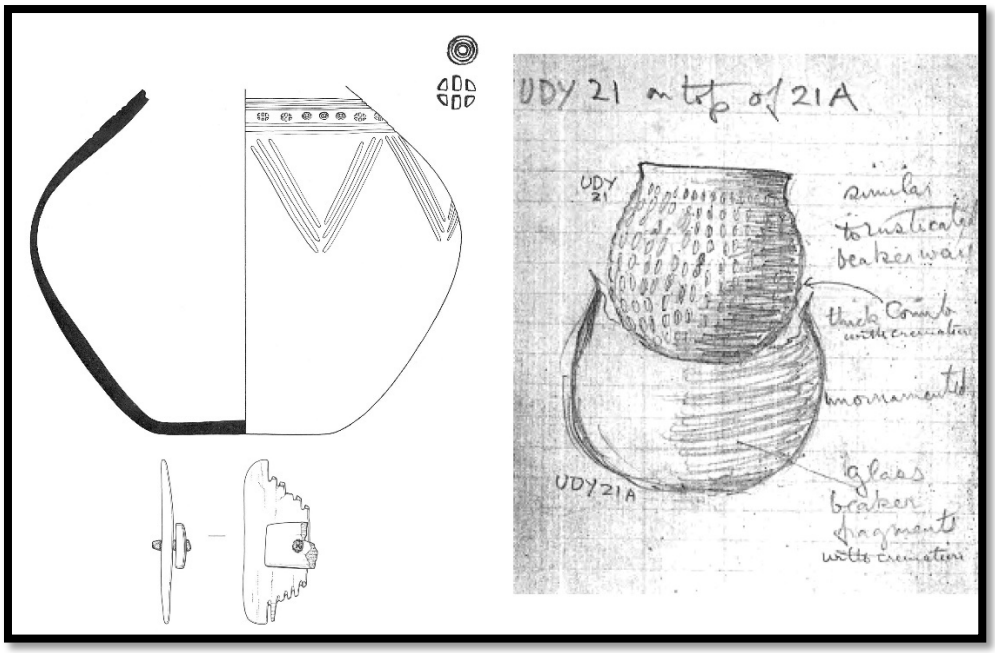
Suffolk County Council

Lackford, Suffolk LKD 001

Archive Report on excavations at the early Anglo-Saxon cremation cemetery 2015-6 and research into the 1947-9 excavations

Historic England project 7593



Sue Anderson, Diana Briscoe, Rose Broadley, Faye Minter, Jude Plouviez, Ian Riddler

Suffolk County Council Archaeological Service

2022

Document Control

Project Name	7593 Lackford, Suffolk, early Anglo-Saxon cremation cemetery
Report title	Archive Report on excavations at the early Anglo-Saxon cremation cemetery 2015-6 and research into the 1947-9 excavations
Organisation	Suffolk County Council Archaeological Service, Bury Resource Centre, Hollow Road, Bury St Edmunds.IP32 7AY
Authors, contact	Faye Minter, Senior Archaeological Officer, Suffolk County Council, faye.minter@suffolk.gov.uk, 01284 741228 Jude Plouviez, jude@plouviez.co.uk, 01473 602295
Authors and other contributors	Sue Anderson, Rose Broadley, Diana Briscoe, Ian Riddler Julie M Bond, Dana Challinor, Julie Dunne, Richard P. Evershed, Peter Marshall, Nicola Trzaska-Nartowski Gillian Greer (maps and plans) Donna Wreathall (drawings)
Origination date	Jan 2022
Revised date	June 2022
Circulation to	Historic England (Magnus Alexander); Dr Catherine Hills
Version	Lackford_LKD001_Archive Report_V2.1

Summary

Detailed analysis of the results of rapid excavations at the Lackford early Anglo-Saxon cremation cemetery in 2015 and 2016, which comprised 15 partially intact cremation burials and 38 surface scatters of pottery and cremated material, provides evidence for human and animal deposits and other pyre and grave goods. Alongside this small sample excavated under modern conditions the excavations by T C Lethbridge in 1947-9 of some 500 cremation burials have been reassessed, with updated studies of the pottery and artefacts held at Cambridge University Museum of Archaeology and Anthropology. In particular the material has been compared to the results from the large cremation cemetery at Spong Hill, Norfolk. Burial at Lackford began in the first half of the 5th century and probably continued into the second half of the 6th century and involved a mixed population including children. Pyre goods commonly included whole animal sacrifices, meat joints, female-style dress accessories, ivory bag rings and metal vessels; additional grave goods were toilet items, particularly antler combs and metal tweezers. The pottery containers are mostly but not exclusively local products; decoration includes a range of stamped motifs some of which are distinctively local but show surprisingly long-distance contacts. Lipid analysis of the 2016 pots strongly suggests that most were used, particularly for dairy products, before being used in burials. Work on the combined archives has also provided a basis for future examination of the site, the physical extent of which is far from certain.

Acknowledgements

Thanks are due to the landowner, Robert Gough of DW Gough & Sons, for facilitating access in 2015-6. Work on site relied on staff from SCCAS and volunteers, with survey work by Cotswold Archaeology. Metal detecting was by Mark Frost and Ian Shipp.

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1. **Background** (Figures 1.1, 1.2)

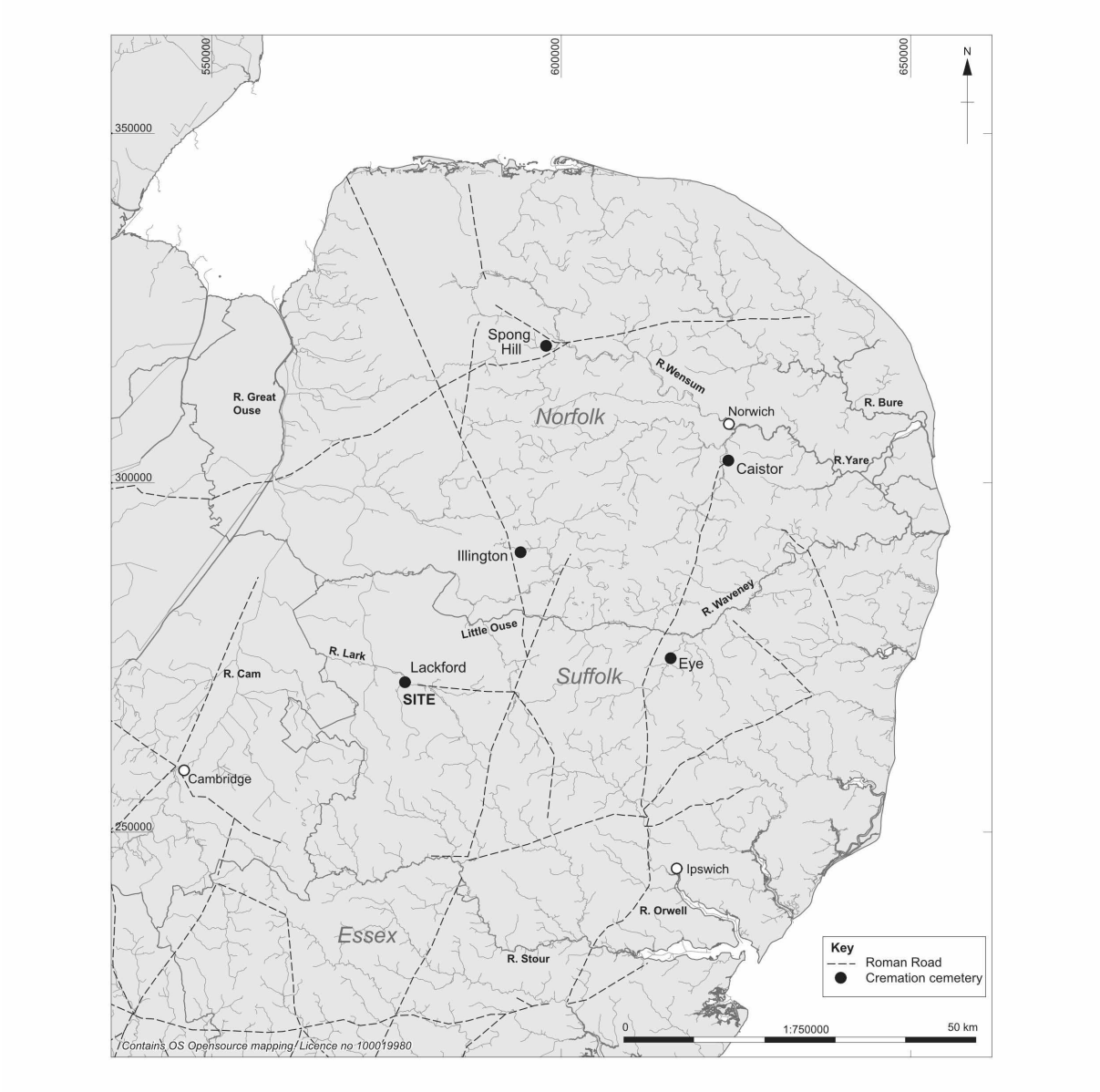

Figure 1.1 Lackford and other early Anglo-Saxon cremation cemeteries in East Anglia

The early Anglo-Saxon cremation cemetery lies on the south side of the valley of the river Lark in the west part of the parish of Lackford, just east of a tributary stream, known as Cavenham Brook or the Holt, and the Cavenham parish boundary. The site is on relatively level ground at just over 18m above Ordnance Datum. The soils are described as 551g Newport 4, deep sandy soils over glaciofluvial drift, and a sandy subsoil was recorded in the excavations. The area is known as Mill Heath, with Cavenham Mill on the Brook to the west, and was minimally cultivated before the mid 20th century. After the 1947-9 excavations trees were planted on part of the cemetery area, and this plantation forms the north boundary of the arable field containing the more recent finds.

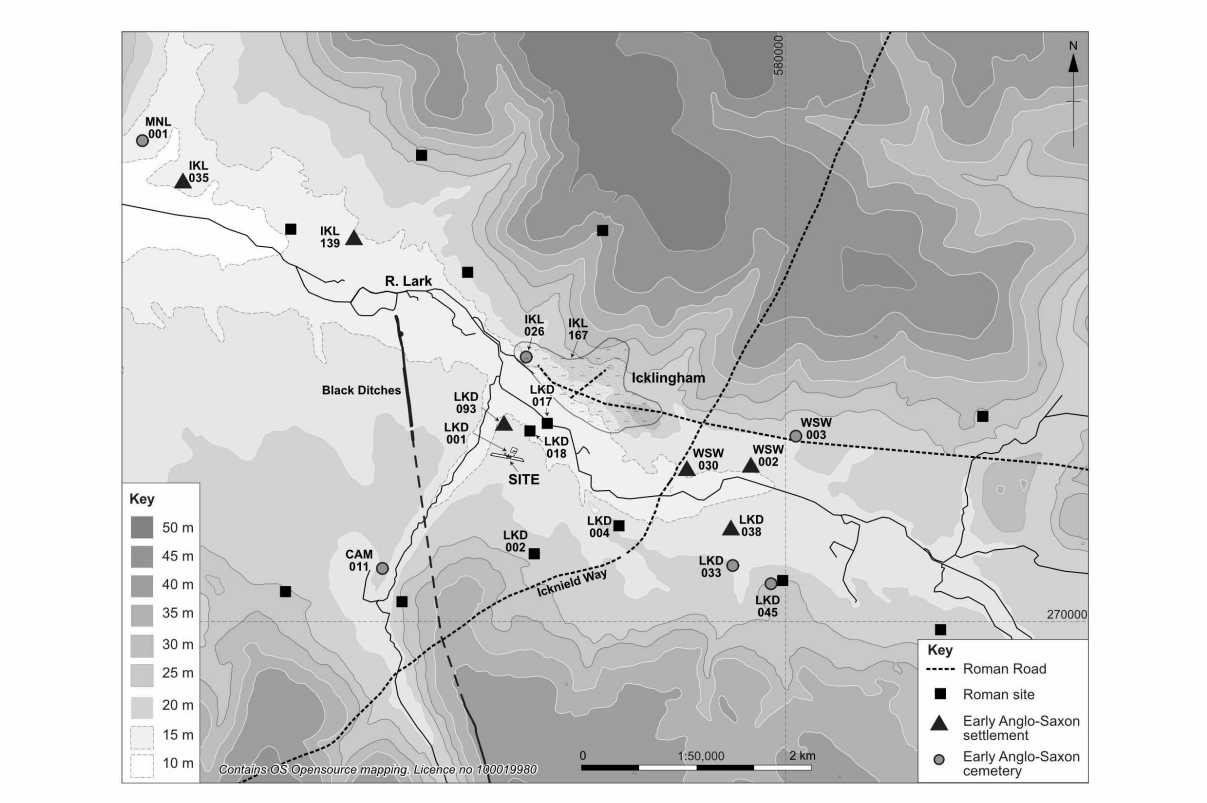

Figure 1.2 Roman and early Anglo-Saxon sites in the Lark Valley around Lackford

Pottery urns were found intermittently on Mill Heath, between Lackford and Cavenham, during the 19th century. The earliest acquisitions by Moyses Hall Museum in Bury St Edmunds were in 1874 (West 1998, 72); pots were also acquired by the Ashmolean Museum, Oxford and one pot by the British Museum (1911.0609.1). An account by H.R.Barker (1917) of Moyses Hall Museum describes how the discovery of a complete pot by a shepherd boy in 1914 was followed, when the findspot was investigated, by the discovery of six more pots close together, along with fragments of up to another eight. The findspot location was not recorded except as on the Heath; the location of the cemetery was pinpointed by Teresa Home (subsequently Teresa Briscoe) of Cavenham Hall following ploughing of the Heath in 1945; apparently the ploughman saw that pots were being truncated and contacted her as a local person interested in 'old things'. She and Moyses Hall Museum contacted various archaeologists for advice and some pots were probably excavated at this time; visitors included Kathleen Kenyon (pers comm Diana Briscoe). Areas were excavated between 1947 and 1949 under the direction of Tom Lethbridge and over 500 cremation pots found (Lethbridge 1951). Subsequently there have been intermittent reports of early Anglo-Saxon pottery sherds in the cultivated area on the south side of the cemetery recorded under the Suffolk Historic Environment Record (HER site reference LKD 001) and in recent years metal detectorists have recorded surface finds of pottery sherds (and no metal objects in this area) with the Portable Antiquities Scheme.

The Lark valley contains a large amount of recorded archaeology of all periods. Of immediate relevance to the Anglo-Saxon cemetery is a large Roman roadside settlement or small town at Icklingham (IKL 167) on the north side of the Lark. The main axis of the small town, which may be the place named *Camboritum* in the Antonine Itinerary, seems to be along the valley and along a Roman road that links east to Pakenham and perhaps follows the Lark north-west towards the Fen edge at Mildenhall. However magnetometry survey at Icklingham (Historic England 1996) shows a potential north-east to south-west route which would cross the river

onto Mill Heath at a point where Roman finds are recorded adjacent to the present river (LKD 017). This route might be an earlier line of the Icknield Way, recorded in the post-medieval period as crossing the Lark to the east at Lackford Bridge (IKL 105, LKD 036). Activity at Icklingham is particularly pronounced in the late Roman period, including evidence for a 4th-century Christian church and burials, early 5th-century *siliquae* hoards, developed crossbow brooches, late belt fittings and widespread Valentinian and Theodosian bronze coinage (West with Plouviez 1976, West 2014), all suggesting a centre of wealth, religious activity and probably political significance at the end of the Roman period. On the edge of the river terrace on the south side of the Lark is a temple, close to the likely findspot of the 'Cavenham Crowns' where activity is much reduced but not completely absent in the second half of the 4th century (LKD 018). Further Roman activity is recorded on higher ground to the south of Mill Heath (LKD 002), as well as sites along the Lark to the south-east (LKD 004) and south along the Cavenham Brook (CAM 006, LKD 019).

Early Anglo-Saxon activity is also well attested along the Lark and was summarised in the publication of the West Stow settlement (WSW 002) (West 1985, 155-163). Inhumation cemeteries are known at Icklingham Mitchells Hill (IKL 026) and West Stow (WSW 003) and surface finds south of the Lark in Lackford (LKD 045) suggest inhumations, as do finds from the area of Cavenham Mere (CAM 011) adjoining the Cavenham Brook. Settlement evidence has been excavated at Lackford (LKD 038) to the south of the extensive excavated site at West Stow; further settlement lies 400m to the west at WSW 030. Surface finds closer to Mill Heath include pottery from immediately north of the cremation cemetery overlooking the junction of the Lark and the Cavenham Brook; the absence of decorated sherds suggests this is likely to be settlement rather than another cemetery area (LKD 093). Pottery sherds have also been found to the east along the valley at LKD 004 (close to the Roman finds) that probably represent another settlement area, and in smaller amounts to the south in the Roman area at LKD 002.

The date of the dyke system, Black Ditches (CAM 001, RBY 002) remains uncertain, perhaps Iron Age but more likely post-Roman by comparison with the four Cambridgeshire examples including Devil's Dyke (which have definite post-Roman dating evidence) as all have the ditch to the west of the bank and are positioned across the route of the Icknield Way. The north end of Black Ditches is on the south side of the Lark valley, 1.6km from the cemetery site, and it crosses the Cavenham Brook to the south of the cemetery; at its closest point the course of the bank is just over 800m from the cemetery.

The course of the Icknield Way route, following the chalk high ground in West Norfolk into Cambridgeshire and beyond towards the west has been noted above as possibly very close to the cemetery, with the recorded post-medieval line (LKD 035) only 1km distant. The Roman road through Icklingham remained in use well into the late medieval period at Mitchells Farm (IKL 127) and presumably then shifted to the modern line of the road along the north side of the valley towards Mildenhall; there is no evidence for when the east end of the road through the Roman settlement and its course towards Pakenham (WSW 036) fell into disuse, although the route is very close to the inhumation cemetery at West Stow; the course here has recently been confirmed in geophysical survey (Whittingham and Wubs 2022, 9).

2. The Excavations

2.1 Constraints and Methodologies

In 2015 a small group of areas of freshly disturbed cremation debris on the surface of the field was reported by a detectorist and rapidly excavated by SCCAS (Brown 2015). In May 2016 further, more extensive, groups of sherds and calcined bone were observed, and a larger area excavated (relative locations are shown in Figure 3.1). These two excavations form the subject of the first part of the following chapters. When assessing the material from these excavations it became apparent that this would be an opportunity to re-examine the evidence from the 1947-9 excavations and these results are also included in this report.

All the excavations have been a response to sherds of pottery and calcined bone fragments being observed on the surface of freshly ploughed fields. In 1945 part of Mill Heath was ploughed for the first time in the twentieth century and the cremation evidence was seen by Teresa Home of Cavenham and subsequently Sam Marston of Icklingham – their concerns about damage to the site (a later note by Teresa Briscoe suggests that subsequent ploughing in 1946 destroyed some 200-300 urns) led to T C Lethbridge being invited to lead an excavation and that project began in January 1947. The original archive notes and plans have largely been lost so our knowledge relies on the published account (Lethbridge 1951) and a single notebook copied from a collection of Lethbridge material

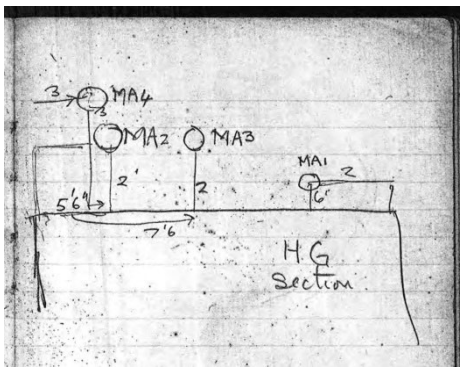

Figure 2.1 Lethbridge Notebook: Plan of urns in area MA

acquired by John Gadd (copies held by SCCAS and CUMAA). The publication is a selective account of aspects of the cemetery that seemed significant and most of the (selected) detailed information about associations and stratigraphy is in the artefact figure captions (Lethbridge 1951, 16-22). The site contexts can be correlated with the museum accession numbers in these figures, providing confirmation of the more complete list in the CUMAA museum catalogue entries. Various inconsistencies were noted in all the sources.

The Lethbridge notebook begins as an excavation diary on 5 Jan 1947 but rapidly ceases to be a regular account and dated entries are rare. It includes some localised sketch plans showing the layout of individual cremations but limited indication of the overall layout of the contexts (Figure 2.1). For some contexts batches there are also notes and sketches showing stratigraphic relationships between pots. The sketches of individual pots and some associated finds provide another confirmation of context attributions (Figure 2.2). The notes have, however, clearly been re-visited during report preparation (for example several instances of 'find this one' annotations). There are also pages of text pulling together themes and thoughts, much of which can also be found in the publication.

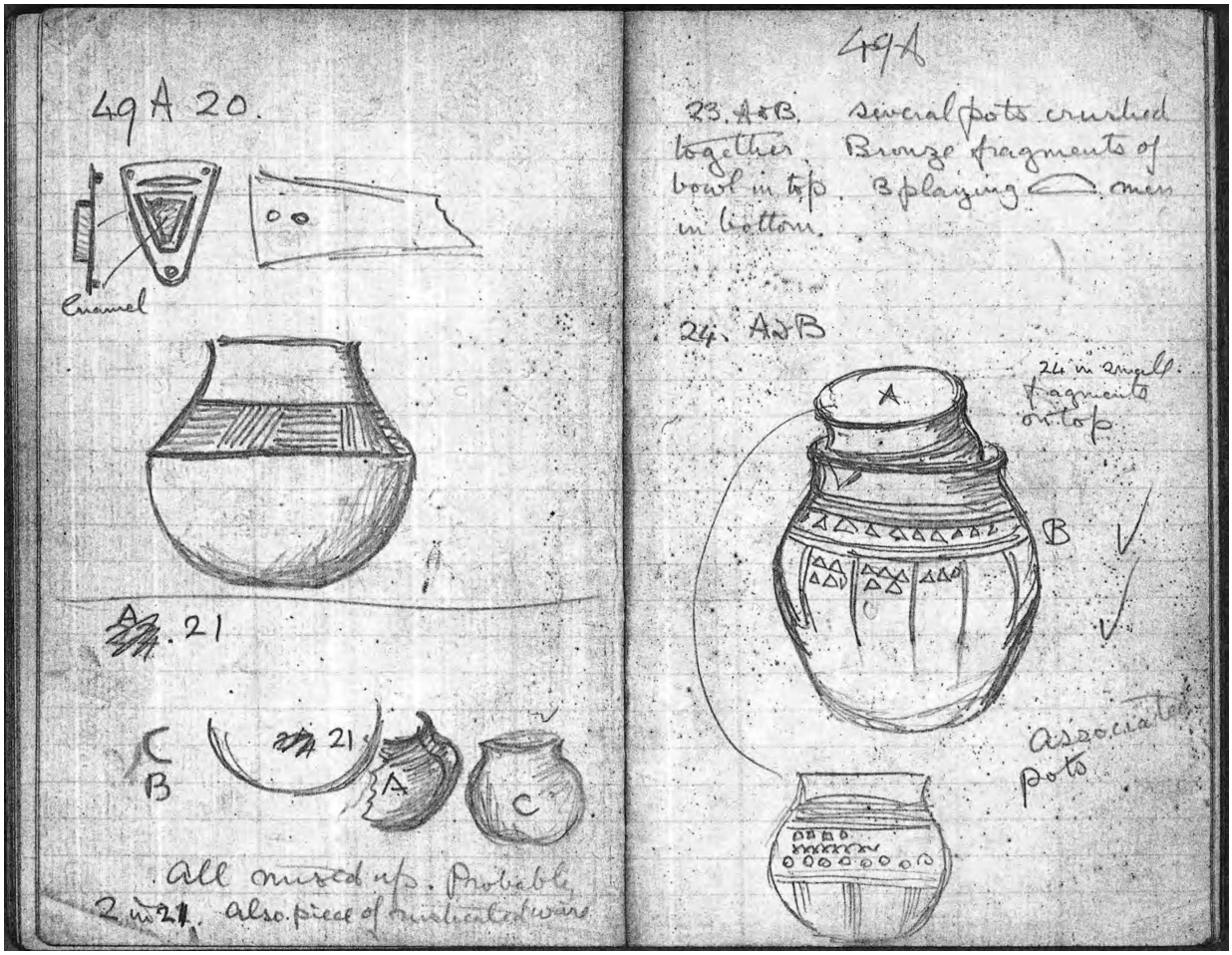

Figure 2.2 Lethbridge Notebook: Pots and associated finds from area 49 A

The published report includes an overall site plan with spots for individual cremations but no context labelling. Examination of the publication plans against the very incomplete data in the notebook has allowed a possible sequence of excavation areas and some context locations to be identified but this is very incomplete (see Chapter 7 and Figure 7.1 below). There is no complete context list, nor indeed any explanation as to how the context labelling system evolved.

On site methodology is not discussed in the publication except incidentally "some [urns] were so soft that it was impossible to extricate them with any hope of future restoration" (1951, 1). A note by Teresa Briscoe tells us that excavation was at weekends and that it was a one mile walk to their parked vehicles carrying pots and equipment, with no hut on site. On 5 January 1947, the first day, Lethbridge (1947-9) notes that 20 cremations were excavated; one was too fragmentary to be collected and one was a cremation without a pot. It seems probable that urn contents were also excavated on site; there is no indication of whether the cremated bone was collected (though various snippets of information were recorded, see Chapter 8.2) but it was not deposited at CUMAA. There is no explanation of how the areas shown on the plans were selected for excavation, but there was clearly a decision to focus on the 'unploughed' area, with the first plough furrow to the south acting as a base line for the plan (1951 Plan II).

Methodologies in the excavations in 2015-6 were constrained by the need to rapidly retrieve data exposed in ploughing with minimal time and finance available and also the agricultural need to plant the area. The area affected was small in 2015, with two cremation pots exposed in a plough furrow and three areas of burnt material found on the surface of the ploughsoil. The 2016 exposure covered a bigger area; 39 surface scatters and thirteen cremation pots cutting into the subsoil were recorded. The groups of sherds and/or burnt or calcined bone identified on the ploughsoil surface were planned at 1:20, allocated a context number (single sequence unique 4-digit numbers 0001-0025 in 2015 and 0101 onwards in 2016) and removed; cremated bone with

soil was taken out in sample buckets, with pottery sherds bagged separately. An area around and below each surface assemblage was excavated to maximise recovery. Where a more complete vessel was found in the sandy subsoil beneath a ploughsoil scatter it was allocated a separate context number and lifted with contents, using bandages (or occasionally cling film) for support. The entire area was metal detected, by experienced detectorists, at surface level and each excavated scatter and pot was further scanned with a detector. Features were recorded in relation to a temporary baseline which was located using an RTK GPS. The extent of each individual excavation area was also planned, and heights relative to Ordnance Datum recorded at the base of each *in situ* pot. All the surface scatters and *in situ* pots were photographed using a digital camera.

The 2015 cremation pots were excavated at SCCAS, the calcined bone and the pottery examined and a draft report prepared for archive (Brown 2015). The 2016 material was placed in storage as excavated while funding options were pursued. A grant from Historic England in 2017-8 enabled processing of the 2016 cremation pots and the surface scatter samples and assessment of the material along with a study of the site context (Anderson, Minter and Plouviez 2018; Minter and Plouviez 2018). The individual partially complete urns were excavated in 20 mm spits, where possible, following the recommendations of McKinley (2013). Each spit was sieved at 10mm, 4mm and 2mm meshes and recorded in plan in drawings at 1:10 scale and photographs. Both the bulk samples from the surface scatters and the spits removed from the urns were processed using manual water flotation/washover and the flots were collected in a 300 micron mesh sieve. The dried flots were scanned using a binocular microscope at x10 magnification.

Context data and finds were recorded on a MS Access database; site plans were scanned and used as a base for digital site plans and sections were scanned. The entire archive, finds, documents and digital, is stored at SCCAS.

2.2 The objectives

Throughout the 2017-20 project the main objective has been:

• To provide an accessible account of the recent finds from the Lackford cemetery, in the context of earlier discoveries, and produce a stable, ordered, accessible physical and digital archive.

The Project Design (Minter & Plouviez 2019) also identified further research questions about the cemetery to be addressed in the analysis and reporting:

Chronology: recent work on Spong Hill (Hills and Lucy 2013) has shown that the earliest Anglo-Saxon phase there is within the first half of the 5th century. At present the recent Lackford evidence is apparently not quite so early: both the finds and the radiocarbon data from the 2016 excavation favour dates between the mid-5th and early 6th century while not ruling out an earlier element. Both Lackford and the nearby settlement at West Stow need re-appraising in light of the Spong Hill data and other new information about the late Roman to early Anglo-Saxon transition in eastern England (including Mucking, Lucy and Evans 2016). Lackford is also very close to the significant late Roman settlement at Icklingham where activity continued into at least the second decade of the 5th century; the juxtaposition is similar to the situation at Caistor by Norwich where a large early Anglo-Saxon cremation cemetery lies outside the enclosed area of the late Roman town (Myres and Green 1973).

Duration: Lethbridge suggested that the cemetery continued in use into the 7th century, but this also needs re-examining. There is certainly 6th-century material, and questions about the dating of the 'Illington-Lackford' pottery style to the late 6th century need appraising (Riddler 2015, 112).

Population: although the 1951 report makes some comments about the human bone the material was not retained. The 2015-6 excavated material contributes substantially to knowledge of the sex, age etc of those buried at Lackford.

Grave goods: like the pottery the associated finds were very selectively included in the 1951 account. For example more beads have been found in the current work than are illustrated by Lethbridge in 1951, although 27 contexts are listed as containing glass beads at CUMAA. The excavated finds provide a good illustration of the total contents of individual urns, and a representative range of materials and types, which can be associated with the more reliably identified population data. Certain of the finds, such as elephant ivory rings and glass vessels, indicate external contacts. The cremated remains of animals are mentioned as present in the 1951 report but minimally identified or quantified, while the new evidence shows that they are quite frequent, potentially present in over 60% of the burials, and often identifiable to species.

3. The Excavations in 2015-6

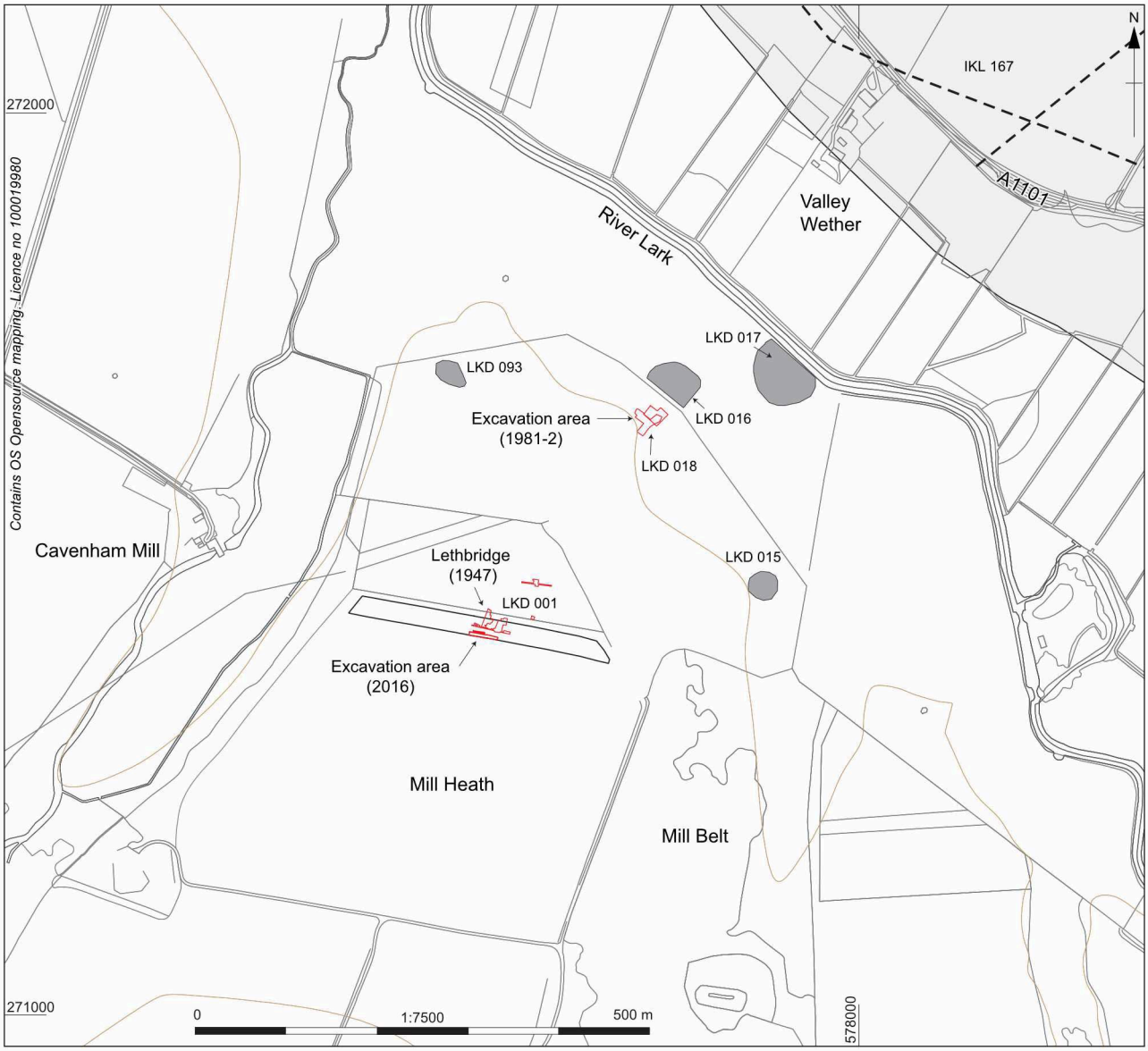

Figure 3.1 Location of the excavation areas(red) and adjacent HER sites; Roman road lines shown as broken lines in Icklingham; contours in brown at 5m, 10m

3.1 The 2015 excavation (Figures 3.1, 3.2) (Appendix 1 full context list)
Pottery was seen and reported (by Ian Shipp, metal detector user) in June 2015 in the southern furrow of the ground cover belt, after ploughing for a new maize crop, on the north side of an arable field. The visible material was rapidly excavated and removed (full account in Brown 2015). Two incomplete cremation pots (0015, 0017) were lifted as they survived cut into the subsoil at the base of the furrow.

A further three scatters of burnt and calcined bone and pottery were identified in the ploughsoil and excavated as related groups (0019, 0020, 0021). In the subsequent examination of small areas around the findspots three features cutting the natural sandy gravel were identified:

0003, a small north-south linear feature, below cremation 0015 so potentially prehistoric or Roman in date but containing no finds.

0005, a small pit (containing hand-made pottery) identified after the removal of cremation 0017. Possibly another cremation or re-deposited cremation debris, not excavated.

0011, a small pit discovered below and west of surface cremation scatter 0020 – possibly the original pit for this or another cremation group? No datable finds recovered.

The surviving contents of the two pots that were lifted were excavated and sieved at SCCAS; calcined bone and one copper-alloy brooch fragment (1080) were recovered.

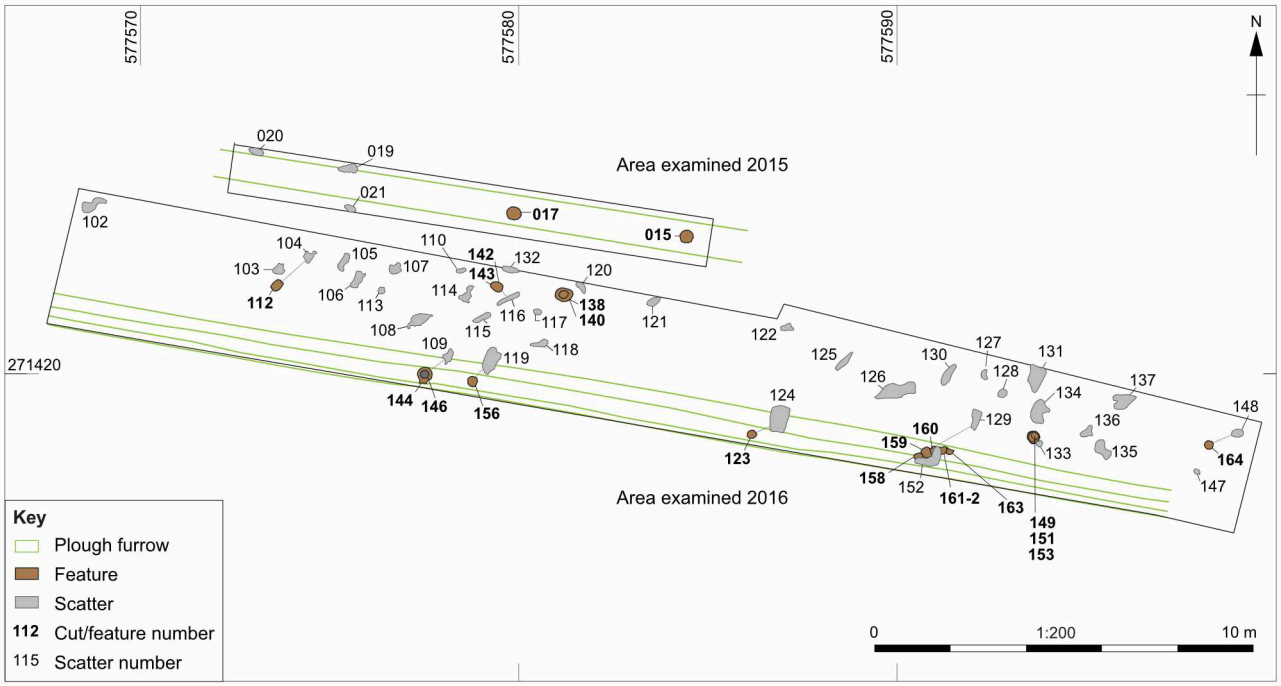

Figure 3.2 The 2015 and 2016 excavations showing surface scatters and sub-surface burial features

3.2 The 2016 excavation

In May 2016 a metal detector user (Mark Frost) again reported that surface scatters of pottery and calcined bone were visible following ploughing of the same game cover belt; in this season the belt was extended about 4m further south and the new finds all lie south of the 2015 material. The surface scatters were found over an area 32m by 3.5m, with *in situ* material visible in the deep open furrow that marked the south edge of the cover belt.

