blade width of c.18mm.

Many of the knives retained traces of mineralised fabric on their blades: not surprising, considering that they were most likely tucked behind a waist belt. Impressions of a leather scabbard are present on knives **71** and **109**. Evidence of wooden handles appears frequently on tangs in the assemblage: knife **167** has traces of a possible horn handle.

Spoon

In Grave 2360, containing the burial of a middle-aged female, the bowl of an iron spoon (**175**) was found by the waist of the deceased. The deep, pear-shaped bowl (Fig. 5.8) suggests that it is modelled on a late classical type, similar to pair of silver spoons found in the Sutton Hoo burial, c.AD624/5 (Carver 1998).

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Grave	*Find no.*	*Description*	*Type (Evison 1987)*
2011	13	Knife	3
2017	15	Knife	4
2018	19	Knife	3
2024	22	Knife	3
2027	24	Knife	3
2030	31	Knife	unclassified
2064	33	Knife	unclassified
2067	34	Knife	5
2076	36	Knife	unclassified
2108	41	Knife	3?
2117	42	Knife	4
2126	50	Knife	4
2135	61	Knife	4
2141	68	Knife	4
2148	70	Knife	unclassified
2151	71	Knife	4
2154	72	Knife	unclassified
2156	78	Knife	3
2174	106	Knife	unclassified
2180	109	Knife	5
2183	117	Knife	unclassified
2203	138	Knife	3?
2206	147	Knife	unclassified
2212	148	Knife	4
2215	152	Knife	4
2222	154	Knife	3
2227	155	Knife	4
2251	156	Knife	4?
2272	159	Knife	1?
2282	162	Knife	3
2309	164	Knife	unclassified
2344	165	Knife	4
2355	167	Knife	3
2360	192	Knife	1
2365	194	Knife	1
2381	195	Knife	1?
2387	198	Knife	1?
2442	199	Knife	3

Figure 5.8 Spoon **175**

Along with the knife (see above) the spoon was a basic implement in Anglo-Saxon food consumption. Silver spoons, such as the Sutton Hoo examples, were obviously for the very wealthy, and possibly for certain limited uses: spoons for everyday use would have been made of wood, bone or iron. An iron spoon was recovered from the Buckland cemetery, Dover (Evison 1987, 118 & fig. 38). Spoons were normally suspended from the waist girdle or chatelaine, along with keys (*ibid*).

Toilet set components

Grave	*Find no.*	*Description*
2360	188	Toilet set, copper-alloy
2251	158	Tweezers, copper-alloy, incomplete.

Components of a toilet set comprising copper-alloy ear scoop and tweezers (**188**) were found with the burial of a middle-aged female, possibly as part of the contents of a bag (see above), located alongside the upper body. Both implements are small (22mm) in length, and are missing their customary suspension ring. A waisted length of copper-alloy strip or sheet, originally identified as a pointer for a balance similar to **27** (above), appears on balance more likely to be one arm of a pair of tweezers, similar in size to those in **188**. It was found in the grave of a middle-aged individual, gender undetermined.

Toilet sets are common in Anglo-Saxon burials from the 5th to the 7th century. In form they are often difficult to distinguish from Roman toilet sets: some could have late Roman origins.

Workboxes

Grave	*Find no.*	*Description*
2005	1	Workbox, copper-alloy.
2168	95	Workbox, copper-alloy.

Two complete copper-alloy caskets or workboxes were found at Wolverton, accompanying an adolescent / young adult (Inhumation 2004) and a middle-aged adult (Inhumation 2167), both probably females. The former workbox was found by the deceased's right arm with a group of finds which could have been in a bag: the latter was by the deceased's right thigh and could have been hung from a chatelaine, for which there was evidence (**9**, above). Each box is comprised of a pair of domed ends c.50-52mm dia. and a number of pieces of curved copper-alloy sheet, which had originally been riveted together. Two small copper-alloy chain links and a suspension loop were also found with box **1**. The body of box **1** is decorated with chevrons formed from punched dots: **95** (Fig. 5.9) has lines of repoussé dots on the body and ends, and bears a runic inscription on the body, which is discussed below. From the way both boxes were found, it appears likely that they were disassembled prior to burial.

Workboxes first appear in Anglo-Saxon female burials in the mid-7th century. They are found mainly north of

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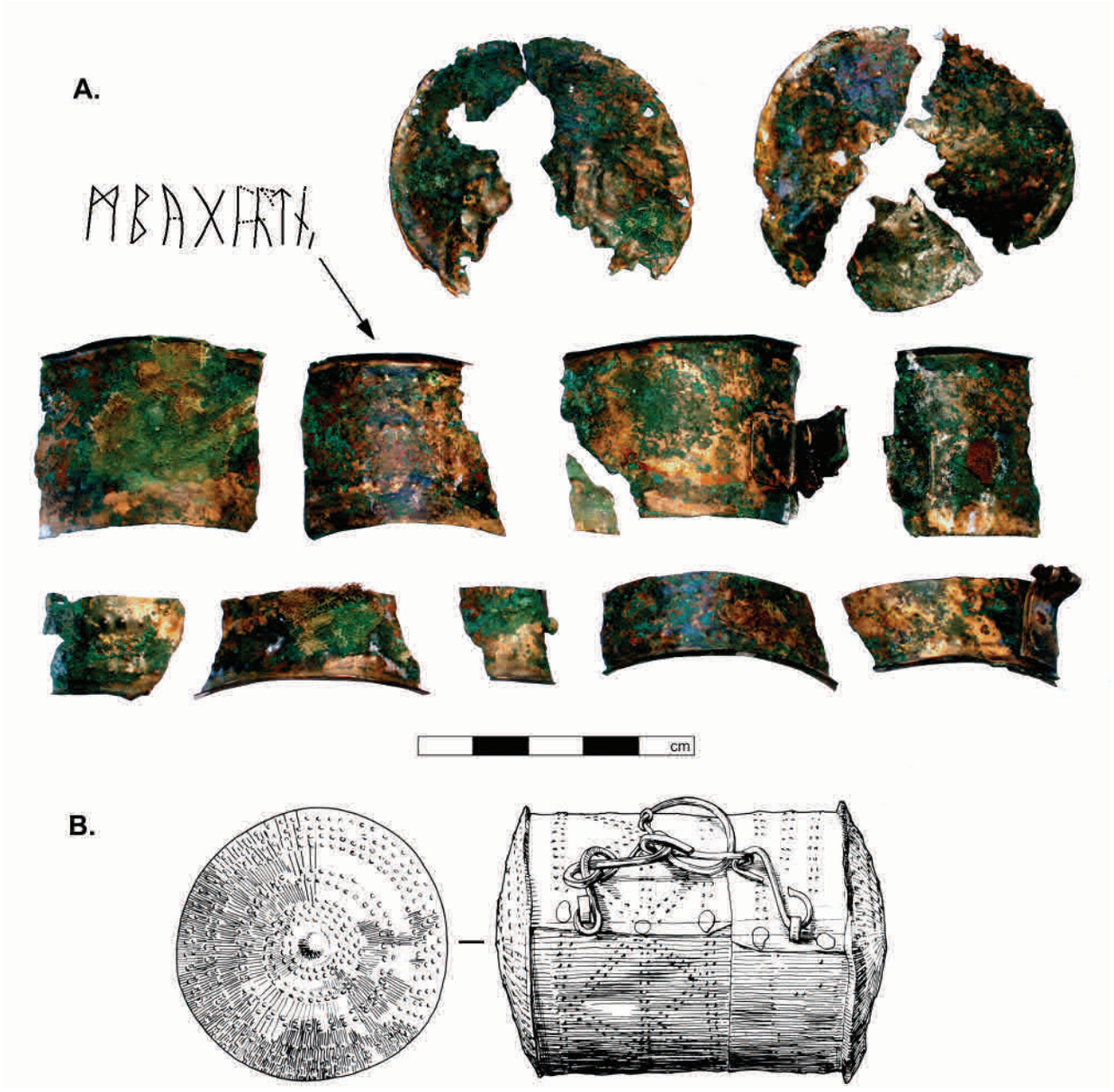

Figure 5.9 **A**. Workbox **95**, showing the runes and their location. **B**. Drawing of complete workbox from Butler's Field, Lechlade (after Boyle *et al* 1998, fig. 5.42)

the Thames (near the Icknield Way), in Derbyshire and in North Humberside and Yorkshire (Drinkall & Foreman 1998, 285). Workboxes can vary in length from c.50-110mm, but most are c.50mm dia. They are commonly decorated with patterns of punched or repoussé dots, as for example a workbox from Butler's Field, Lechlade (Boyle *et al* 2011, 72 and 1998, fig. 5.42: reproduced here in Fig. 5.9). They were suspended from the waist girdle or chatelaine by means of a wire suspension loop or chain. There are various interpretations relating to their function: the workbox from Grave II at Castle-dyke contained threads and a possible iron pin (*ibid*), while others have also been found to contain thread. It seems likely that they were thread boxes (Hawkes 1973, 196–8), though others have stressed their potential for symbolic use (e.g. Dickinson 1976, 232; Meaney 1981, 181–9).

The Runic Inscription

David Parsons

One of the four fragments of the cylinder of Workbox **95** bears an undoubted runic inscription (Figs 3.27 & 5.9). The characters are very lightly incised with a sharp point and can never have been very evident, though with careful lighting and especially using microscopy they are clearly enough visible even on the surviving, partially corroded surface. However, the corrosion and the presence on this fragment of incisions or scratches which are not obviously script, make for problems in parts of the identification.

The runes are set between the lower two of the three horizontal rows of punched dots. They are approximately 8mm-9mm high; the first visible stave is some 10mm from the left edge, and the inscription then extends approximately 25mm to the last rune, which is broken away at the right-hand edge. Eight characters can be made out, as follows:

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mbugi?tn

1 is clearly **m**, the crossed arms set high and meeting neatly at the tops of the staves.

2 is **b** with triangular bows slightly separated at the stave.

3 is **u,** the stave curving slightly in anticipation of the open bow, which itself is relatively narrow and meets the stave in a point at the top. There is a faint horizontal line crossing the character half-way down. It is not clear that this is made with the same implement, nor that it is not an accidental scratch. However, it is possible that it could have linguistic significance, as discussed below.

4 is **g**, `leaning back' at a slight angle.

5 consists of a stave, and is probably to be identified as **i**. However, in some lights it appears possible that there is a downward-sloping arm at its top which would convert it into **l**. In addition, towards its base a line comes off, angled slightly upwards and running to, and slightly across, the stave of 6. Since this is not consistent with any rune-form, it is presumably an accidental scratch.

6 is complex. There is a clear stave and an arm sloping down towards the bottom which could be consistent with the c-rune of the standard Anglo-Saxon runic alphabet. But there are also two possible arms at the top, one almost horizontal, which is perhaps less clear, the other downward-sloping, which looks more convincing. If the two sloping arms were intended this is perhaps an '**a**'.

7 is *very* probably **t**, its left-hand end just clear of the uncertain horizontal at the top of 6.

8 is a stave crossed by arms in the middle, as **n.** The top of the stave is broken away at the edge of the fragment, but there is no obvious alternative to the identification.

After 8 there is a possible base of a further character before the break, but this is very uncertain. Unfortunately the surface of the adjoining fragment, where the inscription might be expected to continue, is damaged at the point immediately adjacent to the break. It is notable, however, that on the undamaged surface just a few millimetres after the break there is no sign of a continuation of the inscription. Instead, there is a group of similarly incised lines, but in an angular pattern inconsistent with letter-forms. Comparable patterns are scratched on at least one more of the side-fragments, and one of the pieces of the lid. They appear casual and inconsequential rather than decorative or informative.

It is not easy to interpret such an inscription. A sequence beginning *mb-* is not expected in early English, or any other locally conceivable language. It is possible that runes have been lost before the m- and *-mb-* is certainly a cluster that can appear in Old English medially, finally, or across a word-break. Although the surface is somewhat corroded and pitted here, it is not markedly more damaged than the following section, and there is no clear sign of earlier characters.

The sequence *bug-* is more promising, bringing to mind the Old English verb *bugan* `to bow, bend', and perhaps, derived from it, the attested personal name *Buga*. Personal names are much the most common recognisable elements in early runic inscriptions, and must be possible here. If the following rune is correctly identified as **i**, then this could be explained as a feasible side-form to the attested *Buga,* though it is not quite the identical name. More interesting, perhaps, is the possibility that there could here be a meaningful term, rather than a name. *Byge,* literally `a bend, a bent thing', is well attested in Old English and is applied, for instance, to the rounded apex of a helmet and to a circular band (albeit in a passage relating to monastic tonsure). When found on an object with a rounded profile, it is possible that there is a reference here to the object, as the `roundel, ring'. Self-reference along these lines is probably the next most common category amongst identified elements in the inscriptions.

However, just as the beginning of the text is difficult, so is the end. It is possible that 5 should be read as **l** rather than **i**, which is hard to reconcile with the preceding *bug-*. In either case a following **ctn-** or **atn-** is also problematic, and no interpretation suggests itself.

Although the text is hard to interpret in detail, it is typical of early runic inscriptions from England. I published a corpus of 5th- to 7th-century inscriptions in 1999: it amounted to sixteen items, none of them longer than three words or sequences, and most of them largely unintelligible. To my knowledge there have only been one or two possible additions to this corpus in the last decade. The inscriptions are not infrequently accompanied, as here, by further script-like marks or doodles, which fall somewhere between writing and geometric designs.

This corpus of early Anglo-Saxon inscriptions is principally dated on archaeological grounds, which can sometimes be problematic; typologically, however, it hangs together neatly enough, because almost all of the items are finds from accompanied burials. By contrast, there is a much larger corpus of Anglo-Saxon runic inscriptions from the `Christian period', many of them on explicitly Christian memorial stones, and generally datable between c.700 and c.900. These `Christian' inscriptions are very different in character to the early grave-finds, not least in being almost always largely intelligible in the light of known (written) Old English. Part of our difficulty in understanding the earlier group of inscriptions probably reflects our inability to penetrate perceptions of linguistic representation in a culture as yet uninfluenced by Latin literacy.

My research indicated a significant break in the development of the runic alphabet used in England between the grave-finds and the later group. I interpreted this as a 7th-century reform of the inherited alphabet, under the auspices of or at least quickly adopted by-the church. Unfortunately none of the characters found in this inscription is diagnostic of this apparent reform (This form of **b,**

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with bows that do not join at the stave, is characteristic of the early inscriptions, though it is not wholly restricted to them). It is likely that, as with the other grave-finds, this inscription belongs typologically to the pre-reform group, but there is no clear evidence.

There is, however, one detail of the inscription which is potentially of great interest to runologists and linguists. If 5 is **ii** rather than 1, then an early Old English sequence *bugi* would be expected to develop, by the sound-change known as i-umlaut, to *bygi*. (This, in turn, would be the expected antecedent of the later-attested *byge; a* personal noun. *Bygi,* later *Byge,* would also be the expected side-form of *Buga* alluded to above.) The later Anglo-Saxon runic alphabet developed a new rune (I) to represent the new sound, which is represented in roman script by 'y'. It is therefore very intriguing to see what seems instead to be a horizontal line across the **u** in this inscription, as 1. It is conceivable that this horizontal should be interpreted as a diacritic to distinguish the umlaut-vowel *y* from the original *u*.

WEAPONS

Weapons were conspicuous by their relative absence at Wolverton. Three large *seaxes,* five spearheads and one sword were recovered from nine graves. No evidence for shields (e.g. bosses, studs) was found. The weapons accompanied adult or adolescent/adult burials, predominantly male, with the exception of spearhead **174**, which was found in grave 2360, that of a middle-aged female accompanied by a wooden box and numerous other grave goods, presumably an individual of some status. It has been suggested that this item may be an example of a so-called 'spear-shaped weaving batten', a leaf-shaped spear with a blunt tip sometimes found in 7th-century graves in Cambridgeshire and Gloucestershire (Rogers 2007, 33–4).

All the weapons were found singly: the spears, the sword and one of the seaxes were accompanied by knives. Three of the spears and the sword were associated with larger (belt) buckles. The locations of the weapons within graves is interesting. Seaxes **12** and **63** were found by the right and left hip respectively, where one might expect them to be if the deceased was fully dressed for burial. Placement to the right or left does not necessarily indicate that the deceased was left- or right-handed: the majority (c.60%) of seaxes in Anglo-Saxon graves are found near the left hip and lower arm (Boyle *et al* 2011, 13). In contrast, seax **69** lay alongside the right upper arm of Inhumation 2147, suggesting that it had been placed separately in the grave.

With only a single sword from Wolverton, comment on the location of the weapon within the grave must be limited. The sword was found with its lower part alongside the flexed right thigh, its point at the knee, the blade passing under the pelvis, with the pommel in the stomach area. This position would be too high for wearing the sword or for using it effectively, so it seems likely that it was placed separately in the grave.