The ploughsoil (0101) was recorded as a mid-grey-brown sandy loam and between 0.25m and 0.35m in depth, with about 0.15m of a distinct subsoil of reddish light brown sandy gravel below. Below this was a coarse yellow sand with flints.

The surface scatters were mostly (25 of the total 39 examples) contained within the upper 0.25m of ploughsoil 0101, but sometimes scattered sherds were found throughout the ploughsoil and in a few cases the excavation then identified a damaged pot cut into the subsoil or the underlying sandy gravel. Small pits that contained the individual pots could sometimes be identified cutting into the undisturbed sandy gravel. No other cut features were seen.

It should be emphasised that none of the cremations survived intact (except 0153 below 0151); the pots that cut the subsoil had plough damage to at least the rim, and often to much of the upper body of the pot. Material identified on the surface probably usually included a recently damaged part of a cremation pot and its contents but any excavated sample around these surface finds would inevitably include material from other previously damaged burials. This field has been under continuous cultivation since the middle of the twentieth century so numerous pots and their contents have been completely dispersed. A few of the surface

scatters could be related to the semi-complete pots, for example surface scatter 0109 and pot 0144 were identified as likely to be a single vessel during the excavation and this was confirmed in the pottery analysis, and a further three surface groups were linked exclusively to single excavated pots during analysis.

Although a high proportion of the material recovered was from the ploughsoil, analysis shows that a majority of the 37 discrete scatters of pottery and bone identified as surface concentrations did represent a single burial, although inevitably with pieces from other disturbed groups mixed into the samples. The links show pots that have been recently broken and the upper part deposited by the plough on the surface about 50cm away from the lower part that remained in the subsoil. This association would only be identifiable in the first year of damage, as the surface scatters would then be turned back and re-mixed in subsequent ploughing; some of the single sherd joins noted span at least five metres and reflect this ongoing process (see Figure 5.5 below).

Of the thirteen semi-complete pots that were lifted with their contents, seven were found in or adjacent to the open plough furrow that defined the south edge of the cultivated game cover belt. This includes a group of five pots found close together (0158, 0159, 0160, 0161, 0163) which were thought to be a single deposit. The excavation photos confirm that they are likely to be a contemporary deposit except that the fragmentary pot 0158 at the south-west end could have been a later insertion (and the form was identified as possibly later, Spong phase C as compared to pots 0159 and 0160 which are Spong phase B types).

There was one example of superimposed cremation pots, a globular jar 0151 (Cat 41) was found directly above a decorated jar 0153 (Cat 23) attributed to Spong phase B.

One pot in the plough furrow (0144, Cat.40) had been placed in a pit (0146) containing cremated animal bone, which has been identified as largely horse.

The burials seem to concentrate in two groups, separated by a 3m gap, with the 2015 finds in the western group and surface scatter 0102 as an outlier 5m to the north-west. However, this may simply be a product of the level of plough damage in 2015-16 rather than a meaningful distribution as the areas excavated related solely to visibility on the surface (see Figure 3.2).

A collection of 77 surface pottery sherds found by the two detectorists in this area of the field between 2012 and 2016 was recorded as context 0165.

3.3 Micro-excavation of the 2015-6 pots

Excavation of the two pots lifted in 2015 did not include separation of the contents by excavated spit, but the contents were sieved into >10mm, >4mm, >2mm and <2mm fractions.

The thirteen pots lifted in 2016 were excavated in 20mm spits where possible, with drawn and/or photographic records of each spit; soil collected from around the damaged pots during on site excavation was also processed separately. The excavated soil spits and the bulk soil samples collected from the surface scatters were flotation sieved and the residues retained. The non-floating residues were collected in a 1 mm mesh and sorted when dry. The cremated bone was sieved into 4 mm, 2 mm and <2 mm fractions prior to sorting and artefacts were extracted.

The list of excavated spits and key contents are summarized in Appendix 2

Figure 3.3 Half of pot 0160 under excavation *Figure 3.4 Pot 0140 under excavation*

In most cases the pots lifted were incomplete because the upper part had been removed to a variable extent by the plough; the surviving pots were sometimes completely shattered and some collapsed before the contents could be systematically excavated. Twelve of the thirteen pots lifted in 2016 were excavated in spits, ranging in number between three and six, although in two cases (0151 and 0160) only partial contents remained in situ for excavation. Pot 0160 was the only example where a complete profile survived and the contents could be 50% excavated (Figure 3.3). In one case, 0153, the pot had collapsed inwards sometime after burial - as 0153 was found directly below 0151 the collapse may have been due to 0151 being added at a later date or to the weight of 0151 being placed directly onto it. 0153 is the only case where the contents can be regarded as not potentially contaminated by plough damage, although in this case extraneous material might have fallen into the pot above the collapsed sides (in practice there are no other vessel pieces present; the rather small quantity of cremated bone may represent parts of an adult and a juvenile).

The more complete pots seemed to have an upper layer with less cremated bone in the sandy soil over generally dense deposits of bone into the bottom of the pot. In some cases it was thought during excavation that the top material was largely redeposited.

Pyre goods (burnt artefacts) or grave goods (unburnt artefacts) were found in nine of the total fifteen pots found below the ploughsoil. There were numerous burnt animal bone fragments in two pots, 0144 (nearly 50% of the pot content and most of an external deposit in the burial pit) and nearly 50% of the bone in 0158, and a smaller amount of animal bone from another seven pots. Charcoal was generally very scarce in the pots, the only substantial quantity was from 0153 – but mainly from the upper spits so probably incorporated from above into the collapsed material; burnt flint fragments were also recorded from the upper levels in this pot. This is the only deposit found that might be described as ‘pyre debris’ rather than selectively collected material, but it could equally represent cooking or heating activity relating to the burial, rather than the cremation, process.

4 Catalogue of burials excavated in 2015 and 2016

4.1 Burials with pots partially or wholly surviving into the subsoil and any associated surface finds

Context 0015 (Cremation 1, surface finds 0001, 0002, excavated in 2015) (Figure 4.1)
A mature or older adult female in an undecorated globular jar, granitic fabric ESOM, Cat No 25.
Residue analysis ref LKD03, ruminant dairy. Part of another pot was found close to this, see 0001/0002 below.
Find: 1080 Copper-alloy incomplete small long brooch, burnt. With lappets to the bow, Penn and Brugmann (2007, 24-25) type sm3; phase FA2a broadly equivalent to Spong phase C

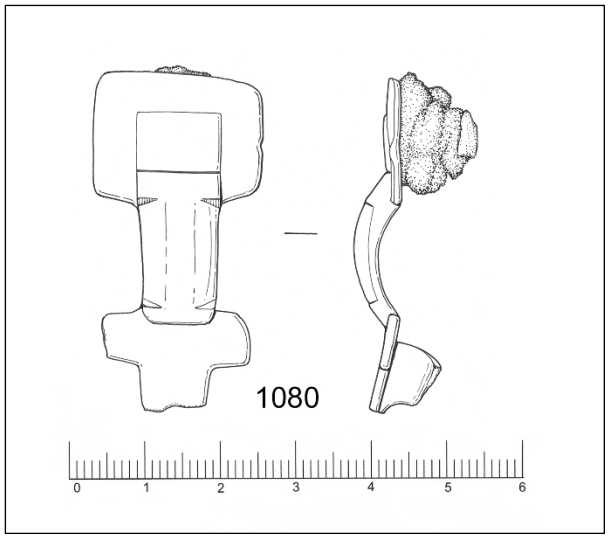

Figure 4.1 Brooch from Context 0015

Context 0017 (Cremation 2, also surface finds 0007, 0008, excavated in 2015) (Figure 4.2)
A possibly older adult female in a sub-biconical jar, quartz-tempered fabric ESCQ, Cat no 2.
Stamp motif C2aix.
Pig bone (scapula) with cut mark.
Spong phase B (pot)

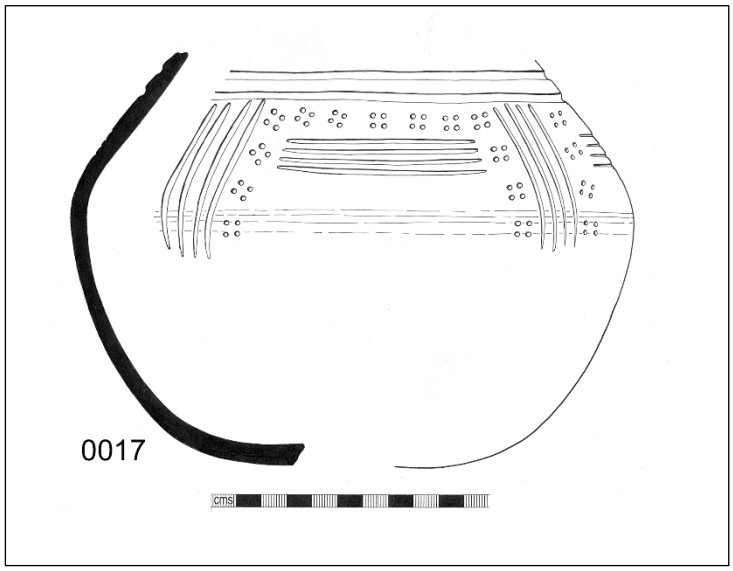

Figure 4.2 Context 0017: pot

Context 0112 (Figure 4.3)
Found in the excavation of surface scatter 0103 (see below), just to the north, to subsoil level, but no related finds were recorded as 0103. A substantial amount of linked finds of pottery and bone were in surface scatter 0104, 1.1m to the north-east which also contained a couple of sherds from 0103.
The pot, 0112, was in a small pit 0111. After lifting 0112 was excavated in four spits.
An adult ?female, probably not old, in a sub-biconical jar, granitic fabric ESCM, Cat.no.5. Stamp motifs A 2bi, D 2ai.
Sheep/goat bones, potentially a complete animal.
Finds: 1015, 1016, 1071 Double-sided composite comb fragments (Comb 4); 1060 seventeen burnt ivory ring fragments; 1056 a few tiny uncoloured glass fragments, origin uncertain; 1073 unidentifiable molten metal fragments.
Spong phases: B/C (pot), C (comb)
Radiocarbon (two samples of femur): Lab no ETH-85999.1.1, Date BP: 1590±24 and Lab no GrM-14680 Date BP: 1582±15; combined date BP: 1584±13

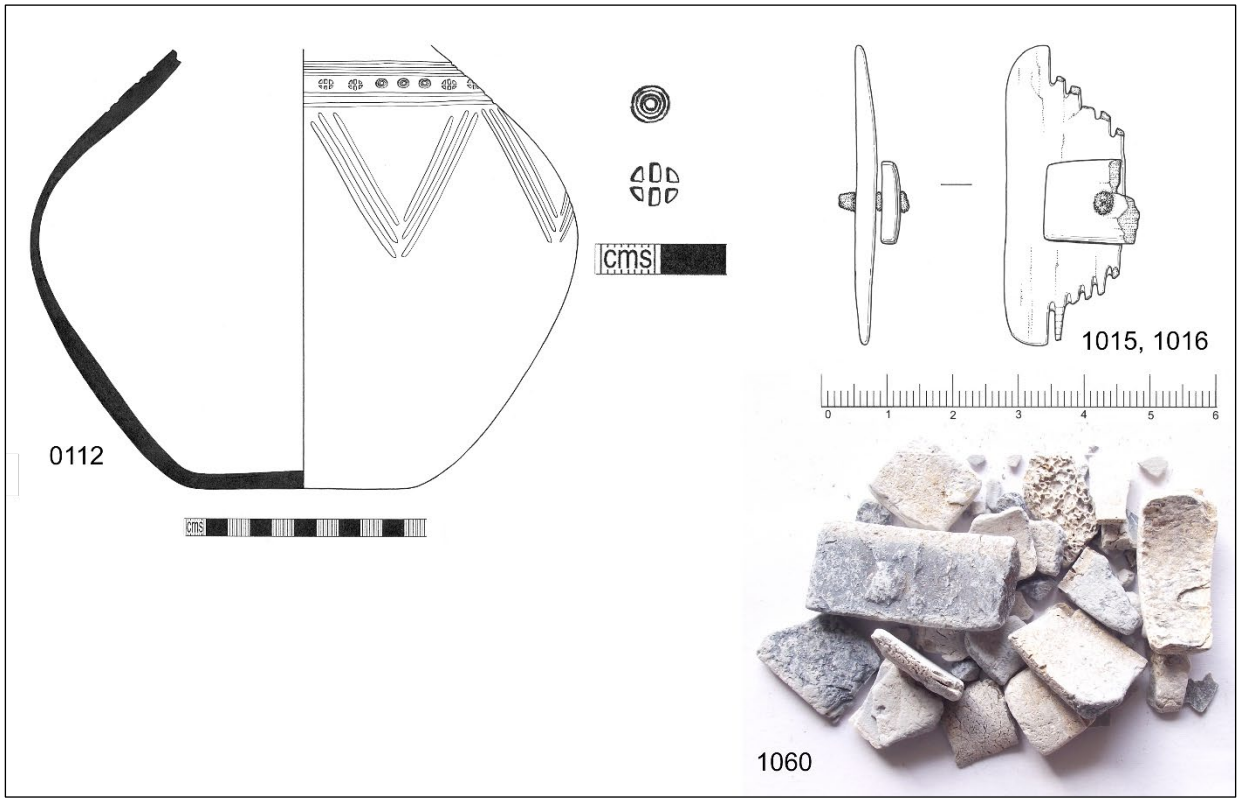

Figure 4.3 Context 0112: pot, antler comb and ivory ring fragments

Context 0123 (and surface finds 0124) (Figure 4.4)
Pot 0123 was exposed in fragments in the plough furrow at the south edge of the excavations, with no surviving indication of the burial pit. After lifting it was excavated in five spits. A scatter, 0124, was exposed on the ploughsoil surface and in the north side of the furrow about 0.80m to the north-east which contained a substantial part of pot 0123 and only two other sherds.
An older male, but also pieces of a younger female were identified in both 0124 and the basal spit in 0123 plus a few fragments of a possible juvenile, in a sub-biconical jar, grog-tempered fabric ESGG, Cat. No 10, with stamp motif H 1ai §. Residue analysis ref LKD10, ruminant dairy.
A very small amount of probable sheep/goat bone.
Finds: 1024, 1025, 1057 three burnt glass beads, probably all opaque white with coloured decoration and 1051, 1052 (from 0124) two burnt glass beads, one opaque white and blue, one dark with opaque red; 1021 a very burnt fragment of glass or copper alloy; 1022 iron pin fragment (perhaps from a brooch), 1023 copper-alloy brooch spring and pin fragments with

associated iron, possibly the pin bar, probably from a long brooch type.
Spong phase A/B (pot)
Radiocarbon (sample of femur): Lab no GrM-14681, Date BP: 1589±1

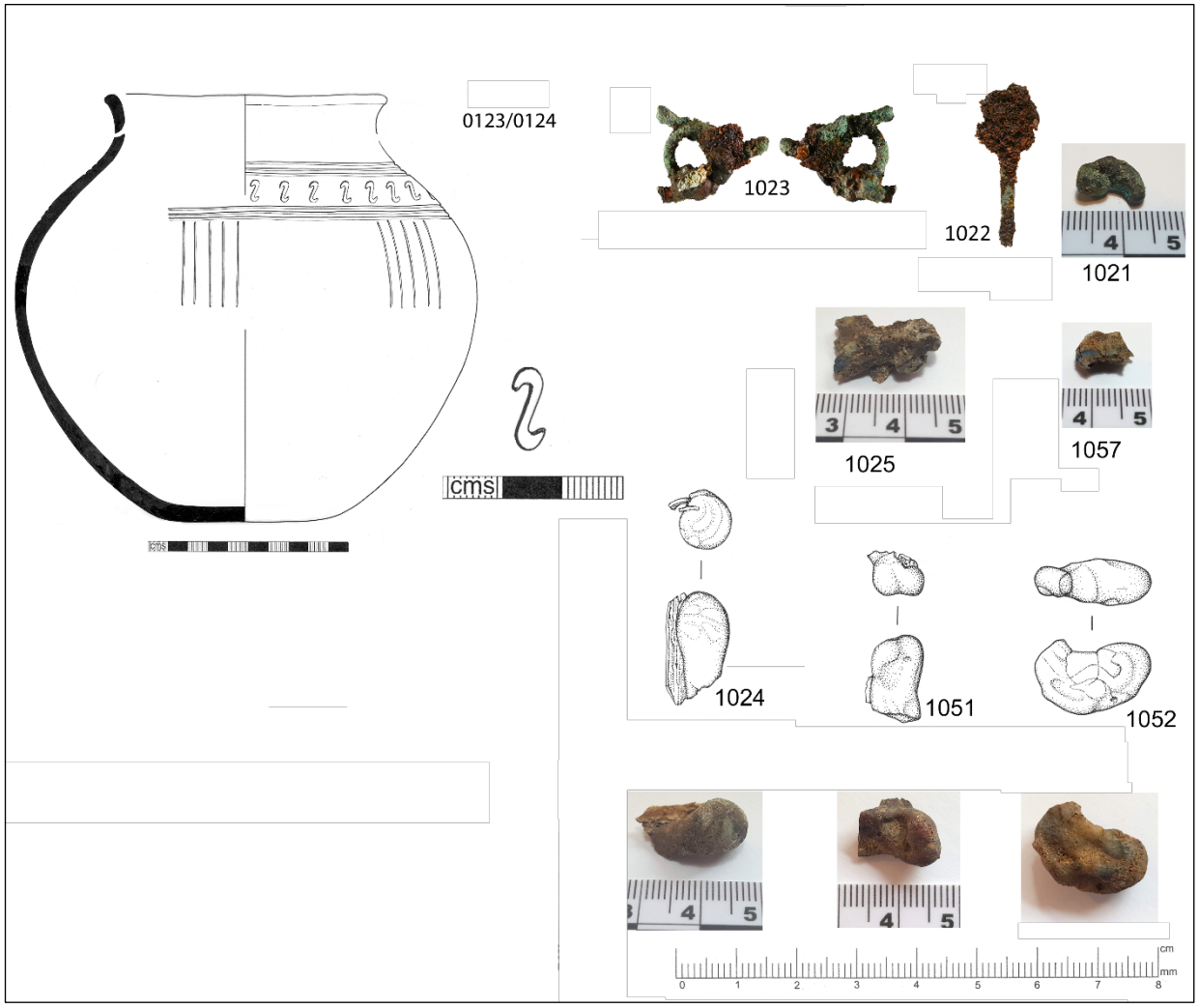

Figure 4.4 Context 0123 pot, metal and glass and finds

Context 0140 (Figure 4.5)
This burial was identified during excavation around scatter 0120, which did not contain significant amounts of related material (a single sherd only). Pot 0140 was in a small pit, 0138, fill 0139. The lifted pot was excavated in six spits.
A mature adult female in a jar of uncertain form, calcareous fabric ESSC, Cat no 59 with stamp motifs A 3aiv, A 4aii.
Sheep/goat bones, one with a possible disarticulation cut mark but potentially a complete or substantial part, mostly from spits 2 and 3.
Finds: 1035 two burnt glass beads, dark and one with opaque red; 1038 Triangular comb end segment (comb 2); 1063 Eight burnt ivory ring fragments; 1036, 1037, 1039, 1069 are all copper-alloy sheet fragments of which 1039 has parallel line decoration and 1036 is large enough to very likely derive from a vessel.
Spong phase B (pot); A/B or B (comb)
Radiocarbon (two femur samples): Lab no GrM-14682, Date BP: 1546±15 and Lab no ETH-86000.1.1, Date BP: 1593±25; combined date BP: 1559±23.

Figure 4.5 Context 0140: antler, ivory, metal and glass finds

Context 0143 (in pit 0141 with fill 0143) (Figure 4.6)
Burial 0143 was identified at the base of the excavation of scatter 0116. It was in a small pit 0141 with fill 0142. A group of sherds from the pot formed part of the mixed ploughsoil assemblage 0116 excavated above it. Following lifting pot 0143 was excavated in five spits.
An adult ?female and juvenile/sub-adult, probably both intentionally deposited in a biconical jar, grog-tempered fabric ESGC, Cat no 20 with stamp motif A 7cii.
Sheep bones, potentially a whole animal and prime meat (under 3.5 years) and a pig head (under 13 months).
Find: 1040 copper-alloy rectangular mount, incomplete and burnt, decorated with punched dots along the long edges and with rivet holes and one *in situ* iron rivet holding a smaller rectangular sheet backing piece, probably a vessel or box mount.
Spong phase B (pot)
Radiocarbon (lower limb sample): Lab no ETH-86001.1.1, Date BP: 1564±23.

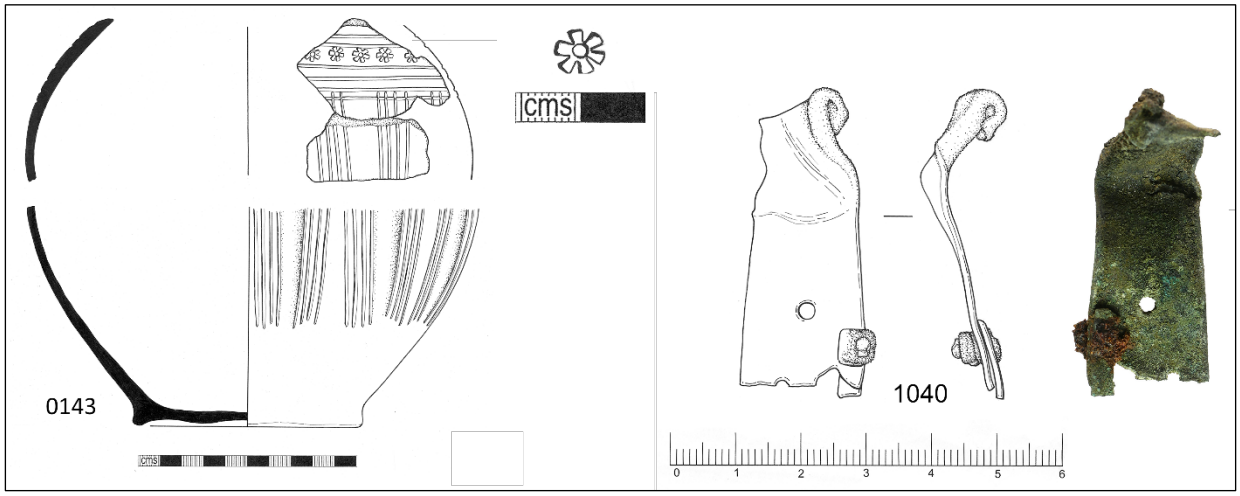

Figure 4.6 Context 0143 pot and copper-alloy object

Context 0144 (Figure 4.7)
Burial 0144 was exposed in the base of the plough furrow at the south edge of the site. It was in a small pit 0146, fill 0145. A surface scatter, 0109, just north of the furrow, 0.7m to the north-east was identified as the same pot. After lifting pot 0144 was excavated in five spits (with 60% of the human bone in the basal spit).
An adult, ?male, not old, in a globular jar, calcareous fabric ESSC, Cat no 39 with stamp motifs A 4aii, A 5avi, A 5bvii, C 2ai, F 2ai, H 2aii, N 1ai.
Animal bone (with a very few human fragments) had been deposited in the burial pit, 0146, before the pot was placed in it. Animals also comprised nearly 50% of the cremated bone content of the pot. The largest amount was horse (with a chop mark) and cattle (identifiable fragments were in the pot), both potentially complete animals, with small amounts of pig, perhaps a joint only, and sheep/goat, potentially a half or complete young animal, (less than 1.5-2 years) in the pot.
Spong phase B.
Radiocarbon (femur sample): Lab no GrM-14683, Date BP: 1619±15

Context 0151 (in pit 0149, fill 0150, and a few sherds in surface scatter 0133) (Figure 4.8)
Burial 0151 was found in pit 0149, fill 0150, cut into the subsoil, during excavation of the ploughsoil below scatter 0133. Some body sherds from pot 0151 were collected in 0133. 0151 was directly above burnt deposit 0157 and burial 0153.
After lifting 0151 was excavated in two sets of four spits following the collapse of the pot into two halves.
A mature adult female in a burnished globular jar, granitic fabric ESOM, Cat no 40.
Fragments of sheep/goat, and also fragments of a cat/hare sized mammal.
Finds: 1070 burnt dark glass bead; 1041, 1042, 1054, 1072 fragments from a double-sided composite comb (comb3); 1078 burnt fragment of an antler coronet ring.
Spong phase C (comb)
Radiocarbon (femur sample): Lab no ETH-86002.1.1, Date BP: 1567±23.

Context 0153 (Figure 4.8)
Burial 0153 was found in pit 0149 below pot 0151, perhaps slightly to the north-east of 0151. A charcoal-rich fill, 0157, was also identified in the lower part of pit 0149 (but with no separate finds).
After lifting pot 0153 was excavated in five spits, which show the pot had collapsed inwards; most of the spits (1-3) were above the large sherds of the upper part of the vessel, but the majority of the relatively small amount of cremated bone, predominantly skull, was from the lower spits (3-5) and so within the pot. The upper subsided fill can be equated with the 0157 layer noted during the site excavation.
An adult and a juvenile, in a sub-biconical jar, quartz-tempered fabric ESFS, Cat no 22 with stamp motifs A 1ai, A 1bi, C 2aiv. Residue analysis ref LKD08, ruminant dairy.
Finds: 1068 two burnt fragments of ivory purse ring (from the top spit).
Charcoal fragments, derived from the upper two spits and from loose soil that was adjacent to or over the pot, were identified as mainly oak with some hawthorn, with small amounts of hazel and ash and a little birch and broom/gorse, the latter two from the loose soil only.
Spong phase B (pot)
Radiocarbon (sample of long bone): Lab no GrM-14685, Date BP: 1595±15.

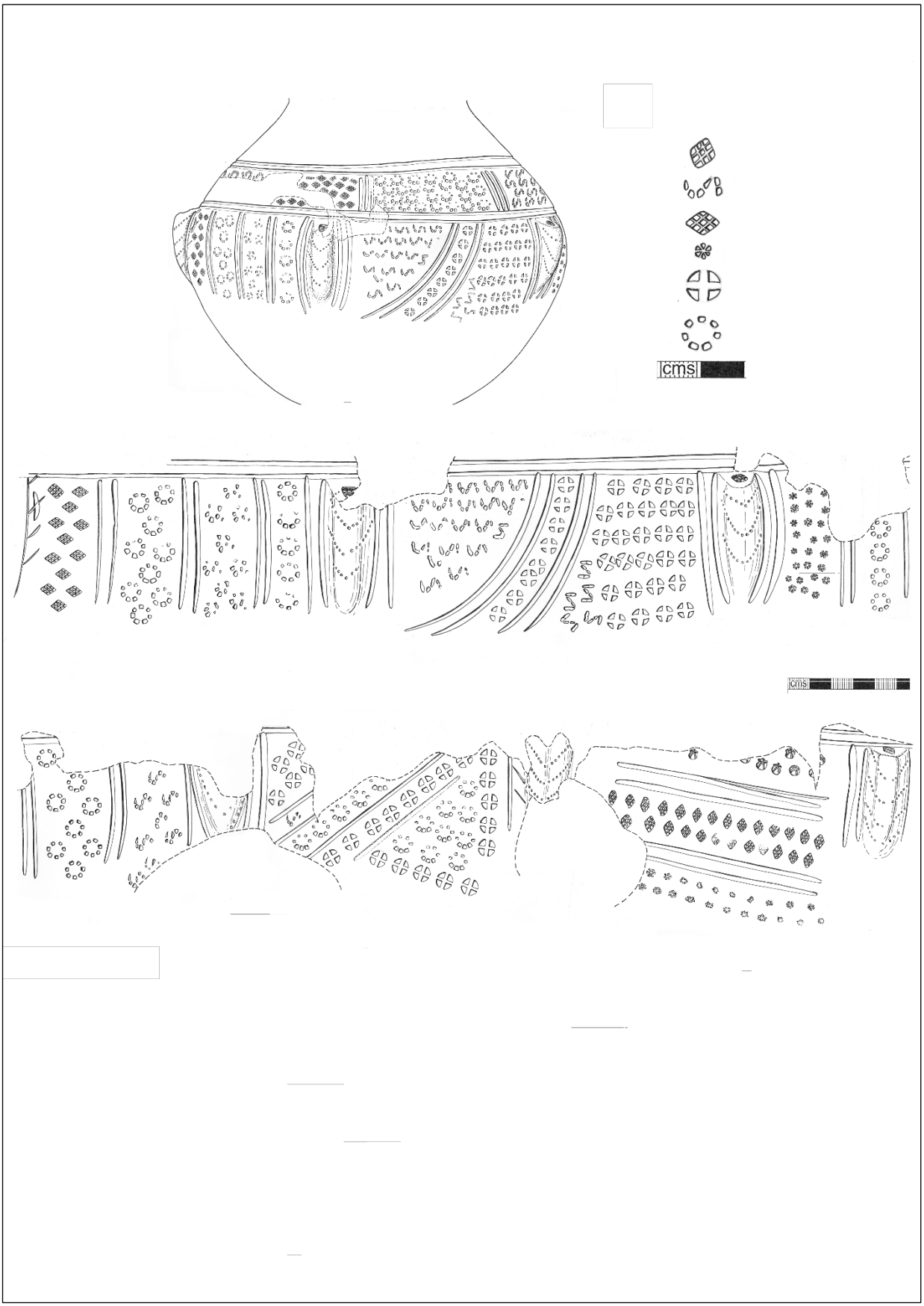

Figure 4.7 Context 0144 pot

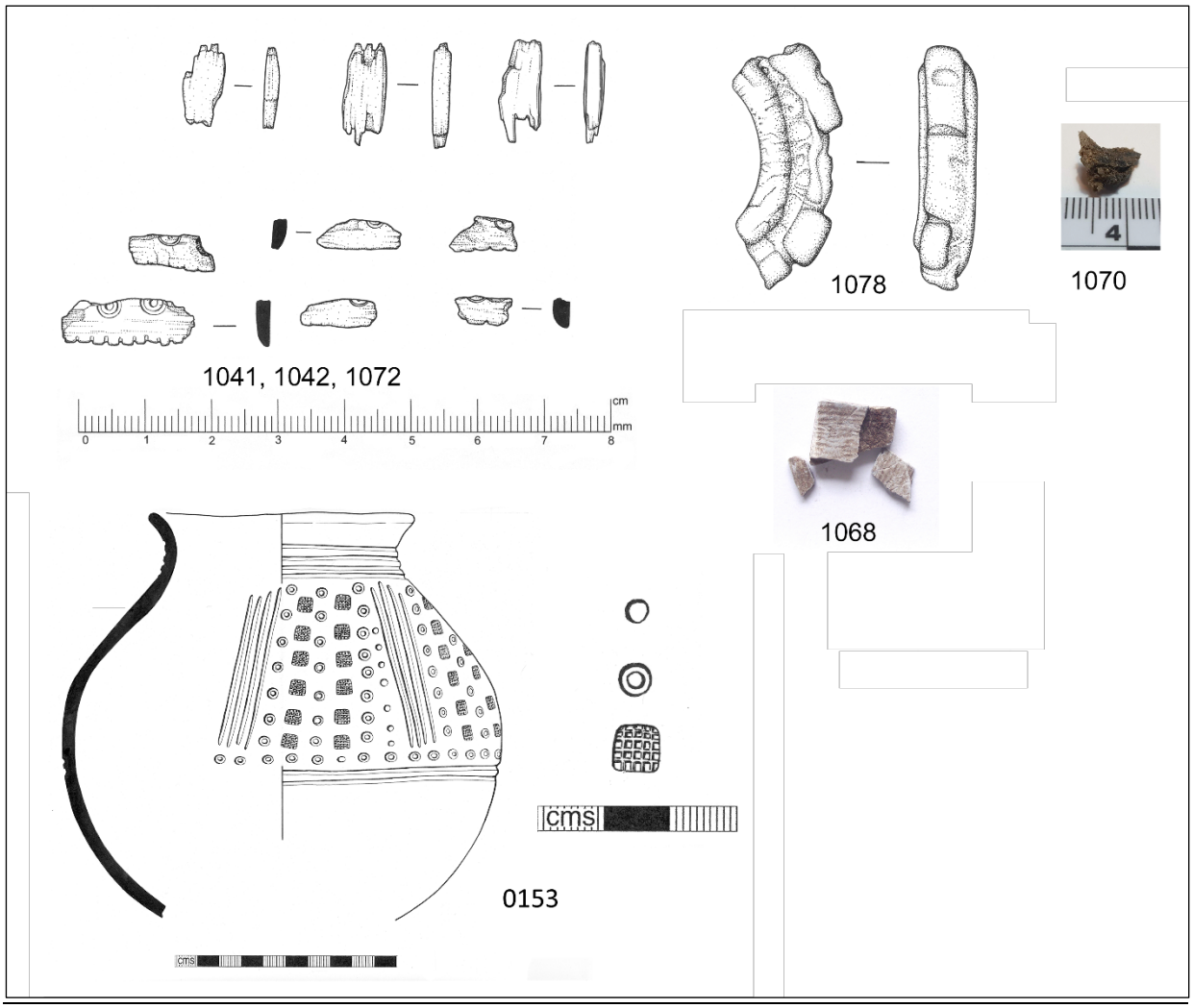

Figure 4.8 Contexts 0151, antler, ivory and glass, and 0153 pot

Context 0158

The five pots, 0158-0163, were initially found in the excavation of 0152, a scatter identified on the north edge of the plough furrow and on the adjacent surface. A small amount of human bone in 0152 may be the same adult as burial 0158 or 0159 and a substantial amount of horse and some sheep is similar to the content of burial 0158. The pottery included large amounts of pots 0158 and 0159 and a few pieces of 0161; there were also sherds of various other fabrics not included in the group of burials.

Pot 0158 was at the west end of the group and is the only one that looks as if spatially it could have been buried separately. After lifting it was excavated in four spits. A single sherd from it was found in surface scatter 0136, just over 4m to the east.

A mature adult in a jar, granitic fabric ESCM, Cat no 60 with reverse-S stamp.

About half the cremated bone was animal, mainly horse (or other large mammal) with some sheep/goat. There were further horse and sheep/goat bones in 0152 which could however relate to any of the 0158-0163 group.

Spong phase C? (pot)

Radiocarbon (femur sample): Lab no ETH-86003.1.1, Date BP: 1546±24

Context 0159 (Figure 4.9)

One of the group of five pots initially investigated as 0152, found to the north-east of 0158. Much of the pot was disturbed and found in the scatter 0152. A couple of sherds of 0159 were collected with adjacent pot 0160, and a few pieces of 0160 were collected with 0159. After lifting it was excavated in five spits.

A juvenile/sub-adult, an adult male and an adult ?female in a globular jar, granitic fabric ESCM, Cat no 41 with stamp motifs C 3bii, F 1ai. Residue analysis ref LKD07, ruminant dairy.
Finds: 1047, 1048, 1049, 1055, 1058, 1062 at least seven burnt glass beads, dark glass, some with opaque red and opaque white; 1067 two fragments of burnt ivory purse ring
Spong phase B (pot)
Radiocarbon (lower limb sample): Lab no GrM-14686, Date BP: 1579±15.

Context 0160 (Figure 4.9)
One of the group of five pots initially investigated as 0152, 0160 lay east of 0159. About half the pot, vertically, survived to be lifted and was excavated in five spits; the rest had collapsed below this and had also been spread, probably when hit by the plough, as ten sherds were found in surface scatter 0129, 1.2m to the north-east.
Sub-adult aged *c*18, with a younger juvenile, in a sub-biconical jar, granitic fabric ESOM, Cat no 23 with stamp motifs E 2ai, G 2ai, G 2aiii, H 2aii, H 2diii.
A few identifiable pieces of sheep/goat.
Spong phase B (pot)
Radiocarbon (sample of long bone): Lab no ETH-86004.1.1, Date BP: 1551±26.

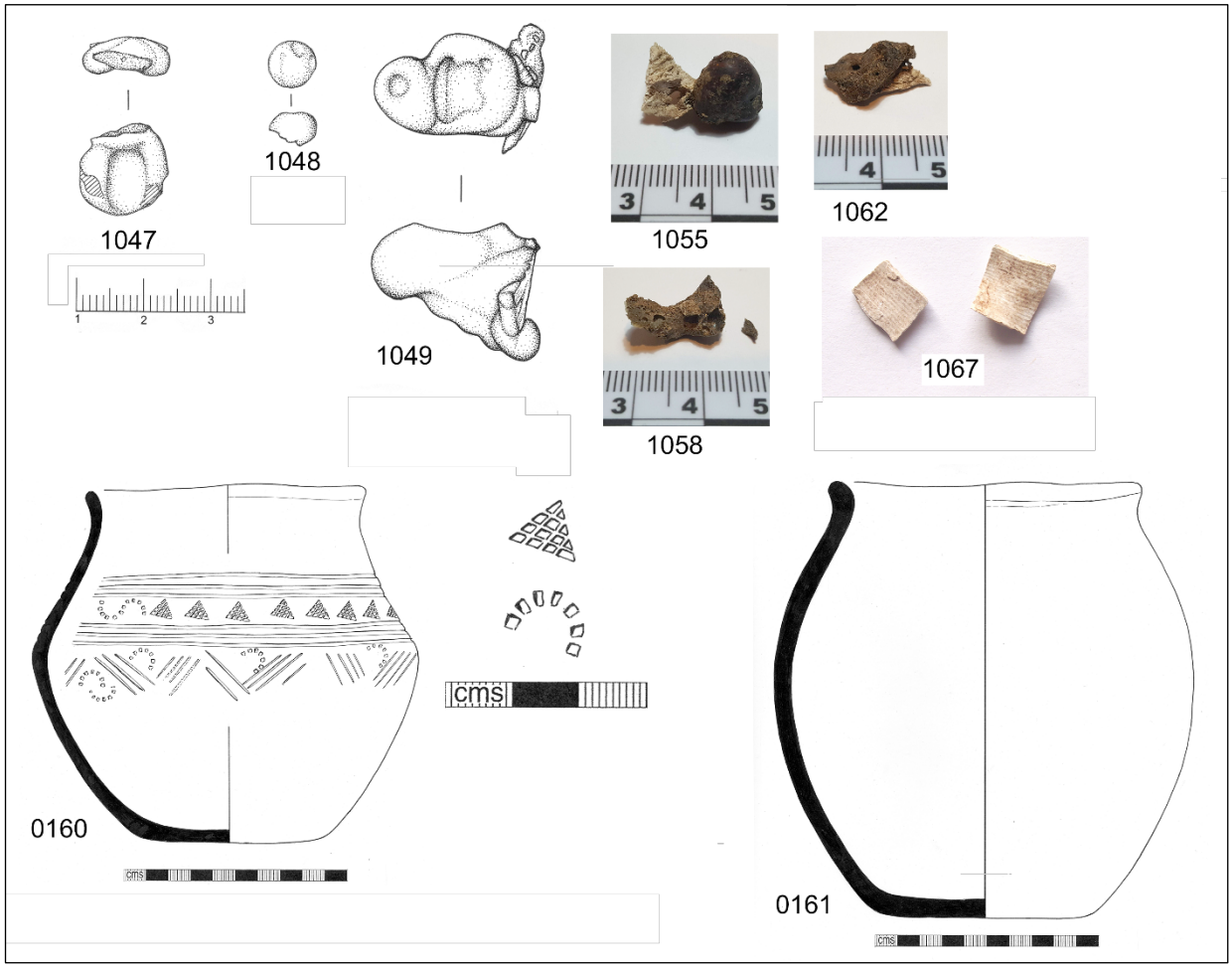

Figure 4.9 Contexts 0159 glass and ivory finds, 0160 pot and 0161 pot

Context 0161 (Figure 4.9)
One of the group of five pots initially investigated as 0152, 0161 was to the east of 0160. This was thought on site to perhaps be two pots, 0161 and 0162, because it had been dragged to the side. There was also a single sherd of 0161 in surface scatter 0137, about 4.5m to the north-east. The pot was wholly collapsed when lifted so could not be excavated in spits.
An adult female in an undecorated tall globular jar, quartz-tempered fabric ESFS, Cat no 42.

Fragments of horse and sheep/goat.
Radiocarbon (sample of lower limb): Lab no GrM-14687, Date BP: 1585±15.

Context 0163
One of the group of five pots initially investigated as 0152, 0163 was at the west end of the row, next to the collapsed pot 0161. One sherd of 0163 was collected with 0161. After lifting it was excavated in four spits.
A mature adult female in an undecorated ?globular jar, organic-tempered fabric ESO1, Cat no 43.
Radiocarbon (sample of femur): Lab no ETH-86005.1.1, Date BP: 1552±25

Context 0164 (Figure 4.10)
Pot 0164 was found in the excavation around surface scatter 0148, which contained only five sherds not derived from 0164, one of which could be linked to the pottery in 0136. The pot in the subsoil was about 0.55m to the south-west of the surface finds. This group was at the eastern end of the 2016 excavated areas. After lifting 0164 was excavated in three spits.
An adult male, with fragments of an infant/juvenile, in a sub-biconical jar, granitic fabric ESCM, Cat no 24 with stamp motifs A 1bi, A 2ai, E 1bi, H 1bxi. Residue analysis ref LKD09, ruminant dairy .
Finds: 1050 burnt fragmentary antler bead, Riddler type E, 1059 iron comb rivet fragments.
Spong phase B (pot), B and C (bead)
Radiocarbon (sample of femur): Lab no GrM-14688, Date BP: 1602±15.

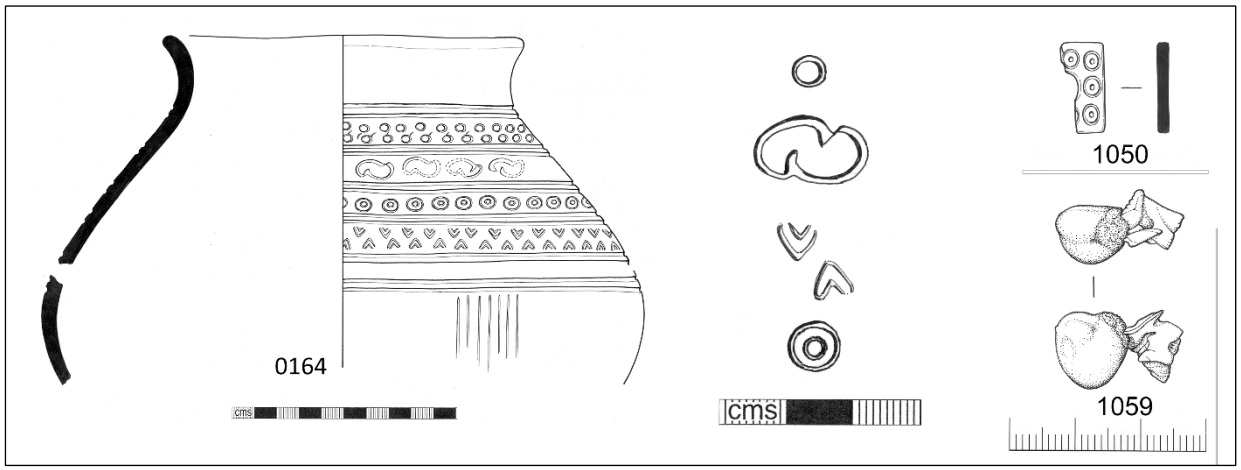

Figure 4.10 Context 0164 pot and antler and iron finds

4.2 Burials identified only as surface scatters (contexts marked * appear to lack primary burial groups)

0001/0002 (also 0015, 2015 excavation).
Possibly associated with subsoil burial context 0015 described above. Sherds of the lower half of a ?sub-biconical jar, quartz-tempered fabric ESFS, Cat. No.1. No associated bone.

0007/0008 (from the area of subsoil burial context 0017 above, 2015 excavation).
Body sherds of a decorated jar, granitic fabric ESCF, Cat no 44, with cross-circle and triangular stamps. No associated bone. Spong phase B?

0019 (cremation 3, 2015 excavation).
A mature adult ?male associated with a jar with flat angled base, flint-tempered fabric ESQF, Cat no 45, with square cross stamps. Spong phase B?

0020 (cremation 4, 2015 excavation). A ?mature ?male associated with a globular ?jar with footstand base, quartz-tempered fabric ESMS, Cat no 26.

0021 (cremation 5, also 0008, 2015 excavation).
A very small group of cremated bone associated with a large footstand base, quartz-tempered fabric ESFS, Cat no 66.

0102
The most westerly material identified, nearly 5m from other burials. An adult ?male associated (solely) with a ?globular jar, granitic fabric ESCF, Cat no 27 and fragments of a large mammal.

0103
This scatter was excavated to the base of the ploughsoil and revealed burial 0112. A sub-adult (aged *c*14-18?) ??male associated with an undecorated ?globular jar, granitic fabric ESCF, Cat no 28 (and some sherds of other vessels including an uncertain form with flaring rim, organic fabric ESO2, Cat no 46 and a few pieces from burial 0112).

0105
The area of the finds included a very recent plough furrow. A sub-adult (possibly the same as 0103) and at least one adult (which might be part of 0108 or 0116), found with a ?globular jar, granitic fabric ESCF, Cat no 30 with stamp motif A 1ai. Spong phase A.
Also a smaller part of an undecorated globular jar, Cat no 29, granitic fabric ESOM, and a single sherd from 0108. Residue analysis ref LKD02, ruminant dairy with some mixing from the ESOM pot.

0106
A mature adult ?male associated with a flaring rim jar, granitic fabric ESCM, Cat no 47 (and a few sherds from four other vessels including one from burial 0112). Residue analysis ref LKD01, ruminant dairy.

0107
A young adult ?female and a middle-aged adult male, associated with a sub-biconical ?jar, quartz-tempered fabric ESMS, Cat no 4 (and a few sherds of another vessel). Finds: 1001 copper-alloy probable vessel fitting consisting of a folded strip with iron rivet, 1002 copper-alloy sheet fragment, probably, by size, from a vessel, 1014 iron pin fragment. Spong phase C (pot).

0108
An adult male associated with a 'horned urn', possibly a non-local quartz-tempered fabric ESFS, Cat no 3 with stamp motifs A 7civ, C 2aii, (also one other sherd, granitic fabric ESCF with stamp motif C 4ai). Sheep/goat bones, potentially from a complete animal. Spong phase B (pot and stamps).

0110
A small and shallow finds scatter. An unsexed adult, associated with sherds of a ?bossed vessel, granitic fabric ESCM, Cat no 62 (and a single other sherd). Bones of sheep/goat. Spong phase B?

0113
An older adult female (possibly as many as three individuals) associated solely with an undecorated globular jar, granitic fabric ESCM, Cat no 31. Sheep/goat and large mammal bones.

0114 (Figure 4.11)
An unsexed adult, associated solely with a biconical jar, organic-tempered fabric ESO2, Cat no 6. Find 1065 Thirteen fragments of burnt ivory purse ring. Spong phase A/B (pot).

Figure 4.11 Context 0114: Pot and ivory ring fragments

0115
A very small amount of bone associated with a sub-biconical jar, quartz-tempered fabric ESMS, Cat no 7 with stamp motifs B 2ai and E 1ai. (and a few sherds from two other vessels). Spong phase A/B

0116 and 0117
The pottery from 0116 and 0117 was unfortunately mixed during processing.
0116 was a more extensive scatter, and excavation extended to the base of the ploughsoil where burial 0143 was identified in the subsoil. 0116 is likely to be the source of most of the pottery. At least three individuals (an adult male, adult female and infant/juvenile) were present; these may be the same as the groups in 0132 (which is adjacent) and perhaps 0120. Small amounts of sheep/goat and large mammal. The main pots represented were: a biconical jar, quartz-tempered fabric ESFS, Cat no 8, Spong phase A? and a ?globular jar, granitic fabric ESCF, Cat no 32, and part of subsoil burial 0143 (see above). The remaining 38 sherds derived from numerous other vessels with some cross links to other surface scatters. (pot, Cat no 8).
0117 was recorded as a single group of sherds, which might have been any of the pots listed for 0116 (the field notes suggest the pottery was not decorated which might be Cat no 32) and included a very small amount of unidentifiable cremated bone.

0118
Some adult bone, and a small amount of sheep/goat sized animal, was found with parts of two pots (and a few other sherds): a sub-biconical jar, granitic fabric ESCF, Cat no 9 with stamp motifs A 4civ, E 2ai. Spong phase C? (pot) and a jar with neck corrugations, quartz-tempered fabric ESCQ, Cat no 48. Spong phase B.

0119
Mature adult male associated solely with a footstand base, calcareous fabric ESSC, Cat no 49. Finds 1017, 1018, two burnt glass beads. See also 0154 below for scattered pieces of the same pot found at the base of the plough furrow and additional glass beads.

0120
At least two adults (male and female) and a ?juvenile, possibly the same individuals as in 0116, and a few large mammal fragments, found in an extensive area that also exposed burial 0140 in

the subsoil (see above). The two main pots are: an undecorated ?globular jar, granitic fabric ESCM, Cat no 34 and a globular ?jar, quartz-tempered fabric ESFS, Cat no 33 with single sherds from another five vessels, including one from burial 0140. A group of burnt vessel glass fragments (Finds 1004, 1005, 1006, 1007, 1019, 1020) from a cone or claw beaker was found below the main pottery scatter amongst cremated bone.

*0121
An unsexed young adult and a large mammal fragment were found with small numbers of sherds from at least six vessels, one with stamp motif C 2ai.

0122
A juvenile, possibly the same individual as in 0120 and 0116, associated with a jar, calcareous fabric ESSC, Cat no 50. Residue analysis ref LKD05, ruminant carcase. Also eight sherds from at least four other vessels.

0125
A young adult ?female found with a biconical jar, granitic fabric ESCF, Cat no 11 with stamp motifs C 3dii, E 2ai (two of), F 2aii, G 1bi. Another ten sherds came from at least four vessels. Finds 1064, thirteen burnt fragments of ivory purse ring; 1079, four fragments of antler coronet ring; 1008 burnt copper-alloy possible mount fragment with partial rivet hole and 1013 unidentifiable sheet fragment. Spong phase B (pot).

0126
A broad scatter containing a ?young adult female and a juvenile, also horse bone and a tiny bird bone, found with parts of three pots (and five sherds from two more pots including Cat no 55): a sub-biconical jar, granitic fabric ESCF, Cat no 12; a pedestal/footring base, granitic fabric ESCF, Cat no 67. Spong phase A; and a jar with vertical rim, grog-tempered fabric ESGG. Finds: 1003 miniature iron tweezers, 1053 miniature iron razor (or possibly knife or shears); 1026 copper-alloy sheet fragment; 1074 nine fragments (one large) of burnt ivory purse ring.

0127
A small scatter with very little cremated bone (perhaps the same individual as 0128) and a jar, granitic fabric ESCF, Cat no 51 with stamp motifs E 2giv, G 1biii (and six sherds from at least four other vessels). Spong phase B.

*0128
A small scatter with an adult, perhaps the same as individuals in adjacent scatters 0131 or 0134, found with a jar rim, calcareous fabric ESSC, Cat no 52 and eight other sherds from about six other vessels.

0129
An unsexed adult found with a globular jar, quartz-tempered fabric ESSM, Cat no 35, but also a jar rim, organic-tempered fabric ESO2, Cat no 53, a rim from burial 0160 (see above and Cat no 23) and two other sherds from separate vessels. Residue analysis ref LKD04, ruminant dairy from the ESSM globular jar.

0130
Charcoal and burnt flint was noted during excavation. An unsexed adult, a perinatal infant and a juvenile of about 5, perhaps the same individual as in adjacent scatter 0126, found with parts of

two pots: a sub-biconical bowl, granitic fabric ESCM, Cat no 14 with stamp motifs E 1bi, H 1bviii (two of). Spong phase B; and a Buckelurne, quartz-tempered fabric ESFS, Cat no 13 with stamp motif A 1bii, Spong phase A. Also ten sherds from other vessels.

0131

A large scatter, with finds to the base of the ploughsoil. An unsexed adult and a juvenile, perhaps the same individuals as in adjacent area 0134, found with parts of two pots: a jar, granitic fabric ESOM, Cat no 55, Spong phase A and a decorated vessel, calcareous fabric ESCO, Cat no 54 with stamp motifs A 2bi, B 3ai, Spong phase C. Also a granitic fabric ESCF jar rim and numerous sherds from around thirteen other vessels. Find 1077 burnt glass bead fragment, dark with opaque red and white.

0132

This group was not seen on the surface but discovered during surface cleaning around 0116, and the infant/juvenile and adult here are perhaps the same individuals as 0116. Found with a sub-biconical vessel, calcareous fabric ESSC, Cat no 15 with stamp motifs F 2aii, F 2aiii. Spong phase B. Also sherds including calcareous fabric ESSC with stamp motif A 1a1 and nine sherds from other vessels, including stamp motif C 3ai.

0133

Although initially a small surface scatter the excavation found pottery to the base of ploughsoil and identified another concentration of finds, 0155, in the ploughsoil and burial 0151 (see above) in the subsoil. A mature adult ?male, possibly the same individual as in adjacent scatter 0134, found with a sub-biconical jar, granitic fabric ESOM, Cat no 16 with stamp motif A 4aii. Spong phase B. Also a burnt or overfired small globular jar, organic-tempered fabric ESO2, Cat no 36, and numerous other sherds with some join links to adjacent scatter 0134. Residue analysis ref LKD06, ruminant dairy with some mixing from ESOM sub-biconical jar.

0134

A large scatter, excavated up to adjoining scatters 0131 and 0133. An adult male, an adult ?female and a juvenile, also horse bones, found with substantial amounts of three pots: a jar, calcareous fabric ESSC, Cat no 56, Spong phase A; an angled-shouldered jar, granitic fabric ESCF, Cat no 17, Spong phase B?; and a ?globular vessel, granitic fabric ESCF, Cat no 37. Also large numbers of other sherds from at least fourteen other vessels. Finds: 1028, 1030, 1031, 1032, 1033, 1034 six burnt glass beads including three traffic light type, one melon-shape and one annular; 1027 copper-alloy fragments with rivet holes? 1029 large copper-alloy sheet fragment probably from a vessel.

0135

A large scatter, adjacent to 0136. A young and a mature adult, ??male , perhaps the same individuals as in 0136 and 0137, also large mammal and sheep/goat bones, found with parts of two pots (and five sherds from another three vessels): a ?globular jar, granitic fabric ESCF, cat no 38 with stamp motif A 7biii, Spong phase B? and an undecorated vessel, grog-tempered fabric ESGG, Cat no 57. Find 1012 large copper-alloy sheet fragment, probably from a vessel.

0136

A scatter adjoining 0135 and with finds to nearly the base of the ploughsoil. A ?young adult female, perhaps the same individual as in 0137, and horse bone, found with a sub-biconical jar, grog-tempered fabric ESGC, Cat no 18 with stamp motifs B 1bii, E 1dii, possibly H 1aiii Spong

phase B. Also a jar, granitic fabric ESCF and seventeen sherds from at least six other vessels, with cross links to various other groups including a single sherd from burial 0158.

0137
A large scatter with finds to near the base of the ploughsoil. A mature adult male, an adult ?female and a ?juvenile possibly the same individuals as groups 0135and 0136, also cattle and sheep/goat bones. Found with a sub-biconical jar, quartz-tempered fabric ESCQ, Cat no 19 with stamp motifs A 1bi, A 7biii, A 7ci, H 1aii &, Spong phase C. Also a jar rim, granitic fabric ESOM, Cat no 58; a single rim sherd from burial 0161 (see above) and fifteen sherds from at least five other vessels including a stamp motif A 1ai. Find 1009: joining copper-alloy sheet fragments, likely to be from a vessel.

0147
A small scatter of pottery only, mainly a sub-biconical jar, granitic fabric ESCM, Cat no 21, with stamp motif A 1ai, Spong phase A, and one other sherd.

0154 (see also 0119)
An adult ?female associated with a part of the pot base recorded in surface scatter 0119 (Cat no 49); this was found at the base of the plough furrow so probably at or near the original burial spot. Find 1061: Two burnt glass beads, dark with opaque red.

0155
Identified as a concentration of cremated bone and pottery within the investigated area around scatter 0133 (but not located on plan). An unsexed adult and a ?juvenile found with a ?bowl, granitic fabric ESOM, Cat no 61 (and two sherds of another vessel). Finds: 1046 Two burnt glass beads, dark, one with opaque red; 1043, 1044, 1066 Fragments of an antler triangular comb (Fig 5.19); 1045 A tiny copper-alloy sheet fragment; 1066 Six very small fragments of burnt ivory, presumably a purse ring. Spong phase A (comb).

5. Specialist reports 2015-6 excavations

5.1 Early Anglo-Saxon Pottery

by Sue Anderson

Introduction

The Early Anglo-Saxon pottery recovered from hand-collection and excavation in 2015 and 2016 amounted to 7274 sherds (38,436g) of approximately 455 vessels.[1] These were collected under 68 context numbers, two of which were unstratified. The majority of vessels were represented by only small quantities of sherds each, and only 66 vessels were present in substantial proportions – none was complete.

Methodology

Quantification was carried out using sherd count, weight and estimated vessel equivalent (eve). The minimum number of vessels (MNV) within and across contexts was recorded and cross-fitting of sherds in different contexts was carried out. A full quantification by fabric, context and feature is in the archive and Appendices 3 and 4. Early Saxon fabric groups have been characterised by major inclusions. Form terminology and dating for Early Saxon pottery follows Myres (1977) and Hamerow (1993). Recording uses a system of letters for fabric codes together with number codes for ease of sorting in database format, and the results were input directly onto an MS Access table.

Fabrics

Table 5.1 shows the distribution of Early Anglo-Saxon pottery by fabric.

Fabrics are grouped on major inclusions (other than sand, except where sand is the only inclusion). However, it should be noted that, as with all handmade pottery, fabrics were extremely variable even within single vessels and categorisation was often difficult. Background scatters of calcareous material, unburnt flint, grog, white mica and other less common inclusions, such as felspar and ferrous pieces, were present in many of the fabrics. All Early Anglo-Saxon wares were handmade, and colours varied throughout from black through grey, buff and brown to red, often within single vessels.

In general, quartz-tempered and granitic types tend to be the most common fabric groups at sites in East Anglia during the first half of the period. Organic-tempering is thought to be a late development across much of East Anglia, and continued in use into the Middle Saxon period on the peripheries of the region (for example in Cambridgeshire and southern Essex).

At this site, quartz tempered fabrics dominated, based on MNV, with granitic fabric groups also frequent. Organic and calcareous fabrics were relatively common, but the other fabrics produced less than five sherds each.

[1] One sherd of gritty Ipswich ware and one of medieval coarseware were also recovered.

Description	Fabric	No	Wt/g	eve	MNV
Quartz tempered					
Coarse quartz in a finer sandy matrix	ESCQ	243	2165		15
Medium sand tempering with few other inclusions	ESMS	313	1218	0.35	24
Fine sand tempering with few other inclusions	ESFS	801	5737	2.18	144
Fine abundant quartz-tempered (greensand)	ESFQ	2	15		2
Very fine sand and abundant white mica	ESSM	43	271	0.25	3
Granitic tempered					
'Charnwood Forest' type, containing granitic tempering	ESCF	1036	6179	1.91	107
Mixed calcareous and granitic inclusions	ESCM	1702	9374	2.02	39
Organic tempering in association with granitic inclusions	ESOM	566	3931	2.86	36
Organic tempered					
Heavily grass tempered with few other inclusions	ESO1	287	886	0.10	5
Grass tempered with moderate to common sand	ESO2	199	577	0.68	35
Calcareous tempered					
Sparse to moderate fine shell and sand tempering	ESSS	1	12		1
Calcareous and organic-tempered	ESCO	23	146		2
Sparse, rounded chalk in a fine to medium sandy matrix	ESSC	857	4209	1.04	22
Grog tempered					
Grog and sand tempering	ESGS	5	22		2
Grog and organic-tempered	ESGO	3	12		2
Sand, red grog and granitic inclusions	ESGG	418	1844	0.41	3
Sand, grog and calcareous inclusions	ESGC	272	1043		4
Common flint inclusions					
Coarse quartz and flint-tempered	ESQF	78	625	0.05	4
Fine flint and sand-tempered	ESFF	1	5		1
Miscellaneous					
Quartz conglomerates in a fine or medium sandy matrix	ESQC	6	41		3
Ferrous oxide and sand-tempered	ESFE	1	2		1
Early Anglo-Saxon handmade (fabric not determined)	ESHM	417	122		-
Total Early Saxon		*7274*	*38436*	*11.85*	*455*

Table 5.1 Early Anglo-Saxon pottery by fabric group.

Vessel forms

The estimated vessel equivalent of 11.85 is based on 52 measurable rims, but a further 17 rims were too small for measurement. Measurements of handmade vessels are always approximate unless a large proportion of the rim is present. For this reason, the minimum number of vessels (MNV), based on sherd families, was estimated for each context, producing a total MNV of 455 vessels.

Rim and base types were classified following Hamerow (1993, fig. 26). This resulted in a total of 29 vessels with flaring rims, 29 vessels with vertical ('upright') rims, six with everted rims, and one with an uncertain form. Seven vessels had flat-rounded bases, eight had rounded or saggy bases, eight were flat-angled, three were footstand types, two were pedestals, and three could only be classified as 'flat' as the angle was lost.

No vessels were complete, but some full profiles were present, and it was sometimes possible to suggest the vessel type on the basis of rim or base form, where enough of the body was present (Table 5.2). Only four vessels were identified as bowls, and 78 as jars. There were similar quantities of sub-biconical and globular vessels, with few other types present.

Form detail	bowl	jar	unknown
biconical	1	5	
sub-biconical		14	4
carinated		1	2
angled shoulder		1	
'horned urn'		1	
globular		17	3
short rim, sloping neck		2	
sloping neck		1	1
uncertain	3	36	

Table 5.2. Identifiable forms/shapes of vessels (MNV).

Most vessels appear to have been smoothed or burnished, although in some cases this may have been lost due to use-wear or post-depositional abrasion. Two vessels appeared to have been covered with the type of coarse slip known as *Schlickung*, four had deliberately rough surfaces and three had been grass-wiped.

Twenty-six vessels showed signs of wear, mostly internally or on the rim, but only four were sooted. No lime deposits were recorded.

One hundred and fifty vessels had some form of decoration, including 53 with stamps. For the more complete vessels in the group it was possible to determine decorative schemes, but the majority of vessels in this category could only be recorded based on individual or a few sherds. The main vessels and their decorative schemes are listed in the catalogue below. Where possible, they have been assigned a 'Spong Phase' letter, based on Hills and Lucy (2013) and parallels from Myres' (1977) corpus are noted where possible. Spong phases are discussed further below (Chapter 8.1), in relation to the other vessels recovered from previous excavations at Lackford.

Catalogue

The catalogue includes the major vessels in the assemblage, some of which are represented only by decorated body sherds or large fragments of base. Not all are illustrated, due to the extremely fragmented condition of many vessels. Briscoe's (see below) stamp reference codes are used as appropriate.

Carinated vessels (Figures 5.1 – 5.4)

1. ESFS ?sub-biconical jar, flat-rounded base. Incised diagonal lines above carination, but most of the upper part of the vessel was lost. Contexts 0001/0002, 0015. Not illus.
2. ESCQ sub-biconical jar. Grooves above band of stamps, above incised horizontal lines broken by vertical lines of stamps (type C2aix) either side of incised vertical lines. Contexts 0007/0008, 0017. Contained Cremation 2. Spong Phase B. This is similar to some of Myres' 'stamped and bossed panel style', with perhaps the closest being from Girton, Cambs (Myres 1977, fig. 117, no. 206), but the Lackford example has vertical lines instead of bosses. Figure 5.1.
3. ESFS 'horned urn'. Incised horizontal lines on 'horn', stamps (types A7civ, C2aii). Contexts 0108, 0105, 0116. Spong Phase B. Not illus. The closest parallel to this is an example, possibly from London, illustrated by Myres (1977, Pl. Ia), who notes that the vessels are largely confined to the south-east (Essex, Kent, Sussex). The fabric of the Lackford vessel is a hard grey granular sandy fabric which is not typical of the local 'ESFS' fabric, and it may well be non-local.
4. ESMS sub-biconical ?jar. Incised diagonal lines forming pendant triangles or chevrons. Context 0107. Spong Phase C. Not illus.
5. ESCM sub-biconical jar, ?flaring rim, flat-rounded base. Bands of incised horizontal lines with stamps (types A2bi, D2ai) between, pendant triangles of three diagonal lines below. Contained cremation 0112. Contexts 0112, 0101, 0104, 0106. Spong Phase B/C. This common design is found on several other vessels at Lackford and across the country (e.g. Myres 1977, fig. 294, no. 2804). Figure 5.1.
6. ESO2 biconical jar, vertical rim. Four grooves at neck, curving diagonal grooves forming chevrons on upper half, bossed at carination, horizontal and vertical lines on lower half. Context 0114. Spong Phase A/B. This has similarities to Cat. no. 17 below, although that vessel does not appear to have been bossed. Figure 5.1.
7. ESMS sub-biconical jar, vertical rim. Bands of incised horizontal lines and single band of stamps (types B2ai, E1ai). Context 0115. Spong Phase A/B. This is a simple design which is not closely paralleled either at Lackford or elsewhere, due to the open areas between the upper and lower bands of lines and the central band. Figure 5.1.
8. ESFS biconical jar, vertical rim. Bands of incised horizontal and vertical lines, bossed. Context 0116/7. Spong Phase A? The 'basketry' decoration is found on other vessels from Lackford and elsewhere (Myres 1977, fig. 211, nos 874–5), but is not typically found on bossed vessels. Figure 5.1.
9. ESCF sub-biconical jar, vertical rim. Two rows of stamps (types A4civ, E2ai) with two lines between, four-line pendent triangles below, with triangle stamps in gaps. Context 0118. Spong Phase C? This vessel has strong similarities to an incomplete example from Illington (Davison *et al.* 1993, fig. 22, no. 296), and is similar in concept to Cat. no. 23 and possibly Cat. no. 51 below, but this is a relatively common design and another closely comparable vessel was found at Faversham, Kent (Myres 1977, fig. 303, no. 2634). Figure 5.1.
10. ESGG sub-biconical jar, flaring rim, rounded base. Three thin incised horizontal lines above line of stamps (type H1ai§), above three incised horizontal lines, with four incised vertical lines below at intervals. Contained cremation 0123. Contexts 0123, 0124. Spong Phase A/B.

This is an example of Myres' 'stamped necklines above grouped vertical lines' group (1977, figs 232–3), although it is mainly examples from Lincolnshire and Nottinghamshire which have a single row of stamps and most of the vessels in this group are more noticeably carinated. The stamp is apparently very local, having been found only at Lackford and West Stow (Briscoe, below). Figure 5.1.

11. ESCF biconical jar, vertical rim. Three incised horizontal lines, line of triangular stamps (type E2ai), three incised horizontal lines, large sub-triangular stamps (type E2ai) with 5-6 vertical lines between, two incised horizontal lines, square stamps (type C3dii), two incised horizontal lines, diamond stamps (type F2aii), incised horizontal line at carination, three-line chevrons containing U stamps (type G1bi) below, delineated by one horizontal line. Contexts 0125, 0130. Spong Phase B. A vessel of similar fabric and form, but with different stamps and a linear scheme of decoration, was recovered from Eriswell G243 (Caruth and Hines forthcoming). Figure 5.2.
12. ESCF sub-biconical jar, vertical rim. Four lines above carination. Contexts 0126, 0127, 0165. A very similar vessel, in terms of form (although slightly more globular), fabric and decoration, was found at Illington (Davison et al. 1993, fig. 17, no. 227; Myres 1977, fig. 90, no. 2114). Figure 5.2.
13. ESFS Buckelurne. Vertical bosses, some applied and some hollow, hollowed out areas, incised curvilinear and large ring stamps (type A1bii). Context 0130. Spong Phase A. The decoration on this vessel has similarities to the so-called Sancton/Elkington workshop, but it is too incomplete to be certain. Figure 5.2.
14. ESCM biconical bowl, flaring rim. Angular wavy line of chevron stamps (type E1bi), three incised horizontal lines, narrower wavy line of 'Z' stamps (type H1bviii), three incised horizontal lines, vertical oval facetting at carination, swags of three incised curving lines below, with angular 'Z' stamps (type H1bviii) in between. Context 0130. Spong Phase B. Potentially the closest parallel for this is the wide-mouthed bowl found at Lackford (49.A.13; Myres 1977, fig. 96, no. 904), although only the lower half is comparable with this – the swag with a central vertical band of stamps and the facetted carination. Figure 5.2.
15. ESSC sub-biconical vessel. Bosses (like vertical corrugations) with incised vertical lines between, incised horizontal lines above carination, and above that random diamond stamps (type F2aii, F2aiii). Contexts 0132/0116-7. Spong Phase B. Not illus.
16. ESOM sub-biconical jar. Four incised horizontal lines, line of stamps (type A4aii), five incised horizontal lines, vertical bosses and vertical lines on lower half? Context 0133. Spong Phase B. Not illus. This vessel appears to be similar to an example from Rockland All Saints, Norfolk (Myres 1977, fig. 241, no. 3383).
17. ESCF angled-shouldered jar, flaring rim. Six fine horizontal lines on neck, fine diagonal lines across and below carination. Contexts 0134, 0135, 0136?, 0137? Spong Phase A/B? This is paralleled by at least one other vessel at Lackford (Myres 1977, fig. 340, no. 2840). Figure 5.2.
18. ESGC ?sub-biconical or angular-shouldered jar, long concave neck. Three incised horizontal lines above carination, bosses with 3+ vertical lines either side curving to a point beneath the boss, vertical line on the boss, random stamps (types B1bii, E1dii, possibly H1aiii), some of which appear to run parallel to the boss. Contexts 0136, 0148. Spong Phase B. Not illus. This is similar to three examples from Lackford (Myres 1977, fig. 224, nos 2989, 898 and 899), but none of these is stamped.
19. ESCQ sub-biconical jar. Eleven+ incised horizontal lines, S stamps, three incised horizontal lines, 'flower' stamps (A7biii), three incised horizontal lines, 'cogwheel' stamps (type A7ci), three incised horizontal lines, chevrons around random S and ring stamps (types H1aii& and A1bi) below carination. Context 0137. Spong Phase C. A similar example from Lackford was

found in G11 (Myres 1977, fig. 322, no. 927); the type is perhaps marginal to the Illington/Lackford group. Figure 5.2.