In the case of the spears, it was evident from their location and alignment that spears **25**, **113** and **174** had been displaced post-burial, presumably by more recent agri-

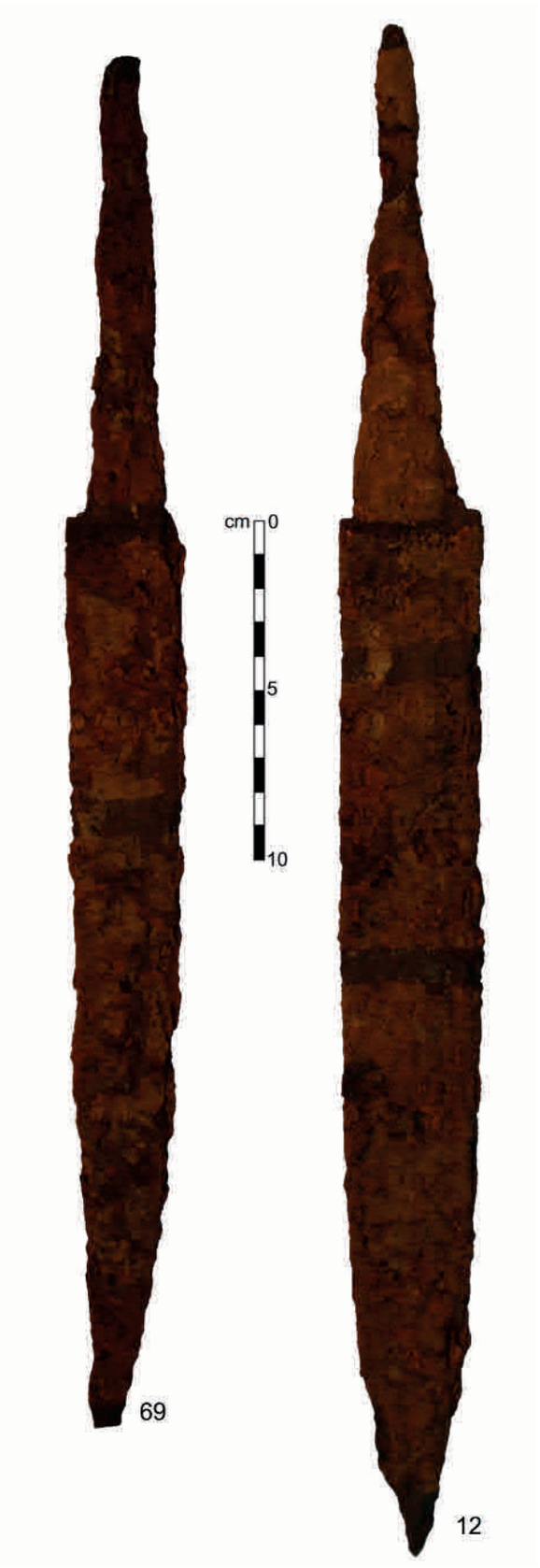

Figure 5.10 Seaxes **12** & **69**

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cultural activity. Spearhead **64** was found to the right of the head of Inhumation 2140, while **197** lay beside the right shoulder of Inhumation 2386. Spears in Anglo-Saxon graves are normally found to the right of the body (Boyle *et al* 2011, 13), so burial practices at Wolverton – albeit from a small sample – seem to conform to the norm.

Seaxes

Grave	*Find no.*	*Description*	*Type*
2008	12	Seax	SX2-a (light broad)
2138	63	Seax	?
2148	69	Seax	SX3 (short broad)

Seaxes **12 & 63** (Fig. 5.10) were found with adult male burials, while **69** accompanied an adolescent. Based on Høilund Nielsen's classification, **12** is a light broad seax, Type SX2-a, while **69** is a short broad seax, Type SX3 (Bayliss *et al* 2013, 194–8). In contrast, **63** has an incomplete tang and – by comparison with the other two seaxes – an incomplete blade also, and could not be classified.

All three seaxes had wooden handgrips, evidenced by abundant traces of mineralised wood on the pommels. Leather traces, presumably from a scabbard, are present near the point of **69**. X-rays of all three seaxes indicate that the blades were pattern welded.

Spears

Grave	*Find no.*	*Description*	*Type*
2027	25	Spearhead	Swanton C2
2141	65	Spearhead	Swanton C2
2183	113	Spearhead	Swanton C2
2360	174	Spearhead	Swanton C1
2387	197	Spearhead	Swanton C2, or possibly a short C5

Five spearheads were recovered from five burials, two of adolescents and three of middle-aged adults, one of them female. The spearheads have been classified using Swanton's typology (Swanton 1973). Only two (possibly three) types are represented, all leaf-shaped or lanceolate (Fig. 5.11).

While it was not feasible to undertake species identification of the mineralised wood traces present in all but one of the sockets, it is likely that the wood used was ash, this being the favoured material for Anglo-Saxon spear shafts. Spears of ash are mentioned in the Saxon poem *The Battle of Maldon* (trans. Alexander 1977), where the warrior Brythnoth 'raised the shield board, shook the slim ash spear'. From the presence of wood in the spear sockets it is likely that the spears were buried with their shafts. Possible shaft lengths – inferred from

Figure 5.11 Spearheads **64**, **113** & **174**

the location of the two in-situ spearheads (**64** & **197**) within the grave – were 1.6m and 1.3m respectively. A similar exercise with a much larger sample at Butler's Field, Lechlade, suggested that the majority of spears were 1.67-1.90m in length, though a few were 1.3-1.4m (Boyle *et al* 2011, 14). It is possible, of course, that spear shafts were ritually broken when the spear was placed in the grave.

Sword

The excavation at Wolverton recovered a single sword (Fig. 5.12, **102**), from Grave 2174, the burial of a young adult male. As noted above, the sword appeared to have been placed in the grave with the deceased, rather than being attached to a belt or baldric. Compared to other iron artefacts recovered from the cemetery the sword was in remarkably good condition, probably owing to the quality of the metal used in its construction.

Sword **102** is a typical Anglo-Saxon weapon of the 7th century, with a parallel-sided blade 810mm in length and

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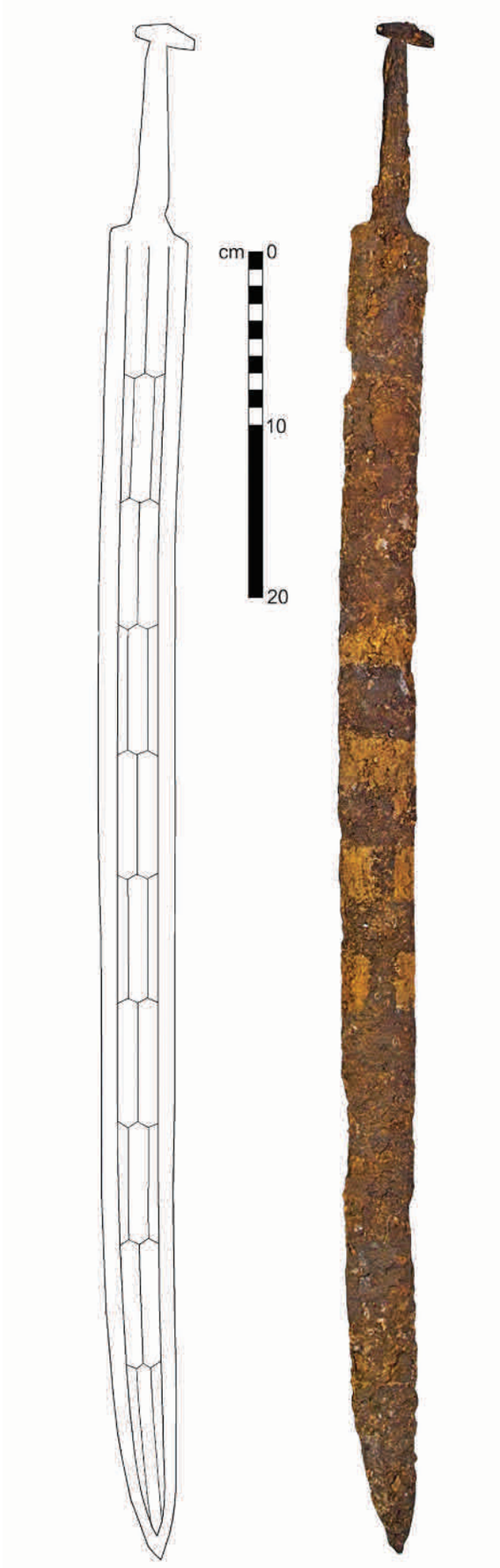

Figure 5.12 Sword **102**, showing pattern-welding scheme revealed by x-ray

40mm wide having a full-length fuller, a tapered tang and an oval pommel. The blade is pattern-welded, with an iron core alternately twisted at right angles (Fig. 5.12) and steel cutting edges. As with other examples of pattern-welded swords, the blade was probably highly polished to bring out the pattern produced by the welding process. No trace remains of the cross guard or hilt, which were presumably organic. Traces of a leather scabbard are preserved on the blade, though no scabbard fittings were present in the grave. A ring-headed pin (**104**) and three pieces of copper-alloy sheet (**105**) found alongside the sword do not appear to have any direct link to the weapon, though the well-worn whetstone (**103**) may be more directly associated with the sword.

Swords are far less frequently found in Anglo-Saxon burials than seaxes or spears because they were expensive to produce and highly valued, probably often being kept as heirlooms. The value attached to Anglo-Saxon swords is illustrated by a mid-10th century source which records that one sword was considered the equivalent of 120 oxen or fifteen slaves (Wilkinson 1978, 42). It is possible that the individual buried with the sword was wealthy, though none of the other objects found in the grave support this interpretation.

Figure 5.13 Scabbard chape **45**

Scabbard Fittings

Grave	*Find no.*	*Description*
2117	43	Cruciform mounts x2, copper-alloy sheet.
	45	Scabbard chape, U-section copper-alloy strip

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Although no sword-related fittings were found in Grave 2174, a group of possible sword/ seax scabbard fittings was recovered from Grave 2117 in association with the burial of a middle-aged female, found by her waist. No weapons were found with these fittings, though the grave did contain a knife (**42**).

These fittings comprised two small cruciform mounts cut from copper-alloy sheet (**43**) and a length of U-section copper-alloy strip bent into a U shape (**45**), with attached fastenings of copper-alloy sheet (Fig. 5.13). Bayliss (2013, 188) illustrates similar items to the latter from Alton, Hants and Bifrons (Patrixbourne), Kent, identifying them as scabbard chapes or end bindings. The two cruciform mounts could have been scabbard mounts. Also found with these items, a length of strip similar to that described above but formed into a circle, a small copper-alloy hinge and two strip fragments do not appear to be associated with the possible scabbard: their functions remain uncertain.

In addition to the above fittings, traces of leather scabbards were found on sword **102**, seax **69** and on several knives from the site.

CONTAINERS

Wooden Boxes

Grave	*Find no.*	*Description*
2168	96	Box fittings, iron
2360	168	Box fittings, iron

Two burials, an adolescent, probably female (Grave 2168) and a middle-aged female (Grave 2360) appear to have been accompanied by wooden boxes with iron bindings and fittings.

In Grave 2168, twelve fragments of badly corroded rectangular fittings and small bent nails (**96**), possibly corner mounts and other fittings from a wooden box, were found along the southern edge of the grave, suggesting that the box they had belonged to had been in the south-east quarter of the grave, on the right side of the deceased, but had subsequently been disturbed. In view of this, little can be determined regarding the size of that box or its contents.

In Grave 2360 the box (**168**) had been placed between the head of the deceased and the east end of the grave and appeared undisturbed, its extent being marked by a rectangle of darker soil within the fill of the grave. The fragmentary remains from at least eight iron corner box-mounts (**169**), similar to those in Grave 2168, were found around the edge of the soil rectangle, along with fragments of a possible iron hinge (Fig. 5.14). Traces of wood and embossed leather were found on the inside faces of the fittings (see Chapter 6 for details). A barrel padlock (**172**, below) was found in association with the box and may have secured it, though no evidence of a hasp was found. Although the likely size of the box can be inferred from the evidence above, insufficient of the box and its fittings remains to permit reconstruction. Inside the box were a Y-shaped iron object (**173**), function unknown and a crude copper-alloy ferrule (**176**). A spearhead (**174**) appears from its relationship to the box fittings to have been laid on the lid of the box, though it could have been displaced by subsequent agricultural activity.

Figure 5.14 Fittings from box **168,** Grave 2360

Iron box fittings are commonly found in the graves of Anglo-Saxon women, notably in Kent, though fittings for two boxes were found in graves at Butler's Field, Lechlade (Clark *in* Boyle *et al* 2011, 72), eight boxes at Castledyke, Barton on Humber (Drinkall *in* Drinkall & Foreman 1998, 296–7), two boxes at Edix Hill, Cambs (Malim & Hines 1998, 234) and at Chamberlain's Barn, Leighton Buzzard (Hyslop 1963, 196). Reconstructed examples from Buckland, Dover are of similar length and breadth to the suggested dimensions of the box from Grave 2360 (Evison 1987, 102, fig. 18). It has been suggested that most boxes had sliding lids (Malim & Hines, *op. cit.*), though hinged lids are known at Buckland, as well as the Wolverton example. Where it has been possible to identify the wood used, alder, ash and oak (Castledyke) and beech (Buckland) have all been used, either with dovetail joints (Buckland) or dowelled (Castledyke). Some boxes have been found with built-in locks, though one (Castledyke) was associated with a barrel padlock, as at Wolverton. The contents of these boxes vary, though the contents of those that are not empty are normally personal items. Boxes are usually a feature of cemeteries from the 7th century onwards (Drinkall *in* Drinkall & Foreman 1998, 297).

Buckets

Grave	*Find no.*	*Description*
2027	30	Bucket handle and hoops, iron.
2141	65	Bucket handle, iron.
2197	119	Bucket fittings, iron.

Iron fittings from possibly three wooden buckets accompanied three middle-aged inhumations: one male, one probable male and one female. All appear to have been

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of stave-built construction, tapering inwards from a flat base, with iron bindings at the base, middle and top linked by upright iron strips and loops for the semi-circular rod handles. Although abundant mineralised wood impressions were found on the iron bindings, the type of wood used was not determined. Reconstruction of bucket (**30**) was possible (Fig. 3.4). Based on its dimensions, the vessel would have had a volume of c.6 litres. Buckets (**30**) and (**65**) were found beside the heads of the burials; **119** was beside the upper body.

Iron- and copper-alloy-bound buckets are commonly found in Anglo-Saxon burials throughout England. Excavations at Butler's Field, Lechlade (Cook *in* Boyle *et al* 2011, 66–69), produced evidence for six iron-bound buckets, along with fittings from several copper-alloy-bound vessels. Diameters ranged from c.125mm to c.240mm, similar to the Wolverton buckets. In general, the iron-bound buckets from Butler's Field appeared to be of 7th-century date, later than the copper-alloy-bound vessels. They were found with burials of all ages and both sexes, though unlike the Wolverton burials, the buckets tended to be placed in the lower (foot) end of the graves. Fittings for a slightly larger iron-bound bucket were found in the Empingham II cemetery, Rutland, also at the foot of a grave (Timby 1996, 71). This site also produced three copper-bound buckets with yew staves, of late 6th to mid-7th-century date. Yew staves were also used in the two iron-bound wooden buckets found at West Heslerton, Yorks (Haughton & Powlesland 1999, 127), though these were much larger than the Wolverton or Butler's Field examples.

Hanging Bowl

A copper-alloy mount with concentric floral *millefiori* decoration (**21**) was found with an adolescent burial in Grave 2024. The rear of the mount is fastened to a piece of silver-plated, copper-alloy sheet, part of the fabric of the vessel to which it was originally attached. On this evidence the mount has been identified as an escutcheon from a hanging bowl (Fig. 5.15).

Figure 5.15 Hanging bowl escutcheon **21**

Hanging bowls are enigmatic high-status objects, typically of mid-6th and mid-7th century date, whose function remains a mystery. Most hanging bowls are made of copper-alloy: there are very few examples of silver bowls, perhaps the most famous being the Witham bowl from Lincolnshire, now lost. The escutcheons of hanging bowls typically have enamelled decoration in Celtic style. The use of *millefiori* is unusual: this is only the eleventh example recorded out of over one hundred bowl or bowl fragments from Britain. Two bowl escutcheons have previously been found in Buckinghamshire, a 19th-century discovery at Oving (Bruce-Mitford corpus 9) and a metal detector find from Brill (Bruce-Mitford corpus 174). The latter contains one central piece of *millefiori*. Another a well-known example of the use of *millefiori* in this context is the hanging bowl from Sutton Hoo (Carver 1998). Why the individual in Grave 2024 should possess a fragment from such a high-status vessel is uncertain.

TOOLS & HOUSEHOLD ITEMS

Padlock

Found in association with box **168** in Grave 2360 was barrel padlock **172**, most likely used in conjunction with the box, although nothing resembling a hasp was found. The lock is of composite construction, the mechanism being made from iron and the barrel cylinder casing, bolt collar and plate from soldered copper-alloy sheet. The lock plate is missing and the external loop is incomplete.

Barrel locks became common in the medieval period (Goodall 1981, 60): only one comparable Anglo-Saxon example has been identified, from Grave 1 at Castledyke (Drinkall *in* Drinkall & Foreman 1998, 296).

Shears

Shears **88** were found in Grave 2168 by the right hand of a single adolescent burial, probably female. Associated finds include a necklace and pendant, chatelaine, workbox and a possible iron-bound wooden box. The shears are small – 150mm total length – and therefore most probably used for needlework (*cf* Parfitt & Bruggman 1977, 76–7).

Shears have been found in a number of Anglo-Saxon cemeteries, mostly with female burials. At Butler's Field, shears 190mm in length were found with an adolescent female (Clark *in* Boyle *et al* 2011, 63), while at Edix Hill shears 80mm in length were recorded (Malim & Hines 1998, 220 & fig. 5.8). At Castledyke, much larger shears (length c.300mm) and therefore probably intended for household use or sheep-shearing were found in two female graves (Drinkall *in* Drinkall & Foreman 1998, 292). In the small late 7th-century cemetery at Westbury-by-Shenley, Milton Keynes, the burial of a young adult female was accompanied by shears c.190mm in length (Mills *in* Ivens, Busby & Shepherd 1995, 320, fig. 145), laid by the right side of the body.

Shears of varying sizes occur throughout the archaeological record, from the Roman period until the advent of scissors in the 16th century: smaller examples intended for lacemaking can still be purchased from craft shops today. Clark (*in* Boyle *et al* 2011, 63) observes that shears seem to be more common in 7th-century graves than earlier.

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Spindle Whorls

Grave	*Find no.*	*Description*
2082	39	Spindle whorl, bone.
2088	40	Spindle whorl, fired clay.

Two spindle whorls were found, both accompanying young adult female burials. One (**39**) was bone, while **40** was carved out of the base of a Roman pottery vessel in the local soft pink grogged fabric of 2nd to 3rd-century date (Marney 1989, fabric 2). At 16g and 19g respectively, both are on the light side for spindle whorls, as 20-30g is necessary for spinning wool. Slightly heavier spinning whorls are necessary for spinning flax (Mynard & Zeepvat 1992, 155).