20. ESGC biconical jar, slight footring base. Two+ incised horizontal lines above and four below row of stamps (type A7cii) - groups of four vertical lines below, with vertical bosses. Contained cremation 0143. Contexts 0143, 0116/7. Spong Phase B. Other similar vessels from Lackford include G10A (Myres 1977, fig. 205, no. 967) and possibly Cat No. 67 below, although all three are in different fabrics. Figure 5.2.
21. ESCM sub-biconical jar, vertical rim. Row of stamps (type A1ai) demarcated above and below by single lines, vertical incised lines around stab lines. Contexts 0147, 0137. Spong Phase A. No direct parallels have been identified. Figure 5.3.
22. ESFS sub-biconical jar, everted rim, rounded base. Three or four neck lines above vertical lines of stamps (six lines per panel, types A1ai, A1bi, C3aiv), demarcated by groups of four vertical lines and underlined by two horizontal lines. Contained cremation 0153. Context 0153. Spong Phase B. This vessel fits into Myres' 'stamped vertical zones' group, with possibly the closest parallels being from Loveden Hill and Castle Acre (1977, fig. 143, nos 1280 and 1171), although an example with diagonally defined panels from Bramford is also similar (ibid 1977, fig. 138, no. 1014). Figure 5.3.
23. ESOM sub-biconical jar, flaring rim, flat-angled base. Three incised horizontal lines, row of stamps (types E2ai, G2ai, G2aiii, H2aii, H2diii), three incised horizontal lines, diagonal lines and stamps (type G2aiii) on/below carination. Contained cremation 0160. Contexts 0160, 0129, 0161-2. Spong Phase B. See Cat. no. 9. Figure 5.3
24. ESCM sub-biconical jar, flaring rim, rounded base. Two incised horizontal lines, two lines of ring stamps (A1bi), two horizontal lines, interlocking curves stamps (type H1bxi), two horizontal lines, double-ring stamps (type A2ai), two horizontal lines, V stamps (type E1bi), two horizontal lines; below carination - bands of seven+ vertical lines. Contained cremation 0164. Contexts 0164, 0148. Spong Phase B. This vessel is very similar to another example from Lackford, which has a similar range of stamps used in a different order on the upper half, and groups of six vertical lines below the carination (context F 16; Myres 1977, fig. 233, no. 2643). Figure 5.3

<u>Rounded vessels</u>

25. ESOM globular jar, flaring rim, flat-rounded base. Undecorated. Contexts 0001/0002, 0015. Contained cremation 1. Not illus.
26. ESMS globular ?jar, footstand base. Incised horizontal lines, possible boss. Context 0020. Not illus.
27. ESCF ?globular jar, slightly concave neck. Incised horizontal lines. Context 0102. Not illus.
28. ESCF ?globular jar, ?vertical rim, ?rounded base. Undecorated? Context 0103. Not illus.
29. ESOM globular jar, flaring rim. Undecorated. Context 0105. Not illus.
30. ESCF ?globular jar, flaring rim. Three deep horizontal lines above random dots (stamp A1ai) between 2-3 shallow vertical lines, shallow vertical bosses. Contexts 0105, 0165. Spong Phase A. No direct parallels were identified, although the vessel probably fits best with Myres' 'bossed line-and-dot panel' group (1977, fig. 230). Figure 5.3.
31. ESCM globular jar, short vertical rim. Undecorated. Context 0113. Not illus.
32. ESCF ?globular jar, flaring rim. Two horizontal lines at neck. Context 0116/7. Not illus.
33. ESFS globular ?jar, flat-rounded base. Undecorated? Context 0120. Not illus.
34. ESCM ?globular jar, vertical rim, flat-rounded base. Undecorated? Contexts 0120, 0122? Not illus.

35. ESSM globular jar, short vertical rim. Undecorated? Context 0129. Not illus.
36. ESO2 small globular jar, flaring rim, rounded base. Burnt or overfired – cracked. Context 0133. Figure 5.3.
37. ESCF ?globular vessel. Undecorated? Context 0134, 0133. Not illus.
38. ESCF ?globular jar, vertical rim. Three incised horizontal lines, row of stamps (type A7biii), two incised horizontal lines. Context 0135. Spong Phase B? This simple linear stamped design has many parallels at Lackford and elsewhere. Figure 5.3.
39. ESSC globular jar, flat-angled base. Bossed, below waist: incised horizontal and diagonal lines with areas of stamps; upper area less clear but more panels with stamps above three incised horizontal lines. Stamp types A4aii, A5avi, A5bvii, C2ai, F2ai, H2aii, N1ai. Contained cremation 0144. Contexts 0144, 0109, 0145. Spong Phase B. Although there are no direct parallels, this vessel fits into Myres' 'bossed stamped panel' group (1977, fig. 246). Figure 5.3.
40. ESOM globular jar, flat-rounded base. Contained cremation 0151. Contexts 0151, 0133. Not illus.
41. ESCM globular jar, flaring rim, flat-rounded base. Two incised horizontal lines, chevrons with stamps (types C3bii, F1ai), three incised horizontal lines, vertical lines around small ?circular bosses. Contained cremation 0159. Contexts 0159, 0152, 0160. Spong Phase B. Not illus. The vessel is in poor condition and the exact decorative scheme is difficult to determine, but it probably fits into Myres' 'stamped zones above bosses' group, perhaps the closest parallel being an example from Cambridge (1977, fig. 156, no. 1673), although the bosses are likely to be lower on the body of the Lackford vessel.
42. ESFS tall globular jar, short thick vertical rim, flat-angled base. Undecorated. Contained cremation 0161/2. Contexts 0161/2, 0137, 0152. Figure 5.3.
43. ESO1 ?globular jar, long vertical rim, rounded base. Undecorated. Contained cremation 0163. Contexts 0163, 0161/2. Not illus.

Uncertain form

44. ESCF body sherds of a jar. Outlined-cross/circle stamps (4+ lines) with double incised horizontal lines between, above incised diagonal lines and triangular stamps, possibly bossed. Contexts 0007/0008, 0008. Spong Phase B? Not illus.
45. ESQF jar, flat-angled base. Burnished and decorated with square cross stamps, incised horizontal lines and curving lines. Context 0019. Spong Phase B? Not illus.
46. ESO2 jar, flaring rim. Context 0103. Not illus.
47. ESCM jar, flaring rim. Context 0106. Not illus.
48. ESCQ jar. Deep corrugations on neck. Context 0118. Spong Phase B. Not illus.
49. ESSC plain body sherds and footstand base. Contexts 0119, 0154. Not illus.
50. ESSC jar, vertical rim. Undecorated. Context 0122. Not illus.
51. ESCF jar. Four incised horizontal lines, row of large sub-triangular stamps (type E2giv), four incised horizontal lines, chevrons of 3–5 diagonal lines, line of U-shaped stamps (type G1biii) in each, large vertical boss. Context 0127. Spong Phase B. See Cat no. 9 above. Figure 5.4.
52. ESSC jar, flaring rim. Undecorated. Context 0128. Not illus.
53. ESO2 jar, vertical rim. Undecorated. Context 0129. Not illus.
54. ESCO body sherds. Incised horizontal lines with line of '+' stamps (type B3ai) at neck, curving

incised pendent triangles with ring-and-dot stamps (type A2bi) on body. Context 0131. Spong Phase C. Not illus. Illington/Lackford type 3 or 4.

55. ESOM jar, sloping neck, vertical rim. Four neck lines above diagonal and vertical bosses with incised swags. Contexts 0131, 0126, 0134. Spong Phase A. Figure 5.4.
56. ESSC jar, vertical rim, flat-rounded base. Three incised horizontal lines at base of long neck, 3-4 vertical lines with curving bottoms delineating vertical bosses, ?pendent triangle delineated by 4+ lines and internal panel with diagonal lines. Contexts 0134, 0136? Spong Phase A. Not illus. No parallels have been identified for the panel containing incised diagonal lines, but this is clearly a bossed linear design.
57. ESGG vessel. Undecorated. Contexts 0135, 0136. Not illus.
58. ESOM jar, everted rim. Heavily fragmented, undecorated. Context 0137. Not illus.
59. ESSC jar, flaring rim, rounded base. Bossed, incised lines, stamps (types A3aiv, A4aii) - scheme not clear. Contained cremation 0140. Contexts 0140, 0139. Spong Phase B. Not illus.
60. ESCM jar, flat-angled base. Two incised horizontal lines, row of stamps (reverse 'S'), two incised horizontal lines, diagonal and vertical lines in groups of 2-3. Contained cremation 0158. Contexts 0152, 0136, 0158. Spong Phase C? Not illus. Comparable with two vessels from Lackford (Myres 1977, fig. 295, nos 968–9).
61. ESOM bowl?, vertical rim. Context 0155. Not illus.
62. ESCM body sherds. ?Bossed, deep incised horizontal lines and rough diagonal lines possibly forming pendent triangles. Context 0110. Spong Phase B? Not illus.
63. ESMS body sherds. Interlace pattern (stamp type H1cii) above three incised lines, pendent triangles formed of lines of swastika stamps (type J2aii) demarcated on either side by single lines, and animal stamps (type K3ai, two different) in the upper parts of the triangles. Unstratified 0165. Spong Phase B. Other combinations of animal and swastika motifs are found at both Lackford and Caistor St Edmund (Myres 1977, fig. 359, nos 1884 and 997). Probably the same vessel as CUMAA Acc. No. Z 17040. Figure 5.4.
64. ESSC body sherds. Three widely-spaced incised horizontal lines at neck, solid boss with three incised lines either side, random stamps (type A1ai). Context 0132. Not illus.
65. ESFS body sherd. Part of boss, horizontal and vertical very fine stabs (made with pin tip?). Unstratified. Figure 5.4

Bases

66. ESFS large footstand base. Flaring rim in this context may also belong. Context 0021, 0008. Not illus.
67. ESCF pedestal/footring base. Pairs of incised diagonal lines demarcating vertical bosses. Context 0126. Spong Phase A. Figure 5.4.

Distribution and plough movement

Almost every context, including some of the *in situ* urns, contained fragments of more than one vessel. Fragments of ten or more vessels were recovered from 0116/7, 0130, 0131, 0133, 0134 and 0152, the majority of which were towards the east of the site (0116/7 appears to have been mixed up during processing). This may indicate greater plough disturbance in this area, or perhaps a higher concentration of lost burials.

There are at least 66 vessels of which a large proportion survives. Some of these were *in situ*, and others appeared not to have moved far from their original burial site, although in a few cases fragments of individual vessels were scattered across several metres.

Movement of sherds was identified across the whole site (Figure 5.5). Although some scatters

were fairly localised, there were other vessels which appear to have been dragged by the plough for several metres. For example, fragments of the main vessel in 0161/2 were found in the overlying scatter 0152, and also in a scatter 0137, some 5m to the north-east. Sherds from vessels in 0120 also occurred in adjacent feature 0140, nearby 0121, 0124 located to the south-east, and possibly 0122, 5.5m to the east. There is no particular pattern to the movement, with some sherds moving east–west, others north–south, and some north-west to south-east, although north–south movements were by far the shortest. This must simply reflect changes in plough directions over the centuries.

The distribution of fabrics and forms (using the main vessels in each context) showed little spatial patterning of types, although there was a possible group of granitic vessels in the western part of the trench (0103–0106, 0112, 0113), and a group of calcareous-tempered vessels to the south-east of those (0109, 0119, 0144, 0154). The burial group 0152 contained mainly granitic vessels (ESCM and ESOM) but also an organic-tempered vessel. Globular and sub-biconical types occurred randomly across the site, as did vessels to which Spong phases had been assigned.

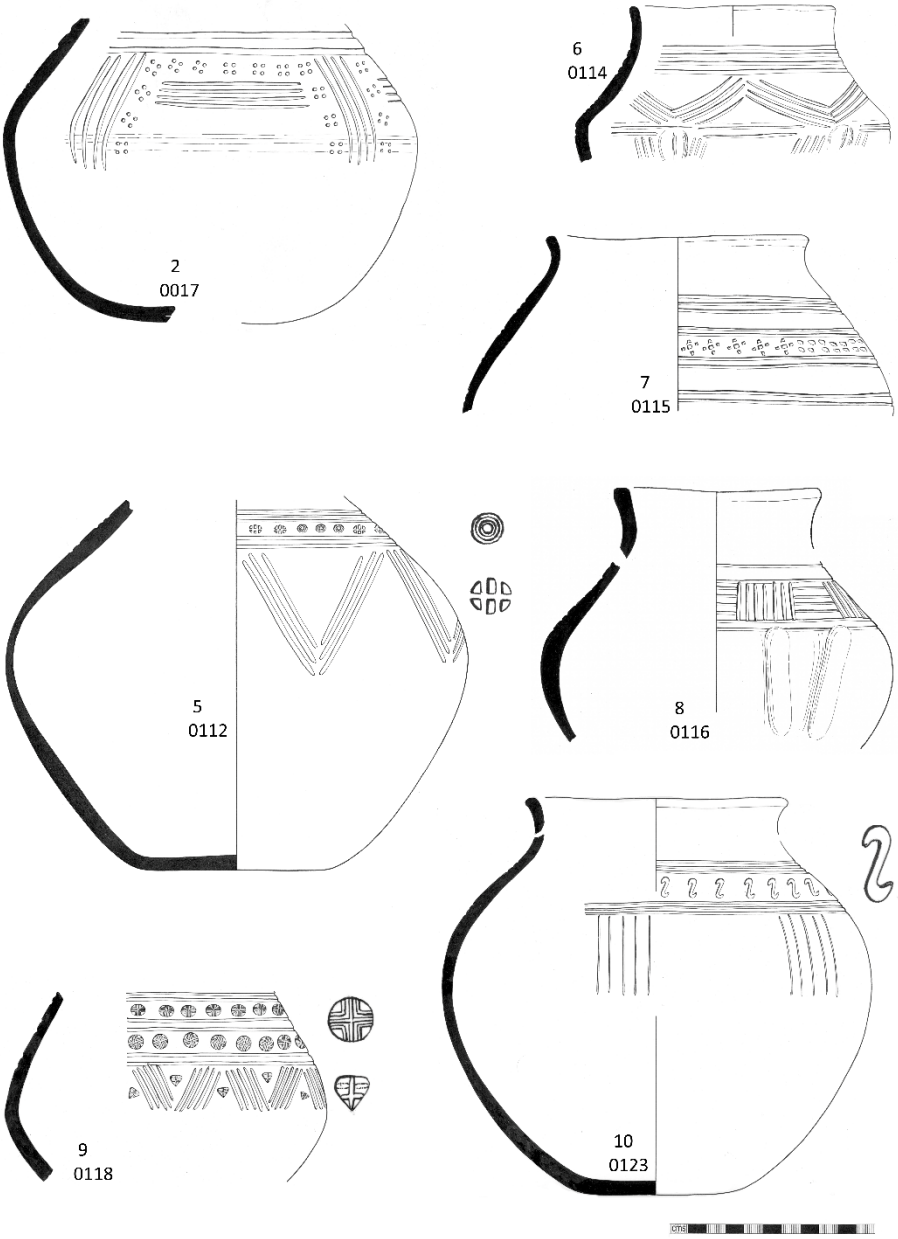

Figure 5.1 The Pottery 2015-6, Catalogue 2 - 10 (scale 1/3, stamps actual size)

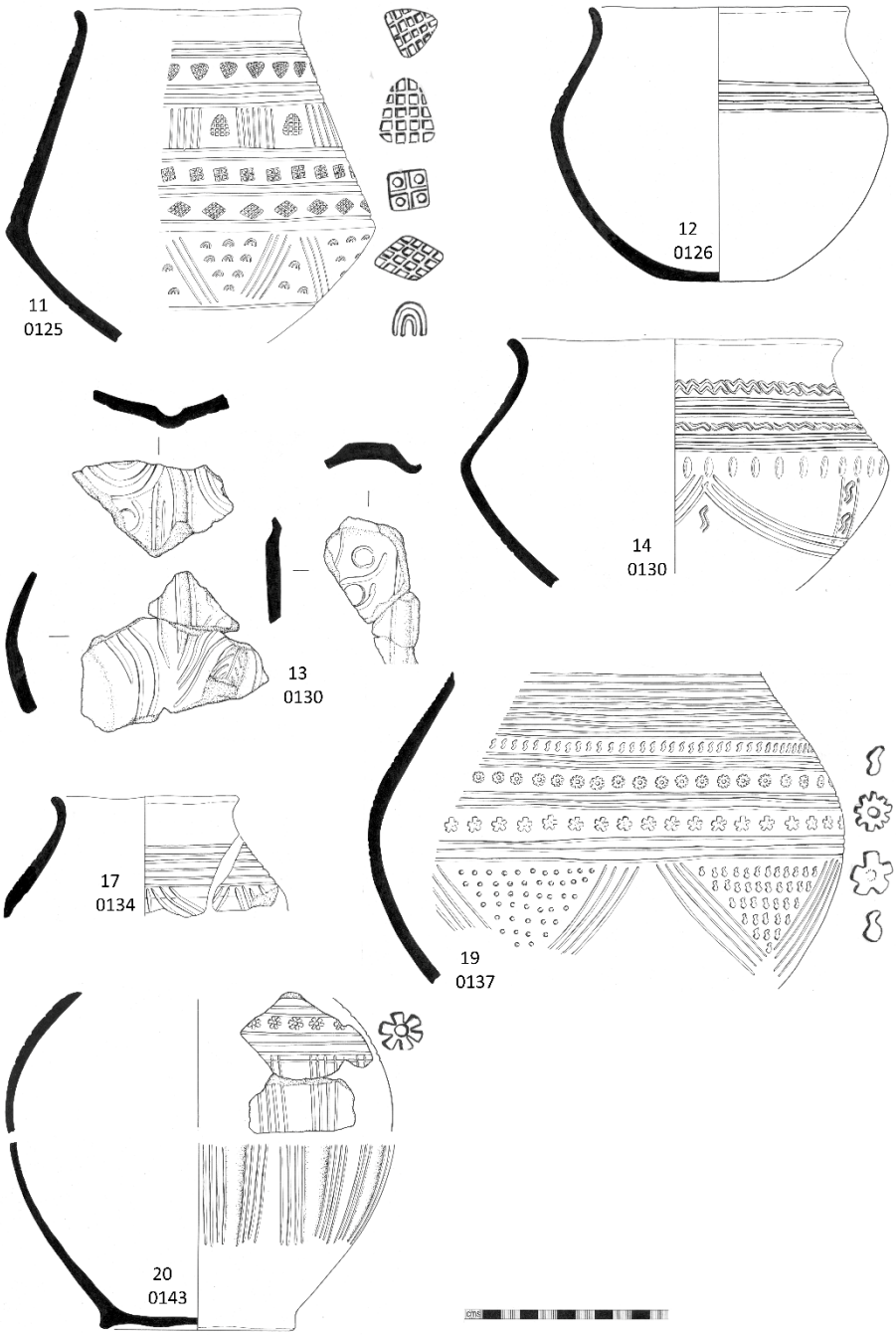

Figure 5.2 The Pottery 2015-6, Catalogue 11 – 20 (scale 1/3, stamps actual size)

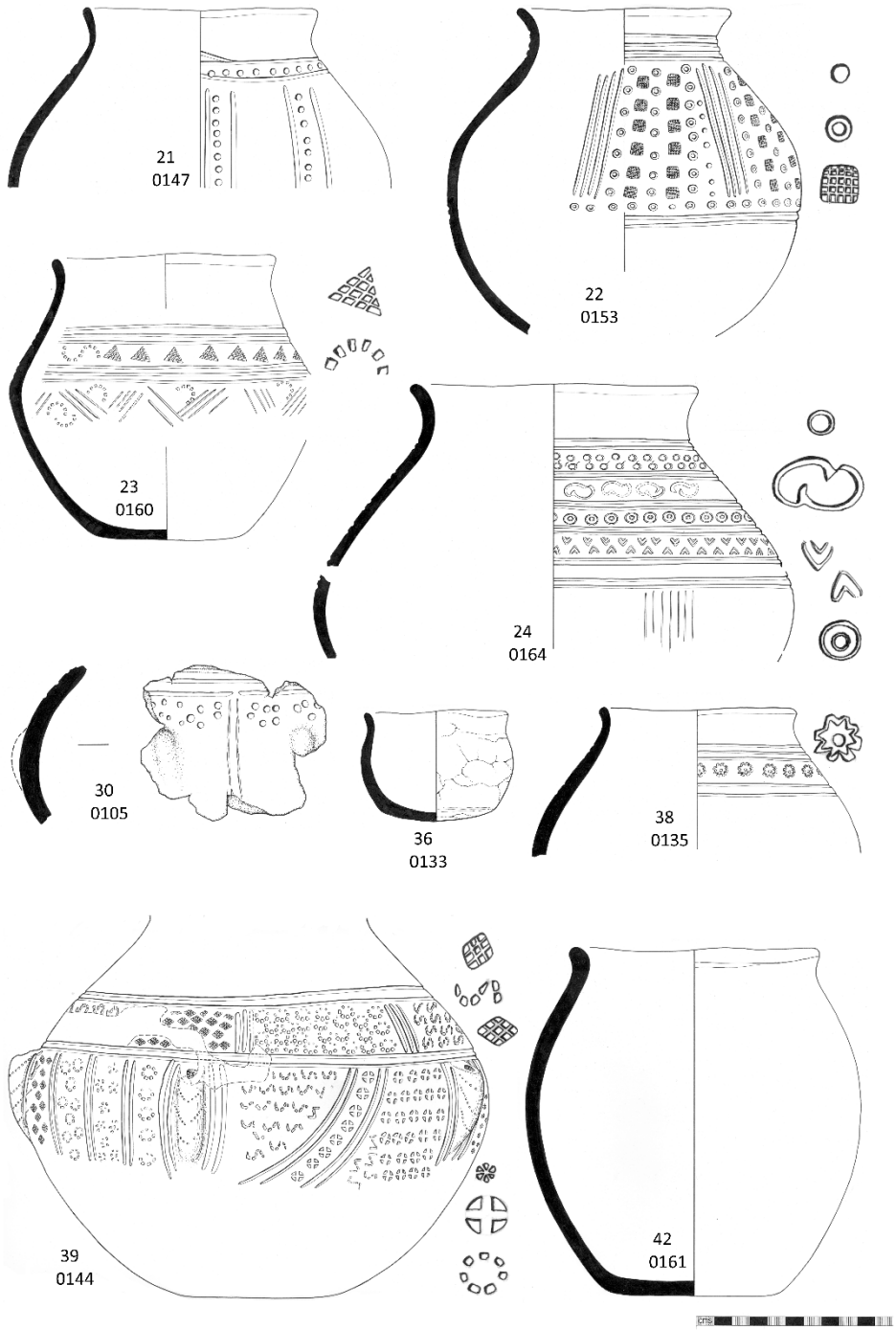

Figure 5.3 The Pottery 2015-6, Catalogue 21 – 42 (scale 1/3, stamps actual size)

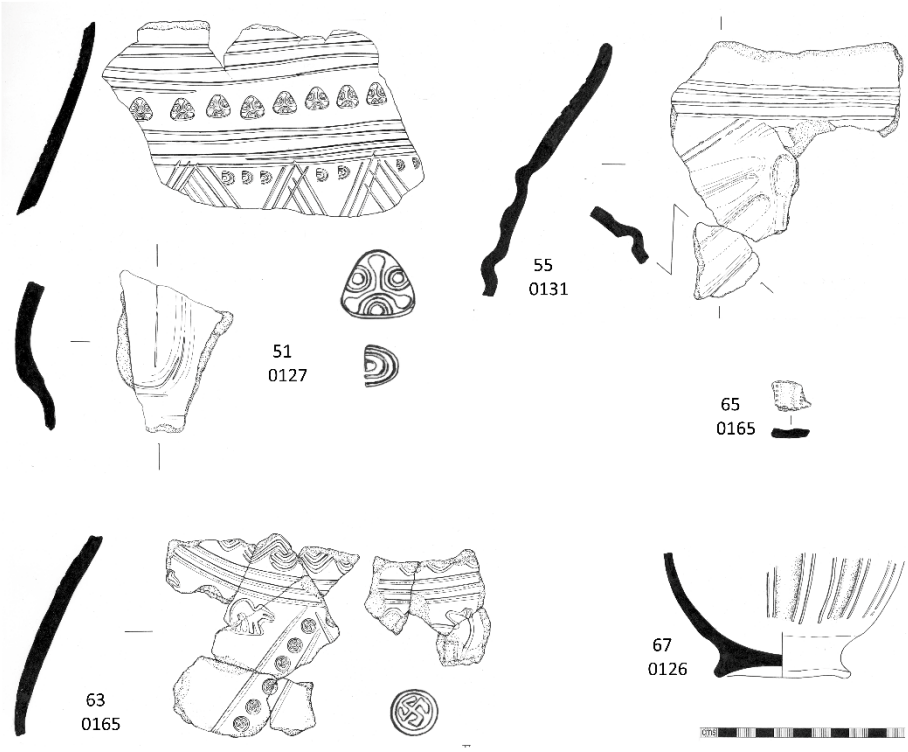

Figure 5.4 The Pottery 2015-6, Catalogue 51 – 67 (scale 1/3, stamps actual size)

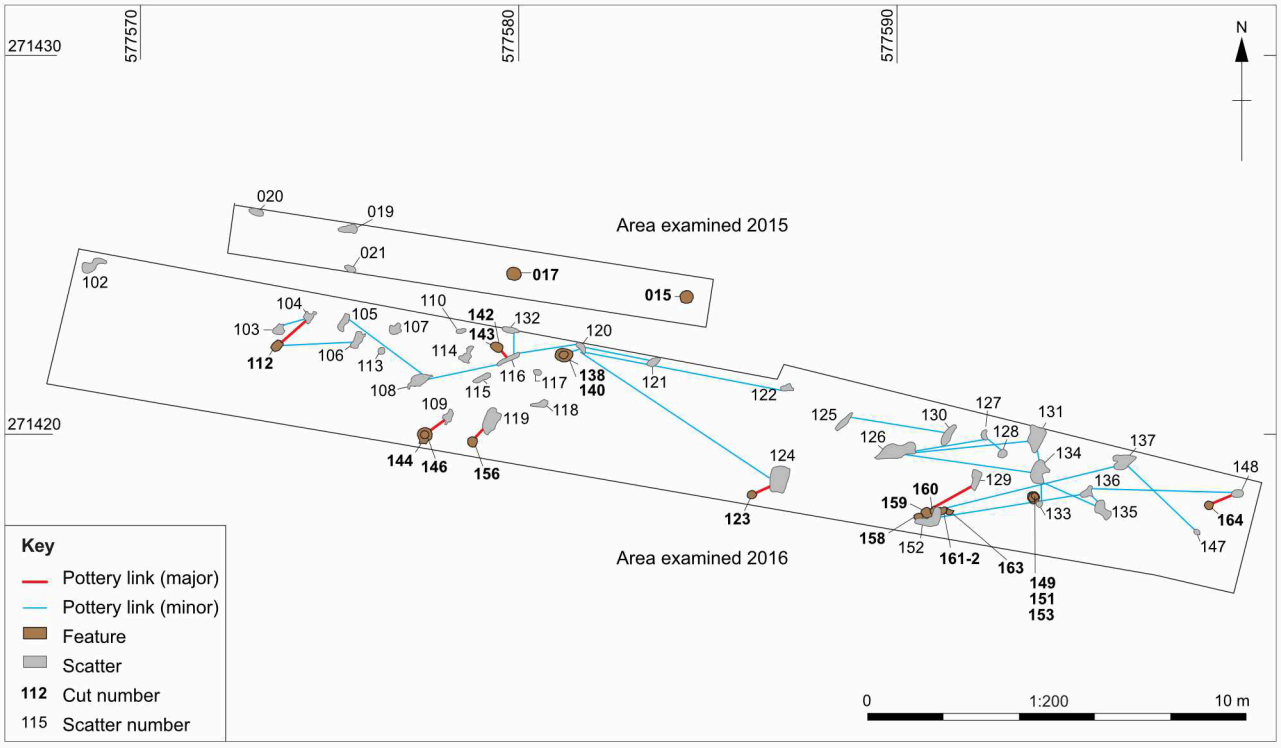

Figure 5.5 Plan showing pottery links

5.2 Pottery stamps

By Diana C. Briscoe © Archive of Anglian & Saxon Pottery Stamps (AASPS), 2020

Introductory notes

- 'Die' means the actual piece of carved bone, wood, metal or (possibly) chalk used to make the impression.
- Where a pair of stamps are described as 'like', it means they have been made with the same die.
- A closing bracket) after size and pot type definition indicates the presence of more than one stamp motif on the pot or sherd.
- Quantities of motifs always include ones from the site being reported upon, unless otherwise stated.

1–20	Rare
21–40	Uncommon
41–70	Fairly common
71–100	Reasonably common
100–150	Common
151+	Very common

Table 5.3 Rarity of Stamps

The 2015 and 2016 excavations produced 80 examples of pot stamps, utilising 52 motifs (the full list is in Appendix 5). Twenty-four of these motifs have not been found in either of the other campaigns. This compares with 676 examples from the various excavations on the original cemetery in 1944 and 1947, which utilised 235 motifs (190 of these have not been found in the other two campaigns). In addition, metal detectorists and the PAS have reported 25 examples, using 21 motifs (six of which are unique to these events).

Lackford lies close to the centre of the region where Anglo-Saxon stamped pottery is most common, so rather than just look at local examples, I have produced a distribution map for any motif which is rare or unusual (Appendix 6a). The AASPS holds 2,996 comparable stamps from 113 other sites (including the original 1940s excavations and the metal-detector finds from 2011), or 2,275 examples if the two extremely local sites are removed from the count. The above numbers exclude the motifs (six in total, as noted under specific motifs below) which are very common, are found very widely and so are completely undiagnostic. Even without these, the distribution range runs from Gloucestershire to North Yorkshire.

Where a motif found at Spong Hill has been dated to a specific Phase or Phases, I have noted this. Most of the motifs in the report (Hills and Lucy 2013) are dated to more than one Phase, but I still find the information helpful.

The motifs

Motif	Size	Pot Type	AASPS No	Context	Pot Catalogue; Figure
A 1ai	3 x 3.5	Sherds = 92+	75	0105	30 Fig 5.3
A 1ai	4 x 4.5	Sherd	76	0122	
A 1ai	3.5 x 4	Sherds = 8	77	0132 [B/C]	64
A 1ai	2 x 3	Sherd	78	0137	
A 1ai		Sherds = 11)	79	0153	22 Fig 5.3
A 1ai		Sherd	80	0147	21 Fig 5.3
A 1bi	2 x 2)	Sherds = 55+)	1	0137	19 Fig 5.2
A 1bi	4 x 4.5)	Sherds = 11)	2	0153	22 Fig 5.3

Motif	Size	Pot Type	AASPS No	Context	Pot Catalogue; Figure
A 1bi	5 x 5.5)	Sherds = 80+)	3	0148	24 Fig 5.3
A 1bii	12.5 x 11	Sherd	4	0130	13 Fig 5.2

Table 5.4 Stamp A 1 motifs

The **A Category** comprises all motifs based on circles. These are by far the most common motifs from the Early Medieval period, representing well over half the total identified stamps.

A 1ai is the most basic stamp, being a simple dot impression. As such, it is extremely common, very widely distributed and completely undiagnostic. There are 451 examples in the Archive, although not all our stamp collectors recorded examples, so there are undoubtedly many more than this.

The **A 1bi** motif describes a negative ring. This is a very common motif with a very wide distribution and, as such, is completely undiagnostic. However, within a site, it is possible to identify stamps made with the same die. There are 386 examples in the Archive.

A 1bii describes a negative ring with one or more breaks in the circle. It is an uncommon motif, with only 24 examples recorded in the AASPS (see distribution map). It has a wide distribution, appearing at most of the large sites within East Anglia, but also as far north as Sancton, E. Yorks, and at two sites on the Thames Estuary and two off the Solent. This Lackford example is one of the largest recorded with three comparably sized examples from Illington, and one from Spong Hill, both Norfolk. The Spong Hill example is also identified as Phase A.

Motif	Size	Pot Type	AASPS No	Context	Pot Catalogue; Figure
A 2ai	7 x 7)	Sherds = 80+)	5	0148	24 Fig 5.3
A 2bi	5.5 x 5)	Sherds = 40+)	6	0112	5 Fig 5.1
A 2bi	8 x 8 ?	Sherd	7	0106	
A 2bi	8 x 8.5 ?	Sherd	8	0131	54
A 3aiv	10 x 10)	Sherds = 16)	9	0139	59
A 3aiv	10 x 10.5)	Sherds = 17)	10	0140	59
A 4aii	6 x 6)	Sherds = 16)	11	0139	59
A 4aii	6 x 6.5)	Sherds = 17)	12	0140	59
A 4aii	6 x 7	Sherd = 60+	13	0133	16
A 4aii	7.5 x 8.5)	Sherds = 70+)	14	0144	39 Fig 5.3
A 4civ	8 x 7.5)	Sherds = 20)	15	0118	9 Fig 5.1
A 5avi	4 x 4)	Sherds = 70+)	16	0144	39 Fig 5.3
A 5bvii	8 x 8.5)	Sherds = 70+)	18	0144	39 Fig 5.3
A 7biii	8 x 7	Sherds = 20+	19	0135	38 Fig 5.3
A 7biii	8 x 7.5)	Sherds = 55+)	20	0137	19 Fig 5.2
A 7ci	7.5 x 7.5)	Sherds = 55+)	17	0137	19 Fig 5.2
A 7cii	7 x 5.5	Sherds = 22+	21	0116	20 Fig 5.2
A 7civ	7 x 6)	Sherds = 82+)	22	0108	3
A 7civ	7 x 7	Sherd	23	0116	3

Table 5.5 Stamp A 2 – A 7 motifs

The **A 2ai** motif describes two negative rings, usually of equal proportions. This is an extremely common stamp and is found widely distributed. As such, it is of little use for diagnostic purposes. There are 392 examples in the Archive.

A 2bi describes a positive dot-in-circle where the dot is smaller than in the A 2ai category. This is again a very common motif, with a very wide distribution. As such, it is of little use for diagnostic purposes. There are 375 examples in the Archive.

The **A 3aiv** motif describes a negative grid of 4 x 4 squares. This is a common motif, with 138 examples recorded. It also has a very wide distribution and, as such, is completely undiagnostic.

A 4aii describes another version of the 'hot-cross-bun' motif – in this version, its arms end within the negative circle. This is an extremely common stamp (286 examples) and also has an extremely wide distribution. As such, it is of very little use for diagnostic purposes.

The **A 4civ** motif describes an outlined positive cross with negative chevrons in the positive quarters. It is a rare motif with only 19 examples recorded in the AASPS. Most examples come from Spong Hill (7) and Loveden Hill, Lincs, which has 6 examples (see the distribution map, Appendix 6a). This is the smallest example in the Archive, with slightly larger versions found at Spong Hill and Loveden Hill. Two of the Spong Hill examples are identified respectively as Phase B and Phase C.

A 5avi describes a circular negative rosette with six petals. This is a reasonably common motif, with a wide distribution. The Archive has recorded 82 examples with five examples each coming from Girton, Cambridge, and Lackford, and four from St John's Cricket Field, Cambridge. There are also three examples from Portchester, Hants. There are six examples from Spong Hill, which are identified as Phase A/B, Phase B (x 3) and two are unphased. There are also eight examples from Loveden Hill, one of which is associated with a motif that belongs to Phase B at Spong Hill.

A 5bvii describes a positive 'cartwheel' stamp with seven spokes coming into a central hub. This is a rare motif with only 19 examples recorded in the AASPS. There are four examples from the 1940s excavations, all of which are slightly smaller than this example. It has quite a wide distribution (see map in Appendix 6a): one of the two examples from Spong Hill is identified as Phase A/B.

The motif, **A 7biii**, describes a design with negative 'petals', reduced almost to lines. These are attached to a negative ring containing a positive circle, giving a 'chrysanthemum' effect. It is a rare motif with only 14 examples recorded and has a rather unexpected distribution (see map, Appendix 6a). There are four examples from Radley, Oxon, plus another from an unidentified site in Buckinghamshire, as well as two from Cleatham and one from West Keal, both Lincs. Again, the Lackford pair are the smallest recorded, with the closest in size being a pair from Spong Hill (neither are dated) and the unidentified example from Bucks. In addition, there are three from St John's Cricket Field and one from Girton.

A 7ci describes a negative 'cogwheel', which has squared-off ends to its arms, unlike the A 7a and A 7b motifs. It is an uncommon motif with only 22 examples in the Archive. It has a wide distribution from Sancton, East Yorks, to Abingdon (Saxton Road), Oxon. Of the nine examples from Spong Hill, one is dated as Phase A/B, three as Phase B, one as Phase C, two as dubious phasing and two are unphased. There are similar sized examples from Loveden Hill, Sancton and Spong Hill.

A 7cii describes a negative 'cogwheel' with a positive central circle. This is a fairly common stamp with 39 examples recorded in the AASPS. It has a wide distribution, including an intriguing run of examples from three sites along the Severn (see distribution map, Appendix 6a) and another three along the Thames. The Lackford example is the smallest recorded, with the nearest in size being from Spong Hill and Loveden Hill. Two of the four examples from Spong Hill are identified as being from Phase B and one from Phase C.

A 7civ is a rare motif, with only nine examples in the Archive. It describes a negative 'cogwheel' which surrounds positive and negative rings with a positive central circle. It has a wide distribution with two examples from Bidford-on-Avon, Warks, and one from Boynton, E Yorks (see map, Appendix 6a). I should caution that the Bidford examples have been identified from drawings and these can be very unreliable. Again, the Lackford examples are the smallest recorded with one comparable sized example from Great Casterton, Leics, and one from Spong Hill, which has been identified as Phase B. There are two larger examples from Illington.

Motif	Size	Pot Type	AASPS No	Context	Pot Catalogue; Figure
B 1bii	11 x 10.5	Sherds = 60+	24	0136 [b]	18
B 1cii	6 x 5	Sherd	25	0101	
B 2ai	9 x 9)	Sherds = 11)	26	0115	7 Fig 5.1
B 3ai	7.5 x 8	Sherd	27	0131	54

Table 5.6 Stamp B motifs

The **B Category** comprises all motifs based on crosses or X-shapes. **B 1bii** describes a negative X-shape. This is an uncommon stamp found mostly in East Anglia and the East Midlands (see distribution map, Appendix 6a). There are 30 examples recorded in the AASPS, which includes one stamp from an unidentified site in Yorkshire. There are five examples from the 1940s excavations, including a large free-hand version (50.111A) and two which are comparably sized. (One of these urns (1977, Corpus No. 185) is misattributed by Myres to Girton. There are eight examples from Spong Hill, two of which are dated to Phase B, one to Phase B/C and two to Phase C.