Spindle whorls are frequently found in Anglo-Saxon burials, made in a variety of materials (bone/antler, ceramics, stone and lead). They accompany both male and female burials, more frequently the latter. Spindle whorls are not closely dated generally (Boyle *in* Boyle *et al* 2011, 66).

Sharpening Steels

Grave	*Find no.*	*Description*
2011	14	Sharpening Steel
2154	73	Sharpening Steel

Two iron objects identified in the catalogue as chisels were found in child and adolescent burials, accompanying knives at the waist. Both were originally identified as chisels, though both are too small when compared with modern woodworking chisels. A similar object found in with a male burial in Grave 148 at Buckland was identified as a sharpening steel (Evison 1987, 110 & fig. 59): this identification certainly fits better with the objects and their location.

MISCELLANEOUS

Roman Coin

A single Roman coin (**62**) was found at Wolverton in Grave 2135, beside the right knee of a middle-aged female burial. The coin, a worn late 2nd-century copper-alloy *as* or *dupondius,* is unperforated.

It is not uncommon to find Roman coins, often in considerable numbers, on early Anglo-Saxon occupation and cemetery sites (Evison 1994, 86–7). Most, unsurprisingly, are later 3rd and 4th-century copper-alloy issues, though coins going back as far as the 1st century are present too. The assumption is that these coins were found and collected by the Anglo-Saxons and used as objects of value primarily for their metal content (King 1988).

Objets Trouvés

Grave	*Find no.*	*Description*
2076	35	Arrowhead, flint, Neolithic.
2180	112	Ammonite, *Cadoceras sublaeve* (J. Sowerby). Lower Callovian, Oxford Clay.
2197	128	Seven fossils, one piece of amber and thirteen geological specimens: • Baltic amber, nodule. • Ammonite, unidentified upper Cretaceous or Oxfordian species. • Sea urchin, *Micraster coranguinum*. Upper Chalk. • Two sea urchins, *Echinocorys (sp)* Upper Chalk. • Unidentified sponge, Upper Chalk. • Bivalve, *Lopha gregarea* (J. Sowerby). Bathonian to Oxfordian. • Bivalve, probably *Lithophaga inclusa* (Phillips). Oxfordian, Corallian Beds. • Granite, cone-shaped, banded with white quartz. • Ironstone fragment. • Flint nodule, naturally perforated. • Flint nodules x6, two giving a distinct rattle when shaken. • Fossiliferous limestone piece. • Quartzite pebble, clear, heart-shaped. • Quartzite pebble, brown. • Ironstone pebble, roughly spherical. • Pink and white quartzite pebble.
	129	Boar's tusk.
2212	150	Flint nodule, spherical.

Three graves, one of a middle-aged female and two (adolescent and adult) where sex could not be determined, contained a range of fossils and geological specimens (**112, 128, 150**), none of which are present in the soils locally (Fig. 5.16). Also included in this assemblage is a Neolithic flint arrowhead (**35**) from a child's grave and a boar's tusk (**129**), both of which could probably be found in the locality. Collectively, these objects are referred to in this report as *objets trouvés*, as they have been apparently collected randomly: other reports frequently classify them as 'amulets' (e.g. Boyle *et al* 2011; Malim & Hines 1998).

The inclusion of invertebrate fossils, shells and geological specimens in Anglo-Saxon graves has been discussed by Meaney (1981, 113–30) under the heading 'animal amulets'. She notes that fossil sea urchins – of which three were found at Wolverton – may have been regarded as protection against lightning strikes, or were associated amuletically with general prosperity. In contrast, ammonites are less frequently found: Meaney (*op. cit*., 113) cites

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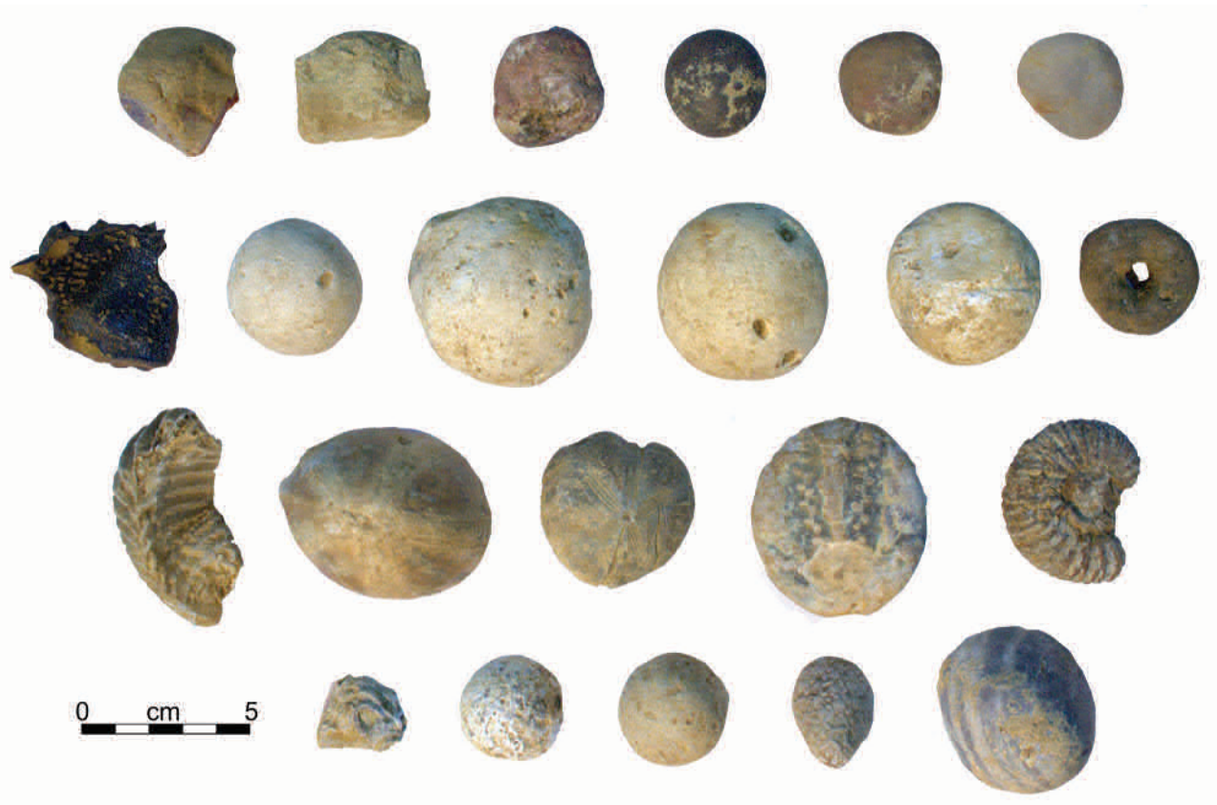

Figure 5.16 Objets trouvés **128**, from Grave 2197

only one instance, from a 7th-century grave near Wrotham, Kent. In traditional folklore the ammonite is sometimes referred to as a 'snakestone' (Timby 1996, 65).

While the fossils found at Wolverton can be readily seen to have some potential for amuletic properties, the same is less certain for some of the geological specimens. Items such as the naturally perforated flint and the rattling flint nodules may have an attraction simply because of their physical properties: the same is true of the heart-shaped quartzite pebble or the spherical pebbles, and items such as the Neolithic arrowhead. While the arrowhead could equally be a residual find, it is worth noting that flint arrowheads have been referred to in English folklore as 'elf arrows', and were viewed as having amuletic powers, not always for good.

Boar's tusks are occasionally found in Anglo-Saxon burials, normally (but not exclusively) those of women and girls. One found in the grave of an adolescent, sex unknown, at Butler's Field, Lechlade was perforated, presumably to be worn as an amulet (Boyle *et al* 2011, 40). Meaney (1981, 32) recorded boar tusks or pig teeth from twelve Anglo-Saxon graves, though not all are perforated. She suggests that they may have served as protective amulets, also having fertility connotations.

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CHAPTER 6: FABRICS

Bob Zeepvat

INTRODUCTION

At least eighteen possible fabric types were recognised at Wolverton, present as impressions on metal artefacts or as mineralised remains. Those which could be identified with some certainty are listed in Table 6.1. Evidence of fabrics was also present in the form of braid and cord: these are also listed. Impressions and surviving fragments of leather were also recorded, mostly in connection with weapons, knives and buckles, but also as the possible covering of the wooden box in Grave 2360. Fabric identifications were provided by Graeme Morgan of the Conservation Laboratory in the Archaeology Department, University of Leicester.

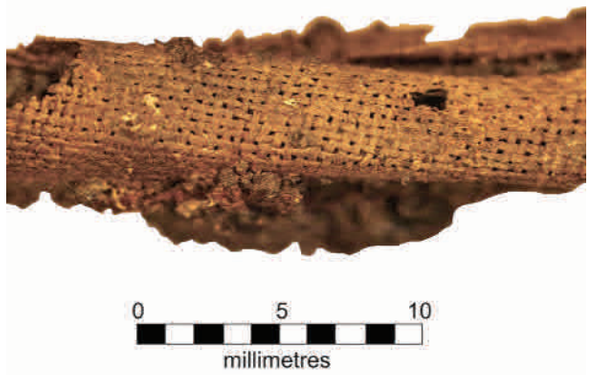

Figure 6.1 Linen tabby, wrapped around part of chatelaine **89**

LINEN

The majority of fabric evidence from Wolverton related to a range of linen tabby fabrics, mostly zz-spun, ranging from 17x17 to 20x20 and 24x24 threads per cm respectively. In one case of the latter weave the individual linen fibres were found to be 5µm-15µm thick. Penelope Walton Rogers (*in* Haughton & Powlesland 1999, 146) notes that the thread-count does not always reflect the weight of the fabric, as some pieces with lower counts might be open-weave fabrics in finer thread. These fabrics were mostly found in association with buckles or the component parts of chatelaines (Fig 6.1), and probably represent undergarments. Other linen fabric recorded was mostly in the form of 2/1 twill between 10x10 and 20x20 threads per cm, spun in a variety of ways, and was also found predominantly on parts of chatelaines and in one case on a knife, suggesting that the implement had been carried thrust between belt and garment, without a scabbard.

Table 6.1 Summary of fabric types identified at Wolverton

Weight	*Type*	*Material*	*Spin*	*Threads per cm*	*Object*	*Obj no.*
heavy	tabby	linen	zz	17x17	buckle	**13**
light	tabby	linen	zz	20x20	buckle	**29**
					chatelaine	**54**
					buckle	**67**
light	tabby	linen	zz	24x24	workbox	**59**
heavy	2/1 twill	linen	z	16x18	chatelaine	**144**
heavy	2/1 twill	linen	zz	10x10	knife	**6a**
heavy	2/2 twill	indet.	ss?	10x12	chatelaine	**54**
					chatelaine	**144/147**
light	2/1 twill	linen?	indet.	20x10	iron ring	**119**
light	tabby	linen?	indet.	26x32	chatelaine	**8**
light	tabby	linen	indet.	20x20	bucket fittings	**18**
heavy	tabby	wool	indet.	'wide weave'	chatelaine	**144**
-	cord	linen	z	?	chatelaine	**102/103**
-	cord	linen?	z	?	balance	**17/24**
-	braid	linen?	-	-	chatelaine	**144**

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Figure 6.2 Linen suspension cord round copper-alloy ring **144**, part of chatelaine **139**

As noted above, linen was also found in the form of braid and cord. The pans of the copper-alloy balance (**17**/**24**) from Grave 2027 appear to have had z-spun suspension cords, probably of linen. Suspension cords and braid (the latter probably made from cord) were found in association with chatelaines **102**/**103** and **144** (Fig. 6.2). Both are likely to have been linen, though conclusive identification was not possible.

Flax was grown in Britain as early as the Bronze Age, though evidence for its use in textile manufacture prior to the late Iron Age is slight (Walton Rogers, *op. cit*.). Linen production probably became more common in the late Iron Age and Roman periods, and textile evidence recovered from cemeteries of early to middle Saxon date in Britain and Europe suggests that zz-spun tabbies, mostly linen, account for one-quarter to one-third of the textiles present (*ibid*.). A flax-retting pit dated to the late 7th to early 8th century was found in excavations at Westbury-by Shenley, Milton Keynes (Ivens, Busby & Shepherd 1995, 71–79), indicating that flax was grown locally. There seems little reason to suppose that the linens found at Wolverton were anything other than common fabric types, locally made.

WOOL

Only two woollen fabrics could be identified with any certainty at Wolverton. Both are heavier-weight fabrics; a 2/2 twill, possibly ss-spun, with 10x12 threads per cm, and a wide-weave woollen tabby. Both were found in association with chatelaines – one in association with a lighter linen tabby – and could have derived from outer garments. Wool was a common clothing fabric through most of north-west Europe from the late Iron Age to the 10th century, and its relative scarcity amongst the fabric evidence from Wolverton is surprising. Given the poor state of preservation of the cemetery as a whole it may be simply that wool garments were more susceptible to decay than linen, or that fewer were close to metallic objects in the burials, allowing fewer opportunities for preservation by reaction with the metal and mineralisation.

LEATHER

As noted above, traces of leather or surviving leather fragments were found primarily with buckles (**13**, **29**, **45**, **67**, **89**, **106**, **150**), belt ends frequently surviving between the buckle plates, providing evidence for the width and thickness of the belt. Evidence for leather scabbards was also present on some of the knives, seaxes and the sword (Fig. 6.3).

Traces of embossed leather were present on the rear surfaces of the iron fittings of the wooden box in Grave 2360. The embossed pattern appears to have comprised a series of indistinct vertical and diagonal lines with crosses at intervals, though insufficient remains to attempt reconstruction. While iron-bound wooden boxes are relatively common finds in mid-Saxon cemeteries, research has so far failed to come up with another example of one with evidence for leather covering or embossed decoration.

Fragments of mineralised leather (**143**) were also recovered from Grave 2360, close to the elbows of its middle-aged female occupant. It has been suggested that these represent the remains of a small bag or purse, but their function remains uncertain.

Figure 6.3 Traces of leather scabbard on blade of sword **102**

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CHAPTER 7: THE POTTERY

ROMAN
Nick Cooper

Introduction
An assemblage of 52 sherds of Roman pottery (347g) was retrieved from eight contexts and has been analysed by fabric using the Milton Keynes Roman pottery fabric series (Marney 1989) and quantified by sherd count and weight (Table 7.1). The material was both hand-recovered and extracted from environmental samples, and occurred as a residual element alongside Anglo-Saxon pottery from grave fills and also as dating evidence for non-grave features.

Results & Discussion (Roman)
Though very broken and abraded, with an average sherd weight of 7g, the Roman assemblage is consistently of early to middle or mid to late 1st-century AD date. The fabrics represented fall into two broad groups. The first group comprises 'Belgic' fabrics containing either grog and shell or grog only (Fabrics 45 and 46), typical of those found from Walton MK36 Group 1 (Marney 1989, 7) and dating to the early-middle 1st century AD. The second group consists of early shell-tempered pottery (Fabric 1a) together with early Roman sandy reduced wares (Fabrics 3 and 47), typical of middle to later 1st-century groups such as that from Cotton Valley MK71 Group 2 (Marney 1989, 9). The only vessel rim from the assemblage was of a lid-seated 'channel-rim' jar in Fabric 1a (residual in the fill of Grave 2009), typical of mid to late 1st and early 2nd-century groups from the Milton Keynes area and surrounding counties (Marney 1989, 10; e.g. fig. 6.5 and 58 for discussion) and probably derived from the kilns at Harrold, Bedfordshire (Brown 1994). Overall, the condition of the assemblage suggested secondary deposition of material from manuring, or midden activity towards the edge of a settlement area. None of the assemblage was considered worthy of illustration, being forms and fabrics common to the area.

ANGLO-SAXON
Paul Blinkhorn

Introduction
The Anglo-Saxon pottery assemblage (Table 7.2) was found largely in funerary contexts, and comprises four accessory vessels from inhumations and two *in-situ* cremation urns. Two other graves contained Anglo-Saxon sherds: in one it seems probable that the sherds were deliberately placed, while in the other the pottery was associated with charcoal, and may indicate disturbance of an earlier cremation during excavation of the grave. A single prehistoric sherd was found in a possible empty grave, and is probably residual. The only Anglo-Saxon pottery recovered from non-funerary contexts was found in Pits 2207 and 2208, and comprised twelve sherds with a total weight of 271g, representing at least four vessels. All the pots were undecorated apart from one accessory vessel, and the whole group appears likely to date to the late 6th to 7th centuries.

Table 7.1 Summary of Roman pottery assemblage

Feat. no.	*Cont.*	*Feature*	*Qty*	*Wt (g)*	*MK fab.*	*Dating / Comment*
2011	2009	Grave	1	19	1a	Mid-late 1st: residual
2011	2009	Grave	1	6	3	Later 1st: residual
–	2190	Treethrow	1	1	46	Early-mid 1st
2212	2210	Grave	1	1	47	Early-mid 1st: residual
2254	2253	Posthole	1	3	1a	Mid-late 1st
2292	2291	Pit	33	279	1a	Mid-late 1st
2300	2299	Ditch	2	3	46	Early-mid 1st
2404	2403	Posthole	1	2	45	Early-mid 1st
–	2419	Pit	9	10	1a	Mid-late 1st
unstrat.	unstrat.	–	2	23	1a	Mid-late 1st
TOTAL ROMAN POTTERY			**52 sherds**	**347g**		

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Table 7.2 Summary of Anglo-Saxon pottery assemblage

Feat. no.	*Cont.*	*Feature*	*Qty*	*Wt (g)*	*Fabric*	*Dating / Comment*
PREHISTORIC						
2185	2184	Grave?	1	20	n/a	LBA/EIA - residual
SAXON						
2141	2139	Grave	vessel	412	F1	Late 6th / early 7th cent.
2207	2450	Pit	5	214	F1	From one vessel
			2	3	F4	
2208	2209	Pit	4	36	F4	
			1	18	F5	
2215	2213	Grave	3	25	F4	Late 6th / mid 7th cent.
2239	2236	Grave	13	134	F4	Late 6th / 7th cent.
2251	2249	Grave	vessel	395	F2	Late 6th / 7th cent.
2252	2245	Cremation	32	317	F3	Late 6th / 7th cent.
2365	2363	Grave	vessel	462	F3	Late 6th / 7th cent.
2436	2435	Cremation	149	520	F1	Late 6th / 7th cent.
2442	2440	Grave	14	24	F4	Disturbed cremation?
unstrat.	unstrat.	–	1	1	–	
TOTAL SAXON POTTERY			**3 vessels + 224 sherds**	**2561g**		

Fabrics

The following fabrics were noted:

F1: Sand-tempered. Moderate to dense sub-angular quartz up to 0.5mm, rare calcareous material of the same size and shape.

F2: Few visible inclusions except for rare sub-rounded iron-rich quartz up to 2mm, sparse silver mica platelets up to 1mm. Sparse organic voids.

F3: Sparse to moderate fine sub-angular quartz, sparse to moderate grains up to 1mm.

F4: Coarse quartz. Moderate to dense sub-angular quartz up to 1mm.

F5: Coarse quartz and limestone. Sparse to moderate sub-angular quartz up to 2mm, sparse sub-rounded limestone up to 3mm, rare sub-rounded ironstone up to 10mm.

These fabrics are fairly typical of Anglo-Saxon sites in the region, and have parallels at settlement sites such as Pennyland, Milton Keynes (Blinkhorn 1993, 246).

INHUMATION ACCESSORY VESSELS

(Fig. 7.1, 1-3)

1. Fabric F1. Near-complete accessory vessel. Rim dia. 80mm, base dia. 60mm, weight 412g. Variegated greyish-brown to black outer surface, decorated with a zig-zag line within two cordons on the neck and two cordons just above the waist. The inner surface shows light but even attrition throughout, apart from the inner neck and rim.

The form of this vessel, with its relatively long neck and low waist on a slightly bulbous body, is very typical of the later 6th or earlier 7th century, and classified as 'high-necked' or 'low-bulbous' by Myres (1977, 7 & figs 56-8). This supports the dating suggested by the 7th-century spearhead (**42**) also present in this grave.

Vessels with a similar form to this were recovered from non-funerary contexts at Pennyland (e.g. Blinkhorn 1994, fig. 103 no. 48), including some from a sunken-featured building (SFB1), found in direct association with two iron knives of 7th-century date (Williams 1993, 103–4). The decoration on this vessel does not easily fit into Leahy's classification of the cremation urns from the Cleatham cemetery (Leahy 2007), but does have a fairly large number of parallels in Myres (e.g. Myres 1977, fig. 120), although not on high-necked or low-bulbous vessels. Generally, these high-necked vessels are undecorated, so this vessel is most unusual when compared to the *corpus* of pottery of this type.

Although the vessel has no parallels from Pennyland in terms of decoration, the fabric is essentially the same as fabric 5 from that site (Blinkhorn 1993, 246). Sherds of this fabric occurred at all phases at Pennyland, but it was most common in the early/middle Saxon phase (6th–7th century), and it was by far the major fabric type from SFB1, where it comprised over 55% of the sherds present (*ibid*, table

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55). There appears little doubt therefore that it is of late 6th to 7th-century date, despite the somewhat unusual decoration.

Grave 2141, Context 2139, **66**.

2. Fabric F2. Near-complete accessory vessel with old damage to rim. The rim has a diameter of 86mm and is 75% complete. Uniform black fabric with light brown patches on the body, smoothed outer surface.

   The vessel is undecorated but of similar form to Vessel 1, although smaller with a slightly less bulbous lower body. It seems very likely therefore to also be of late 6th to 7th-century date.

   Grave 2251, Context 2249, **157**.

3. Fabric F3. Near-complete accessory vessel with old damage to rim and a large crack down one side, probably due to soil pressure whilst buried. Rim diameter is 93mm, and the rim is 90% complete. Single spalled circular flake missing from side of body. No decoration. Black fabric with smoothed surfaces. The form is similar to that of Vessel 2, although the waist is slightly higher and neck slightly shorter, and the pot has a more pronounced base-angle. Late 6th to 7th century. A sub-rounded limestone pebble was present in the lower fill of the vessel.

   Grave 2365, Context 2363, **193**.

Cremation Urns

4. Fabric F3. Most of the upper half and a fragment of the base of this vessel is missing, but there is a non-joining rim sherd (c.120mm diameter, 11% complete). Black fabric with variegated brown and black smoothed outer surface. The base is flat, with a diameter of 80mm. It was not possible to reconstruct the vessel to a full profile, but it appears to have a simple globular form quite unlike that of the accessory vessels. The surviving areas of the outer surface above the waist show traces of light sooting. The cremation yielded a radiocarbon date of AD600–675, indicating that this vessel is broadly contemporary with the low bulbous accessory vessels from the inhumations.

   Grave 2246, Cremation 2252, **201**. NI.

5. Fabric F1. Uniform grey fabric. Highly fragmented remains of a single vessel weighing 520g. The pot is somewhat underfired and has completely disintegrated, making full reconstruction impossible. The vessel has a flat base with an original diameter of 160mm, suggesting it is one of the larger vessels from the site. No rim sherds were present, despite some of the sherds occurring in the fill of the portion of the pot that remained (context 2347), suggesting that the upper part has been removed by ploughing.

   Grave 2436, Cremation 2437, **202**. NI.

Sherds from Grave Fills

6. Fabric F4. Thirteen non-joining rim and body sherds from a single vessel (134g). Uniform black fabric. The rim has a diameter of 100mm, and is 25% complete. It is difficult to ascertain the original form of the vessel, but the high rim and curvature of the body sherds suggest that it is similar to the other accessory vessels, and is a high-necked, low-bulbous pot of late 6th to 7th-century date. These sherds were distributed throughout the fill of the grave, which was close to the two urned cremations. It is possible that this pot was originally associated with a cremation and was disturbed by the later inhumation.

   Grave 2239, Context 2236. NI.

7. Fabric F4. Three plain body sherds, weight 25g, all probably from two vessels. Apparently deliberately placed together underneath the ribcage of the burial. The burial in this grave produced a radiocarbon date of AD575–660, broadly contemporary with the other dateable pottery from the site.

   Grave 2215, Context 2213, **153**. NI.

8. Fabric F4, fourteen fragments (24g), probably one crushed sherd from a single vessel. Located in a charcoal deposit, possibly a disturbed cremation, underneath the ribcage of Inhumation 2441.

   Grave 2442, Context 2447. NI.

9. Flint-tempered body sherd, almost certainly prehistoric, from a possible empty grave cut. The fabric is

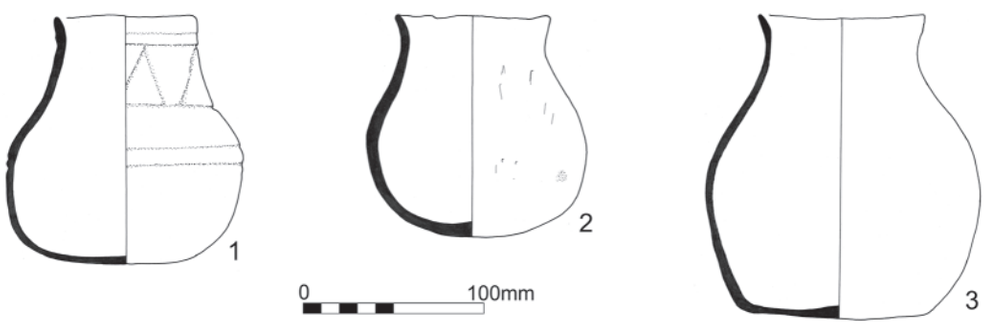

Figure 7.1 Anglo-Saxon pottery, accessory vessels 1-3 *(1:4)*

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typical of the late Bronze Age and Early Iron Age traditions of the region (e.g. Knight 1993, 230).

Pit 2185, Context 2184. NI.

Pottery from non-Funerary Features

10. Fabric F1, five sherds (214g): Fabric 4, two sherds (3g). The Fabric 1 sherds are all from the same vessel, a jar with an upright and slightly everted rim. The vessel has a dark grey fabric and a smoothed, 'wet hand'-finished outer surface. The body of the pot has a rounded profile, and a rim diameter of 120mm (25% complete). The base and lower body are entirely missing.

    Pit 2207, Context 2450. NI.

11. Fabric F4, four sherds (36g): Fabric 5, one sherd (18g). The Fabric 4 group includes a rim sherd with an upright and slightly everted profile, and a rim diameter of 100mm (23% complete).

    Pit 2208, Context 2209. NI.

Discussion (Saxon)

The dating of the inhumations from the pots and the spearhead indicates that the three graves with accessory vessels date to the 7th century, the very end of the period in which the Anglo-Saxons were furnishing burials. Pots with forms similar to these are relatively rare in burials: although the Myres (1977) *corpus* lists a number of them from Eastern England none, as noted above, are decorated in the fashion of Vessel 1. Undecorated vessels of a similar form have been recorded from Saxon cremation burials in the barrow at Bledlow Cop, Bucks (Head 1936, 337, plate 10), though none have been found in burial contexts elsewhere in Buckinghamshire or Bedfordshire.

It is possible that the inhumations represent a different phase of burial activity to the cremations, especially as one of the former (Grave 2239) appears to have disturbed and destroyed one of the latter. Also, the only cremation urn which can be reconstructed to a near-complete profile is not a low, bulbous type like the accessory vessels from the inhumations but is globular, a common form throughout the Early Anglo-Saxon period. However, a combination of artefact dating and scientifically-derived chronology suggests that all the pottery appears broadly contemporary, and vessels with a rounded form were found at Pennyland in 7th-century contexts alongside low-bulbous and high-necked vessels (Blinkhorn 1994, fig. 103).

Vessel 6, the apparently disturbed and redeposited cremation urn found in the fill of Grave 2239, appears to have been a low-bulbous type and thus of a similar date to the accessory vessels, and the radiocarbon dates associated with that vessel, and the 'placed' sherds from Grave 2215 (Vessel 7) indicate a late 6th to 7th-century date. This does suggest that either the location of the cremation was not marked, it was no longer visible when the grave was dug, or that the grave-diggers simply chose to ignore it.

It is not certain if markers were used to indicate the location of buried cremation urns in Early Anglo-Saxon cemeteries. At Spong Hill, Norfolk, some of the more deeply-buried urns had heaps of flints above them which may have been the bases of small cairns, and two urns had a sandstone slab laid over them, but many cremations revealed no evidence of having their locations marked (Hills 1977, 11). At the same site, examples were noted of urned cremations cut into graves, but not the reverse (*ibid*, 12). This suggests that the position of buried urns was generally marked, and it seems that, generally, in mixed-rite cemeteries, inhumations rarely disturbed earlier cremations. At Westgarth Gardens, Suffolk, four cremations were distributed in and around the graves at a proximity which suggested that the users of the cemetery were aware of their existence (West 1988, fig. 4), and there was no evidence of disturbed cremations in any of the inhumations. At Cleatham, Lincolnshire, fifty-three of the 827 urns had associated stones which may have been markers, but there were also many examples of urned cremations which had cut through and destroyed earlier ones (Leahy 2007, 28–9). However, owing to the local geology space was somewhat restricted at Cleatham, so these could easily have been deliberate, knowing acts, rather than accidents, especially as there was evidence at both Spong Hill and Cleatham of urns being carefully placed with earlier burials in 'family plots' over time.

As both the cremations at Wolverton had been plough-damaged to a greater or lesser degree, and their upper parts mainly destroyed, it is not possible to say whether they had markers or not. Even if they had, the evidence from Cleatham suggests it is entirely possible that they were ignored, and in the case of Vessel 8 scattered in Grave 2442, removed and completely destroyed by later burial.

A few cemeteries of this date are known in the Milton Keynes region, but none have pottery accessory vessels like those observed here. A cemetery of seven inhumations was excavated at Westbury-by-Shenley (Ivens *et al* 1995, 71–4). It was dated to the late 7th to early 8th century, and included a richly-furnished female burial and others with grave-goods, but none contained pots. Another inhumation cemetery of 7th-century date with five graves, four of them furnished, was excavated at Bottledump Roundabout, Milton Keynes (Parkhouse & Smith 1994). Again, none of them included pottery as grave-goods or 'placed' sherds, and Anglo-Saxon pottery was entirely absent from the whole site.

The presence at this site of a small group of apparently deliberately placed sherds in Grave 2215 (Vessel 7) is worthy of comment. This is a phenomenon which has been noted in Anglo-Saxon cemeteries elsewhere, for example at Sewerby, Yorkshire (Hirst 1985, 31–2). It was thought by the excavator that they may be representations of whole vessels. A number of the inhumations at Spong Hill contained broken and/or incomplete pots, and even token sherds, such as at this site, including one example where they appear to have been deliberately placed under the body (Hills *et al*. 1984, 7). One of the most notable examples of such practice is from South Carlton, Lincolnshire, where a crouched inhumation was noted with one hand placed on a large sherd of a pot, the bulk of which was otherwise absent (Wessex Archaeology 2004, fig. 7).

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CHAPTER 8: ENVIRONMENTAL

Alistair Hill

INTRODUCTION

During the excavation, soil samples were taken to facilitate the recovery of preserved plant remains. The collection and analysis of archaeobotanical evidence from archaeological sites presents archaeologists with a very distinctive range of data that can be used to interpret the economic systems of past societies as 'almost all plant species attested for archaeological sites have economic implications, either of direct, or of indirect nature' (van Zeist 1991, 109).

METHODS

The archaeobotanical samples were taken from discrete datable contexts identified as having the potential for the preservation of plant remains. A total of twenty-nine samples were taken from a range of contexts that had been chronologically phased, based on the ceramic artefact dating and relevant stratigraphic relationships, from the Romano-British and Anglo-Saxon periods (Table 8.1).

The plant remains were processed by ASC using bulk flotation, utilising 4mm, 2mm and 1mm sieves, and the flotation fraction (flot) was collected on a 500micron (0.5mm) mesh. The flots were air dried, packed in self-seal polythene bags marked with details of the project code, context and sample numbers and sent to the University of Leicester's environmental laboratory for analysis.

Analysis of the flots was carried out by scanning and 100% sorting each flot, using a binocular microscope with magnification settings of between x7 and x40. The carbonized plant remains (except charcoal) were separated from the flots and stored separately as either cereal grain, chaff and weed seeds, prior to being identified further. The laboratory's seed reference collection and reference manuals (e.g. Anderberg 1994, Berggren 1969, 1981 and Cappers *et al* 2006) were then used to identify the morphological characteristics of the archaeobotanical evidence found in each of the samples, subject to the degree of preservation. The plant names and orders used follow Stace (1997).

The numerical quantification, by species, of the grains, chaff and seeds from each sample was carried out using the following methodology. For cereals, each grain present in the assemblage was counted as one. Where fragments of grain were present an estimate of the number of whole grains these would have represented was made by combining fragments. This method was also used in counting the chaff present in the assemblage. The weed seeds, although generally poorly preserved, in common with the rest of the archaeobotanical assemblage were counted as one unless they could be identified as fragments of a fractured large weed seed, following van der Veen (1992). The grain/seed counts were recorded using a Microsoft Excel spreadsheet. The <4mm residues were also scanned: no archaeobotanical remains were recovered from them.

PRESERVATION

The survival and quality of plant material at archaeological sites is determined mainly by the taphonomic conditions present at an excavation site. These conditions include the mode of preservation, the conditions that surrounded the organic evidence and the local or regional climatic conditions. In this case, the archaeobotanical remains from the excavation were found to have been preserved through carbonization. This occurs when the botanical material has been subjected to fire, which in most cases preserves a carbonized morphological structure of the material that is not subject to biological decay but is susceptible to mechanical damage (Moffett 1993).

RESULTS

Charred plant remains were present in five of the samples examined (Table 8.1). However, only the sample from the fill of Grave 2215 contained any cereal remains. The other four samples with archaeobotanical remains each contained a single charred seed. Most samples contained a few uncharred seeds, believed to be modern intrusions, including goosefoots (*Chenopodium* sp.), brambles (*Rubus* sp.), fool's parsley (*Aethusa cynapium* L.) fumitories (*Fumaria* sp.) and elder (*Sambucus nigra* L.).

The samples were also examined for insect and mollusc remains. Fourteen samples contained over a hundred shells, six produced over fifty shells and the remainder contained less than fifty shells (Table 8.1). Shells of the burrowing snail (*Cecilioides acicula*), which can burrow to depths of two metres and are indicative of modern contamination, were the most common. Modern root fragments were present in all samples.

Romano-British

The samples from Postholes 2317, 2372 and 2404 each contained a single charred seed. The small clover-type seeds (*Medicago/Melilotus/Trifolium*) found in 2317 and 2372 can occur as arable weeds, but can also grow on grassland. The sample from Posthole 2404 contained one poorly preserved cleavers seed (*Galium* sp.), often associated with disturbed ground or arable land.