The **B 1cii** motif describes an outlined diagonal positive cross. It is a very rare stamp with only five examples recorded in the AASPS. The other examples come (one each) from the 1940s excavations (Lethbridge 1951: 49.177A); Lakenheath, Suffolk; Cleatham and Elsham, Lincs (see map, Appendix 6a). This example is the smallest recorded, but the Elsham example is comparable in size.

B 2ai describes a segmented negative cross. This can appear in both diagonal and upright forms. It is a very rare motif with only six examples recorded in the Archive (plus one from Lejre, Denmark), but with a wide distribution (see map). They include smaller examples from West Stow and from Spong Hill, which is dated to Phase C.

B 3ai describes a thin open-ended positive diagonal cross – it cannot be used as to produce an upright version (B 3aii). (Previously classified as B 2aii, I have changed this in order to regularise the running order of the Types level of the Classification.) It is a reasonably common stamp with 79 examples recorded in the Archive and a distribution mainly in Norfolk and further north, although there is an outlying group from Radley (Barrow Hills) and Eynsham Abbey, both in south Oxfordshire. This is one of the stamps commonly attributed to the 'Lackford-Illington potter'. There are 22 examples from Spong Hill, of which one is dated as Phase A, two as Phase A/B, eight as Phase B, one as Phase B/C and five as Phase C, and another 22 from Illington. Locally, there are two examples from West Stow, one of which is comparably sized.

Motif	Size	Pot Type	AASPS No	Context	PotCatalogue; Figure
C 2ai	5 x 3)	Sherds = 70+)	28	0144	39 Fig 5.3
C 2ai	7 x 5.5)	Sherds = 11)	29	0121	
C 2aii	8 x 9)	Sherds = 82+)	30	0108	3
C 2aiv	6 x 6.5)	Sherds = 11)	33	0153	22 Fig 5.3
C 2aix	9 x 7	Sherd	31	0132	

Motif	Size	Pot Type	AASPS No	Context	PotCatalogue; Figure
C 3ai	5 x 5.5	Sherds = 9	32	0132	
C 3bii	4 x 4.5	Sherds = 100+	34	0152	41
C 3dii	7 x 6)	Sherds = 60+)	35	0125	11 Fig 5.2
C 4ai	8 x 9	Sherd	36	0108	

Table 5.7 Stamp C motifs

The **C Category** comprises all motifs based on squares or rectangles. **C 2ai** describes a rectangular negative grid with 2 x 2 (or more) positive bars. It is a fairly common stamp with 58 examples in the Archive. It has a very wide distribution, reaching as far as Southampton and Andover, both Hants, and Reading and Great Shefford in Berks, as well as north to Sancton and Little Driffield, E. Yorks. However, the motif is so universal as to be of little use for diagnostic purposes. Locally there are seven examples from West Stow and five from the 1940s excavations, but none are really comparable in size.

C 2aii describes a rectangular negative grid with 3 x 3 positive bars. It is a common stamp with 115 examples recorded in the AASPS. There are 18 examples from Spong Hill, 11 from Loveden Hill, nine from Sancton, eight from Elsham and seven from St John's Cricket Field. Of the Spong Hill stamps, one is dated Phase A, five as Phase A/B; and eight are dated Phase B, while one has dubious phasing. Locally there are five from the 1940s excavations and three from West Stow. Size-wise, the nearest examples come from St John's Cricket Field, Loveden Hill and Sancton. (Also see C 2aix below)

C 2aiv describes a rectangular negative grid with 4 x 4 positive bars. This is a common stamp (144 examples recorded in the AASPS) with a wide distribution and, as such, is of little diagnostic use. Locally there are six examples from the 1940s excavations, with two of similar size. Loveden Hill produced 29 examples and 22 were found at Spong Hill, some of which have been dated from Phase A to Phase B/C. There were nine examples from Cleatham, and eight from Sancton.

C 2aix describes a square or rectangular grid stamp, where not enough of the grid has survived to make it identifiable. My best bet is that this is a C 2aii (see above), but it is impossible to make a secure identification.

The **C 3ai** motif describes an open-ended, positive, vertical cross on a negative rectangle [it should be noted that such a die can also make an A 4ai stamp]. This is a common stamp (102 examples) with a very wide distribution (mostly in the Midlands and North), so it is not diagnostic. Locally there are two examples from the 1940s excavations (both slightly larger) and one from metal detecting in 2011, which is the same size. Spong Hill produced 20 examples, of which there are examples dated to all of the five phases, and none. There are seven examples each from Loveden Hill and Newark-on-Trent, Notts.

C 3bii describes a closed, positive, diagonal cross on a negative rectangle. It is a fairly common stamp (54 examples in the AASPS) with a wide distribution, although a large proportion of examples have come from the Midlands and Lincolnshire. Locally there are four examples from the 1940s excavations, but all are larger. Loveden Hill produced 10 examples and five were found at Spong Hill, of which two have been dated Phase B, and one to Phase C. There were six examples from Cleatham, and five from Elsham.

The **C 3dii** motif describes a positive cross with closed ends within a negative square, plus one positive pellet in each quarter. It is a rare motif with only eight examples recorded in the AASPS (see distribution map, Appendix 6a). Of those, three examples come from the 1940s excavations (all of a comparative size) and one from metal detecting in 2011 (PAS SF-931157). There is also one from West Stow, but it is larger. The other two examples come from St John's Cricket Field and Cleatham.

C 4ai describes a segmented positive rectangle, made up of irregularly cut triangles which form a 'Union Jack' pattern. It is an uncommon motif with 38 examples recorded in the AASPS. It has a wide distribution, although the bulk of examples come from East Anglia, including Cambridgeshire (see distribution map). There are eight examples from the 1940s excavations at Lackford, two of which are of comparable size. There are also four from Little Wilbraham, Cambs, and three from St John's Cricket Field, most of which are not of comparable size. Spong Hill produced one example, on a lid, which is dated as Phase B/C.

Motif	Size	Pot Type	AASPS No	Context	Pot Catalogue; Figure
D 2ai	7 x 5.5	Sherd	37	0112	5 Fig 5.1

Table 5.8 Stamp D motif

The **D Category** comprises all motifs based on ovals. The **D 2ai** motif describes a negative oval grid with 2 x 2 (or more) positive bars. It is a fairly common motif with 42 examples recorded in the AASPS. It has an interesting distribution pattern (see map, Appendix 6a), which would appear to demonstrate access to the various sites mostly by water. Locally there are three examples from the 1940s excavations, with one of similar size, plus another larger example from West Stow. Loveden Hill produced four examples, as did Illington and St John's Cricket Field.

Motif	Size	Pot Type	AASPS No	Context	Pot Catalogue; Figure
E 1ai	2 x 5)	Sherds = 11	38	0115	7 Fig 5.1
E 1bi	6 x 7)	Sherds = 80+)	39	0148	24 Fig 5.3
E 1bi	8 x 8)	Sherds = 50+)	40	0130[A]	14 Fig 5.2
E 1dii	7 x 7)	Sherds = 60+)	41	0136 [a]	18
E 2ai	10 x 10	Sherds = 6	42	0162/0161	23 Fig 5.3
E 2ai	10 x 11)	Sherds = 60+)	43	0125	11 Fig 5.2
E 2ai	10 x 9.5 ?)	Sherds = 8)	44	0129	23 Fig 5.3
E 2ai	6 x 5)	Sherds = 20)	45	0118	9 Fig 5.1
E 2ai	9 x 10)	Sub-biconical)	46	0160	23 Fig 5.3
E 2ai	9 x 8)	Sherds = 60+)	47	0125	11 Fig 5.2
E 2giv	14 x 12)	Sherds = 12)	48	0127	51 Fig 5.4

Table 5.9 Stamp E motifs

The **E Category** comprises all motifs based on triangles and chevrons. **E 1ai** describes a simple negative triangle. This is a common stamp with 105 examples recorded in the Archive. It has a wide and interesting distribution, which includes 15–20 examples from sites along the Thames Valley. Locally there are six examples from the 1940s excavations, five from St John's Cricket Field, and four from Girton. Because of the nature of the design, parallels are almost impossible to establish. There are five examples from Spong Hill, which are identified as Phase B (x 2), Phase B/C, Phase C and one is unphased. There are 19 examples from Loveden Hill, two of which are associated with motifs that belong to Phase B at Spong Hill.

The **E 1bi** motif describes a simple positive chevron with a negative outline and closed ends. It is a rare motif, with just 20 examples recorded in the AASPS. It has a limited distribution in East Anglia and southern Lincolnshire (see map, Appendix 6a), although the PAS has recorded a hand-drawn version from Tysoe in Warwickshire (PAS WAW-4EA6D5). Locally, there are two examples from West Stow, one larger and one smaller than these two, as well as four from Spong Hill (two dated to Phases A/B and B) and three from Little Wilbraham.

E 1dii describes a small negative triangle inside a larger positive triangle with a negative outline. It is an uncommon motif (just 25 examples recorded by the AASPS), with a limited distribution mostly in East Anglia and southern Lincolnshire (see map, Appendix 6a). There are six examples from Spong Hill, of which one is dated as Phase A and two each as Phases B and C. There are also four examples from Loveden Hill and three from Caistor St Edmund, Norfolk.

The **E 2ai** motif describes a negative triangle containing a positive grid sloping upward from its base – unlike other grid stamps, the design is not categorised any further. It is a reasonably common motif with 93 examples recorded in the AASPS, and a distribution mostly in East Anglia, southern Lincolnshire and along the Thames (see map, Appendix 6a). Locally there are six examples from the 1940s excavations at Lackford and four from West Stow, a couple of which are comparably sized. There are 13 examples from Spong Hill, certain of which are dated to all five of the phases, plus nine from Loveden Hill, and seven each from Illington and St John's Cricket Field.

E 2giv describes a negative triangle with a positive circle in each angle, a negative central symbol within a positive triangle, and one or more positive bars between the central triangle and each angle. It is a very rare motif, with only two examples recorded – the other stamp comes from Newark-on-Trent (Myres 1977, Corpus No. 3514) and is much smaller (see map, Appendix 6a).

Motif	Size	Pot Type	AASPS No	Context	Pot Catalogue; Figure
F 1ai	6 x 5	Sherds = 70+	49	0159	41
F 2ai	7 x 6)	Sherds = 70+)	50	0144	39 Fig 5.3
F 2aii	11 x 7.5)	Sherds = 60+)	51	0125	11 Fig 5.2
F 2aii	8 x 10	Sherds = 5	52	0132	15
F 2aiii	11 x 8.5	Sherds = 30+	53	0132 [B]	15

Table 5.10 Stamp F motifs

The motif **F 1ai** describes a simple negative diamond. Surprisingly, this is a very rare motif with only six examples recorded by the AASPS. Apart from this example, there are two from Spong Hill (one Phase A/B, one Phase B), and one each from Little Wilbraham; South Elkington, Lincs; and Rayleigh, Essex (not cast, so I am not totally sure that this is a stamp) (see map, Appendix 6a). The nearest in size is the example from South Elkington, providing the published drawing is accurate.

F 2ai describes a negative diamond grid with 2 x 2 (or more) positive bars. This is a very rare motif with six examples recorded in the Archive. It has a limited distribution in central East Anglia (see map, Appendix 6a). There is one much larger example from the 1940s Lackford excavations, plus one each from Castle Acre, Norfolk; Kentford, Suffolk; Rocklands, Norfolk; and St John's Cricket Field. The nearest in size is the example from Castle Acre.

The **F 2aii** motif describes a negative diamond grid with 3 x 3 positive bars. This is a fairly uncommon motif with 41 examples recorded in the AASPS. It has a very wide distribution from Kent and Oxfordshire to East Yorkshire (see map, Appendix 6a), with 13 examples coming from Spong Hill (11 are dated to Phase A and one to Phase B). Locally, there are five examples from the 1940s excavations, plus one from West Stow – none are comfortable as comparably sized examples.

The motif **F 2aiii** describes a negative diamond grid with 3 x 4 (or more) positive bars. This is an uncommon motif with 26 examples recorded by the AASPS, but with a wide distribution from Kent to north Lincolnshire and Nottinghamshire (see distribution map, Appendix 6a). There are six examples from Spong Hill (two are dated to Phase B and one to Phase B/C) and one from the 1940s excavations, but that is much bigger.

Motif	Size	Pot Type	AASPS No	Context	Pot Catalogue; Figure
G 1bi	7 x 6)	Sherds = 60+)	54	0125	11 Fig 5.2
G 1biii	7.5 x 7	Sherds = 12)	55	0127	51 Fig 5.4
G 2ai	10 x 10)	Sherds = 11)	56	0121	
G 2ai	12 x 7)	Sub-biconical)	57	0160	23 Fig 5.3
G 2aiii	7 x 3)	Sherds = 8)	58	0129	23 Fig 5.3

Table 5.11 Stamp G motifs

G 1bi describes one positive arch or horseshoe (which can also be viewed as two negative horseshoes) with open ends. This is a fairly common stamp with 57 examples recorded, but with a reasonably wide distribution in East Anglia and Lincolnshire (see map, Appendix 6a). There are 16 examples from Spong Hill (of which, one is dated to Phase A, three to Phase A/B and six to Phase B), plus 11 from Loveden Hill and seven from St John's Cricket Field.

The motif **G 1biii** describes two or more positive (or negative) arches or horseshoes with a negative centre to the smallest positive arch – the ends can be open or closed with a negative bar. This is an uncommon motif (31 examples recorded) with a limited distribution in East Anglia, Lincolnshire and Nottinghamshire (see map, Appendix 6a). There are 15 examples from Spong Hill (of which four are dated to Phase A/B and nine to Phase B) and four from Caistor St Edmund. The nearest in size are from those sites, plus one from Strange's Boathouse, Cambridge.

G 2ai describes a segmented negative horseshoe. This is a reasonably common stamp with 82 examples recorded by the AASPS. The motif is so universal as to be of little use for diagnostic purposes, although it should be noted that the bulk of the examples come from East Anglia and the Cambridge region. Locally there are three from the 1940s excavations, one of which is of comparative size with [0121]. There are 13 examples from Spong Hill (of which four are dated to Phase A/B and three to Phase B), plus eight from Caistor St Edmund and six each from Mucking, Essex, and St John's Cricket Field.

The motif **G 2aiii** describes a segmented negative part-circle which does not taper at either end. This is a very rare motif with only three examples recorded by the AASPS. The others come from Loveden Hill and The Mount, York, N. Yorks, but are not comparable in their sizes.

It will be of interest that the ARPS (Archive of Roman Pottery Stamps) holds 152 examples from sites all over Britain (this represents 6.4% of all motifs identified from the 4th century). This makes the example from The Mount in York of great significance as it may demonstrate continuity of occupation. However, of the 52 examples from the 4th century collected from the various sites around York, none of them feature a G 2aiii motif.

Motif	Size	Pot Type	AASPS No	Context	PotCatalogue; Figure
H 1ai §	5 x 13	Sherd = 18	59	0123	10 Fig 5.1
H 1ai §	5 x 13	Sherds = 50+	60	0124	10 Fig 5.1
H 1aii &	2 x 5)	Sherds = 55+)	61	0137	19 Fig 5.2
H 1aiii	14 x 14 ?)	Sherds = 60+)	62	0136 [a]	18
H 1bii +	10 x 17)	Sherds = 9)	63	0165	63 Fig 5.4
H 1bviii	6 x 12.5)	Sherds = 50+)	64	0130[A]	14 Fig 5.2
H 1bviii	9 x 12)	Sherds = 50+)	65	0130[A]	14 Fig 5.2
H 1bxi	16.5 x 9.5)	Sherds = 80+)	66	0148	24 Fig 5.3
H 1cii	21 x 26 ?)*	Sherds = 9)	67	0165	63 Fig 5.4

Motif	Size	Pot Type	AASPS No	Context	PotCatalogue; Figure
H 2aii	10 x 24)	Sub-biconical)	69	0160	23 Fig 5.3
H 2aii	6 x 8)	Sherds = 70+)	70	0144	39 Fig 5.3
H 2diii ?	18 x 21)	Sub-biconical)	68	0160	23 Fig 5.3
	* I have guesstimated the size from part stamps on two sherds.				

Table 5.12 Stamp H motifs

The motif **H 1ai §** describes a negative left-facing hooked 'S'. This is a rare and extremely local motif as it has only been found at Lackford (1940s excavations) and West Stow to date (the AASPS has recorded 14 examples). There are two from the Lackford 1940s excavations and 10 from West Stow – the nearest in size are two from West Stow. The opposite motif – H 1aii § describing a negative right-facing hooked 'S' – has a wider distribution (see map, Appendix 6a, for both motifs). The AASPS has recorded 26 examples, of which six come from the original Lackford excavations (but none from 2015/16) and 14 from West Stow.

The motif **H 1aii &** describes a negative right-facing vestigial 'S', which is almost straight. This is a very rare motif with only five examples recorded by the AASPS. They come from Field Dalling, Norfolk; the 1940s Lackford excavations; Loveden Hill; and from Scampston, N. Yorks (see map, Appendix 6a).

H 1aiii describes a plain, negative, left-facing 'Z'-shaped stamp. It is an uncommon stamp (22 examples recorded by the AASPS), but with a wide distribution (see map, Appendix 6a). Six examples come from Loveden Hill; the sole example from Spong Hill is dated to Phase B. This Lackford example is one of the largest and there are no comparably sized examples.

H 1bii + describes a positive right-facing standard 'S'-shape in a closed negative outline. It is a reasonably common motif with 53 examples recorded by the AASPS, and a wide distribution in East Anglia and the Midlands (see map, Appendix 6a). Locally there are three examples from the 1940s excavations, and one from West Stow, but they are all much smaller than this example. In total, there are 15 examples from Spong Hill, dated to all phases except B/C. The two nearest in size both come from Spong Hill, and one of those is dated to Phase A.

H 1bviii describes a positive right-facing 'Z' stamp with open ends. This is an uncommon motif with a very strong connection to Loveden Hill, in that 31 of the total of 44 examples recorded have come from there (that 44 includes one No Provenance example from Cambridgeshire, see map, Appendix 6a). There are five examples from the 1940s Lackford excavations: one from a globular urn (Lethbridge, 1951: 49.21), is very similar in size to the 6 x 12.5mm example; the others are much smaller.

The **H 1bxi** motif describes a pair of juxtaposed negative curves forming the outline of a left-facing 'S'. This is a very rare motif with only five examples recorded in the AASPS. Locally there is one example from the 1940s Lackford excavations from a globular urn (Lethbridge 1951: 50.28 / Myres 1977, Corpus No. 2643), which is similar in size to this example. Apart from that there are two larger examples from Spong Hill, dated to Phase B and Phase C respectively, and one from Newark-on-Trent, which is much smaller (Myres 1977, Corpus No. 3555).

H 1cii describes a stamp with two or more right-facing positive 'S's, each outlined by a negative groove. This is an uncommon motif with a very strong connection to Spong Hill, in that 31 of the total of 47 examples recorded have come from there (that 47 includes one No Provenance example from Northamptonshire, see map, Appendix 6a).

The **H 2aii** motif describes a right-facing negative segmented 'S' motif. This is an uncommon stamp with only 32 examples recorded in the Archive. Nonetheless it has a wide distribution from north Lincolnshire to Hampshire, with an outlier from Eynsham, Oxon (see map, Appendix 6a). There are six examples from Spong Hill, of which two are dated to Phase A/B, and one each to

Phases B and C. There are also five examples from Mucking. The nearest in size to the smaller stamp comes from Northfleet, Kent; there are no comparable-sized examples to the larger stamp.

H 2diii describes a left-facing positive 'S' outlined by two negative segmented 'S's or 'Z's. This is a very rare and very local motif with only three examples recorded by the AASPS. The other two examples come from the 1940s Lackford excavations (Myres 1977, Corpus No. 185: misattributed to Girton) and from West Stow. Both are much smaller than this example.

Motif	Size	Pot Type	AASPS No	Context	Pot Catalogue; Figure
J 2aii	8 x 8)	Sherds = 9)	71	0165	63 Fig 5.4
K 3ai	10 x 26)	Sherds = 9)	72	0165	63 Fig 5.4
K 3ai	20 x 10)	Sherds = 9)	73	0165	63 Fig 5.4
N 1ai	2 x 8.5)	Sherds = 70+)	74	0144	39 Fig 5.3

Table 5.13 Stamp J, K, N motifs

The **J 2aii** motif describes a positive right-facing swastika in a negative circle. This is a very rare and very local motif with only four examples recorded by the AASPS. Two of the other examples come from the 1940s Lackford excavations (Lethbridge 1951: 49.582A; Myres 1977, Corpus No. 921) and from the 2011 metal-detecting finds. The latter is the same size as this example; the former is much larger. The final example comes from Spong Hill and is dated to Phase B.

K 3ai describes a motif showing one or more mammals facing left. It is very unusual for a die from this Variation to be found more than once, so any results record the use of the idea, rather than a repeat use of the die. There are 15 examples of this motif recorded by the AASPS, including seven from Spong Hill and four from Caistor St Edmund. All bar one of the Spong Hill examples are dated to Phase B, with the odd one dated to Phase A.

It is worth noting that there are 16 examples of the K 2aii (right-facing mammal) in the AASPS, of which three come from the 1940s Lackford excavations and two from the 2011 metal-detecting finds. There are five examples from Spong Hill, all dated to Phase B, plus three from Caistor St Edmund.

N 1ai describes impressions made by a comb or similar with five or more round teeth. They are a common motif (with 92 examples recorded by the AASPS) and it is almost impossible to identify like stamps from a site unless the comb used had broken teeth or a particularly unusual spacing. (Similar impressions, but from a comb or similar with square teeth, are classified as R 1ai.) They seem to have been a popular motif at Loveden Hill as 32 examples are recorded from there, but there are no other examples from either Lackford or West Stow.

Discussion

Lackford is an unusual site in several ways, but particularly in its stamp motifs. The original excavations from the 1940s produced 676 examples of 235 motifs. If the later campaigns are included, the totals rise to 781 examples and 261 motifs – making it the third largest site found to date in Britain (see Figure 5.6). By comparison, Spong Hill produced 2,335 examples from 418 motifs, and Loveden Hill 1,988 examples from 313 motifs. On analysis, this shows that both Loveden Hill and Spong Hill have a much lower number of different motifs than the other large sites (there are 18 with 100 or more than examples, see Figure 5.7) compared to the number of stamps retrieved. As it is commonly considered that big Anglo-Saxon cremation cemeteries drew in burials from quite

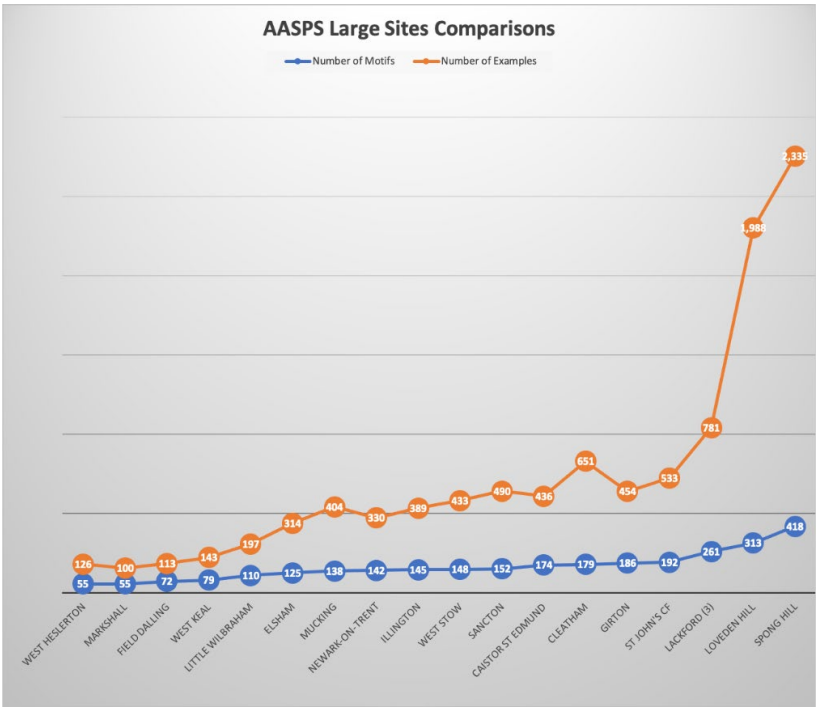

Figure 5.6 Chart showing the numbers of stamp motifs at individual sites

a large area, it seems possible that the lower number of motifs from the two biggest cemeteries indicates that they had a resident potter or potters, who supplied urns using a limited number of dies, as opposed to somewhere like Lackford, where the urns probably was being generated by several different potters, because the cemetery was not big enough to support a permanent potter. The Roman road, which runs reasonably close to the site, would have facilitated this access.

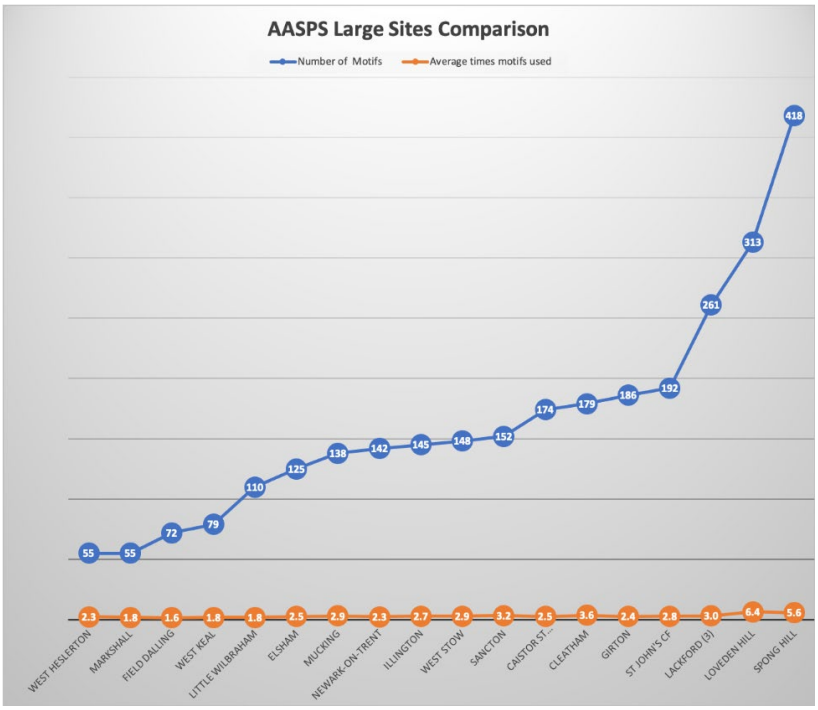

Figure 5.7 Chart showing the frequency of use of stamp motifs at individual sites

The interconnectedness of early Anglo-Saxon Britain is also demonstrated by the wide distribution evidenced by the rarer motifs. Excluding the eight common motifs, comparable examples of the remaining motifs have been found at 113 sites, ranging from Gloucestershire to North Yorkshire (see Appendix 6), and would appear to show people and goods travelling by both

land and water. The run of three sites up the Severn, as seen on the **A 7cii** distribution map, is particularly intriguing as it implies much more contact between the Germanic society of eastern Britain and the Romano-British society of western Britain than is usually put forward.

There are also some fascinating conundrums posed by some of these motifs. For example, the **C 3dii** motif appears to have a strong local connection to Lackford and West Stow, so why should a solitary example turn up at Cleatham, some 120 miles away? **J 2aii** also appears to be a motif special to Lackford. What was the connection between Lackford and Newark-on-Trent, as demonstrated by the **E 2giv** map? Does the **G 2aiii** example found in York demonstrate continuity of occupation, given the popularity of that motif in the 4th century, or is it a coincidence, given that no examples of that motif were found in York in the earlier period? Might it have been used at Lackford because of the proximity of the small Roman town at Icklingham?

The distribution data also show up various lines of communication in early Anglo-Saxon Britain. Connections to both Spong Hill and Loveden Hill from other sites in East Anglia are ubiquitous and are generally more notable by their absence than presence. Equally, the connections between the Lark Valley and the sites in and around Cambridge are well established, as are those to Caistor St Edmund, and around the coast to the Thames Estuary. However, Field Dalling has shown up more often than I would have expected, usually in conjunction with Spong Hill, but on its own for the vestigial "S"-shape (**H 1aii &**). Markshall Farm, so close to Caistor St Edmund, has only appeared for the most common motifs and none of the rare ones.

One bonus has been the identification of two motifs, which have very strong ties to Spong Hill (**H 1cii**) and Loveden Hill (**H 1bviii**), as well as four which appear to be local to Lackford and West Stow (**E 2giv, H 1ai §, HH 2diii, J 2aii**). I have previously discussed various motifs which can be really identified as unique to Lackford, West Stow or Illington (Briscoe 2013), as opposed to those traditionally identified as belonging to the "Lackford-Illington Potter", and these four should be added to the total.

5.3 Organic residue analysis of early Anglo-Saxon pottery

By Julie Dunne and Richard P. Evershed, March 2020

Introduction

Lipids, the organic solvent soluble components of living organisms, i.e. the fats, waxes and resins of the natural world, are the most frequently recovered compounds from archaeological contexts. They are resistant to decay and are likely to endure at their site of deposition, often for thousands of years, because of their inherent hydrophobicity, making them excellent candidates for use as biomarkers in archaeological research (Evershed 1993).

Pottery has become one of the most extensively studied materials for organic residue analysis (Mukherjee *et al.* 2005) as ceramics, once made, are virtually indestructible and thus are one of the most, if not the most, common artefacts recovered from archaeological sites from the Neolithic period onwards (Tite 2008). Survival of these residues occurs in three ways; rarely, actual contents are preserved in situ (e.g. Charrié-Duhaut *et al.* 2007) or, more commonly, as surface residues (Evershed 2008). The last, most frequent occurrence, is that of absorbed residues preserved within the vessel wall, which have been found to survive in >80% of domestic cooking pottery assemblages worldwide (Evershed 2008).

The application of modern analytical techniques enables the identification and characterisation of these sometimes highly degraded remnants of natural commodities used in antiquity (Evershed 2008). Often, data obtained from the organic residue analysis of pottery or other organic material provides the only evidence for the processing of animal commodities, aquatic products or plant oils and waxes, particularly at sites exhibiting a paucity of environmental evidence. To date, the use of chemical analyses in the reconstruction of vessel use at sites worldwide has enabled the identification of terrestrial animal fats (Evershed *et al.* 1997a; Mottram *et al.* 1999), marine

animal fats (Copley *et al.* 2004; Craig *et al.* 2007), plant waxes (Evershed *et al.* 1991), beeswax (Evershed *et al.* 1997b) and birch bark tar (Charters *et al.* 1993; Urem-Kotsou *et al.* 2002). This has increased our understanding of ancient diet and foodways and has provided insights into herding strategies and early agricultural practices. Organic residue analysis has also considerably enhanced our understanding of the technologies involved in the production, repair and use of ancient ceramics.

Preserved animal fats are by far the most commonly observed constituents of lipid residues recovered from archaeological ceramics. This demonstrates their considerable significance to past cultures, not just for their nutritional value but also for diverse uses such as binding media, illuminants, sealers, lubricants, varnish, adhesives and ritual, medical and cosmetic purposes (Mills and White 1977; Evershed *et al.* 1997a).

Today, the high sensitivities of instrumental methods such as gas chromatography and mass spectrometry allow very small amounts of compounds to be detected and identified. Furthermore, higher sensitivity can be achieved using selected ion monitoring (SIM) methods for the detection of specific marine biomarkers (Evershed *et al.* 2008; Cramp and Evershed 2013). The advent of gas chromatography-combustion-isotope ratio mass spectrometry in the 1990s introduced the possibility of accessing stable isotope information from individual biomarker structures, opening a range of new avenues for the application of organic residue analysis in archaeology (Evershed *et al.* 1994; 1997a).

This stable carbon isotope approach, using GC-C-IRMS, is employed to determine the $\delta^{13}C$ values of the principal fatty acids (C_{16} and C_{18}), ubiquitous in archaeological ceramics. Differences occur in the $\delta^{13}C$ values of these major fatty acids due to the differential routing of dietary carbon and fatty acids during the synthesis of adipose and dairy fats in ruminant animals, thus allowing ruminant milk fatty acids to be distinguished from carcass fats by calculating $\Delta^{13}C$ values ($\delta^{13}C_{18:0}$ - $\delta^{13}C_{16:0}$) and plotting that against the $\delta^{13}C$ value of the $C_{16:0}$ fatty acid. Previous research has shown that by plotting $\Delta^{13}C$ values, variations in C_3 versus C_4 plant consumption are removed, thereby emphasizing biosynthetic and metabolic characteristics of the fat source (Dudd and Evershed 1998; Copley *et al.* 2003).

Aims and objectives

The objective of this investigation was to determine whether absorbed organic residues were preserved in the Lackford cemetery pots used as cremation containers. This would establish whether the pots underwent domestic use prior to their use as cremations vessels or if they were specifically made for cremation purposes. To date, to our knowledge, there has been no residue analysis of Anglo-Saxon cremation urns and very little work on early Anglo-Saxon wares in Eastern England, save for some analysis of Ipswich Ware by the University of Bristol, in conjunction with Paul Blinkhorn. However, this was prior to the advent of isotope work and this would not have produced definitive results. Certainly, Anglo-Saxon pottery is woefully under-studied across the whole country, despite the clear potential, aside from analysis of two Late Saxon/early medieval ceramics from West Cotton, Raunds (Charters *et al.* 1995).

Materials and analytical methods

Lipid analysis and interpretations were performed using established protocols described in detail in earlier publications (Correa-Ascencio and Evershed 2014). Briefly, ~2 g of potsherd were sampled and surfaces cleaned with a modelling drill to remove exogenous lipids. The cleaned sherd powder was crushed in a solvent-washed mortar and pestle and weighed into a furnaced culture tube (I). An internal standard was added (20 µg *n*-tetratriacontane; Sigma Aldrich Company Ltd) together with 5 ml of H_2SO_4/MeOH 2 - 4% ($\delta^{13}C$ measured) and the culture tubes were placed on a heating block for 1 h at 70 °C, mixing every 10 min. Once cooled, the methanolic acid was transferred to test tubes and centrifuged at 2500 rpm for 10 min. The supernatant was then decanted into another furnaced culture tube (II) and 2 mL of DCM extracted double distilled water was added. In order to recover any lipids not fully solubilised by the methanol solution, 2 x

3 mL of *n*-hexane was added to the extracted potsherds contained in the original culture tubes, mixed well and transferred to culture tube II. The extraction was transferred to a clean, furnaced 3.5 mL vial and blown down to dryness. Following this, 2 x 2 mL *n*-hexane was added directly to the H_2SO_4/ MeOH solution in culture tube II and whirlimixed to extract the remaining residues, then transferred to the 3.5mL vials and blown down until a full vial of hexane remained. Aliquots of the TLE's were derivatised using 20 µl BSTFA, excess BSTFA was removed under nitrogen and the derivatised TLE was dissolved in hexane prior to GC, GC-MS and GC-C-IRMS. Firstly, the samples underwent high-temperature gas chromatography using a gas chromatograph (GC) fitted with a high temperature non-polar column (DB1-HT; 100% dimethylpolysiloxane, 15 m x 0·32 mm i.d., 0.1 µm film thickness). The carrier gas was helium and the temperature programme comprised a 50°C isothermal followed by an increase to 350° at a rate of 10° min^{-1} followed by a 10 min isothermal. A procedural blank (no sample) was prepared and analysed alongside every batch of samples. Further compound identification was accomplished using gas chromatography-mass spectrometry (GC-MS). FAMEs were then introduced by autosampler onto a GC-MS fitted with a non-polar column (100% dimethyl polysiloxane stationary phase; 60 m x 0.25 mm i.d., 0·1 µm film thickness). The instrument was a ThermoFinnigan single quadrupole TraceMS run in EI mode (electron energy 70 eV, scan time of 0·6 s). Samples were run in full scan mode (*m/z* 50–650) and the temperature programme comprised an isothermal hold at 50° for 2 min, ramping to 300° at 10° min^{-1}, followed by an isothermal hold at 300° (15 min). The instrument was a ThermoFinnigan single quadrupole TraceMS run in EI mode (electron energy 70 eV, scan time of 0·6 s). Samples were run in full scan mode (*m/z* 50–650) and the temperature programme comprised an isothermal hold at 50°C for 2 min, ramping to 300°C at 10° min^{-1}, followed by an isothermal hold at 300°C (15 min). Data acquisition and processing were carried out using the HP Chemstation software (Rev. C.01.07 (27), Agilent Technologies) and Xcalibur software (version 3.0). Peaks were identified on the basis of their mass spectra and gas chromatography (GC) retention times, by comparison with the NIST mass spectral library (version 2.0).