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Table 8.1 Summary of the environmental assemblage

Feat.	*Type*	*Fill*	*Date*	*Grain*	*Chaff*	*Seeds*	*Charcoal*	*Shell*	*Charred*	*Uncharred*
2254	PH	2253	R/B				fl	+		Rts, gsfts
2292	Pit	2291	R/B							Rts, elder seed
2404	PH	2403	R/B			1	fl	+	1 cleavers (*Galium* sp.)	Elder, gsfts
2419	Pit	2418	R/B					+		Rts, gsfts, brms
2300	Ditch	2299	R/B					+		Rts, gsfts, brms
2296	Ditch	2295	R/B?					+		Rts, gsfts, brms, buds, elder
2317	PH	2316	R/B?			1			1 clover type (*Medicago/ Melilotus/Trifolium)*	Rts
2328	PH	2327	R/B?							Rts, gsfts
2370	PH	2371	A/S					+++		Rts, gsfts
2372	PH	2373	A/S			1		++	1 clover type (*Medicago/ Melilotus/Trifolium)*	Fools parsley, gsfts & fumitories
2374	PH	2375	A/S					+++		Rts
2376	PH	2377	A/S					+++		Rts, gsfts
2400	PH	2399	R/B?				fl	+		Rts, gsfts, knotgrass
2421	PH	2420	R/B?					+		Rts, gsfts
2416	Pit	2415	R/B?					+		Rts, gsfts, brms, buds, elder
2296	Ditch	2295	R/B?					+		Rts, thistles, buds, pods
2239	Grave	2236	A/S					+++		Rts
2215	Grave	2213	A/S	1				+++	1 wheat (*Triticum* sp.)	Rts, brms, gsfts
2251	Grave	2249	A/S?					++		Rts, gsfts
2309	Grave	2307	A/S?					+++		Rts, gsfts
2350	Grave	2347	A/S?				fl	+		Rts, elder, gsfts, fools parsley
2355	Grave	2353	A/S?			1		+++	1 oat (*Avena* sp.) wild	fumitories
2362	Grave	2361	A/S?					+++		Rts, gsfts & fumitories
2439	Ditch	2438	A/S?					+++		Rts, brms, buds, pods
2185	Grave	2184	A/S?					++		Rts, gsfts
2203	Grave	2201	A/S?					+++		Rts
2212	Grave	2210	A/S?					++		Rts, gsfts
2235	Grave	2233	A/S?					+++		Rts
2272	Grave	2269	A/S?					+++		Rts

Key: R/B = Romano-British: A/S = Anglo-Saxon: fl = flecks: + = present: ++ = moderate (50+): +++ = abundant (100+). Rts = roots: gsfts = goosefoots: brms = brambles.

Anglo-Saxon

Of the samples from the grave contexts associated with this period, only those from Graves 2215 and 2355 contained archaeobotanical remains. The latter contained a single grain of oat (*Avena* sp.), though in the absence of chaff it cannot be identified as being representative of a cultivated cereal. The sample from Grave 2215 contained a single grain of wheat. Unfortunately, due to the poor level of preservation, no further identification could be made with regard to species.

CONCLUSION

The samples from Wolverton contained an extremely low density of archaeobotanical remains. As a result, an interpretation of the site with regard to diet, agricultural practises and activities using archaeobotanical evidence could not be made.

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CHAPTER 9: SCIENTIFIC ANALYSIS

RADIOCARBON DATING

Bone samples from six inhumation burials and one cremation were sent to the Scottish Universities Environmental Research Centre (SUERC) for radiocarbon dating. The results of this are summarised in Table 9.1: the dating certificates are retained in the project archive. Based on these results, the date obtained for the inhumation cemetery appears to be late 6th to late 7th century. The cremation provided a slightly later date range, wholly within the 7th century, though as a single sample this should be treated with caution.

DNA SAMPLING: PRELIMINARY REPORT ON INHUMATION 2167

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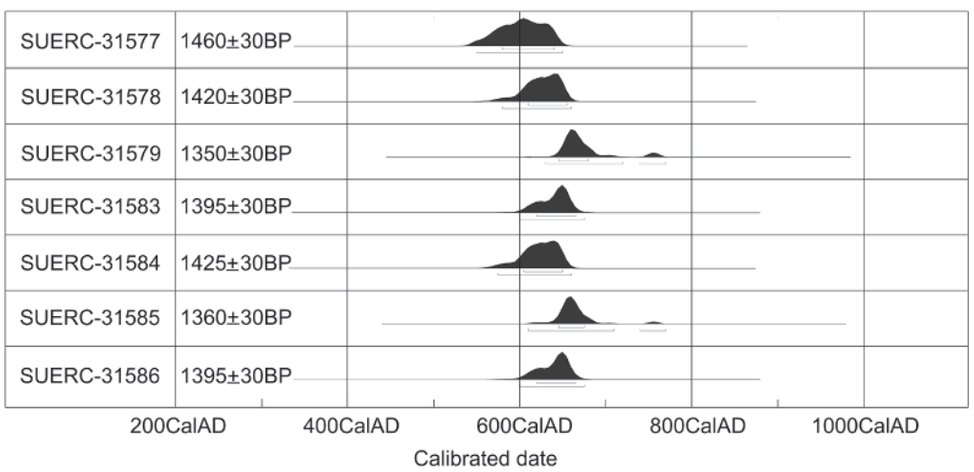
Introduction

Four individuals from the Wolverton cemetery were sampled for ancient DNA as part of a Wellcome Trust-funded project investigating adaptation and population

Table 9.1 Summary of radiocarbon-dating results

Laboratory ref.	Individual	Sample details	C13/C12	Conventional Radiocarbon Age BP	Calibrated AD *68.2% confidence* **95.4% confidence**
SUERC-31577 GU-22533	2007	Human bone	–20.4‰	1460 +/– 30	*Cal AD 580–640* **Cal AD 550–650**
SUERC-31578 GU-22534	2087	Human bone	–20.1‰	1420 +/– 30	*Cal AD 610–655* **Cal AD 580–660**
SUERC-31579 GU-22535	2167	Human bone	–20.2‰	1350 +/– 30	*Cal AD 645–680* **Cal AD 630–720** (87.6%) **Cal AD 740–770** (7.8%)
SUERC-31583 GU-22536	2182	Human bone	–20.7‰	1395 +/– 30	*Cal AD 620–655* **Cal AD 600–675**
SUERC-31584 GU-22537	2214	Human bone	–20.5‰	1425 +/– 30	*Cal AD 605–650* **Cal AD 575–660**
SUERC-31585 GU-22538	2348	Human bone	–20.5‰	1360 +/– 30	*Cal AD 645–675* **Cal AD 610–710** (91.6%) **Cal AD 740–770** (3.8%)
SUERC-31586 GU-22539	2252	Cremated human bone	–21.0‰	1395 +/– 30	*Cal AD 620–665* **Cal AD 600–675**



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change in Britain over the last 10,000 years. In each case, the petrous portion of the temporal bone was drilled to remove 50-100 milligrams of bone powder. This bone was targeted as it often shows exceptional DNA preservation (Pinhasi *et al* 2015). DNA was extracted from this sample using a modified version of the Dabney *et al* (2013) protocol and built into partial-UDG treated Next Generation Sequencing (NGS) libraries using a modified Meyer & Kircher (2010) protocol (Fu *et al* 2016). DNA libraries were also shotgun-sequenced on the NHM's Ilumina NextSeq. Furthermore, a sample of the DNA library was sent to Professor David Reich's laboratory at the Harvard Medical School for enrichment and analysis on their 1.24 million SNP Capture Array. Capture arrays enrich DNA libraries for particular parts of the genome that are known to be useful for addressing certain questions (e.g. population differences, physical characteristics, disease resistance).

By the time of writing (July 2018), analysis of one of the Wolverton samples, Inhumation 2167, had been undertaken and is described and discussed here. When information on the remaining samples becomes available it will be published in the county journal, *Records of Buckinghamshire*.

Table 9.2 Probability scores producing predictions of hair and skin pigmentation for Inhumation 2167 using the HIrisplex-S software (Walsh et al 2017, Chaitanya *et al* 2018)

Category	Ancestral	Derived
Hair		
Blonde	0.538245479	0.069484559
Brown	0.415085468	0.649059644
Red	0.026480988	0.000744224
Black	0.020188065	0.280711572
Light	0.83466934	0.209817108
Dark	0.16533066	0.790182892
Skin		
Very Pale	0.005852101	1.16E-11
Pale	0.025262142	0.418433481
Intermediate	0.425054553	0.581454658
Dark	0.308061971	4.65E-18
Dark to Black	0.235769233	0.000111861

Results and Discussion

Around 40% of the (non-captured) DNA sequences obtained from the Inhumation 2167 petrous aligned with the human genome, suggesting that DNA preservation was quite good (Table 9.2). Contamination from modern human DNA has been a persistent issue in analyses of archaeological human remains (Llamas *et al* 2017). However, the advent of NGS sequencing has facilitated the development of several tools for assessing modern contamination (Key *et al* 2017). The human DNA sequences obtained from Inhumation 2167 were authenticated using MapDamage, a program that identifies patterns of DNA damage that are characteristic of ancient DNA sequences (Jónsson *et al* 2013). The data were also analysed using ContamMix, which estimates the likelihood that a sample contains DNA from more than one individual and quantifies the level of any related contamination (Fu *et al* 2013).

We calculated the genetic sex of Inhumation 2167 using Skoglund *et al* (2013). This method compares the number of DNA reads which align with the Y chromosome against the number which align with the X. As females have two X chromosomes and males have an X and a Y, the ratio between DNA sequences aligning to these chromosomes can be used to determine sex. This analysis indicates that Inhumation 2167 is female (XX). Osteological examination (Chapter 3) failed to confirm the sex of this adolescent individual.

The mitochondrial haplogroup of Inhumation 2167 was determined using Phy-Mer (Navarro-Gomez *et al* 2015) with a read depth threshold of three (--min-DoC=3). The mitochondrial DNA is passed down maternally and does not recombine, making it a useful marker of maternal population movements. Inhumation 2167 belongs to the W4a mitochondrial haplogroup which is present at low frequencies across northern Europe and western Asia. Mitochondrial lineages belonging to the W haplogroup appear to have arrived in northern Europe with movements of people from the Pontic steppe (Haak *et al* 2015) and probably into Britain with populations associated with Beaker cultures c.2500 BC (Olalde *et al* 2018).

We also explored the ancestry of Inhumation 2167 using information from across her whole genome, employing Principal Components Analysis (PCA) of Single Nucleotide Polymorphisms (SNPs). The data were plotted against published modern populations using the method of Cassidy *et al* (2016) and Mathieson *et al* (2015). Inhumation 2167 plots with modern populations from Central/Eastern Europe, on the edge of the distribution of modern populations from the British Isles. Further analysis and comparison with ancient populations should help to determine whether this individual had ancestry from continental Europe that has been identified as being associated with the arrival of Anglo-Saxon cultures in eastern England, or is mostly derived from preceding Romano-British populations (Schiffels *et al* 2016).

Predictions of hair, eye and skin pigmentation were generated using the HIrisplex-S phenotyping web tool (Walsh *et al* 2017; Chaitanya *et al* 2018; Table 1). The capture array used by the Reich laboratory had greatly improved representation of positions associated with pigmentation traits in this sample, although 9 of the 36 positions were missing from the data. The missing SNPs included one that is highly influential in determining eye colour (OCA2) and another (SLC24A5) that is predominantly associated with hypo-pigmentation (pale) skin in modern northern European populations. This meant that eye colour could not be predicted for Inhumation 2167. Ancient individuals from northern Europe dating from the Bronze Age onwards usually have two copies of the light pigmentation version of SLC24A5. We were able to make some predictions of hair and skin pigmentation for Inhumation 2167 assuming that this individual had two copies of the light pigmentation version of SLC24A5. Two versions of the HIrisplex

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model were generated assuming all of the missing SNPs were ancestral or derived, providing the extreme ranges of possible variation. We assumed that sites with only 1x coverage were homozygous. In the ancestral model, the 'blonde' category had the highest probability score. However, as the 'blonde' probability score is <0.7 and the 'brown' category also scores highly, one mediates the other, producing a probable prediction of light brown hair. In the derived model, the 'brown' category has the highest probability score. However, as the score is also <0.7, it is mediated by the secondary 'black' category, which would give a probable prediction of dark brown. Therefore, the overall predicted range for hair colour of Inhumation 2167 would be light to dark brown.

In terms of skin pigmentation, the intermediate category has the highest probability score in the ancestral model. However as the score is <0.7 it is mediated by the secondary 'dark' category, giving an overall prediction of intermediate-dark. The intermediate category is also predominant in the derived model is also <0.7 and is mediated by the secondary 'pale' category, giving a prediction of intermediate-pale. Therefore, it is unlikely that this individual had the palest or darkest skin pigmentation, and the overall prediction would be quite broad, from dark to pale. The predominance of the intermediate category in both models may indicate that Inhumation 2167 probably had intermediate skin pigmentation (often referred to colloquially as 'olive-skinned').

Summary

The genetic analyses of Inhumation 2167 that have been undertaken so far confirm that the skeleton was of a female who probably had dark or light brown hair and intermediate skin pigmentation. Her ancestry was consistent with an origin in northern or central Europe.

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CHAPTER 10: DISCUSSION

Bob Zeepvat, with Michael Farley and Harriet Anne Jacklin

DATE OF THE CEMETERY

Taking first the artefact assemblage from the cemetery, about one-quarter of the two hundred or so registered finds could be assigned a date with any confidence by comparison with similar dated finds from other sites. The range of dates thus obtained spans the period from the 5th to the early 8th century. The pottery assemblage is dated to the late 6th and 7th centuries. From the results of the radiocarbon dating carried out by SUERC on six inhumations and one cremation, it appears that the cemetery could have been in use between AD550 and AD720, spanning a possible 160-year period, broadly similar to that arrived at by typological study of the finds.

However, the close dating of individual objects accompanying burials is not straightforward, particularly as the objects may have been personal items long in an individual's possession, or heirlooms. That said, the grave goods from this cemetery have been mainly dated to the later 6th century into the 7th. The possibility that burial here might have continued into the 8th century depends almost entirely on the dating of the four double-sided combs (**48**, **108**, **160**, **203**), whose design is suggested to have a date range from the mid-7th to the mid-8th century. On balance it is probably safer to conclude that burial at Wolverton probably ceased somewhere around the mid-7th century and certainly by the late 7th century. This would be consistent with the local radiocarbon dates (Table 9.1) and also with those from a substantial study of burial deposition reported by Bayliss *et al* (2013, 464), which when comparing dating of male and female furnished graves notes that 'furnished burial, for both men and women, may have been abandoned at the same time', this being dated to '*cal AD 671 (end AS-MF and end AS-Mt)* to *cal AD 669 (end AS-FE)*'.

Cemeteries of this date are sometimes called 'Final Phase' cemeteries' (Geake 2002, 149) or alternatively 'Conversion Period' cemeteries (Buckberry 2010), reflecting the fact that the later 7th century to the earlier 8th saw a move away from many existing cemetery sites to completely new locations. An example of one of the latter can be seen locally in the village of Milton Keynes, now Middleton (Parkhouse *et al* 1996). At these later locations graves were generally arranged in rows and grave goods were the exception. The debate as to how far this was a result of conversion to Christianity and how far due to other local factors continues. However, Buckberry (*ibid,* 2) notes that '... there is little evidence that the Anglo-Saxon church was especially concerned with the manner in which people were buried.'

EXTENT OF THE CEMETERY

The full extent of the Wolverton cemetery was not determined (Fig. 2.1). Although its north-western and north-eastern extents were identified, it appeared to continue to the south-west, where it will almost certainly have been truncated by road construction in the 1970s, and to the south-east, into an area which remains undeveloped at the time of writing (August 2017). The excavation did not reveal any features which could have been interpreted as cemetery boundaries: to the north-west and north-east, burials simply ceased randomly with no indication of a boundary, though the excavated area was extended c.20m in both directions to confirm this. The later boundaries of the site bear no relationship to the alignment or extent of the cemetery, and are almost certainly post-enclosure in date (Fig. 1.4), though they may relate, in part at least, to the layout of the medieval open-field system of Wolverton parish.

The absence of any specific boundary features here is paralleled at many other early to mid-Anglo-Saxon cemeteries, such as Butler's Field, Lechlade (Boyle *et al* 2011). Although the edges of at least some cemetery sites of this period must have been marked, if only by a hedge, boundary features are rare (Cook & Dacre 1985). Some cemeteries appear to have been located alongside existing features: at Portway, Andover, alongside a ditch (*ibid.*), at Dinton, Bucks, beside an Iron Age field boundary (Hunn *et al* 1994), and at Empingham II, Rutland, alongside an Iron Age or early Roman trackway (Timby 1996). From Hyde's 1742 map it is evident that an east-west route across Wolverton parish, probably of medieval date, traversed the site, while from its eastern corner another path ran north-westwards towards Wolverton Turn (Croft & Mynard 1994, 179). The location of the cemetery at the junction of these two routes may be significant.

BURIAL RITES

The majority of Anglo-Saxon cemeteries in England (c.74%) are comprised solely of inhumation burials (Lucy 2000, 140 & fig. 5.9). The Wolverton cemetery falls into a smaller group (c.19%) of mixed-rite cemeteries, containing both inhumations and cremations. Eighty-four graves were present within the excavated area, of which there were two cremations, and two other probable cremations truncated by later inhumation burials (Graves 2239 & 2442). Although most cremations found elsewhere appear to belong to the earlier part of the Anglo-Saxon period (Lucy 2000, 119), the radiocarbon date obtained from Cremation 2252 places it in the same general date range as the six inhumations that were similarly dated. Furthermore, there are no appreciable differences

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between the ceramics present in cremations and inhumations at Wolverton. This suggests that the two burial rites were in contemporary use here, though the disturbance of possible earlier cremations by Graves 2239 & 2442 might be taken as an indication that cremation may have been the earlier rite. The cremations were all clustered near the south-west side of the excavation, hinting that the earlier part of the cemetery may have been in this area.

The presence of both cremations and inhumations in the Wolverton cemetery is not unusual in cemeteries of this date. Cremation appears to have been less common than inhumation in the Saxon period: this is certainly the case in Buckinghamshire (Hey & Hind 2014, 212), though Lucy (2000, 119) suggests that the rite of cremation in southern England is probably under-represented. Evidence suggests that cremation burials were especially prevalent in East Anglia (Roberts & Cox 2003). Unfortunately, recent studies (e.g. Lucy 2000, Bayliss *et al* 2013) fail to provide plausible reasons for choosing one burial rite or the other.

SPATIAL GROUPINGS

Daniell & Thompson (1999) suggest that many Anglo-Saxon cemeteries incorporate burial monuments from earlier periods, such as barrows, perhaps in an attempt to identify the new landowners as part of an older tradition. While this is the case at Mill Hill, Deal, Kent (Lucy 2000, 124), where a Saxon cemetery is centred on a prehistoric barrow cemetery, and at Longthorpe, Cambs, where a small cremation cemetery was located in a corner of the 1st-century Roman fort (*ibid.*), at Wolverton the nearest known Bronze Age ring ditches are 400m and 700m from the cemetery.

Uniformity of layout is also another feature of some Anglo-Saxon cemeteries. Although not buried in rows, as at Garton, Yorks (Lucy 2000, fig. 5.3) or St Peter's, Broadstairs, Kent (Hogarth 1973, fig. 4), the Wolverton graves were for the most part discrete features, with a lack of truncation by later interments. This suggests that old graves were respected and possibly marked in some way, and that space for burial was not a problem. This is also the case at Empingham II, Rutland (Timby 1996). No obvious groupings of burials relating to age, sex or pathology have been found within the cemetery, although there do seem to be slightly more non-adults in the south corner of the excavated area. Nor has segregation between those buried with and without grave goods been found. The north-east side of the cemetery (the one nearest to the Wolverton Turn settlement) seems to be most densely occupied with burials, the density lessening towards the south-west side of the excavated area.

There are two exceptions to the random spread of burials at Wolverton. Towards the north corner of the cemetery there was a row of five graves (2154, 2156, 2151, 2166, 2197), all aligned west-east. Graves 2151 and 2156 contained only knife fragments, and were presumably disturbed by later agricultural activity: the remaining graves contained an adult female, an adolescent – possibly female, from the accompanying grave goods – and two children. Their close association suggests that these individuals were related.

The Rectangular Post-Setting and Related Burials (Structure 2378)

Michael Farley

The other burial grouping noted was near the south-west side of the excavated area, and comprised a square four-post structure (2378), 1.7m across, its corners facing the four cardinal points, with a grave parallel to each of its sides. Four-post structures defining a rectangle are not uncommon in Anglo-Saxon cemeteries but the example at Wolverton (Fig. 2.3) appears to be unique in having four inhumations closely associated with one structure in a regular manner.

At Apple Down, West Sussex, where thirty-three timber structures were recorded (the majority being four-posters), all seemed to be associated in some way with cremations, and in one instance a cremation was at the centre of a setting (Down *et al* 1990, cremation 146, fig. 2.13, plate V). Ploughing may have removed other central deposits. Four postholes round a central cremation have also been recorded at Butlers Field, Lechlade, Gloucs (Boyle *et al* 2011, 158–60). At Collingbourne Ducis, Wiltshire, four posts – probably connected by beam slots – contained a central pit with cremated bone and sherds (Dinwiddy *et al* 2016, 9).

Four-post structures enclosing inhumations are unusual. At Apple Down (previously mentioned), one four-poster enclosed a 7th-century warrior grave (Down *et al* 1990, grave 99). At the feet of this central grave was a much shallower female grave (*ibid*, grave 93, fig. 2.56) which was set between two of the posts. Its position suggests that the structure must have been open on this side at least, since a burial here would have precluded the presence of walling.

Where inhumations are associated with encompassing structures, whether ring-ditches, for example at Broadstairs, Kent (Hogarth 1973, figs 4 & 18), or some other form of identifiable timber feature which would have provided the grave with a visible focus, they often occur in a late phase of the cemetery's life and some certainly contain higher-status burials. An apparently late example of a four-post rectangular structure was excavated at Great Houghton in Northamptonshire. This cemetery had twenty-three east-west inhumations without grave goods and also what has been described as a 'mausoleum', consisting of four posts at the corners of a coffined male inhumation. One radiocarbon date suggested an 8th-century date for the cemetery (Chapman 2000, figs 10-11 & plate 6).

The Wolverton example with its four inhumation burials (graves 2212, 2215, 2227 and 2235) neatly arranged around a four-post structure, one on each long side, appears to be exceptional among this relatively unusual form of burial. There was nothing particularly distinctive about the surrounding graves. All four were adults although the gender of only one, a female, could be determined. One burial was crouched, with no recorded grave goods. The other three burials, all supine, each had a knife which generally lay near the waist. Did the crouched individual have a different and perhaps less valued role within the group?

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It would seem likely that the arrangement of bodies around the post-setting must indicate respect for whatever was originally contained within the structure itself. It would also seem highly probable that the dead were linked in some way, perhaps by family or clan, or by some incident which resulted in their death on a related occasion. The possibility of DNA analysis might be worth exploring in the future. If the burials did not take place on one occasion as might seem likely, then the span of time between burial must have been within human memory and must certainly have pre-dated the inevitable decay and hence visibility of the post-built structure.

Multiple Burials

There were four multiple burials. Each comprised a double-width grave with two individuals laid alongside each other, heads at the same end. Combinations varied: Grave 2018 contained a middle adult male (Inhumation 2019) and a young adult, possibly female (Inhumation 2020), both supine; Grave 2112 held a middle adult female (Inhumation 2110) and a young adult female (Inhumation 2111), both prone; in Grave 2272 two children had been laid facing each other (Inhumations 2270 & 2271) and Grave 2350 contained two supine middle adult males (Inhumations 2348 & 2349). Each pair of individuals appears to have been buried in a single event: one can only speculate upon their likely relationships, though it seems likely that family members would be buried together.

In the past there has been much discussion regarding the spatial distinction of burials according to sex, age and artefact types (e.g. brooches, weapons), apparently indicating different cultural groupings within the Anglo-Saxon community (Lucy 2000, 132–39). However, analysis of the Wolverton inhumations and their grave goods reveals a homogenous distribution of individuals and artefacts across the excavated part of the cemetery.

BURIAL ORIENTATION

Daniell and Thompson (1999) suggest that the structure and alignment of Anglo-Saxon graves can reveal different elements of social organisation and belief. They state that the most common alignment for Anglo-Saxon graves is east-west. At Wolverton, the most common alignment was with the head towards the south-west and west quadrants, with smaller numbers to the north-east and east (*i.e.* reversed), a few facing north-west/south-east and only one on a south/north alignment (Fig. 10.1). On balance, it appears that the favoured orientation for burials was with the head aligned roughly between the south-west and west quadrants. This diversity in orientation is likely to result from the lining-up of graves with extant landscape features and the position of the sun at different times of year, rather than to religious and/or social beliefs, though it does not explain the smaller number of graves where the alignment was reversed, or the one that is totally different. Analysis suggests that there was no difference in orientation based upon age and gender differences at Wolverton. Although the date of use for the cemetery falls within the Anglo-Saxon 'conversion period' and a west/east alignment is preferred for Christian burials, no evidence was found to suggest that any of the burials at Wolverton were Christian.

GRAVE DIMENSIONS

On the whole, grave cuts at Wolverton were of sufficient width and length to accommodate the body for which they were dug. The cuts were quite rough, with rounded ends and were shallow, c.0.25-0.3m on average. This is probably at least partly because of the loose, stony clay subsoil in which they were dug. This is not easy to cut into, even with modern hand tools, so it seems likely that the graves may have been covered with mounds or cairns to protect their contents. There was no evidence of burial in coffins: the

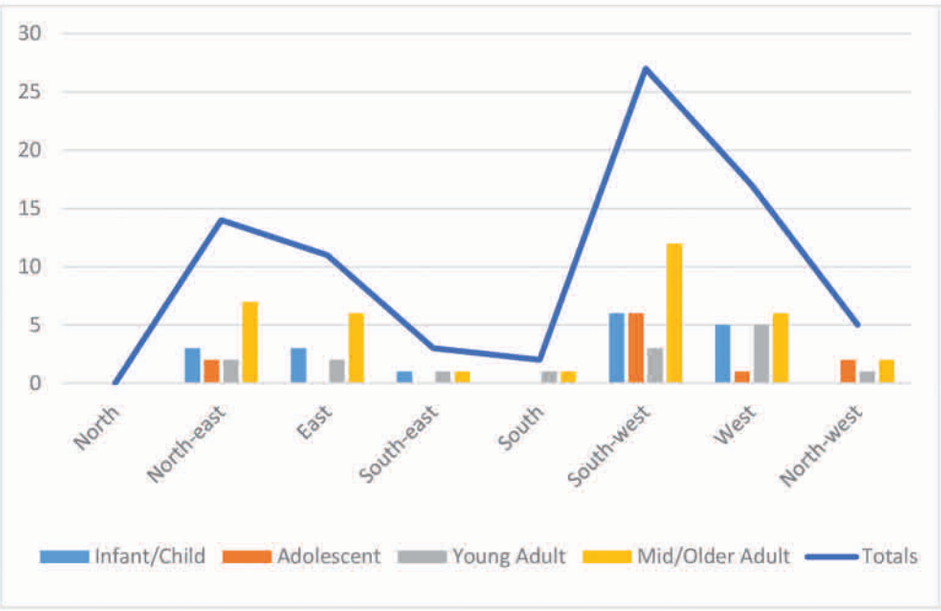

Figure 10.1 Orientation (head-foot) of the inhumations

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frequent cloth impressions found on grave goods suggests that the deceased were simply lowered into the grave fully clothed, or possibly wrapped in a shroud. The pin (**87**) found by the neck of Inhumation 2167 may have been used to fasten a shroud over the face of the deceased. The cremation pits were also shallow: in Cremation 2246 the vessel was complete, but in Cremation 2436 the pit survived to only 70mm depth and the vessel had been heavily truncated.

BODY POSITIONS

Harriet Anne Jacklin

It was possible to determine the body positions of nearly all the excavated inhumations: uncertainty was only present in a few cases where poor preservation or truncation had resulted in sufficient loss of skeletal components. Out of a total of 79 individuals whose body position could be determined, the majority (56) were supine, 14 were crouched, seven were prone, and two (Grave 2272, above) were buried on their sides, facing each other (Fig. 10.2).

The position of the body within the grave can be informative. Evidence from a number of 5th to 6th-century cemeteries suggests that the usual body position is supine and extended, as at Wolverton. The arms are either by the side of the body or slightly flexed: variations include hands across the waist or the pelvis (e.g. Inhumation 2007). Other variants include crouched and prone inhumations (Daniell & Thompson 1999). It has been suggested (*ibid.*) that crouched burials may represent a continuing Romano-British tradition and prone burials are thought to be associated with criminals or deviants. The latter association would be especially true if there was evidence to suggest the hands were tied, though no evidence for this has been found at Wolverton. Prone burials are believed to be quite rare and have given rise to a range of explanations, such as face-down burial being a punishment for witchcraft (Lucy 2000, 78), yet seven – two males, four females and an adolescent – have been found at Wolverton. Two of the prone females (Inhumations 2110 & 2111) were buried together in a double grave (2112). Pathological analysis revealed no difference between the prone burials and the rest of the burial population. One case of possible 'early stage' tuberculosis and two cases of Schmorl's nodes were found, but no evidence of anything that may have excluded them from society, causing them to be buried in this way.

Other interesting burial positions include Inhumation 2087, a young female aged between 30 and 32 years (Fig. 10.3). She was buried in a supine position but her head had been placed resting on the left side of her chest, above her left arm, suggesting decapitation. Decapitation is usually diagnosed by cut marks on or through the cervical vertebrae and, in some cases, the separate burial of the skull (Merbs 1989). Ortner (2003) explains that severance through any of the cervical vertebrae can point to possible decapitation, but the mid-cervical area is the most commonly affected. Cut marks affecting the mandible and the base of the skull have also been associated with possible decapitation. Although no pathological evidence of decapitation could be found for Inhumation 2087, her cranium was damaged by taphonomic processes and her first two vertebrae (C1 and C2) were absent. The rest of her cervical vertebrae were present and showed no signs of damage. Pathological anal-

Figure 10.2 Grave 2272

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Figure 10.3 Inhumation 2087

Figure 10.4 Inhumation 2147

ysis revealed that Inhumation 2087 may have suffered from 'early stage' tuberculosis. It was concluded by the writer that this burial does not represent a decapitation: although the head was moved, the mandible was found in-situ, where it would be expected to be in a normal supine burial. This indicates that the process of decomposition had already begun before the head was moved. Unless the grave had been left open, relocation of the head would have necessitated re-opening of the grave. No parallels for this moving of the head *post-mortem* have been unearthed in the available literature and the reason for it remains unclear.

Inhumation 2147, an adolescent aged between 14 and 18 years, was also buried in an unusual position, supine with flexed legs. Whilst this in itself is not unusual, the degree by which the legs are flexed is (Fig. 10.4). No pathology has been found to explain why the individual was buried in such a way. One possibility is that the legs of the corpse were flexed when buried, because the grave was too short for the body. The legs would then have fallen into this position under the weight of the grave fill, as decomposition set in.

Inhumation 2176, a female aged between 36 to 46 years, was buried in a supine position, but the positioning

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Figure 10.5 Inhumation 2176

of her hands to the right side of her head, with her left hand holding her right wrist, is unusual. Her head faced right, towards her hands (Fig. 10.5). No grave goods were associated with the burial, and no pathology was found to explain this unusual position. A young adult female, Inhumation 2096, had her hands together to the right of her head in a similar position. Her burial was also devoid of grave goods.

CEMETERY POPULATION

The population recovered from the Wolverton cemetery comprised eighty inhumation burials interred in seventy-six graves, in addition to two cremation deposits. Also, five empty graves were identified and the remains of at least two further cremations were found in the fill of later grave cuts that had disturbed them. There is evidence to suggest that the cemetery originally extended to the south and south-east: its total population can only be guessed at.

It has been pointed out (Brothwell 1972, 82) that any reconstruction of the population using a cemetery will be difficult, particularly when the spatial and temporal limits of the site are uncertain, and because the ageing of human remains above 30 years of age has been shown in recent years to be increasingly imprecise (Molleson & Cox 1993). From the radiocarbon dating results the cemetery could have been in use for about 160 years, therefore having an average burial rate of just under two individuals per year, which seems excessively low. However, the range of the three earliest radiocarbon dates extends well into the first half of the 7th century, and the grave goods present with those burials – or the lack of them – suggests that they were probably interred during the 7th rather than the 6th century, narrowing down the period of use of the cemetery. Furthermore, as it is evident that the cemetery extended beyond the excavated area, it is likely that a greater number of burials lay beyond the limits of the excavation.

GRAVE GOODS, AGE AND GENDER

Harriet Anne Jacklin

Between the 5th and 7th centuries, Daniell and Thompson (1999) suggest a shift from relatively uniform cemeteries to a select number of high-status burials with lavish grave goods and increasingly complex burial rites. They suggest that this change may have been associated with the newly-formed kingdoms which elevated the status of certain individuals and families. While settlements earlier in this period were community based, by the 8th century high-status burials began to be replaced by simpler, more uniform graves, often unfurnished and increasingly associated with churches.

It is commonly supposed that the presence of grave goods indicates pagan beliefs, and the lack of grave goods indicates conversion to Christianity. However, Arnold (1982) suggests that the decline of grave goods may also relate to social and economic considerations and not to a change in belief. There are various reasons behind the burial of an individual with grave goods, ranging from providing the individual with items needed in the afterlife, to indicating ethnicity, rank or social function of the dead, or simply being a showy gesture by the mourners. Pader (1982) studied the grave goods from two small Anglo-Saxon cemeteries in Suffolk and concluded that there were so many potential symbolic meanings that it would be not be possible to know all the reasons behind burial with grave goods. Daniell and Thompson (1999) suggest that grave goods were probably only buried with high-status individuals, and that the goods themselves were gender related. Obvious examples are women being buried with beads, brooches and weaving tools and men with seaxes or spears, or with shields and swords if of higher social status.

To test these hypotheses on the Wolverton burials, the gender and age of the Wolverton individuals were compared to the grave goods associated with them. Of

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the 76 graves containing inhumations, 49 (64.5%) had associated grave goods. Females and non-adults showed a higher prevalence of associated grave goods than males, though this may be at least partly because there were more female and non-adult graves than male graves. Of the 30 inhumations with no associated grave goods, 43.3% were non-adults, 26.7% were females, 20% were male and 10% were of undetermined sex.

Regarding the distribution of the grave goods themselves, Figure 10.6 illustrates the relative presence or absence of certain types of grave goods between non-adult, adult male and adult female graves. Artefacts that occur singly in the assemblage, e.g. swords and shears, are excluded as being statistically not relevant. Perhaps unsurprisingly, knives are present in more-or-less equal measure in the three groups, reinforcing their importance as a personal, multi-purpose implement. Jewellery was found only with non-adult and female burials and buckles and seaxes with non-adult and male burials. Combs and spearheads were found with all three groups, though combs more commonly accompanied females and spearheads were more often found with males (only one with a female). Of the three buckets found on the site, two were with males and one with a female. The following paragraphs discuss in more detail the possible relationships between artefact types and the ages and gender of those individuals buried at Wolverton.

Of the twenty-nine non-adults (*i.e.* infants, children, adolescents) in the assemblage, eighteen (62.1%) were buried with grave goods. The presence of grave goods seems to have increased with age: none were present in the sole infant burial (Inhumation 2072), whereas the range of grave goods buried with older children and adolescents more closely resembled those with adults. This seems to be in line with the evidence from cemeteries elsewhere (Lucy 2000, 88–9), albeit of 5th and 6th-century date.

The item most commonly associated with non-adult graves at Wolverton was an iron knife, found in 12 (66.6%) graves, of both children and adolescents. These were often the only items present within the grave, although the occasional buckle, spearhead or item of jewellery was also found. Four inhumations were accompanied by items which might be considered keepsakes or *objets trouvés,* or to have some amuletic properties: 2075 by a Neolithic flint arrowhead, 2179 by a fossil ammonite, 2196 by a boar's tusk and an assemblage of fossils and geological specimens and 2211 by a spherical flint nodule. Inhumation 2134 was interred with a worn Roman coin: this could have been kept by the deceased as an ornamental object rather than for any monetary purpose (King *in* Boyle *et al* 2011, 84–85). Of particular interest was Inhumation 2167, an adolescent (subsequently revealed by DNA sequencing to be female), whose grave contained a necklace and pendant, small domestic shears, fragments of two metal bosses and a copper-alloy workbox (probably for sewing materials), some or all probably contained in a wooden box, represented by its iron fittings.