Carbon isotope analyses by GC-C-IRMS were also carried out using a GC Agilent Technologies 7890A coupled to an Isoprime 100 (EI, 70eV, three Faraday cup collectors *m/z* 44, 45 and 46) via an IsoprimeGC5 combustion interface with a CuO and silver wool reactor maintained at 850°C. Instrument accuracy was determined using an external FAME standard mixture (C11, C13, C16, C21 and C23) of known isotopic composition. Samples were run in duplicate and an average taken. The $\delta^{13}C$ values are the ratios 13C/12C and expressed relative to the Vienna Pee Dee Belemnite, calibrated against a CO^2 reference gas of known isotopic composition. Instrument error was ±0.3‰. Data processing was carried out using Ion Vantage software (version 1.6.1.0, IsoPrime).

Results

Lipid analysis and interpretations were performed using established protocols described in detail in earlier publications (e.g. Dudd and Evershed 1998; Correa-Ascencio and Evershed 2014). The lipid recovery rate for the Lackford sherds was 100% with all vessels yielding interpretable lipid profiles.

The mean lipid concentration from the sherds (Table 5.14) was 4.9 mg g^{-1}, with a maximum lipid concentration of 30.9 mg g^{-1} (LKD04). A number of the potsherds contained high concentrations of lipids (e.g. LKD01, 2.3 mg g^{-1}, LKD03 4.6 mg g^{-1}, LKD05, 2.4 mg $g^{-1,}$ LKD07, 3.0 mg g^{-1} and LKD10, 3.6 mg g^{-1}), demonstrating excellent preservation. This likely indicates that these Lackford vessels were subjected to sustained use in the processing of high lipid-yielding commodities. The lipid extracts comprised lipid profiles which demonstrated free fatty acids, palmitic (C_{16}) and stearic (C_{18}), typical of a degraded animal fat (Figure 5.8), were the most abundant components (Evershed *et al.* 1997a; Berstan *et al.* 2008).

Laboratory Number	Object Context Number	Lipid concentration (ug g^{-1})	Total lipid in extract (ug)	$\delta^{13}C_{16:0}$	$\delta^{13}C_{18:0}$	$\Delta^{13}C$	Attribution
LKD01	0106	2297.6	4253.5	-28.9	-33.2	-4.3	Ruminant dairy
LKD02	0105	633.8	903.8	-28.5	-31.7	-3.2	Ruminant dairy
LKD03	0002/0001	4624.7	9070.9	-29.2	-33.7	-4.5	Ruminant dairy
LKD04	0129	30985.0	74054.1	-28.4	-33.5	-5.1	Ruminant dairy
LKD05	0122	2392.2	2577.4	-27.7	-30.0	-2.4	Ruminant adipose
LKD06	0133	110.0	301.1	-29.5	-32.9	-3.4	Ruminant dairy
LKD07	0152=0159	2963.3	9325.8	-28.3	-33.1	-4.8	Ruminant dairy
LKD08	0153	393.7	641.2	-29.2	-33.9	-4.6	Ruminant dairy
LKD09	0148=0164	928.7	1980.0	-28.8	-32.9	-4.1	Ruminant dairy
LKD10	0124=0123	3618.9	5661.8	-28.2	-33.7	-5.5	Ruminant dairy

Table 5.14 Laboratory number, object number, lipid concentrations (µg g^{-1}), total lipid concentration in extract (µg), $\delta^{13}C$ and $\Delta^{13}C$ values and attributions of Lackford vessels.

Extracts from six sherds (LKD01, LKD02, LKD03, LKD07, LKD09 and LKD10) include a series of long-chain fatty acids (in low abundance), containing C_{20} to C_{26} carbon atoms (Figure 5.8b). It is thought these LCFAs likely originate directly from animal fats, incorporated via routing from the ruminant animal's plant diet (Halmemies-Beauchet-Filleau *et al.* 2013; 2014).

GC-C-IRMS analyses were carried out on the sherds (*n*=10; Table 5.14) to determine the $\delta^{13}C$ values of the major fatty acids, $C_{16:0}$ and $C_{18:0}$, and ascertain the source of the lipids extracted, through the use of the $\Delta^{13}C$ proxy. The $\delta^{13}C$ values of the $C_{16:0}$ and $C_{18:0}$ fatty acids from the lipid profiles are plotted onto a scatter plot along with the reference animal fat ellipses (Figure 5.9a). It has been established that when an extract from a vessel plots directly within an ellipse, for example, ruminant dairy, ruminant adipose or non-ruminant adipose, then it can attributed to that particular source. If it plots just outside the ellipse then it can be described as predominantly of that particular origin. However, it should be noted that extracts commonly plot between reference animal fat ellipses and along the theoretical mixing curves, suggesting either the mixing of animal fats contemporaneously or during the lifetime of use of the vessel (Mukherjee 2004; Mukherjee *et al.* 2005).

In this instance, seven of the lipid residues plot within the dairy reference ellipse (Figure 5.9a), suggesting these vessels were solely used to process dairy products, with a further two plotting quite close to the ellipse. The remaining vessel plots between the ruminant carcass and ruminant dairy ellipses, suggesting some mixing of these animal products.

Ruminant dairy fats are differentiated from ruminant adipose fats when they display $\Delta^{13}C$ values of less than -3.1 ‰, known as the universal proxy (Dunne *et al.* 2012; Salque 2012). Significantly, lipid residues from 7 of the 10 (70%) lipid-yielding vessels plot within the ruminant dairy region (Figure 5.9b) confirming that these vessels were used to process secondary products, such as milk, butter and cheese. A further 2 vessels plot between the ruminant adipose region and ruminant dairy region, although with $\Delta^{13}C$ values of -3.2 (LKD02) and -3.5 ‰ (LKD06), respectively. This suggests the processing of primarily dairy products with some minor mixing with ruminant carcass products. One vessel (LKD05) plots within the ruminant carcass region with a $\Delta^{13}C$ value of -2.4 ‰.

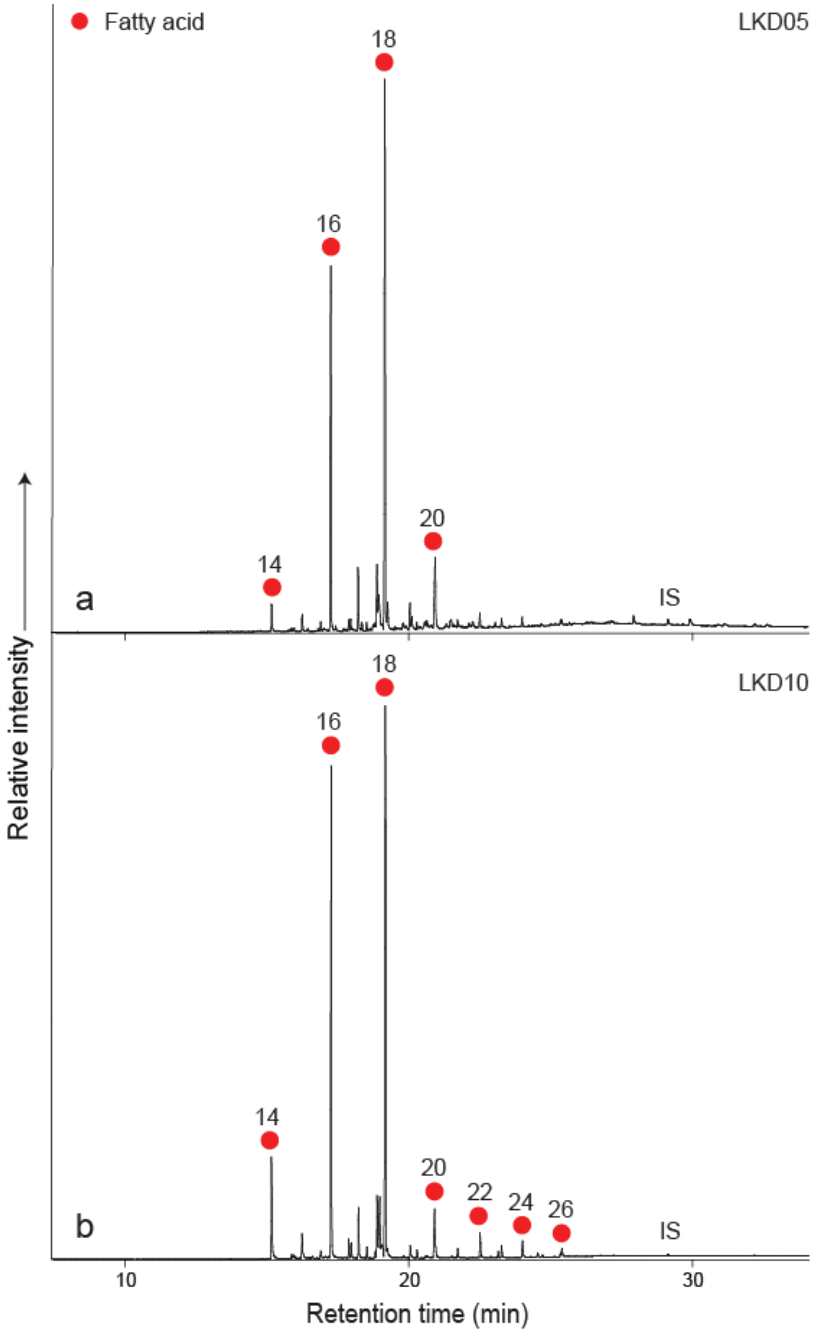

Figure 5.8. Gas chromatogram of trimethylsilylated FAMEs from Anglo-Saxon pottery extracts of LKD05 (ruminant adipose) and LKD10 (ruminant dairy), circles, n-alkanoic acids (fatty acids, FA); IS, internal standard, C_{34} n-tetratriacontane.

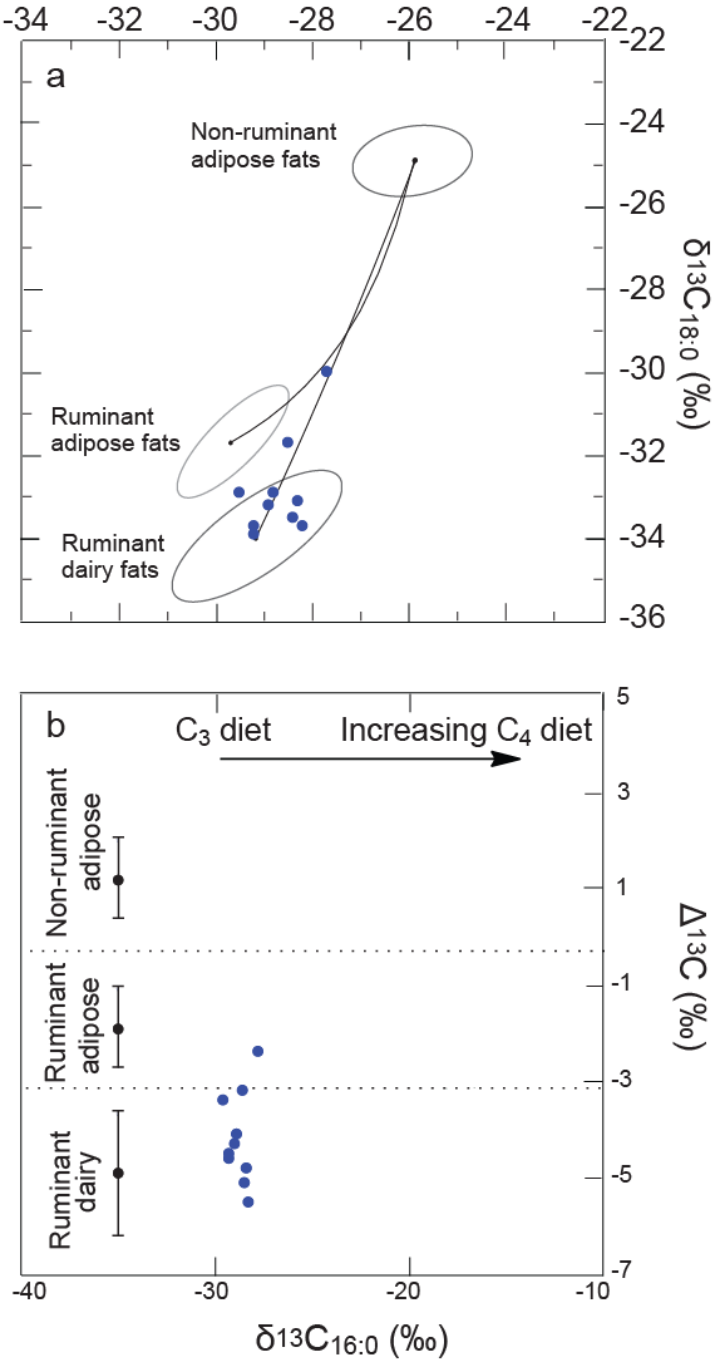

Figure 5.9. Graphs showing: ***a****.* $\delta^{13}C$ *values for the* $C_{16:0}$ *and* $C_{18:0}$ *fatty acids for archaeological fats extracted from Lackford Anglo-Saxon ceramics. The three fields correspond to the P = 0.684 confidence ellipses for animals raised on a strict* C_3 *diet in Britain (Copley et al. 2003). Each data point represents an individual vessel.* ***b*** *shows the* $\Delta^{13}C$ *(*$\delta^{13}C_{18:0} - \delta^{13}C_{16:0}$*) values from the same potsherds. The ranges shown here represent the mean ± 1 s.d. of the* $\Delta^{13}C$ *values for a global database comprising modern reference animal fats from Africa (Dunne et al. 2012), UK (animals raised on a pure C3 diet) (Dudd and Evershed, 1998), Kazakhstan (Outram et al. 2009), Switzerland (Spangenberg et al. 2006) and the Near East (Gregg et al. 2009), published elsewhere.*

Conclusion

The objective of this investigation was to determine whether organic residues were preserved in 10 early Anglo-Saxon date cemetery pots (used as cremation containers) excavated from Lackford. Lipids were recovered from all cremation containers analysed, often in high abundance, suggesting that these vessels were subjected to sustained use in the processing of high lipid-yielding commodities. This confirms that the vessels were not specially produced for use in cremations but rather that they were in use as cooking pots over extended periods, possibly belonging to the occupant of the grave.

The results, determined from GC, GC-MS and GC-C-IRMS analyses, demonstrate that 7 of the 10 (70%) lipid-bearing sherds from the assemblage were routinely used to solely process dairy products, such as milk, butter and cheese. A further two vessels were predominantly used to process dairy products with some mixing of other animal products. One vessel was used to process ruminant carcass products. These data provide clear evidence for vessel specialisation and also suggest the importance of dairying, although it should be noted this is a small dataset.

Hills and Lucy (2013), discussing the Spong Hill assemblage, argue that Anglo-Saxon pottery from cremation assemblages are different and noteworthy because of the high proportion of decorated vessels, similarly to Lackford. They suggest that such vessels served a special purpose, being used for beer brewing. We can confirm that, at Lackford, this is not the case as these vessels were clearly used as cooking pots.

Further analysis of more vessels from Lackford and a comparison to Spong Hill vessels would clearly be of great interest.

5.4 Cremated Human bone

By Sue Anderson

Introduction

Groups of cremated bone were recovered from fifteen *in situ* urned burials and 40 discrete scatters of bone. The urned burials are of Early Anglo-Saxon date and the scatters are also associated with pottery of this period. It is likely that all of the scatters were originally from urned burials – all were associated with sherds.

Methodology

Bone from the burials was collected as bulk samples and flotation-sieved, the entire residue being retained as a single group for each context or spit. Twelve urned burials were excavated in spits. The residues were seived into >10mm, >4mm, >2mm and <2mm fractions. Methods used follow the Workshop of European Anthropologists (WEA 1980) and McKinley (1994 and 2004). The bone from each of the fractions above 2mm was sorted into five categories: skull, axial, upper limb, lower limb, and unidentified. An estimate of the weight of bone from unsorted residue of <2mm has been included in the weights. All fragment groups were weighed to the nearest nearest tenth of a gram. Measurements of maximum skull and long bone fragment sizes were recorded. Observations have been made, where possible, concerning bone colour, age, sex, dental remains and pathology.

Excavation	Context	Total wt(g)	% ident	Phase	C14 date
2015	Crem 1	1101.3	44.4	FA2a / C	
	Crem 2	432.9	52.4	B	
2016	0112 (& 0104)	677.6	59.0	C	1584±13 BP
	0123 (& 0124)	1094.9	50.8	A/B	1589±15 BP
	0140	934.6	55.5	B	1593±25 BP
	0143	753.8	43.0	B	1564±23 BP
	0144 (& 0145)	506.5	48.3	B	1619±15 BP
	0151	514.1	61.0	C	1567±23 BP
	0153	173.7	24.7	B	1595±15 BP
	0158	281.9*	9.3	C?	1546±24 BP
	0159	923.8	47.6	B	1579±15 BP
	0160	411.5	52.1	B	1551±26 BP
	0161/2	810.0	52.9	-	1585±15 BP
	0163	615.0	53.7	-	1552±25 BP
	0164 (& 0148)	853.8	58.0	B	1602±15 BP

* most of this is unidentified and may be animal bone

Table 5.15. Quantities of cremated bone from the in situ *urned burials.*

Identifiable fragments have also been noted. All data were recorded onto an Excel spreadsheet, which forms the archive catalogue (summary version in Appendix 7).

Quantification

Table 5.15 shows the bone weights (excluding animal bone) and percentages of identified bone from the *in situ* urned burials. Radiocarbon and artefactual dating suggest that most of the burials in this part of the cemetery date to a short period within the mid 5th to early 6th centuries.

The scattered material recovered from the topsoil has clearly been disturbed from either underlying urns or represents urns buried higher in the subsoil which were more vulnerable to plough damage.

Burial	Wt (g)	% ident	Links based on pottery	
			Main vessel	Misc sherds (no. sherds)
Sk 3	394.3	34.0		
Sk 4	576.6	49.4		
Sk 5	2.6	11.5		
0102	172.7	60.8		
0103	417.2	44.4		0104? (6)
0105	258.8	70.6		0108/0116 (1)
0106	225.3	75.3		0104/0112 (1)
0107	272.5	61.5		
0108	621.0	51.0		0105 (1) 0116 (1)
0110	94.8	54.2		
0113	303.6	49.7		
0114	77.1	73.7		
0115	3.1	100.0		
0116	360.7	47.3	0143?	0108 (1), 0120 (1), 0132 (5)
0117	1.6	0.0		
0118	24.2	48.3		
0119	227.4	48.1	0154	
0120	446.0	44.2	0122?	0116 (1), 0121 (1), 0140 (1)
0121	21.8	65.1		0120 (3)
0122	23.3	52.3		0120? (1)
0125	191.0	49.5	0130	
0126	619.5	33.2	0127	0131/0134 (4)
0127	1.4	0.0		0126 (1), 0128 (1)
0128	66.1	50.4		0127 (1)
0129	161.1	55.0		0160-0162 (10)
0130	37.4	48.4		0125 (1)
0131	30.2	49.6	0126/0134	0132? (1)
0132	119.8	29.8	0116	0131? (2)
0133	80.3	77.4		0134 (10 & 1), 0151 (10)
0134*	728.1	40.1	0133, 0135, 0136?, 0137?	0126/0131 (1)
0135*	290.1	45.0	0136	0134 (1)
0136	349.4	43.7		0135 (8 & 1), 0134? (2 & 3), 0152 (1)
0137	974.9	46.9		0147 (1), 0152/0161 (1), 0134? (1)
0152*	372.2	3.3	0136/0158, 0159	0137/0161 (3)
0154	106.9	50.2		0119 (19)
0155	89.1	33.4		

* main vessel not certain due to large parts of several vessels in these contexts

Table 5.16. Quantities of cremated bone from the bone scatters.

Analysis of the pottery has shown that in some cases the scatters contained small amounts of ten or more vessels, but it is not possible to determine the minimum number of individuals in the bone assemblage with such accuracy. It is likely that, as with the pottery, the majority of bone in

each discrete scatter represents one individual, with occasional bones of other individuals also present but not necessarily identified. Other than the four scatters linked to urned burials as shown in Table 1, it has not been possible to allocate scatters to *in situ* burials, although the pottery links may show possible movements of some fragments. The remaining 36 contexts contained quantities of bone varying between 1.4g (in 0127) and 974.9g (in 0137), as summarised in Table 5.16.

Based on plough-disturbed pottery movements in the subsoil/topsoil, it is possible to suggest a few possible links between the scatters. Context 0105 contained a sub-adult (possibly part of 0103), and an adult which may be part of 0108 or 0116. There were potentially 3–4 individuals in 0116, and these may be linked to 0120 and/or 0132, both of which also contained adults and children. There may a link between 0121 and 0120, and the juvenile in 0122 may be the same as the one in 0120. The small amount of bone in 0127 may belong to 0128. The juvenile and adult bones in 0131 and 0134 could be from the same two individuals. Scatters 0135, 0136 and 0137 may represent mixing of three individuals. The few definitely human fragments in 0152 could belong to burial 0159. Unfortunately it is not possible to confirm these links based on the bone.

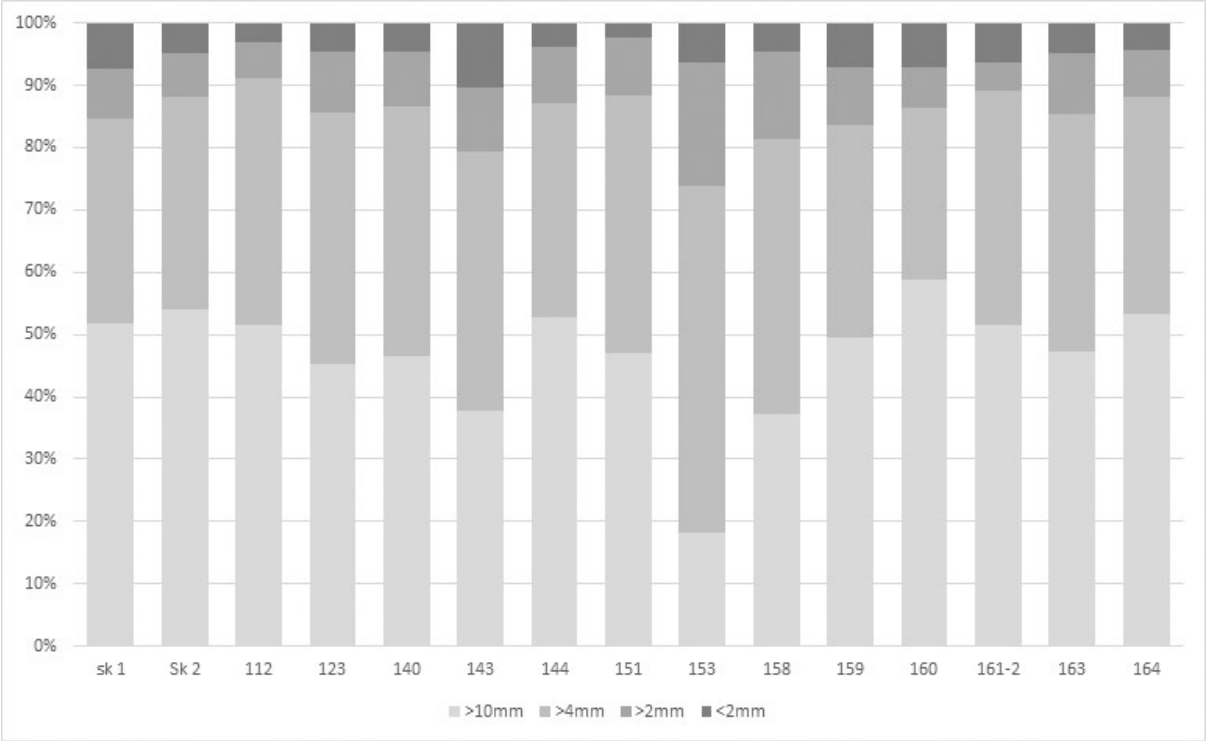

Figure 5.10. Proportions of sieved fractions from the in situ *urned burials.*

Minimum number of individuals

The estimated minimum number of individuals (MNI) in the assemblage, taking into account disturbance and potential movement of bone, is *c*.52 individuals. If duplicated bone parts are used to calculate the MNI, the main recurring fragment was the odontoid process of the axis which was present in only twelve burials. If all identified individuals are counted separately, the maximum number of individuals is 71 and could easily be higher, particularly given the much larger quantity of pottery vessels spread across the excavated area.

Condition and preservation

The bone itself is generally in good condition with little abrasion, although each group contains at

least a few fragments of white/grey abraded bone. A high proportion of cancellous bone survives in both the scatters and the urns. In terms of preservation, the scatters of bone generally have high proportions of bone below 10mm in size, whilst the groups from urns contain higher proportions above 10mm. This can be illustrated graphically by the proportions of the four sieved fractions in the larger groups (Figures 5.10, 5.11).

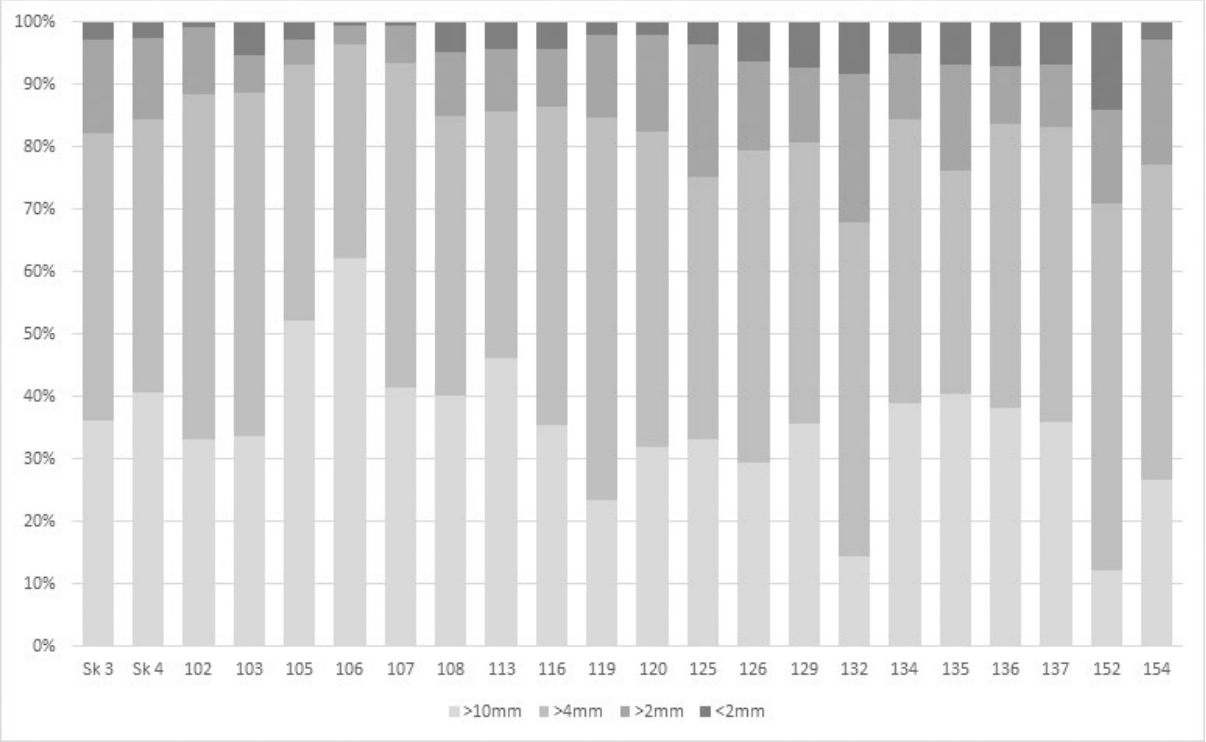

Figure 5.11. Proportions of sieved fractions from the larger scatters (>100g).

In twelve of the fifteen urned burials, more than 40% of the weight comprised fragments larger than 10mm. This was only the case for seven of the twenty-two largest scatters. Nevertheless, the two smallest fractions generally represented quite small proportions of both the urned burials and the scatters, showing that even the disturbed remains were relatively well preserved. The large size of surviving fragments is reflected in the relatively high identification rates shown in Table 1, with the lowest identification rate corresponding to the lowest proportion of >10mm bone in 0153. Many fragments were more than 50mm in length.

Mays (1998, Table 11.2) notes that the combusted weight of an adult skeleton has a mean of around 1500g for females and 2300g for males. All groups were below this range, including those which contained more than one individual. The quantity of bone in each burial therefore represents only a small proportion of the combusted weight of an average adult skeleton.

Firing, pyre collection and survival

Most of the bone was white or cream-coloured, indicating that firing probably reached the high temperatures normally associated with cremation, although there was not full calcification of every bone. Fragments from the back of the head, the vertebrae and the rear of the leg bones in particular were commonly darker grey and had not been exposed to as much oxygen during firing as some of the upper parts of the body. This suggests that bodies were generally supine on the pyre. In contrast, many fragments of the horse bone from burial 0144 were dark brown or had white surfaces and black cores, suggesting that the horse was not subject to complete cremation. The presence of a high proportion of white bone indicates firing temperatures in excess of *c*.600°C (McKinley 2004, 11).

Table 5.17 and Figure 5.12 show the proportions of bone identified from the four areas of the skeleton (skull, axial, upper limb, lower limb) in the urned group, and Table 4 and Figure 4 show

the same data for the scatters. Expected proportions are provided in the first row. Contexts for which no bone was identifiable are not included in Table 5.18.

Context	% skull	% axial	% upper limb	% lower limb
*Expected**	*18.2*	*20.6*	*23.1*	*38.1*
Crem 1	40.7	16.0	10.6	32.7
Crem 2	46.9	5.2	12.4	35.5
0112 (& 0104)	20.5	23.3	18.5	32.9
0123 (& 0124)	23.2	12.0	13.3	51.5
0140	22.4	16.1	17.6	43.9
0143	26.0	16.0	19.4	38.6
0144 (with 0145 & 0109)	12.5	4.7	0.6	82.2
0151	27.5	25.3	21.1	26.1
0153	90.0	5.6	0.5	4.0
0158	29.4	30.9	0.0	39.7
0159	18.9	25.6	20.5	35.0
0160	18.7	20.9	20.8	39.6
0161-2	30.7	6.2	18.4	44.6
0163	21.1	9.1	12.0	57.8
0164 (& 0148)	27.0	10.5	18.2	44.2

(*expected proportions from McKinley 1994, 6)

Table 5.17. Percentages of identified fragments, urned burials.

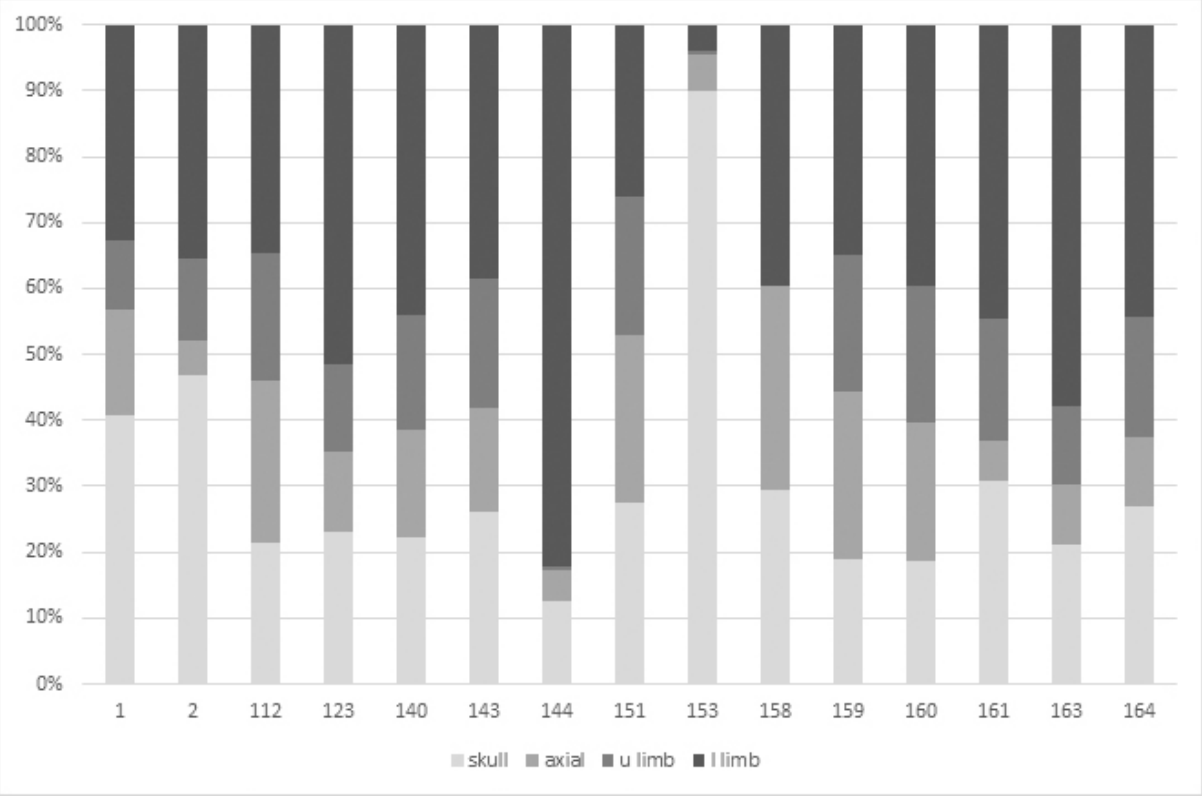

Figure 5.12. Proportions of identified fragments in the urned burials.

Proportions were very variable in the urns, which is probably largely a result of truncation. Particularly noticeable is the high proportion of cranial fragments in 0153 (90%), but as there was less than 200g of bone in this burial it seems likely that this represents a concentrated episode of collection, with fragments from this area being deposited in the pot together. Cranial fragments

are among the easiest pieces to identify, so they are rarely under-represented, with only 0144 containing less than the expected proportion. In this case, the majority of bone was from the lower limbs, perhaps again indicating selective collection. Axial fragments are under-represented in nine burials, which is likely to be due to their fragility – although a number of burials did contain large portions of vertebral bodies and arches. The upper limb is under-represented in every urn, but this is likely to be a result of the difficulty of identifying small pieces of the arm bone shafts.

The scatters were more variable than the urned group, with some groups containing only/mainly skull or only/mainly leg bone. Axial fragments were always under-represented in this group, which is not surprising as these friable pieces would be easily destroyed during plough truncation. Arms were also generally under-represented for the reasons stated above, but in this group they were over-represented in six groups. The generally robust pieces of leg bone shafts were most frequently identified in this group, but were still under-represented in eleven groups.

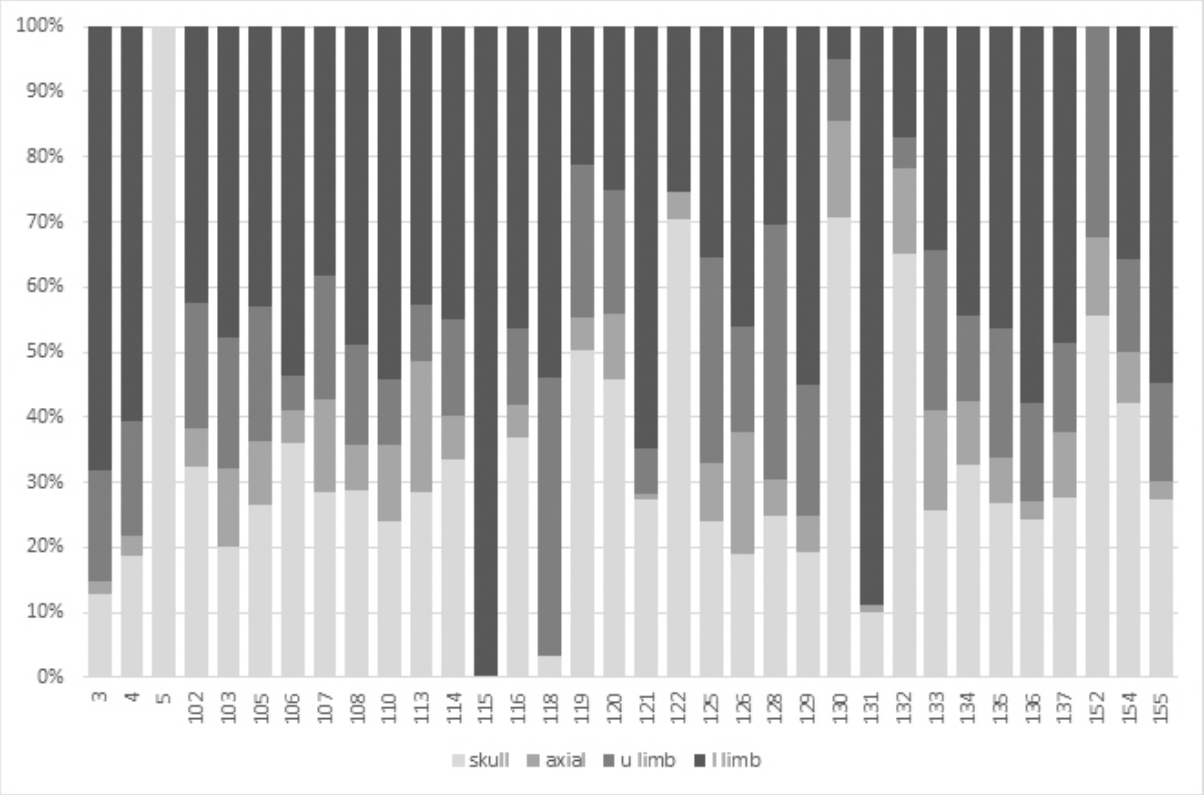

Figure 5.13. Proportions of identified fragments in the scatters.

Feature	% skull	% axial	% upper limb	% lower limb
*Expected**	*18.2*	*20.6*	*23.1*	*38.1*
Sk 3	12.9	2.0	17.0	68.1
Sk 4	18.7	3.0	17.8	60.5
Sk 5	100.0	-	-	-
0102	31.9	5.9	18.9	42.0
0103	18.0	10.7	17.9	42.8
0105	25.5	9.6	19.8	41.4
0106	35.8	5.0	5.3	53.2
0107	28.3	14.2	18.7	37.9
0108	26.2	6.4	14.0	44.6
0110	23.5	11.2	9.8	52.8
0113	26.2	18.6	7.9	39.3
0114	32.9	6.7	14.5	44.1
0115	-	-	-	100.0
0116	33.7	4.7	10.7	42.6
0118	3.4	0.0	42.7	53.8
0119	50.4	4.8	23.5	21.3
0120	45.8	10.0	19.0	25.2
0121	27.5	0.7	7.0	64.8
0122	70.5	4.1	0.0	25.4
0125	24.0	9.0	31.5	35.4
0126	19.0	18.6	16.3	46.1
0128	24.9	5.4	39.3	30.3
0129	19.2	5.7	20.1	55.0
0130	70.7	14.9	9.4	5.0
0131	10.0	1.3	0.0	88.7
0132	65.3	12.9	4.8	17.1
0133	25.6	15.5	24.6	34.3
0134*	32.8	9.6	13.3	44.3
0135*	26.8	7.1	19.8	46.3
0136	24.2	3.0	15.1	57.7
0137	27.6	10.1	13.6	48.7
0152*	55.6	12.1	32.3	0.0
0154	42.1	8.0	14.3	35.6
0155	27.5	2.7	15.1	54.7

(*expected proportions from McKinley 1994, 6)

Table 5.18 Percentages of identified fragments, scatters.

Twelve of the urned burials were excavated in spits. Data collected in this way can be used to compare the relative proportions of the four main skeletal areas throughout the container and perhaps gain some insight into the collection techniques following cremation. In three of the urns, the quantity of identified material in each spit was too small to make analysis worthwhile. Analysis of the remainder showed that in most cases all four areas were present in each spit with little difference in proportions. Some typical examples are shown in figures 5.14-5.16.

Figure 5.14 shows a fairly typical pattern, with a slight increase in deposition of cranial fragments towards the top of the truncated vessel, at the expense of the lower limb bones. A similar pattern of distribution is seen in urns 0112 and 0159. In contrast, there is a steady increase of lower limb from the bottom to the top of the surviving urn in 0123 (Figure 5.15). With the exception of the basal spit (which contained the most lower limb bone of any in that vessel), the pattern in 0140 is similar.

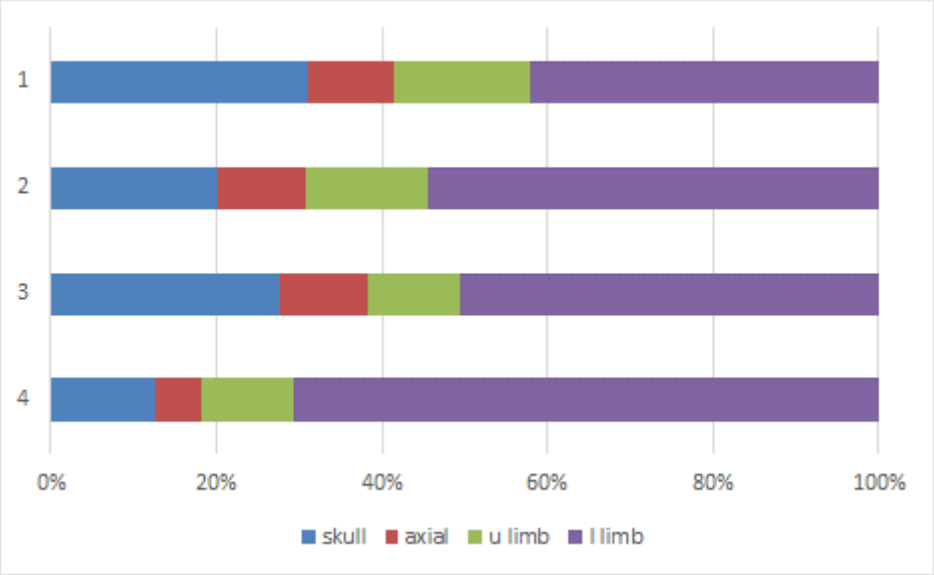

Figure 5.14 Distribution of bones from the four main skeletal areas through spits in urn 0163

One other fairly common pattern is a 'wave' pattern, with skull most frequent in the base, showing an increase in lower limb to approximately midway up the vessel, followed by a decline in the latter as the former increases again. This is shown best by the seven spits in 0151 (Figure 5.16), but also occurs in 0143, 0160 and 0164. It is possible that the same pattern would have been seen in 0140 and 0123 if these had been more complete.

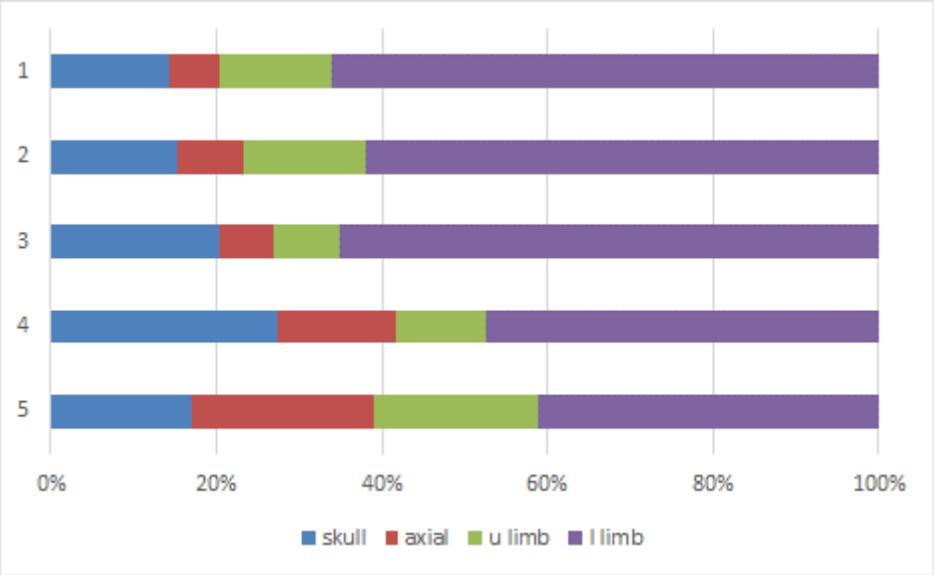

Figure 5.15. Distribution of bones from the four main skeletal areas through spits in urn 0123.

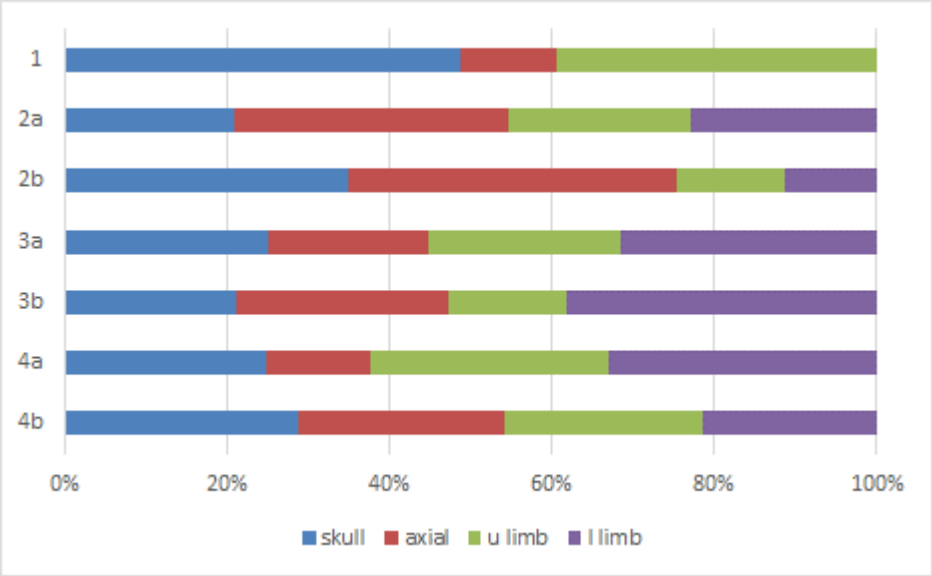

Figure 5.16. Distribution of bones from the four main skeletal areas through spits in urn 0151.

What these patterns appear to show is that fragments of bone were recovered from all areas of the skeleton at the same time. As bodies burnt on pyres tend to fall through the pyre in approximate anatomical order as they are reduced to bone, this may suggest that more than one person was involved in the recovery of fragments, with each person working on a different part of the pyre but contributing to the vessel contents at the same time. The inclusion of many small pieces, such as tooth roots and toe and finger phalanges, suggests care and attention to detail, something which is less likely to be seen in cremations carried out by 'professionals' (such as those working in the Roman period; *e.g*. Anderson 2006), and probably indicates that recovery from the pyre was carried out by family or friends. Nevertheless, the inclusion of small quantities of 'extra' individuals in the enclosed vessels (as opposed to the scatters) tends to suggest that pyre sites were sometimes re-used and that some fragments were left behind following previous cremations. It is also clear from the two most complete urns recovered (0160, 0163), that the small quantity of bone was not always a result of truncation, and perhaps the amount the urn could hold was a factor – 0160 was a relatively small vessel in comparison with some from the site.

In situ *burials*

A summary of the age and sex identifications for these burials can be seen in Table 5.19, and the burials are described in more detail below. The fifteen urned burials contributed a total of 20 individuals to the MNI. Although there is evidence for more than one individual in several of the urns, none falls within the criteria set out by McKinley (1994, 6) which would allow them to be interpreted as deliberate multiple cremations, with the possible exception of burial 0143 in which several duplicated elements were present.

Context	Age	Sex
Crem 1	?Old	Female
Crem 2	Adult	Female
0112 (& 0104)	Adult	?Female
0123 (& 0124)	Older adult	Male
	Younger adult	?Female
0140	Adult	Female
0143	Adult	Female
	Juvenile/sub-adult	Unsexed
0144 (& 0145)	Adult	?Male
0151	Mature adult	Female
0153	Juvenile	Unsexed

Context	Age	Sex
	Adult	Unsexed
0158	Mature adult	Unsexed
0159	Adult	Male
	Juvenile?	Unsexed
0160	Sub-adult	Unsexed
0161/2	Adult	Female
0163	Adult	Female
0164 (& 0148)	Young adult	Male
	Infant/juvenile	Unsexed

Table 5.19 Summary of age and sex in the urned burials.

Cremation 1 (0015)

Sieving of the soil collected from pot 0015 produced 1101.3g of calcined bone. The largest fragment sizes were 52mm from the skull and 60mm for a piece of long bone. The fragments had been fired to a relatively high temperature and were generally cream-coloured with occasional grey/brown pieces.

This assemblage included fragments of cranial vault, petrous temporal, maxilla, mandible, ten tooth fragments, scapula, clavicle, vertebrae, ribs, ilium, humerus, radius, ulna, finger phalanges, femur, patella, tibia, fibula, talus and metatarsal.

The skull was moderately gracile based on fragments of occipital bone, the axis had a small odontoid process, and the iliac crest was also gracile. Some cranial sutures were fused and some vertebral body fragments had osteophytes. The remains were therefore those of a mature or older adult female.

Cremation 2 (0017)

Pot 0017 contained 432.9g of bone. In addition, at least 9.6g of bone were probably animal rather than human. The bone was cream/buff in colour. The largest fragment sizes were 58mm from the skull and 65mm for a piece of long bone.

Identifiable fragments included cranial vault, cervical vertebrae, ribs, ilium, tarsals, metatarsals, and shaft fragments of the major long bones.

The bones were generally gracile, the occipital had gracile nuchal crests and the mastoid process was small. A possible cyst in the superior surface of a cervical vertebral body may be osteoarthritis. This suggests a female, possibly in the older age group.

Burial 0112 and 0104

The total weight of bone recovered from these two contexts was 701.7g, of which 24.1g was extracted as probable animal bone (including fragments of antler comb, 1071). The surviving lower half of the vessel was excavated in four spits and there was also a small group of bone from around the pot and from the surface (0104), but the majority of bone was from spits 2–4, with the basal spit containing 34% of the total weight. The bone was generally cream or white, but several vertebrae were blue-grey. The largest fragment sizes were 37mm for the skull and 63mm for a long bone fragment. Two samples of femur (3.5g and 2.7g) were recovered from the two lowest spits for radiocarbon dating.

Identifiable fragments included cranial vault (frontal, occipital, basi-occipital), both petrous temporals, eight tooth root fragments, mandibular condyles, acromion and coronoid fragments of the scapula, fragments of the first three cervical vertebrae and other miscellaneous vertebral and rib fragments, the first sacral segment, pieces of acetabulum and pubic symphysis, shaft fragments of all major long bones, proximal and distal fragments of humerus, proximal fragment of ulna, carpals (lunate and capitate), metacarpal heads, finget phalanges including the thumb, proximal femur, ?talus, and proximal fragments of the metatarsals.

The individual was an adult ?female, based on the small size of the distal left humerus and some

finger phalanges. Tooth roots were fully developed, but the cranial sutures were unfused and there was no degeneration on the surviving joint facets and vertebral bodies, perhaps indicating that she was not old at the time of death.

The frontal bone showed the non-metric (inherited) trait of retention of the metopic suture. There was possible periostitis of the femur or tibia.

Burial 0123 and 0124

The lower half of urn 0123 and surface finds 0124 together produced 1096.5g of bone, of which 1.6g was extracted as possibly animal. Five spits were excavated through the complete part of the urn, and a small quantity of bone was recovered as 'loose'. The majority of bone was recovered from spits 3–5. The bone was generally cream in colour, occasionally with some grey or brown fragments. The largest fragments were 40mm (skull) and 67mm (long bone). A sample of femur (4.8g) was extracted from spit 5 for radiocarbon dating.

Identifiable fragments included skull (occipital, left zygoma, mastoid process, orbit, temporal), two fragments of petrous temporal, 20 pieces of tooth root (including canine, premolar, molars), maxilla, mandibular condyle, mandible (open sockets for right PM1 to M2/3), scapula, vertebral and rib fragments, ilium and acetabulum, shafts of all major long bones, distal humerus, right and left distal ulna, carpal navicular, most of the left first metacarpal, patella, talus, ?cuboid or cuneiform, head of the first metatarsal and another metatarsal.

Some fragments appeared to belong to an older male, based on the presence of several vertebrae (cervical and thoracic) with large osteophytes, fragments of skull with closed sutures endocranially, and the large size of the first metacarpal. However there were some fragments which appeared to belong to a younger female including pieces of a small patella with no enthesophytes. Fragments of this individual were identified in both the surface finds and the basal spit. Fragments of mandible and maxilla with open sockets suggest that at least one of the individuals was unaffected by dental disease. Several thin fragments of skull in spit 4 could possibly represent a juvenile.

Burial 0140

A total of 954.3g of bone was recovered from this burial, of which 19.7g was possibly animal (including small pieces of burnt ivory ring, 1063). The basal section of the urn was excavated in six spits and there was a small amount of 'loose' bone. The largest quantities in this urn were from spits 2 and 3, with 31% of the total weight in the latter. Most of the bone was cream or grey in colour, and grey fragments included the skull and vertebrae. Two fragments of femur (3.8g and 1.6g) were collected as dating samples from spit 6.

Identifiable pieces comprised cranial vault (occipital), right petrous temporal, mandible (open incisor sockets), scapula (acromion), cervical vertebrae including the axis, bodies and fragments of other vertebrae, ribs, sacral segments, acetabulum, shafts of all major long bones, distal humerus, proximal and distal radius, lesser multangular, metacarpal head, one finger phalanx, proximal and distal femur, patella, talus, calcaneus, first metatarsal head and two other metatarsal heads.

The individual was a mature adult female. The femur head was fully fused, there were very small osteophytes on some vertebral bodies, the cranial vault sutures were still open, the nuchal crest of the occipital appeared gracile, and the distal femur, carpal and finger bones were all small.

Burial 0143

This burial comprised 779.6g of bone, of which 25.8g was extracted as animal (there were some other fragments which could belong either to a juvenile or to an animal). The pot was excavated in five spits, with a small quantity of 'loose' also collected. Large groups of bone were recovered from spits 2 and 3, with 41% of the total weight in spit 2, and only 15% in the two lowest spits. This is likely to be due to the shape of the urn, which had a very narrow base and broad globular body. Most of the bone was cream-coloured, with occasional white/black and grey fragments, but in spit 2 it was noted that *c.*20% of the smaller fraction was black. A sample of lower limb (5.5g)

was taken from spit 3 for radiocarbon dating.

Identifiable fragments comprised skull (left zygoma and process, right and left supra-orbital, basi-occipital), ?pair of petrous temporals, three tooth roots, nasal process and fragment of right maxilla (sockets of mesial incisor to PM2 open), ramus/condyle of mandible, scapula, cervical vertebrae including atlas and axis of adult and juvenile, thoracic vertebral bodies, ribs, pelvis (acetabulum, first sacral segment, ilium), shaft fragments of all major long bones, distal humerus (adult and juvenile), proximal radius, finger phalanx, patella (adult and juvenile), tibial epiphyses, talus, calcaneum, cuboid, and first metatarsal.

The bones represent an adult ?female and a juvenile/sub-adult. The evidence for an adult was in the form of fully fused thoracic vertebral bodies, and the sub-adult was identified based on fragments of femoral and tibial epiphyses which were unfused. Cranial fragments with open sutures could belong to either. A few small and larger cervical vertebrae were present, and pieces of duplicated elements as noted above also suggested that this was an intentional burial of two individuals.

Burial 0144 and 0145

A large quantity of bone was recovered from this burial, with a total weight of 1911.1g, although 931.2g of this was from the fill of the pit (0145) and almost all of this was animal bone (horse). There were further fragments of animal bone in the pot, and the total amount extracted was 1404.6g, leaving only 506.5g of possible or definite human bone. The vessel was the most complete of the disturbed urns and was excavated in five spits; there was also a very small quantity of 'loose' bone. The majority of the bone was found in spit 5 (60% of the 'human' group). Most of the human bone was cream with occasional grey areas, but the animal bone was less well calcined (brown, white and grey). A sample of femur (3.7g) in spit 5 was extracted for radiocarbon dating.

Identifiable fragments included cranial vault, petrous temporal, mandible, complete body of a lumbar vertebra, ribs, shaft fragments of humerus, femur and tibia, distal femur, patella, and a fragment of ?cuboid.

The individual was identified as a ?male due to the robusticity of the leg bones. There were no degenerative changes to the vertebrae and the cranial sutures were still open suggesting that, although adult, the individual was not old.

Burial 0151

A total of 524.7g of bone was recovered from seven spits (1, 2a-b, 3a-b and 4a-b) and 'loose', of which 10.6g was extracted as animal bone (including a fragment of unburnt antler comb, 1072). The 'loose' component was larger than any of the spit quantities, making up 22.4% of the total. The largest quantity from any of the spits was from spit 4b (94.5g). The bone was buff coloured. A fragment of femur (4.2g) was extracted from spit 4a for radiocarbon dating.

Identifiable fragments comprised cranial vault (left supra-orbital, occipital, parietal), petrous temporal, three tooth fragments (2 molar), maxilla fragments (open sockets), mandible (4 open sockets, condyle, coronoid processes), scapula, cervical vertebrae including atlas and axis, fragments of other vertebrae including the fifth lumbar, ribs, pelvis (first sacral segment, ischium), shafts of all major long bones, proximal humerus, proximal ulna, distal femur, and talus.

The individual was a mature adult female, based on the gracile nuchal crest, the presence of small osteophytes on cervical and fifth lumbar vertebrae, and partially closed cranial sutures. The first sacral segment had a Schmorl's node.

Burial 0153

Only a small quantity of bone (193.9g) was recovered from this vessel, of which 20.2g was extracted as animal. The pot was excavated in five spits and there was 1g of 'loose' bone, but only 5.1g of bone were recovered from the upper two spits (which were actually above the top of the vessel). The largest group (40.4%) was from spit 5. The bone was buff to brown in colour. A 1.4g

sample of long bone from spit 4 was collected for radiocarbon dating.

Identifiable fragments included cranial vault, five tooth fragments, mandible (3-4 open sockets), ribs (adult and juvenile), metacarpal head, proximal fragment of tibia, and metatarsal heads.

Fragments of unfused epiphyses and many pieces of thin cranial vault indicated the presence of a juvenile, but there were also fully fused metatarsals/metacarpals of an adult.

At least two wormian bones were identified.

Burial 0158

A total of 513.4g of bone was recovered, but 231.5g of this was extracted as animal bone and it is possible that there was more amongst the unidentified fraction. The pot was excavated in four spits, but the largest group was recovered as 'loose' bone. The largest quantities were from spits 3 and 4 (48% of the total 'human' group). The bone was cream, buff and white/black. A 3.4g sample of femur from spit 4 was extracted for radiocarbon dating.

Definitely human pieces included cranial vault, mandibular condyle, second and third cervical vertebrae, ?lumbar vertebra, pubic symphysis, ribs, femur, and ?fibula.

The individual was a mature adult, based on the presence of osteophytes on the third cervical vertebral body.

Burial 0159

A total of 941g of bone came from this vessel, of which 17.2g was extracted as animal. Five spits were excavated, and there was a small quantity of 'loose' bone. Spits 2 and 3 contained the largest quantities, with 36% of the total weight in spit 2. The bone was cream-coloured. A 3.6g sample of lower limb from spit 4 was selected for radiocarbon dating.

Identifiable fragments comprised cranium (basal fragments, left zygoma), petrous temporal, seven tooth fragments (2 molar), right and left maxilla (open sockets from right M1 to left canine), mandible (right body with open sockets from first incisor to M1, left condyle, gonion), near-complete right scapula glenoid, cervical vertebrae including atlas and axis, other vertebral fragments, ribs, pelvis (ilium, sacral segments, ischium, acetabulum), shaft fragments of all major long bones, distal humerus, proximal radius and ulna, proximal and distal femur, left patella, talus, proximal first metatarsak, finger and toe phalanges.

This is a mixed group which appears to include remains of a juvenile/sub-adult (unfused epiphyses), and an adult male (size) and ?female (size, fused basi-occipital). No evidence for degenerative changes was identified on the vertebrae or patella.

Burial 0160

The remains of this burial contained 434.3g, of which 22.8g was extracted as animal. The vessel was not truncated, but the rear portion (as it lay in the ground) was broken. It was excavated in five spits, but almost half of the bone was recovered as 'loose'. Much of the bone was brown, with occasional white/grey fragments. A fragment of long bone (2.9g) was extracted from spit 5 for radiocarbon dating.

Identifiable fragments comprised cranial vault (basi-occipital), petrous temporal, one tooth (?canine), mandible (right ramus, left condyle), scapula (glenoid, acromial crest), cervical and thoracic vertebral bodies, ribs, pelvis (ilium), shaft fragments of all major long bones, proximal humerus, radius and ulna, proximal epiphyses of femur, proximal tibia, talus, calcaneum, first metatarsal head and proximal epiphysis.

The individual was a sub-adult, but the size of most of the epiphyses suggested that he/she was adult-sized, perhaps *c*.18 years. The presence of a few pieces of smaller bone (mainly ribs) may indicate that there was also a younger juvenile.

Burial 0161/2

This group weighed 864.0g, of which 54.0g was extracted as animal. The burial was not excavated

in spits as the vessel was heavily fragmented. The bone was mainly cream-coloured, with occasional white/grey fragments. A fragment of lower limb (3.5g) was sampled for radiocarbon dating.

Identifiable fragments comprised cranial vault (left and right supra-orbital, occipital), right maxillary nasal process, scapula, vertebral and rib fragments, pelvis (acetabulum), shaft fragments of all major long bones, distal humerus, radius and ulna, talus, calcaneum and cuneiform, metatarsal head, toe phalanx.

The cranial sutures were open, there were small enthesophytes on the rear of the calcaneum, and the occipital appeared gracile, suggesting an adult female.

Burial 0163

The total weight of bone in this burial was 628.8g, of which 13.8g was thought to be animal. Four spits were excavated, and there was a small quantity of bone from 'loose'. The vessel was not truncated, but had been flattened by the adjacent urn. The majority of bone came from the lowest two spits. Bone was generally cream-coloured or occasionally light grey. A sample of femur (4.4g) from spit 4 was extracted for radiocarbon dating.

Identifiable fragments included cranial vault (left temporal, left and right zygoma), petrous temporal, one tooth, maxilla, mandible (left coronoid and condyle), scapula, vertebrae, ribs, pelvis (ilium), shaft fragments of all major long bones, proximal and distal radius, first metacarpal, distal tibia, talus, navicular, cuboid, metatarsal head, distal hallucial phalanges.

Degenerative changes suggested a mature adult, and the sharpness of the zygomata suggested a female.

Pathological changes comprised slight osteophytes on the sacro-iliac joint of the ilium and a vertebral body, and a fragment of ?cervical vertebral facet with Grade II osteoarthritis.

Burial 0164 and 0148

A total of 867.1g of bone was collected from this urn and overlying deposit 0148, of which 13.3g was extracted as possibly animal. The vessel was excavated in three spits and there was also some 'loose' bone. The largest proportion was from spit 1 (41.3%). The bone fragments were cream, brown, or occasionally white/black in colour. A sample of femur (5g) was taken from spit 3 for radiocarbon dating.

Identfiable fragments comprised cranial vault (occipital, left supra-orbital, left and right zygoma), five teeth (unerupted molar crown), right and left maxilla (left second incisor to PM2 and right second incisor and canine open sockets), right and left mandibular condyles, scapula, vertebrae including two cervical bodies, ribs, pelvis (ilium, iliac crest), shaft fragments of all major long bones, distal humerus, proximal and distal radius, left ulna trochlea, distal ulna, carpal navicular, proximal ?pollicial phalnx, proximal and distal femur, patella, proximal and distal fibula, metatarsal head and toe phalanx.

The majority of bone belonged to an adult male, with sex identified based on the rounded border of the zygoma and robust nuchal crest, and age on some completely developed tooth roots and fused iliac crest. There were also fragments of infant/juvenile mandible and unerupted tooth crowns, ribs and possibly tibia and other long bones.

Scattered cremation deposits

Table 5.20 summarises the deposits of cremated bone which were recovered from scatters, and shows which individuals were counted in the overall MNI. Identifiable bones recovered from these scatters are recorded in Appendix 7.

Burial	MNI	Age	Sex	Animal	Notes
Crem 3	1	Mature adult	?Male		
Crem 4	1	?Mature adult	?Male		

Burial	MNI	Age	Sex	Animal	Notes
Crem 5	-	-	-		
0102	1	Adult	?Male	+	
0103	1	Sub-adult (c.14-18?)	??Male		
0105	-	-	-		same as 0103 and 0108?
0106	1	Mature adult	?Male		
0107	2	Young adult	?Female	+	
		Middle-aged adult	Male		
0108	1	Adult	Male	++	
0110	1	Adult	Unsexed	+	
0113	1	Older adult	Female	+	possibly as many as 3 individuals
0114	1	Adult	Unsexed		
0115	-	-	-		same as 0116?
0116	3	Adult	Male	+	
		Adult	Female		
		Infant/juvenile	Unsexed		
0117	-	-	-		tiny quantity
0118	-	-	-	+	same as 0119?
0119	1	Mature adult	Male		
0120	-	-	-	+	same as 0116?
0121	-	Young adult	Unsexed	+	
0122	-	-	-		same as 0116 child?
0125	1	Young adult	?Female	+	
0126	2	?Young adult	Female	+	
		Juvenile	Unsexed		
0127	-	-	-		tiny quantity
0128	1	Adult	Unsexed		could = 0131 or 0134?
0129	1	Adult	Unsexed		
0130	2	Perinatal infant	Unsexed	+	juvenile (c.5) = 0126?
		Adult	Unsexed		
0131	1	Adult	Unsexed		juvenile = 0134?
0132	-	-	-		same as 0116?
0133	-	-	-		adult male = 0134?
0134	3	Adult	Male	++	
		Adult	?Female		
		Juvenile	Unsexed		
0135	-	-	-	++	same as 0136/0137?
0136	1	?Young adult	Female	++	
0137	2	Mature adult	Male	+	?female = 0136?
		Juvenile?	Unsexed		
0152	-	-	-	+++	=burial 0159?
0154	1	Adult	?Female	+	
0155	2	Adult	Unsexed	+	
		Juvenile?	Unsexed		

Table 5.20 Summary of the bone scatters.

Demography

The 55 deposits of human bone represent a minimum of 52 individuals and a maximum of 71. Infant, juvenile, sub-adult and young, mature and old adults of both sexes are represented. Based on the individuals included in the MNI, there were fourteen adult males, a sub-adult ?male, seventeen females, nine unsexed adults and eleven children. Where it was possible to suggest an age for the adults, it appears that slightly more men were in the 'mature' or older category (five) than women (three), and that there were more young women (four) than men (one). The children were difficult to age precisely, but there were at least two or three who were younger than five years, and three who were older sub-adults (*c.*13–18 years).

Despite the missing data which is an expected result of cremation studies, this group appears to conform to a 'normal' population of the period in terms of its age and sex structure. The proportion of children to adults (21%) is slghtly lower than other local cremated groups in the Early Anglo-Saxon cemeteries at Illington (33%), Eriswell (33%) and Spong Hill (26%), for example (Wells 1993; McKinley forthcoming and 1994), but given the degree of disturbance in the Lackford group it is not surprising that the smaller bones of juveniles might be lost.

Attempts have been made to estimate the original population size which would have contributed to the cemeteries at Spong Hill, Norfolk and Cleatham, Lincs (McKinley 1994, 69–71; Leahy 2007, 31–2). The estimated number of burials at Cleatham is *c*.1400, while at Spong Hill it is *c*.2700, and it is likely that Lackford fell somewhere between the two. It is not possible to estimate crude mortality rates for Lackford based on the small quantity of bone available, but based on the figures for the other two cemeteries, the contributing population was probably in the region of 500 people.

Non-metric traits and pathology

Only two non-metric traits were noted, these being the presence of metopic suture in adult ?female 0112 and a few pieces of wormian bones in burial 0153, which could belong to the juvenile or the adult identified in that vessel. Retention of the metopic suture into adulthood is an inherited trait which occurs in *c*.4-8% of the population. Wormian bones are extra bones which form in the sutures of the skull and may be genetically or environmentally determined.

Pathological conditions are difficult to identify in cremated remains, as many rely on identifying distortions or abnormalities in the bones, and cremation can sometimes result in similar changes. However, degenerative joint disease is commonly noted in these groups, and the Lackford population is no exception. Eleven adult individuals had slight to large osteophytes on one or more vertebrae, and they were also recorded on the sacro-iliac joint in one of these, and on the distal femoral condyle of an additional adult. Three individuals had limited evidence for osteoarthritis in the cervical vertebrae, the neck being a commonly affected area in most populations.

New bone growth on the linea aspera of the femur was noted in two individuals (Crem 3, 0119), a condition which may relate to 'bone forming' in old age, but could also be caused by torn muscle attachments at the back of the thigh. One individual (0112) had evidence for an inflammatory response (periostitis) on the tibia or possibly femur, again a relatively common condition. There were Schmorl's nodes, a condition associated with stress on the spine, in one vertebral body of two individuals (0116, 0151). A possible example of hyperostosis frontalis interna was seen in 0123, this being a condition most associated with post-menopausal women, although it can also occur in older men.

A number of tooth fragments and pieces of maxilla and mandible were present, and in general dental health appears to have been good with no evidence for abscess formation or caries (although this would be difficult to detect in burnt tooth fragments). However, one mandible fragment in Crem 4 had evidence for ante-mortem tooth loss.

Summary and discussion

Careful study and analysis of cremated remains was not really a feature of cemetery studies until the late 1950s, when Calvin Wells undertook the recording of a number of cremation cemeteries in Norfolk. His pioneering methods are described in the Illington Early Anglo-Saxon cemetery report (Wells 1993, based on work carried out in 1956). It is unfortunate that the original excavators of the main part of the Lackford cemetery, like others at the time, were unaware of the value of cremated remains. It is assumed that they disposed of the cremated remains on site, emptying them out and picking through them to recover any pyre goods – a similar practice was noted at Caistor St Edmund (Myres 1973, 119). The only observations on the remains of the people buried at Lackford were that 'children were frequently cremated, often very young ones', and that male and female burials could be distinguished based on the finds inside the pots

(Lethbridge 1951, 3). A few scraps of bone are preserved with some of the pots held at West Stow Museum and CUMAA, but these are not complete enough to be worth recording and it would be difficult to determine whether they were even from the same urns. The group recovered from Lackford in 2015 and 2016 is therefore the first opportunity to study the physical remains of the population which used it as their final resting place, but it is small and conclusions are limited as a result.

In terms of age and sex, the group from this southern strip of the cemetery appears to represent a normal population, but as the area seems to have been in use for several decades based on the phasing of the pottery and other finds, the burials may not represent individuals who lived at the same time or even in the same settlement. Nevertheless, there was at least one group-burial of vessels (Group 0152), and these have been interpreted elsewhere as possible family groups. Unfortunately it is not possible to confirm or refute this on the basis of the osteological study.

None of the burials can be considered complete in terms of bone weight, and none fell within the range for modern day cremated bone weights. In addition, the heaviest groups generally contained more than one individual. In most cases the low weights may be accounted for by plough truncation, with many *in situ* urns showing evidence for loss of their upper parts through such disturbance. There were two possible exceptions in burial-group 0152 (urns 0160 and 0163), but both were crushed and the former had a large quantity of 'loose' bone associated with it. Urn 0153 also survived complete but severely crushed beneath 0151. The scatters represent redeposition of disturbed material, and in some cases the direction of ploughing can be suggested from the longitudinal shape of the deposit – however, movement of the pottery sherds indicates that this was not always carried out in a single direction, and bone from underlying burials may have travelled several metres from the original point of deposition. Possible associations of individuals identified in the scatters have been suggested, but as noted above, the minimum number of pottery vessels makes it just as likely that these represent many more people than the MNI suggests.

Plotting of the proportions of the skeleton in spits within the urns shows that all areas of the bone were put into the pot as it was filled – there was no evidence of methodical collection from one end of the body to the other as sometimes occurs in prehistoric and Roman burials. It has been suggested above that this may reflect the number of people involved in collecting the remains. There was also little evidence for deliberate fragmentation prior to insertion in the urn, as there were many large fragments surviving and any breakage post-cremation could simply be the result of post-depositional changes.

Evidence for pathology in the group was limited, but this is typical of cremated remains. It is interesting that osteophytes of the spine have a crude prevalence of 26.8% in this group, as this appears to be high in comparison with other cremated populations – for example only two of the 118 individuals studied from the cemetery at Rayleigh, Essex, were recorded as having the condition, and another two had osteorthritis (Powers 2008). At Spong Hill it appears to have affected *c*.10% of the population (McKinley 1994, 110). The higher prevalence at Lackford may indicate that the excavated area included a larger proportion of older individuals than might be expected to occur across the whole cemetery, although osteophytes are not entirely age-related and may be induced simply by the load placed on the spine.

Conclusion

As a proportion of a much larger whole, this group of cremated remains has provided some information about the people buried at Lackford. It provides evidence for internment of men, women and children of all ages, some of whom suffered from the typical diseases associated with degeneration in older age groups. Evidence for family groups and the potential involvement of family members in the collection of the cremated remains has been postulated, and the inclusion of animals and pyre goods (or unburnt 'urn goods' in some cases) has been noted. It is regrettable that so much of the bone came from cremation burials which had been scattered by the plough and were therefore mixed and dispersed across quite a wide area, but it has still been possible to

use these in the demographic profile and to suggest a minimum number of burials which were once present on the site.

5.5 Cremated Animal bone
By Julie M Bond

Cremated human and animal bone from 13 urned burials and 36 discrete scatters of cremated bone, previously assessed for human osteological significance by Sue Anderson, was examined for animal bone remains. The material had been collected as bulk samples and flotation sieved. Eleven of the urned burials had been excavated in spits and the material from each spit separately bagged. The material had been sieved into >10mm, >4mm, >2mm and <2mm fractions and the fragment groups weighed.