In the past, it has been proposed that the grave goods present in non-adult burials may indicate the sex of the interred individual. For example, the grave goods accompanying Inhumation 2167 are all of a domestic nature and may therefore stereotypically suggest a female (this was

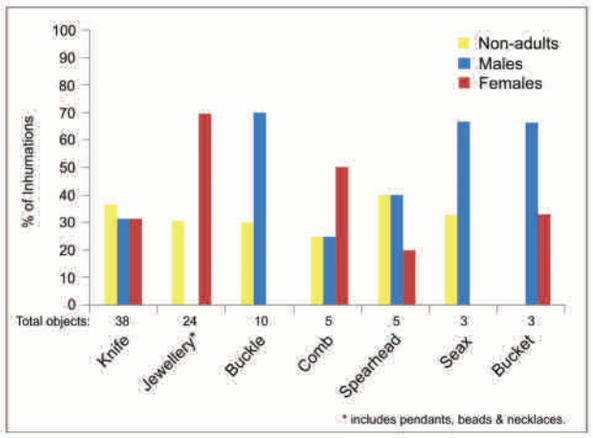

Figure 10.6 Distribution of grave goods according to age and gender

subsequently revealed to be the case), whereas Inhumation 2386, accompanied by a spearhead, could be male. However, it does appear that these stereotypes may not always apply.

Of the twenty-four females within the assemblage, fifteen (62.5%) had grave goods buried with them. Of these, nine (60%) were accompanied by a knife, seven (46.6%) by beads and jewellery (necklaces, pendants and bracelets), two (13.3%) by bone combs and two by spindle whorls. One individual (Inhumation 2196) was accompanied by a bucket. This latter individual also had a large collection of *objets trouvés* buried with her. Of particular interest was Inhumation 2359, a middle-aged female, who was found with a range of grave goods, some of which were contained within an iron-bound, leather-covered wooden box positioned by her head (Fig. 10.7). These items included a small socketed spearhead, a knife, a spoon, jewellery (including beads made of glass, amethyst and shell and silver-alloy rings) and a barrel lock of copper-alloy and iron. Presumably this was a woman of some status in the community.

Of the fourteen males within the assemblage, nine (64.3%) had grave goods buried with them. Of these, eight individuals (88.9%) were accompanied by an iron knife, four (44.4%) a buckle, three (33.3%) by seaxes, two (22.2%) a spearhead, two a complete pottery vessel and one (Inhumation 2173) a sword. One individual (Inhumation 2140) was accompanied by a bucket, and Inhumation 2173 was also associated with fragments from a copper-alloy workbox.

Grave Goods and Gender: a Summary

At Wolverton, the item most frequently found in graves of all ages and genders was a knife. This is not surprising, since the knife was a multi-function personal implement as well as a weapon until relatively modern times. It is unfortunate that the generally poor preservation of the Wolverton ironwork has precluded a more detailed study of the mostly fragmentary knives present, so that blade types and methods of construction could be better distinguished. Other weapons, such as seaxes, spears and swords, were present only in male graves. There was no evidence for shields.

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Figure 10.7 Inhumation 2359, with box marked by darker soil by head

In female graves, jewellery was the most popular item after knives and blades: in male graves, the only items of personal adornment, of a rather more practical use, were buckles, presumably from belts. Some personal and household items such as combs, spindle whorls, which might be regarded as 'female-associated grave goods', were more common in female graves, though one male was accompanied by a bucket, an item also present in female burials.

This tendency towards gender-specific grave goods has been noted on other contemporary Saxon inhumation cemeteries, such as Empingham II (Timby 1996, 86–93) and Butler's Field, Lechlade (Boyle *et al* 2011, 170–175), where much greater numbers of burials have made possible detailed statistical analysis of this aspect. Unfortunately, the relatively small number of identified male and female graves at Wolverton has precluded this level of analysis.

THE SITE IN ITS SETTING

The evidence for Anglo-Saxon activity in the Milton Keynes area is relatively good when compared with the rest of the south Midlands. The cemetery at Tickford Park, Newport Pagnell, was discovered at the turn of the last century: further burials were found there in the 1920s (Hunn *et al* 1994, 143). Work by the Milton Keynes Archaeology Unit in the late 20th century revealed farmsteads at Pennyland and Hartigans, the latter now part of the Oakgrove district (Williams 1993) and a group of 7th-century burials at Westbury, now in Shenley Wood (Ivens *et al* 1995). Subsequent investigations by others have added to this the middle-Saxon enclosed settlement at nearby Wolverton Turn (Preston *et al* 2007; Chapman *et al* 2015), a small 7th-century cemetery at Bottledump Roundabout, Tattenhoe Park (Parkhouse & Smith 1994) and a late-Saxon cemetery at Milton Keynes village, now Middleton (Parkhouse *et al* 1996). It is likely that the Wolverton Turn site and the Wolverton cemetery are related, as they are only 500m apart and there is no evidence for contemporary settlement in the vicinity.

Moving further afield, the current state of knowledge regarding Anglo-Saxon cemeteries in Buckinghamshire is most recently discussed in Hey and Hind (2014, 211–213). On the whole, the evidence from the county is slight. Apart from the aforementioned sites in Milton Keynes, no others have been recorded in the northern part of the county. There is a cluster around Aylesbury and the upper reaches of the river Thame, one has been found in the Chilterns at High Wycombe (pers. comm. M Farley) and only a few are known in the south of the county, including the rich burials at Taplow in the Thames valley. The Wolverton cemetery is by far the largest of the conversion-period Saxon cemeteries in Buckinghamshire, with eighty inhumations and at least two cremations. In comparison, the Dinton cemetery comprised 20 graves (Hunn *et al* 1994), the cemetery at Drayton Beauchamp had 18 (Masefield 2006) and the Westbury cemetery comprised 7 inhumations (Ivens *et al* 1995). However, even the Wolverton cemetery appears small when compared with sites in neighbouring Oxfordshire, where the largest number of early Saxon cemeteries in the region have been recorded. Of these there are several (Brighthampton, Lockinge, Wheatley) of a similar size to Wolverton and at least four (Abingdon, Berinsfield, Long Whittenham, Standlake Down) containing over 100 burials (Hey & Hind 2014, 212–213).

CONCLUSION: WULFHERE'S PEOPLE

In conclusion, what has the excavation of the Wolverton cemetery told us of the people buried there? The adults were, on average, of similar stature to those found in other contemporary cemeteries in the region: c.173cm (5' 8") for males and 163cm (5' 4") for females. They seem to have suffered more from disorders at least partly related to diet and malnutrition than their contemporaries elsewhere. Osteoarthritis was more common in males and older

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members of the community. It is suggested that some of this, particularly in the spines of adult males, may be due to lifting, bending and carrying heavy loads incorrectly and/or repeatedly. Infectious diseases such as tuberculosis, osteomyelitis and periostitis were also identified, as well as one case of poliomyelitis. Unsurprisingly, dental health and dental hygiene were little understood, males having more evidence of abscesses but females having a higher prevalence of caries and calculus. This could also be a reflection of the quality of the diet of the cemetery population.

From the traces of fabric found at Wolverton, it appears that linen was more commonly used for clothing than wool, though this might be owing to better preservation of the former material. Where wool was found, it appears to have been more commonly used for outer garments. Men typically wore a belt at the waist; women more commonly had a chatelaine made of light iron or copper-alloy chain, embellished with bone or antler spacers and beads, from which purses, workboxes, keys and other household items could be hung. Knives for personal use were carried by all ages and both sexes, either in scabbards attached to belt or chatelaine, or possibly just tucked inside them. No evidence was found at Wolverton for footwear, though this seems a common occurrence at other cemeteries, possibly because shoes were retained by the living as the dead had no need of them.

Few weapons were found at Wolverton, suggesting that the community there was most likely settled and engaged in agriculture. Leaving aside the spears, which were probably used for hunting, only four weapons – three seaxes and a sword – were found in the cemetery. Shield bosses and other fittings were conspicuous by their absence. Perhaps it is no surprise that the seaxes and sword were all buried with adolescents and young adults, probably all male, those members of the community most likely to be inclined towards more warlike pursuits. Only one skeleton, a middle-aged male, showed signs of a possible violent death, by means of sharp-force trauma to the back of the head.

Although the evidence from Wolverton tells us little of the religion and burial rites of the community there, it is all too apparent that superstition had a significant role in daily life. The presence of a range of *objets trouvés* in the graves, several of which have been interpreted on other sites as having potential amuletic powers, makes it difficult to avoid this suggestion. In one burial, that of a young adult female, the head had apparently been detached *post-mortem* and relocated within the grave, for reasons which remain unclear. One of the most intriguing features of the cemetery is the group of four burials placed around four-post structure 2378, a feature which at present appears to have no parallels elsewhere.

By modern standards, life in the Anglo-Saxon community at Wolverton was short. Most adults passed away during middle age (36-50 years), though slightly more women than men survived beyond that. Young adult women (21-35 years) were more likely to die than men of the same age, presumably owing to childbearing problems. Most non-adults died during childhood (4-12 years) closely followed by adolescence (13-20 years). Surprisingly there was little evidence of infant deaths: this could be due to poor bone preservation, to different funerary practices for this age group, or a combination of these and other factors.

Despite the evidence that the Wolverton community led a physically demanding agricultural existence, there are some surprising hints of wealth and connections to the wider world. Apart from the wealthy burial of the middle-aged female mentioned above, certain items of jewellery (notably the composite bead/pendant **38** and glass bead **181** with toothed silver edging) must have required a high degree of skill to manufacture and have been priced accordingly. Pattern-welded swords and seaxes will also have been expensive items. Balance **27** is probably linked to the use of currency: Scull (1990) suggests that the presence of a balance may indicate an individual or location of some importance. The inclusion with the jewellery of cowrie shell and amethyst hint at trade with mainland Europe, specifically the Mediterranean region. Penannular brooch fragment **51** and hanging bowl escutcheon **21** both suggest links to the Celtic west of Britain. Finally, the fossils and geological specimens comprising the various *objets trouv*és have evidently been collected from a much wider area than the environs of Wolverton.

In a wider context, the Wolverton cemetery is located in an area first used for burial in the Bronze Age, though it is stands separate from the nearby Bronze Age burials rather than incorporating them, as has happened elsewhere. The cemetery is almost certainly related to the contemporary enclosed settlement at Wolverton Turn, itself the precursor of the medieval village of Wolverton, to the north, and the Victorian 'new town' of Wolverton to the east, founded to serve the London & Birmingham Railway's works in the first half of the 19th century.

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APPENDIX 1: THE CEMETERY POPULATION

A1.1: BURIAL CATALOGUE

Grave	*Individual*	*Age*	*Sex*	*Head*	*Position*	*C14*	*Grave Goods*
2005	2004	Adolescent – Middle Adult	NSA	E	crouched right		yes
2008	2007	Young Adult	M	E	supine	AD550–650	yes
2011	2010	Adolescent	und	SW	supine – flexed		yes
2014	2013	Middle Adult	F	W	Supine		no
2017	2016	Young-Middle Adult	M	W	supine		yes
2018	2019	Middle-Older Adult	M	NE	Supine		yes
	2020	Young Adult	F?	NE	Supine		yes
2024	2023	Adolescent	und	E	supine		yes
2027	2026	Middle Adult	NSA	E	Supine		yes
2030	2029	Young Adult	F	W	supine		yes
2034	none	Empty grave	n/a	n/a	n/a		no
2045	2044	Young Adult	F	NW	crouched left		yes
2064	2063	Middle Adult	F	SE	supine		yes
2067	2066	Middle Adult	M	SW	supine		yes
2070	2069	Child	und	NW	crouched left		no
2073	2072	Infant	und	W	crouched left?		no
2076	2075	Child	und	SE	supine		yes
2079	2078	und	und	NW	crouched right		no
2082	2081	Young Adult	F	W	supine – flexed		yes
2085	2084	Child	und	NW	supine		no
2088	2087	Young Adult	F	E	supine	AD580–660	yes
2091	2090	Young Adult	M	NW	prone		no
2094	2093	Child	und	W	supine		no
2097	2096	Young Adult	F	W	supine		no
2100	2099	Young Adult	M	SW	supine		no
2108	2107	Middle Adult	F	NW	supine		yes
2112	2110	Middle Adult	F	NW	prone		no
	2111	Young Adult	F	NW	prone		no
2117	2116	Middle Adult	F	NE	supine		yes
2118	2119	Child	und	E	supine?		no
2123	2122	Middle Adult	F	E	prone		yes
2126	2125	Child	und	NE	supine – flexed		yes
2129	2128	Child	und	W	supine		no
2132	2131	Middle Adult	F	NE	supine		yes
2135	2134	Middle Adult	F	SW	crouched left		yes
2138	2137	Middle Adult	M?	SW	crouched left		yes
	2142	Child	und	und	at feet of 2137		no
2141	2140	Middle Adult	M?	E	supine		yes
2148	2147	Adolescent	und	NE	supine		yes
2151	2150	Child	und	SE	supine		yes
2154	2153	Infant/Child	und	NW?	und		yes
2156	none	Empty grave	n/a	n/a	n/a		yes
2158	none	Empty grave	n/a	n/a	n/a		no
2165	2164	Middle Adult	M	NW	supine		no
2168	2167	Adolescent	und	NW	supine	AD630–720	yes
2171	2170	Adolescent – Young Adult	und	SW	supine		no
2174	2173	Young Adult	M	E	prone		yes
2177	2176	Middle Adult	F	SE	supine		no
2180	2179	Adolescent – Young Adult	NSA	S	supine		yes
2183	2182	Adolescent	und	SW	supine		yes
2197	2196	Middle-Older Adult	F	W	prone		yes
2203	2202	Child	und	SE	supine		yes
2206	2205	Adolescent – Middle Adult	NSA	SE	supine		yes
2212	2211	Middle Adult	NSA	SW	supine		yes
2215	2214	Middle Adult	NSA	SW	supine	AD575–660	yes
2222	2221	Adolescent – Middle Adult	NSA	SW	crouched left		yes
2227	2226	Middle Adult	F	NW	supine		yes
2232	2231	Young-Middle Adult	NSA	SW	supine – flexed		no
2235	2234	Middle Adult	NSA	NW	crouched right?		no

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Grave	*Individual*	*Age*	*Sex*	*Head*	*Position*	*C14*	*Grave Goods*
2239	2237	Adolescent	und	W	supine		yes
2243	none	Empty grave	n/a	n/a	n/a		no
2248	none	Empty grave	n/a	n/a	n/a		no
2251	2250	Middle Adult	NSA	SW	supine		yes
2252	2246	und	und	n/a	cremation	AD600–675	no
2257	2256	Child	und	SW	crouched left		no
2272	2270	Child	und	SW	lateral right		yes
	2271	Child	und	SW	lateral left		yes
2277	2276	Middle Adult	F	SW	supine		yes
2282	2281	Middle Adult	NSA	SW	crouched right		yes
2285	2284	Adolescent	und	W	supine		no
2290	2289	Child	und	NW	supine		no
2309	2308	Young Adult	F	SW	supine		yes
2312	2311	Young-Middle Adult	F	W	supine		no
2322	2321	Middle Adult	NSA	NE	supine		no
2344	2343	Child	und	SW	supine		yes
2350	2348	Middle Adult	M	W	supine	AD610–710	no
	2349	Middle Adult	M	W	supine		no
	2340	charnel	und	n/a	n/a		no
2355	2354	Young Adult	M	NW	crouched left		yes
2360	2359	Middle Adult	F	SE	crouched left		yes
2365	2364	Middle Adult	M	SW	supine		yes
2381	2380	Child	und	SW	crouched left		yes
2384	2383	Child	und	NW	supine		no
2387	2386	Adolescent	und	NW	prone		yes
2407	2406	Middle Adult	F	SW	supine		no
2430	2429	Adolescent	und	SW	supine		no
2436	2437	Young Adult	F	n/a	cremation		yes
2442	2441	Middle Adult	M	SW	supine		yes
2445	2444	Middle Adult	F	SW	supine		no

NSA = non-sexed adult und = undetermined For definition of age categories, see Chapter 4

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A2.2: SKELETAL ANALYSIS

Individual	*Preservation*	*Survival (%)*	*Stature (cm)*	*Congenital Condition*	*Metabolic Condition*	*Pathology*	*Hypoplasia*
2004	Fair	25-50	und	No	No	No	No
2007	Fair	75-100	167-175	No	No	Yes	Yes
2010	Poor	50-75	und	No	No	Yes	No
2013	Good	75-100	163-169	Yes	No	Yes	Yes
2016	Fair	25-50	und	No	No	No	No
2019	Good	75-100	161-169	Yes	No	Yes	No
2020	Poor	50-75	und	No	No	Yes	No
2023	Good	75-100	und	No	Yes	Yes	Yes
2026	Poor	75-100	und	No	No	Yes	Yes
2029	Fair	75-100	und	No	No	No	No
2044	Fair	75-100	165-174	No	No	No	Yes
2063	Fair	75-100	und	No	No	Yes	No
2066	Fair	75-100	174-182	No	Yes	Yes	No
2069	Poor	50-75	und	No	No	No	No
2072	Fair	25-50	und	No	No	No	No
2075	Poor	75-100	und	No	Yes	No	No
2078	Fair	50-75	und	No	No	No	No
2081	Fair	75-100	156-164	No	No	No	No
2084	Good	75-100	und	No	Yes	No	No
2087	Good	75-100	164-171	No	No	Yes	Yes
2090	Good	75-100	169-175	No	Yes	No	No
2093	Fair	50-75	und	No	Yes	No	No
2096	Good	75-100	157-164	Yes	Yes	Yes	No
2099	Poor	50-75	168-176	No	No	No	No
2107	Fair	75-100	und	Yes	Yes	Yes	No
2110	Good	75-100	161-168	Yes	No	No	No
2111	Good	75-100	160-168	No	No	No	Yes
2116	Good	75-100	162-169	No	No	No	Yes
2119	Poor	25-50	und	No	No	No	No
2122	Good	75-100	155-163	No	No	Yes	No
2125	Fair	75-100	und	No	No	No	Yes
2128	Fair	75-100	und	No	No	No	No
2131	Fair	50-75	und	No	No	No	No
2134	Fair	75-100	159-167	No	No	Yes	No
2137	Good	75-100	167-175	No	Yes	Yes	Yes
2140	Good	75-100	172-180	No	Yes	Yes	No
2142	Poor	0-25	und	und	und	und	und
2147	Good	75-100	und	No	No	No	Yes
2150	Good	75-100	und	No	Yes	No	No
2153	Poor	0-25	und	No	No	No	No
2164	Fair	75-100	179-189	No	No	Yes	Yes
2167	Poor	25-50	und	No	No	No	No
2170	Fair	0-25	und	No	No	No	No
2173	Fair	50-75	163-169	No	No	No	Yes
2176	Good	75-100	157-165	Yes	No	No	Yes
2179	Poor	0-25	und	No	No	No	No
2182	Fair	75-100	und	No	Yes	No	No
2196	Good	75-100	163-171	No	Yes	Yes	Yes
2202	Good	75-100	und	No	No	Yes	No
2205	Poor	0-25	und	No	No	No	No
2211	Poor	25-50	und	No	No	No	No
2214	Fair	75-100	181-189	No	No	Yes	No
2221	Poor	0-25	und	No	No	No	No
2226	Fair	75-100	und	No	No	No	Yes
2231	Fair	25-50	und	No	No	No	No
2234	Fair	25-50	und	No	No	No	No
2237	Fair	75-100	und	No	No	Yes	No
2250	Poor	25-50	und	No	No	Yes	No
2246	cremation	n/a	n/a	und	und	und	und
2256	Fair	25-50	und	No	No	No	No
2270	Fair	75-100	und	No	No	No	No
2271	Fair	75-100	und	No	No	No	No

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Individual	*Preservation*	*Survival (%)*	*Stature (cm)*	*Congenital Condition*	*Metabolic Condition*	*Pathology*	*Hypoplasia*
2276	Fair	75-100	151-159	No	Yes	Yes	No
2281	Fair	25-50	und	No	No	No	No
2284	Fair	50-75	und	No	No	No	No
2289	Fair	25-50	und	No	No	No	No
2308	Fair	75-100	161-169	No	No	Yes	Yes
2311	Poor	25-50	und	No	No	No	No
2321	Fair	50-75	und	No	No	No	No
2343	Fair	75-100	und	No	No	No	No
2348	Good	75-100	167-177	No	No	No	No
2349	Fair	75-100	167-177	No	No	No	Yes
2354	Good	75-100	163-171	No	No	No	No
2359	Good	75-100	164-171	No	No	Yes	No
2364	Good	75-100	169-177	Yes	No	Yes	No
2380	Poor	0-25	und	No	No	No	No
2383	Poor	0-25	und	No	No	No	No
2386	Fair	75-100	und	No	Yes	Yes	Yes
2406	Fair	25-50	und	No	No	No	No
2429	Fair	75-100	und	No	No	No	No
2437	cremation	n/a	n/a	und	und	und	und
2441	Fair	75-100	168-176	No	No	Yes	No
2444	Fair	75-100	143-151	Yes	No	No	No

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APPENDIX 2: GRAVE GOODS CATALOGUE

Report SF no.	*Original SF no.*	*Grave*	*Material*	*Description*	*Fig no(s)*
1	x	2005	Ae	WORKBOX, comprising 2-5	3.1
2	3	2005	Ae	Workbox end	3.2
3	3	2005	Ae	Workbox end	3.2
4	9	2005	Ae	Workbox body: 6 sheet fragments	3.2
5	20	2005	Ae	Two chain links and suspension loop	3.2
6	4	2005	Fe	Implement, in two pieces	3.2
7	7	2005	Ae	Finger ring	3.1
8	21	2005	shale	Bangle	3.2
9	x	2005	various	CHATELAINE, comprising 10 & 11	3.2
10	8	2005	Fe	Chain, six chain links, iron ring & misc. fragments	3.2
11	5	2005	antler	Chatelaine spacer ring	3.2
12	1	2008	Fe	Seax	3.3, 5.10
13	6	2011	Fe	Knife	3.4
14	6	2011	Fe	Sharpening steel	3.4
15	22	2017	Fe	Knife	3.6
16	23	2017	Ae	Strip mount (scabbard binding?)	3.6
17	66	2018	Fe	Staple	3.7
18	67	2018	Ae	Buckle & plate	3.7
19	68	2018	Fe	Knife	3.7
20	65	2018	bone	Bead, annular	3.7
21	10	2024	Ae	Disc mount	3.8, 5.15
22	11	2024	Fe	Knife	3.8
23	13	2027	Ae	Buckle & plate	3.9
24	14	2027	Fe	Knife	3.9
25	15	2027	Fe	Spearhead	3.9
26	16	2027	lead	Weight	3.9
27	x	2027	Ae	BALANCE, comprising 28 & 29	3.9, 5.7
28	17	2027	Ae	Balance arm and pans	3.9
29	24	2027	Ae	Balance stirrup	3.9
30	18	2027	Fe	Bucket fittings	3.9
31	2	2030	Fe	Knife	3.10
32	19	2045	Ag	Necklace, comprising scutiform pendant and four slip-knot rings	3.12, 5.4
33	25	2064	Fe	Knife fragment	3.13
34	27	2067	Fe	Knife	3.14
35	26	2076	flint	Neolithic arrowhead	3.16
36	28	2076	Fe	Knife fragment	3.16
37	29	2076	Ae & Fe	Buckle & plate	3.16
38	30	2082	Ae	Bead, composite	3.18, 5.3
39	31	2082	bone	Spindle whorl	3.18
40	69	2088	ceramic	Spindle whorl (from RB vessel base)	3.20
41	32	2108	Fe	Knife	3.22
42	33	2117	Fe	Knife	3.24
43	34	2117	Ae	Two cruciform mounts and tacks/rivets	3.24
44	34	2117	Ae	Oval hinge	3.24
45	34	2117	Ae	Scabbard chape	3.24, 5.13
46	34	2117	Ae	Edge binding	3.24
47	34	2117	Ae	Two strip fragments	3.24
48	35	2123	bone	Comb, double-sided	3.26
49	36	2126	Fe	Chain link?	3.27
50	37	2126	Fe	Knife	3.27
51	70	2126	Ae	Penannular brooch fragment	3.27, 5.1
52	x	2135	various	NECKLACE, comprising 53-57	3.29
53	39	2135	Ae & glass	Composite pendant, white glass	3.29, 5.6
54	39	2135	Ae & glass	Composite pendant, turquoise glass	3.29
55	39	2135	Ae & glass	Composite pendant, blue glass	3.29
56	39	2135	glass	Bead, annular, clear glass	3.29
57	39	2135	shell	Two cowrie shell beads	3.29
58	x	2135	various	CHATELAINE, comprising 59 & 60	3.29
59	40	2135	Fe	Miscellaneous rings and chain fragments	3.29
60	40	2135	Ae	Suspension clip	3.29

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Report SF no.	*Original SF no.*	*Grave*	*Material*	*Description*	*Fig no(s)*
61	40	2135	Fe	Knife	3.29
62	60	2135	Ae	As/Dupondius of Marcus Aurelius	NI
63	41	2138	Fe	Seax	3.30
64	42	2141	Fe	Spearhead	3.31, 5.11
65	43	2141	Fe	Bucket handle	3.31
66	44	2141	ceramic	Pot, high necked (pot rep 1)	3.31, 7.1
67	45	2141	Fe	Buckle & plate	3.31
68	46	2141	Fe	Knife fragment	3.31
69	47	2148	Fe	Seax	3.32, 5.10
70	48	2148	Fe	Knife	3.32
71	49	2151	Fe	Knife	3.33
72	50	2154	Fe	Knife	3.34
73	50	2154	Fe	Sharpening steel	3.34
74	50	2154	Fe	Blade, curved	3.34
75	50	2154	Fe	Nail	3.34
76	50	2154	Fe	Two chain links	3.34
77	50	2154	Ae	Chain link	3.34
78	51	2156	Fe	Knife	3.35
79	x	2168	Ag & Ae	NECKLACE(s), comprising 81-87	3.37
80	52	2168	Ag	Bracteate pendant	3.137, 5.6
81	52	2168	Ag	Bulla pendant	3.37
82	52	2168	Ae	Fragments of at least four bulla pendants	3.37
83	52	2168	Ag	Disc fragment	3.37, 5.6
84	52	2168	Ag	Three? fragmentary slip-knot rings	3.37
85	71	2168	Ag	Slip-knot ring	3.37
86	71	2168	shell	Bead, cowrie shell	3.37
87	52	2168	Ae	Pin	3.37
88	53	2168	Fe	Shears	3.37
89	x	2168	various	CHATELAINE, comprising 90-94	3.37
90	54	2168	Ae	Figure-of-eight links	3.37
91	57	2168	Fe	Chain	3.37
92	58	2168	Fe	Chain	3.37
93	55	2168	glass	Bead, 'horned'	3.38, 5.2
94	56	2168	glass	Melon bead	3.38
95	59	2168	Ae	Workbox	3.38, 5.9
96	x	2168	Fe	BOX FITTINGS, comprising 97-100	3.38
97	61	2168	Fe	Box corner mount	3.38
98	62	2168	Fe	Two box corner mounts	3.38
99	63	2168	Fe	Box fitting	3.38
100	64	2168	Fe	Box corner mounts	3.38
101	72	2174	Ae	Hooked tag	3.40
102	74	2174	Fe	Sword	3.40, 5.12
103	75	2174	stone	Whetstone	3.40
104	76	2174	Fe	Ring-headed pin	3.40
105	77	2174	Ae	Fittings	3.40
106	78	2174	Fe	Knife	3.40
107	79	2174	Ae	Buckle & plate	3.40
108	86	2180	bone	Comb, double-sided	3.42
109	x	2180	Fe	KNIFE, comprising 111 & 112	3.42
110	87	2180	Fe	Knife blade	3.42
111	90	2180	Fe	Knife tang	3.42
112	115	2180	stone	Fossil (ammonite)	NI
113	81	2183	Fe	Spearhead	3.43, 5.11
114	82	2183	Fe	Nail fragment	NI
115	83	2183	Fe	Nail	3.43
116	84	2183	Fe	Nail fragment	NI
117	88	2183	Fe	Knife	3.43
118	89	2183	Ae	Buckle plate	3.43
119	x	2197	Fe	BUCKET FITTINGS, comprising 120-126	3.44
120	91	2197	Fe	Bucket fittings	3.44
121	92	2197	Fe	Bucket fittings	3.44
122	93	2197	Fe	Bucket fittings	3.44
123	94	2197	Fe	Bucket fittings	3.44

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Report SF no.	*Original SF no.*	*Grave*	*Material*	*Description*	*Fig no(s)*
124	98	2197	Fe	Bucket fittings	3.44
125	157	2197	Fe	Bucket fittings	3.44
126	96	2197	Fe	Bucket fitting	3.44
127	95	2197	glass	Bead, annular	3.44
128	97	2197	stone	Fossils and geological specimens (21 items)	5.16
129	99	2197	bone	Boar's tusk	3.44
130	x	2203	various	NECKLACE(s), comprising 131-137	3.45, 5.5
131	104	2203	Ae	Bulla pendant	3.45, 5.5
132	104	2203	Ae	Wire ring	NI
133	104	2203	Ag & glass	Three slip-knot rings with annular beads	3.45
134	104	2203	Ag	Nine slip-knot rings	3.45
135	104	2203	glass	Three annular beads	3.45
136	100	2203	Ag	Bead, biconical wire	3.45, 5.5
137	104	2203	Ag	Five biconical wire beads	3.45, 5.5
138	101	2203	Fe	Knife	3.45
139	x	2203	various	CHATELAINE, comprising 140-145	3.45
140	102	2203	Fe & Ae	Chain	3.45
141	103	2203	Fe	Chain	3.45
142	102	2203	antler	Chatelaine spacer ring	3.45
143	103	2203	antler	Chatelaine spacer ring	3.45
144	103	2203	Ae	Suspension ring	3.45
145	103	2203	glass	Bead, annular	3.45
146	103	2203	Fe	Ferrule	3.45
147	105	2206	Fe	Knife	3.46
148	108	2212	Fe	Knife	3.47
149	109	2212	Fe	Ring	3.47
150	119	2212	stone	Flint nodule	NI
151	106	2215	Fe	Buckle plate	3.48
152	107	2215	Fe	Knife	3.48
153	110	2215	ceramic	Three pot sherds	NI
154	111	2222	Fe	Knife	3.49
155	113	2227	Fe	Knife	3.50
156	117	2251	Fe	Knife	3.52
157	118	2251	ceramic	Pot, high necked (pot rep 2)	3.52, 7.1
158	161	2251	Ae	Object?	3.52
159	120	2272	Fe	Knife	3.54
160	121	2277	bone	Comb, double-sided	3.55
161	122	2277	Ae	Ring-headed pin	3.55
162	123	2282	Fe	Knife	3.56
163	124	2282	Ae	Buckle	3.56
164	131	2309	Fe	Knife fragment	3.58
165	132	2344	Fe	Knife	3.61
166	133	2355	bone	Comb, single-sided	3.63
167	134	2355	Fe	Knife	3.63
168	x	2360	Fe	BOX FITTINGS, comprising 169-171	3.64, 5.14
169	137	2360	Fe	Box corner mounts	3.64
170	137	2360	Fe	Box hinge	3.64
171	156	2360	Fe	Box hinge	3.64
172	155	2360	Fe & Ae	Barrel padlock	3.64
173	135	2360	Fe	Object?	3.64
174	136	2360	Fe	Spearhead	3.64, 5.11
175	140	2360	Fe	Spoon	3.64, 5.8
176	145	2360	Ae	Ferrule?	3.64
177	141	2360	antler	Disc	3.64
178	x	2360	various	NECKLACE(s), comprising 179-183	3.64
179	142	2360	Ag	Six slip-knot rings	3.64
180	142	2360	Ag & glass	Annular glass bead & dog-toothed binding	3.65, 5.2
181	142	2360	glass	Two annular bicolour beads	3.65, 5.2
182	142	2360	shell	Two beads	3.65
183	142	2360	amethyst	Two beads	3.65
184	x	2360	various	BAG & CONTENTS? comprising 185-188	3.65
185	143	2360	leather	Five fragments	NI
186	143	2360	Ae	Slip-knot ring	3.65

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Report SF no.	*Original SF no.*	*Grave*	*Material*	*Description*	*Fig no(s)*
187	143	2360	Ae	Two strap slides with rivets	3.65
188	143	2360	Ae	Ear scoop and tweezers	3.65
189	x	2360	Fe	CHATELAINE, comprising 191-192	3.65
190	144	2360	Fe	Chain, six S-shaped links	3.65
191	147	2360	Fe	Chain, eight S-shaped links	3.65
192	146	2360	Fe	Knife	3.65
193	138	2365	ceramic	Pot, high necked (pot rep 3)	3.66, 7.1
194	139	2365	Fe	Knife	3.66
195	149	2381	Fe	Knife	3.67
196	150	2381	Fe	Buckle, plate missing	3.67
197	151	2387	Fe	Spearhead	3.69
198	152	2387	Fe	Knife	3.69
199	159	2442	Fe	Knife	3.72
200	160	2442	Ae	Buckle & plate	3.72
201	116	2246	ceramic	Cremation vessel	NI
202	158	2436	ceramic	Cremation vessel	NI
203	162	2436	bone/antler	Comb, double-sided	3.75

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APPENDIX 3: NON-FUNERARY CONTEXTS

Cut no.	*Fill no.*	*Type*	*Comments*	*Pottery*
2032	2031	ph		
2042	2041	natural		
2103	2101	ph		
2145	2143	pit		
2184	2185	treebole		
2187	2186	treebole		
2188	2189	treebole	upper fill	
	2190	treebole	lower fill	RB: early-mid 1st
2194	2193	treebole		
2200	2199	treebole		
2207	2450	pit		AS: Fabrics 1+4
2208	2209	pit		AS: Fabrics 4+5
2224	2223	natural		
2228-	2229	gully?		
2241	2242	gully?		
n/a	2244	natural		
2254	2253	ph		RB: mid-late 1st
2274	2273	treebole		
2279	2278	natural		
2286	2287	ph		
2292	2291	pit		RB: mid-late 1st
2294	2293	ph		
2296	2295	ditch		
2300	2299	ditch		RB: early-mid 1st
2304	2323	ph		
2306	2305	ph		
2314	2313	drain	Land drain cutting Grave 2350	post-medieval
2317	2316	ph		
2319	2318	ph?		
2324	2323	ph		
2326	2325	pit?		
2328	2327	ph		
2346	2345	ph		AS: (also 2347)
2357	2356	treebole		
2370	2371	ph	Group 2378: 4-post structure assoc with graves 2212, 2215, 2227, 2235	
2372	2373	ph	Group 2378: 4-post structure assoc with graves 2212, 2215, 2227, 2235	
2374	2375	ph	Group 2378: 4-post structure assoc with graves 2212, 2215, 2227, 2235	
2376	2377	ph	Group 2378: 4-post structure assoc with graves 2212, 2215, 2227, 2235	
2389	2388	ph		
2392	2390	pit	upper fill	
	2391	pit	lower fill	
2394	2393	pit	upper fill	
	2417	pit	intermediate fill	
	2418	pit	primary fill	
2396	2395	treebole		
	2410	treebole		
2398	2397	ph		
2400	2399	ph		
2402	2401	ph		
2404	2403	ph		RB: early-mid 1st
2409	2408	ph		
2411	2412	ph		
2414	2413	ph		
2416	2415	pit	upper fill	
	2419	pit	lower fill	RB: mid-late 1st
2421	2420	ph		
2422	2423	ph?		
2424	2425	pit?		

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Cut no.	*Fill no.*	*Type*	*Comments*	*Pottery*
2427	2426	ph		
2431	2434	pit		
2433	2432	treebole		
2439	2438	ditch		
2453	2454	ph		

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