Methods of identification

Bone was examined under good general light with an additional raking light to highlight surface features. Identification of the cremated animal bone was achieved principally through direct comparison with modern and archaeozoological reference material. Where possible the following criteria were recorded: genus/species, bone element, area of fragment, side (left or right), degree of burning (colour; Nicholson 1993), fusion state, pathology, butchery or other modification. Where it was not possible to identify to taxa and element, bone was recorded by element type (e.g. 'long bone', 'flat bone' (cranial, pelvis, scapula) 'vertebral fragment', 'rib fragment') and by size class (e.g. 'large mammal', 'medium mammal', 'small mammal', 'small bird'). As it is difficult to identify sheep or goat purely from fragmentary osteological material, the sheep/goat category is used but this is likely to be mostly or all sheep; no evidence of goat was seen.

Cremated bone can be very hard to identify and it has been demonstrated that larger animals fragment into smaller and therefore relatively less-identifiable fragments than smaller animals (Buikstra and Swegle 1988), This can be seen in many earlier excavations, where the smaller animals have been routinely identified but animals such as cattle and horses are not recognised; in the original Lackford excavation, for example, it is noted that 'bones of dog, sheep and red deer show that these animals were also burnt with the dead' but there is no mention of the larger mammals (Lethbridge 1951, 3; the red deer he refers to are 'large portions of red deer antler' from one burial, ibid, 17-18.).

Cremated animal bone assemblages rarely produce evidence for the age or sex of the animals, because of the fragmentation issues mentioned above and because sexing of animals usually relies on biometric data which is unavailable. There were few fragments for which species, bone element and fusion state could be identified, and for which the surviving part was diagnostic of age. Where recorded, minimum ages were assigned following Silver (1969).

Results (Appendix 7a)

All material was examined but most of the material below 4mm and all of the material below 2mm was not identifiable to element or taxa.

In general the bone was in very good condition and although fragmented it was not nearly as fragmentary as some other Anglo Saxon assemblages examined by the author (e.g. Tranmer House, Bond & Mustchin 2015) nor was there significant evidence of chemical erosion or abrasion on the surface of the bones, meaning that potentially surface features such as knife marks could be preserved. Unusually, some butchery or dismemberment marks were observed. The colour of burnt bone is an indication of temperature and length of burning (Nicholson 1993) and can vary from brown, through black, blue-grey and grey to white depending on the temperature of the burn and the completeness of the process. In the case of the Lackford material the colour of the burnt animal bone was quite variable, with colour varying from fully cremated white calcined material to black, suggesting that less care was taken with ensuring the uniform cremation of the animal offerings. This could be due to a number of factors such as the animals being placed closer to the edge of the pyre, a shortage or restriction in fuel, so that the pyre was of insufficient size,

or the pyre was not continuously tended.

With fragmentary cremated animal bone, it is necessary to think as much of what bone is missing as what is listed; the difficulty of identification of extremely fragmentary bones means that much material is not identifiable even to bone element, much less taxon. When discussing this material it is also obvious that not all of the animal bone can have been collected from the pyre site for burial, as in most cases there is not enough bone present to represent the whole animal. With the bone scatters, it must be assumed that taphonomic factors and problems of scattering, mechanical damage and recovery will have further reduced the amount of identifiable bone and this is visible in the data; from the bone scatters 15 out of the 36 discrete deposits had identifiable animal bones, whereas in the 13 urned burials, nine had animal material identifiable to bone element and/or taxon. Even in the urned burials there was not always a large amount of identifiable bone from even the bigger animals; for example, in urn deposit 0161-2, a horse was represented only by a single fragment of a sesamoid bone, weighing 2.2g. In most cases, however, there seems to be bone from different areas and both sides of the body, suggesting that many of these animal offerings were whole or substantially whole bodies when added to the pyre. The 'large mammal' category is important in understanding the likely presence of other body parts from horses or cattle in the cremations; fragments of vertebrae, ribs and undifferentiated longbone shaft are likely to be either horse or cow.

Given all the factors stated above, the proportion of animal bone even in the scatters is relatively high; estimates of proportions in other cemeteries range from 1-60% (Rainsford 2017).

Range of Species

Horses, cows, sheep/goat (mostly probably sheep) and pig were the main animals identified. Several of the groups included horses, and very unusually, cows. The presence of cow in an Anglo Saxon cremation is highly unusual; their presence in the Tranmer House cremations was suggested to be indicative of high status burials (Bond and Mustchin 2015). The presence of pig, also quite rare and also found at Tranmer House, suggests that there are some unusual bone groups in this cemetery. One of the urns (0151) contained tiny fragments of a cat or hare sized animal and one of the bone scatters (0126) contained an unidentifiable fragment from a very small bird.

Horses

Of the urned burials, three of the nine with identifiable animal bone contained evidence of horses (0144, 0158, 0161); this is a similarly high proportion to the numbers seen at Spong Hill (Bond 1994, Bond & Worley 2006). Of these burials, one is with an unsexed adult, one an adult female, one an adult possibly male, thus showing no particular bias towards male burials. This is a similar pattern to that seen at Spong Hill and is very different to the pattern seen in Anglo-Saxon inhumations where there is a strong correlation with male human burials (e.g. Sutton Hoo; O'Connor 1994). In the bone scatters, five of the 15 groups which contained identifiable animal bone included horse, reflecting a similarly high proportion and again with no obvious bias towards male humans.

No evidence of the age of the horses was found. The horse in burial 0144 had a large chop mark through the upper (dorsal) face of the third phalange (hoof). This is an unusual place to find a butchery or dismemberment mark; skinning marks on large mammals tend to be around the proximal end of the metapodia or if the operator is particularly skilled, they may be found around the proximal end of the first phalange or middle of the second. There seems no good reason therefore to remove the hoof and the fact that there are many other parts of the body included in the cremation (see below) suggests this was not to produce a head and hoof or skin offering.

Cow

The unusual presence of cow in the assemblage (in urned burial 0144 and surface finds 0137) parallels the high-status cemetery at Tranmer House and the wealthier burials at Spong Hill, where approximately 8% of the cremations with animal offerings had evidence of cattle (Fern

2015, Bond 1994). Of the 80 instances of cattle at Spong Hill, only seven were demonstrably whole animals rather than joints, and the combination of whole horse with a whole cow is rare (Bond 1994, 126–8; Bond and Worley 2006, 91). This may be a function of the quite limited data set we actually have for animal remains from Anglo-Saxon cremations. Although there may seem to have been much work on this material, a recent survey has shown that the data set is swamped by the large cemeteries of Spong Hill and Sancton and it is likely that the full range of practices is not yet known (Rainsford 2017, 282; McKinley 1994, Timby *et al*. 1993). Analysis of this material from Lackford adds important data to the surprisingly small corpus of well-studied and published animal bone from Anglo Saxon cemeteries.

Sheep/goat

Sheep/goat was present in nine of the bone scatters and nine of the urned burials. In several cases there is sufficient evidence to say these must have been whole animals; bone scatter 0108 included fragments from the cranium, left femur, left and right sides of the pelvis, left femur, left tibia, ribs and a vertebral fragment from the tail. In urn 0112 there were pelvic fragments from the left and right sides rib fragments and undifferentiated longbone fragments suggesting more than just a butchered joint. Urn burial 0144 contained maxilla and mandible fragments, other cranial areas, pieces from a left tibia and other longbone shaft fragments and a tail (caudal) vertebra. This animal might possibly be a half animal but there were no observable butchery marks.

One set of butchery marks was recorded; urned burial 0140 contained a sheep represented by a cranial fragment, fragments of a left tibia, some other longbone fragments and a rib fragment. The tibia shows a cut mark on the proximal shaft, possibly from disarticulation at the knee joint. This would be a common way to butcher a sheep carcass but the presence of the skull and rib fragments suggest that even if butchered, the whole animal or a substantial portion of it was placed on the pyre.

Urn 0143 contained fragments of a sheep left tibia which was unfused at the proximal epiphysis; this would mean the animal was less than three to three and a half years old at death, just prior to maturity which is the age at which, in traditional forms of husbandry, an animal would normally be killed for prime meat production. The sheep from urn burial 0144 was much younger; the distal tibia was unfused which would place the animal at under eighteen months to two years old (Silver 1969).

Pig

Pig was identified in two of the urned burials; 0143 and 0144. In 0143 there were fragments of two molars (M1/M2), root fragments and pieces of maxilla and mandible. It is possible that this represents just a head, which of course on a pig is itself a substantial food source. The two molars were unerupted (the surface is completely unworn and the roots undeveloped) which would place the animal at under 13 months of age. The pig in 0144 was represented by a left tibia and other longbone shaft fragments, so again might be a joint or joints rather than a whole animal.

Pig is not a particularly common find in Anglo Saxon cremation cemeteries; they were present in only a few of the Spong Hill cremations and in every case were represented by only a single bone or a few bones. None of the Spong Hill deposits appeared to be whole carcasses except for a (so far) unique group of five neonate ‘suckling pigs’ (Bond 1994, 130–2; McKinley 1994, tab. 5; Bond and Worley 2006, 92).

Significant Burials

Three of the burial groups in this assemblage are significant in terms of the quantity and range of animal offerings. Cremation 0143, of an adult female and a juvenile/subadult, had offerings of both a sheep and the pig head. Cremation 0144, of an adult ?male, had by far the greatest amount of animal bone with a horse, a cow (represented by cranial and maxillary fragments, left mandible and a right scapula), a sheep and pig. This is a similar size of offering to that from cremation 8 at Tranmer House, a significant probably female cremation with a hanging bowl,

horse, cow, sheep/goat and pig (Bond & Mustchin 2015). For comparison, Mound 7 at Sutton Hoo had a horse, a whole cattle carcase, probably a whole sheep, a joint of pork, and some red deer antler (Bond 2005, 276 – 9, tab. 38).

Cremation 0151, of a mature female, contained five fragments of a sheep-sized animal but also fragments of a cat or hare-sized animal. There seems to be a group of unusual cremations which rather than the usual range of domestic animals contain just a single wild animal. These cremations are often not particularly high-status judged by the artefacts but may symbolise a specialist social role; other examples include Lackford's male with red deer antlers (also discussed below, section 8.3.14) and the Spong Hill women with fox mandibles (Lethbridge 1951, 3, Bond and Worley 2006).

5.6 Metal artefacts

By Faye Minter

A key list of all small finds from 2015-6 is included as Appendix 8, more detailed catalogues of metal, glass and bone and antler objects are in Appendices 9-11.

The objects are here arranged by functional category and object type. Where possible they are placed within relevant object typologies and the typological sequence of three main phases used for Spong Hill (Hills and Lucy 2013, 157-232).

90% (52) of the assemblage are copper-alloy objects, five are iron and one lead. Apart from two Roman objects from the ploughsoil all others are, or could potentially be, early medieval in date. The assemblage is dominated by small pieces of copper-alloy sheet and most objects show at least some degree of exposure to heat.

Roman (not illustrated)

Two objects of Roman date were recovered from metal detecting of ploughsoil.

SF1075. Coin, nummus of Magnentius (351-353). It is not pierced and has no other evidence of re-use and it is unclear if it relates to the known Roman activity in the area or if its presence is directly associated with the later cremation cemetery. Four Roman coins were recovered from the Lethbridge excavations, three of which were pierced for suspension.

SF1076. A lead biconical steelyard weight, a common Roman type. As with the coin above its association with the cemetery is unclear.

Early Medieval

Of the remaining 56 small finds, all of which could potentially be early medieval in date, eleven were recovered from within cremation urns and the rest from the surface scatters.

Dress accessories

Brooches

One incomplete small long brooch, with the foot missing due to old breaks, was recovered from the 2015 excavation from within cremation urn 1. (SF1080 from cremation 1 [0015]) (Figure 4.1). It is of Penn and Brugmann type sm3, which falls mainly into their phase FA2a (AD c 480-510 and perhaps extending to at least 530) (Penn and Brugmann 2007, 24-25). Minimal evidence of burning is present as the head appears slightly distorted.

Eight small long brooches were identified from the Spong Hill cremations, none of which were of Penn and Brugmann type Sm3, with lappets to the bow, as is the most recent Lackford example, although all three Penn and Brugmann types were found in the inhumation burials (Hills and Lucy 2013, 34-35). There are three small long brooches from the earlier Lethbridge assemblage, of Penn and Brugmann types sm1, sm2 and sm3 (Penn and Brugmann 2007, 25).

SF1023, from cremation 0123, is the possible remains of a long brooch. Consisting of fragments of an iron, possible pin bar, with fragments of a copper-alloy spring and pin attached. Not illus.

Pins (not illustrated)
SF1022 (cremation 0123), iron circular sectioned shaft fragment with oval-shaped corroded iron fragment adhering and SF 1014 (scatter 0107), comprising two adjoining fragments of an iron shaft, could be the remains of iron pins or brooch pins.

Personal possessions
Both the Spong Hill and Lackford metal toilet items appear to have been added unburnt to the cremation urns and are predominately associated with Phase B and earlier (Hills and Lucy 2013, 312). The use of miniature items at Spong Hill occurs in greater numbers than seen at any other known cremation cemetery, including Lackford, where they do occur but at lower frequency. The presence of miniature objects is seen to support previous arguments that these were non-functional symbolic items within the cremation ritual (Hills and Lucy 2013, 312-313).

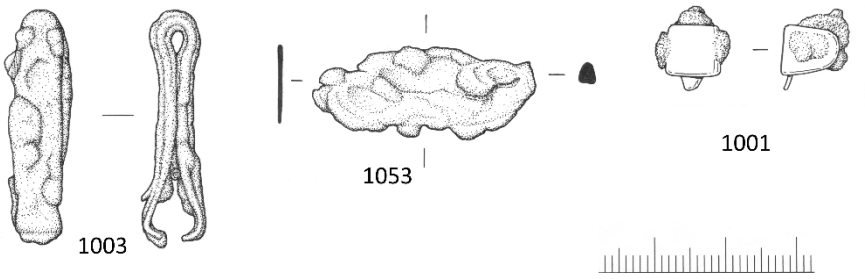

Figure 5.17 Metal small finds 2016

Tweezers (Figure 5.17)

One set of miniature iron tweezers, SF1003, was recovered from surface scatter 0126, these tweezers are very similar in size and form to the 47 miniature iron tweezers recovered from Spong Hill, which are classified as such as they are 35mm or less in length (Hills and Lucy, 2013, 62-64, fig 2.16 2180/1). Five pairs of iron tweezers were recovered during the earlier Lethbridge assemblage, one of which was also miniature in size, the other four were full size.

Miniature razor (Figure 5.17)

One iron miniature handled razor SF1053 was found, also in surface scatter 0126, consisting of a small curved iron blade with a looped handle. 48 such razors, with the majority measuring between 30 and 50mm in length were recovered from Spong Hill and are of Beilke-Voigt (1998) knife type II (Hills and Lucy, 2013, 66-67, fig 2.18, 2495/1). As it is much corroded there is also a possibility that SF1053 may be a fragment from miniature broken shears or a knife.

Box, casket or vessel mounts (Figure 4.6)

SF1040 is an incomplete, partially melted, copper-alloy rectangular mount, excavated from within a cremation urn 0143. It has longitudinal rows of tiny circular indentations along both long edges, a central circular rivet hole through the better preserved end and beyond this two partial rivet holes in the incomplete edge, there is also in this edge an in situ iron rivet which holds a smaller copper-alloy rectangular strip in place parallel to the long edge of the object.

SF1008, is a fragmentary molten copper-alloy possible mount with a partial rivet hole surviving in the centre of one incomplete terminal end. Not illus.

Both of these objects may be mounts, perhaps from a boxes, caskets or a vessel of some kind.

Household objects
Vessels
45 sheet copper-alloy fragments were recovered, only eleven were recovered from excavated spits within cremation urns and the remainder from the plough soil scatters. Although this makes

their dating less secure, they are very similar to those fragments from within the urns and therefore potentially also early medieval and consequently they are included in this discussion. Seven fragments are in joining groups: SF 1069 (urn 0140, spit 3) two joining fragments, SF 1039 (urn 0140, spit 5) three joining fragments (Figure 4.5), SF1009 (surface scatter 0137) two fragments, not illustrated. Only SF1039 is decorated, with parallel grooves.

78 sheet copper alloy fragments occur from the previous Lethbridge excavations of the site and a large number of the Spong Hill cremations also contained pieces of copper-alloy sheet. From the latter site examples that measured less than 10mm in diameter and two grams in weight were deemed unidentifiable to object type, as they could be from a range of objects made from copper alloy sheet (Hills and Lucy 2013, 83). There are thirty-eight such unidentifiable fragments from Lackford, these show various levels of burning and could derive from copper-alloy dress accessories, copper-alloy vessels or the copper-alloy fittings of wooden vessels or horns.

64 fragments from Spong Hill, which were too large to belong to other types of artefact, i.e. greater than 20mm diameter and without edges or rivet holes, were classified as probable fragments of bronze vessels, these included rims and undecorated pieces with or without curvature, (Hills and Lucy 2013, 84). There are only six such fragments from the recent excavations at Lackford, SF1002 (0107 scatter), SF1009 (0137 scatter), SF1012 (0135 scatter), SF1029 (0134 scatter) and SF1036 (two fragments from urn 0140), none of which are rim fragments or decorated. There are 61 of these larger fragments from the Lethbridge assemblage. These fragments could have come from a range of types of bronze vessel. Within the Lethbridge assemblage five rim fragments of bead-rimmed vessels were present, at least three fragments of these distinctive vessels were also found at Spong Hill. Other fragments could have derived from cauldrons and plain hemispherical bowls (Hills and Lucy 2013, 84).

SF1001, a probable vessel clip or repair is possibly from a wooden vessel found in a surface scatter (0107) (Figure 5.17). Consisting of a copper-alloy strip folded longitudinally with an iron rivet through the open ends. The previous Lethbridge assemblage contained 10 such examples and they were also present at Spong Hill and could have derived from plain hemispherical bowls, buckets or other wooden vessels, and perhaps some of the smaller examples from drinking horns (Hills and Lucy 2013, 86).

5.7 Bone, antler and ivory artefacts

By Ian Riddler and Nicola Trzaska-Nartowski

Introduction

A small assemblage of objects of antler and ivory came from recent work at Lackford, including fragments of five combs, an antler bead and eight ivory bag rings. They are discussed in turn here. An attempt has been made to compare them with the earlier material from Lackford, as well as with objects from other cremation cemeteries. The phasing established for Spong Hill forms an important basis for the antler, bone and ivory objects from Lackford and it has been noted for each object type.

Antler Bead 1050 from pot 0164 (Figure 4.10)

An incomplete antler bead of square shape and rectangular section has a prominent perforation at the centre, surrounded by ring-and-dot decoration on the upper surface, much like an example from Spong Hill, and it can be assigned to type E within the classification for that cemetery (Riddler and Trzaska-Nartowski 2013, 94 and fig 2.32.3009/1). Five beads of this type came from Spong Hill. One of the cremations containing them has been placed in phase A or B, three in phase B and one in phase C. Accordingly, this bead type does not seem to have been amongst the earliest forms within that cemetery and they may not have come into use before phase B, around the middle third of the 5th century, and continued into phase C. Two further examples are known from Loveden Hill, one of which is rectangular in shape, rather than square (Riddler 1988). A square bead of this form came from an inhumation grave at Brighthampton and it can be

regarded as a sword bead, given that it was found close to the pommel of a sword (Evison 1976, 309; Dickinson 1976, 256-7). That does not mean that all of these beads are sword beads. At Spong Hill, for example, the biological sex of the five graves with these beads could not be determined, but their ages ranged from older infant to mature adult; and the older infant is unlikely to have been buried with a sword bead. Hills has noted that these beads are seldom found in association with glass beads. An example from Issendorf had been threaded with wire for attachment to clothing or jewellery, suggesting that it was being used in the manner of an iron lozenge (Hills 1977, 30; Janssen 1972, 58).

Antler Burr Rings (Figure 4.8)

The rings survive as small burnt fragments (1078, not illustrated, and 1079) in two contexts, 0125, a surface group, and pot 0151. Antler burr rings can be separated into three types (Riddler and Trzaska-Nartowski 2013, 99). These two fragments can be identified as coronet rings, where the central part of the burr has been removed, leaving a ring that is normally oval in shape, formed from the coronet. The coronet itself was left largely unmodified. The twenty-four examples of coronet rings from Spong Hill were recovered from cremations mainly of phase A, with small numbers also in phases A/B, B and C. They have a long ancestry stretching back to the 4th century on the Continent and it continued in use across phases A to C. Thereafter it extended further into the 6th century and can be seen within inhumation graves, including East Anglian examples from Barrington, Burnham Market and Little Wilbraham (Meaney 1981, 139; Riddler 2012a, 160). Within inhumation graves coronet rings occur at the waist in the graves of females (identified by sex and/or gender) and would have been used as suspension rings, in a similar way to the rings of copper alloy and iron that they accompany.

Ivory Bag Rings

Fragments of ivory bag rings, weighing 20g in total, were recovered from eight separate contexts. All of the fragments have been burnt to a white to grey colour and most of them are small and weigh less than 1g. They are identifiable as ivory from their colour, their softness, their rectangular shape and their texture, with sequences of closely-spaced parallel lines visible on a number of the pieces, forming part of the Schreger lines that are a noticeable characteristic of elephant ivory (Hills 2001, 132; Drauschke 2011, abb 48). Ivory bag rings were recognised during the previous excavations at Lackford from around a dozen urns, according to Lethbridge (1951, 8), a re-evaluation of the material from that cemetery providing twenty separate assemblages. The weights of ivory per cremation can be amalgamated for the two sets of excavations (Figure 5.18)

The heaviest assemblage weighs just over 15g. The relative fragmentation of this material from the cremation process can be assessed by comparing these weights with those from complete ivory bag rings recovered from early Anglo-Saxon inhumation burials at Eriswell and Burnham Market, where the weights are 44.2g and 55.7g respectively. Much has clearly been lost in the cremation process and it is not possible to estimate the original dimensions of any of the bag rings from Lackford. Ivory rings from early Anglo-Saxon inhumation graves are around 100-150mm in diameter, but no diameter measurements can be taken for any of these fragments (Green 1973, 101; Hills 2001, 133-4; Mohnike 2015, 51).

The rings are likely to have come from the ivory of African elephants. Fragments of ivory rings from ten cremation graves at Schmalstede were identified as probably stemming from African elephants, as was a fragmentary example from Mucking, and it is presumed that the Spong Hill bag rings were also made from African elephant ivory, although no provenance studies have been carried out, in part because some of these involve destructive chemical tests (Bode 1998, 95-6; Hills 2001, 135; Hirst and Clark 2009, 618; Riddler and Trzaska-Nartowski 2013, 104; Drauschke 2011, 147-8). Non-destructive Fourier-Transformation-IR spectroscopy of merovingian ivory rings also identified them as of African origin (*ibid*, 149-50). The trade routes to northern Europe have usually been thought to pass through Egypt or Ethiopia, but Guérin has argued recently for other sub-Saharan alternatives (Hills 2001, 135-6; Guérin 2013).

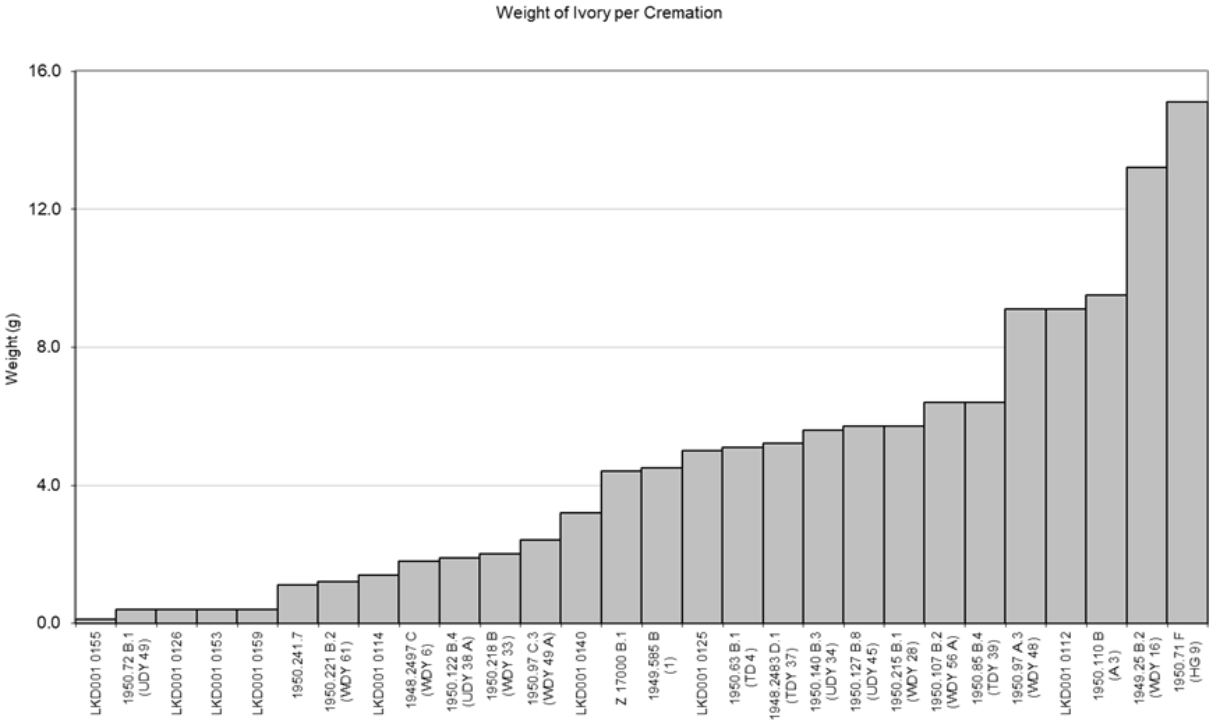

Figure 5.18 Ivory ring weights from Lackford (1945-7 and 2016)

Huggett's distribution map of finds of ivory bag rings within early Anglo-Saxon England highlighted their occurrence within the large cremation cemeteries of East Anglia and Lincolnshire, although the figures he used were incorrect and there are greater quantities from the cremation cemeteries than he allowed (Huggett 1988, fig 3; Riddler 2012, 159). They are known from practically all of the cremation cemeteries of eastern England, with examples coming from over 200 cremations at Spong Hill, just over 150 cremations at Cleatham, and 42 cremations at Loveden Hill (Hills 2001, 140; Leahy 2007, 203; Riddler 1988). They occurred within almost 25% of the urns from both Cleatham and Elsham in Lincolnshire but elsewhere they are less common, in relative terms. They are known from around 8.5% of the urns from Spong Hill and, if Lethbridge did excavate *c* 500 urns from Lackford (Lethbridge 1951, plan II), then they were found in 4% of those, assuming that all of the material was diligently collected. At the same time, their presence in no less than eight urns from the 2016 excavations suggests that they may have been more common in the 1948-1950 excavations than their present survival suggests. It could be argued that ivory is more common within cremation cemeteries located further to the north, the percentage of cremations with ivory for Cleatham, Elsham, Loveden Hill and Newark (at 13 – 27%) exceeding those for Caistor-by-Norwich, Lackford, Mucking and Spong Hill (1.5 – 8.5%); but there are many uncertainties in the quantities of urns from these sites and the care with which ivory was recovered from them (Hills 2001, 140).

Ivory bag rings are known to have been deposited in graves across most of the early Anglo-Saxon period (Green 1973, 101; Hills 2001, 132). At the same time, it is clear that the quantity deposited in graves decreases noticeably from the 5th century to the 7th century. The seriation of graves at Spong Hill indicated that most of the ivory there was placed in urns of phases A and B, with small numbers occurring in phase C, a phase that included fewer cremations (Hills and Lucy 2013, table 3.12). On balance, therefore, it is possible that the majority of ivory bag rings were placed in cremations of Phase A and B at Lackford as well, essentially within the first two thirds of the 5th century. Thereafter, the quantity of ivory found in graves (whether cremations or inhumations) declines steadily. The situation on the Continent is slightly different. Within southern Germany, for example, ivory objects (most of which are bag rings) are at their most common within inhumation graves of phases AMII to JMIIa, essentially *c* 570 – 650 (Drauschke 2011, abb 53).

Ivory bag rings were discussed in detail by Barbara Green, who encountered them in five cremations at Caistor-by-Norwich (Green 1973, 100-3). They are relatively common finds from inhumation graves, where it is clear that they were worn at the waist (and not on the arm) and were used as rings for containers made of organic materials (*ibid*, text-fig 3). Ivory arm rings do exist, but they are of Roman date and are smaller in diameter (Rees *et al* 2007, 52-3 and fig 27.210). Ivory rings from both cremation and inhumation graves are largely but not exclusively associated with women. At Issendorf they formed one of the sets of grave goods to be most heavily associated with women but at Schmalstede all ten cremations were adult burials, but three were males and three females (Weber 2000, abb 11; Bode 1998, 95-6). All sexed graves with ivory from Sancton were females but both males and females were represented amidst the much larger sample from Spong Hill (Timby *et al*1993, 279; Hills 2001, 141).

Combs

Over 60 combs have come from Lackford but less than half of these were described and illustrated by Lethbridge. Five comb fragments were retrieved from the recent excavations and they include one of the earliest combs of the entire assemblage, as well an end segment from a triangular comb, two fragmentary double-sided composite combs and an iron rivet (Sf 1059 from cremation 0164).

Fragments of the five combs were recovered from separate urns. All of them appear to be composite combs and there are no simple combs within this small assemblage. In one case (Sf 1059) the comb consists of nothing more than a single iron rivet. The four remaining combs are a little more substantial and their basic forms can be identified, if not their specific types.

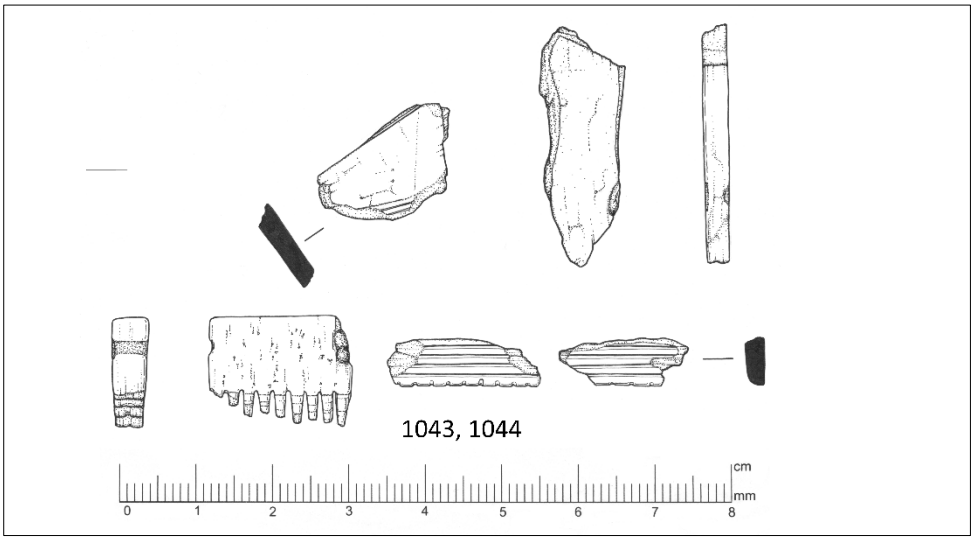

Figure 5.19 Comb fragments from scatter 0155

The earliest comb consists of the fragments from surface scatter 0155 (Sfs 1043, 1044 and 1066; Figure 5.19). These form the lower part of a triangular comb, not identifiable to a specific type, with two tooth segments accompanied by parts of the connecting plates, decorated with horizontal lines. The technology of the comb is intriguing and significant. Sufficient survives of one piece of connecting plate to indicate that it ascended at an angle of 33◦, placing it within the elongated category of triangular comb. The iron rivets have been placed along the edges of the tooth segments, a typologically late feature usually attributable to *c* 450 or later (Riddler and Trzaska-Nartowski 2013, 108-9). Equally, however, both of the tooth segments are 5mm wide, well beyond the normal widths of 3 – 4mm, and one of them is merely a partial segment, sawn horizontally just above the stubs of the teeth. Partial segments can be seen on some of the earliest triangular combs, occurring in Scandinavia and central Europe (Thomas 1960, 75-6 and abbn 25 and 37.8). Essentially, the tooth segments do not extend across the entire height of the comb but are split into two parts, each part normally secured by several rivets. This is a typologically early feature that had been abandoned by the time that triangular combs were

being made in early Anglo-Saxon England. It can be seen on an early form of round-backed comb from Puckeridge-Braughing, Hertfordshire, probably of 4th-century date (Greep 1988, fig 37.37). The use of thick tooth segments is also an early feature, seen on just a few of the Spong Hill combs (Riddler and Trzaska-Nartowski 2013, fig 2.42.1771/2). The segments were probably fastened on their edges purely for practical reasons: it is difficult to drill through the centres of thick segments. Thick tooth and end segments can be seen on a few of the Spong Hill combs (*ibid*, fig 2.45.1688/2), all attributable to phase A. Although only a small part of this Lackford comb survives, it can be identified as a form made in all probability on the Continent in the 4th century.

An end segment (Sf 1038 from cremation 0140; Figure 4.5) from a triangular comb has a back that ascends at an angle of 32◦, indicating that it belongs to the elongated type, as defined for Spong Hill (Riddler and Trzaska-Nartowski 2013, 115). The end of the segment rises up to a point beyond the line of the back of the comb. This is a slightly unusual form for an end segment, which is matched by another end segment from Lackford (Lethbridge 1951, fig 9), as well as a few examples from Spong Hill. One of them has a slight upward lip, not as pronounced as here, whilst two decorated end segments also rise to points ((Hills *et al* 1987, figs 109.2452/3 and 110.2524/3; Hills *et al* 1994, fig 121.3049/3). These are fragments of combs from cremations of phase A/B or B. Further end segments with this feature are known from Alwalton, Cleatham and Newark (Gibson 2007, figs 33.1274.3 and 36.1328.1; Leahy 2007, fig 105.T; Kinsley 1989, fig 51i). The Alwalton cremations were dated to the 5th century and late 5th- to early 6th century (Gibson 2007, 257-61).

The two remaining combs are double-sided composites. One of them (Sfs 1041, 1042 and 1072; Figure 4.8), from cremation 0151, includes connecting plates of D-shaped section, decorated with ring-and-dot motifs, probably forming a continuous pattern. The specific comb type is unclear, particularly in terms of the shape of the ends of the connecting plates, making it difficult to place it within the comb sequence. Double-sided composite combs decorated with ring-and-dot patterns alone are known from cremations at Illington and Spong Hill and they should probably be assigned to phase B (Riddler and Trzaska-Nartowski 2013, 140). A second comb fragment (Sfs 1015, 1016 and 1071; Figure 4.3), from cremation 0112, includes part of an undecorated connecting plate with a shallow D-shaped section, as well as an incomplete end segment. The connecting plate tapers towards its end but is also a broad plate. The combination of these attributes can be seen on combs from Abingdon and Pennyland, which can probably be placed around the middle third of the 6th century, although a slightly later date is possible (Riddler 1993, 111; Dickinson 1976, II, 16).

5.8 Glass artefacts

By Rose Broadley

Glass beads

28 melted or partially-melted beads were found in 2015-16, during excavation of 59 cremations (39 surface scatters and 13 excavated deposits). Approximately 104 beads were found in 1947-8 from over 500 urns excavated. However, in many cases the number of original beads within a melted agglomeration is necessarily an estimate. The beads came from 10 different grave groups in 2015-16 and 27 in 1947-8, so together there are a combined total of 37 grave groups of glass beads from Lackford. As the total number of graves and grave groups excavated at the site is above 560, the percentage with associated glass beads is 7% across both excavation periods. The percentage for the 2015-16 excavations 17% and the percentage for 1947-8 is 5%. These figures are all lower than Spong Hill and other cemeteries in East Anglia, especially inhumation cemeteries (Hills and Lucy 2013, 48). The average number of beads per grave is 3.6 at Lackford, which is below the average calculated for 'near complete and complete cremation burials' at Mucking, Essex, of 5.7, for example (Hirst and Clark 2009, 613), and the latter figure is approximately a fifth of the average number of beads in each inhumation burial at Mucking (ibid.), suggesting that poor retrieval from the pyre is also a factor at both sites. It is also possible

that some beads were not retrieved during the 1940s excavations in particular, and that historic damage to the site has played a role in the low numbers. Overall, the prevalence of dark glass (32%) among the bead melts is noticeable – it is likely that most of this material came from dark blue annular beads, although some could be from beads with opaque red or Brugmann's 'brown' bodies. Thirty one percent of the beads had an identifiable opaque red body colour, 11 percent opaque white, nine percent blue-green and seven percent deep blue (see Figure 8.8 below). Significant proportions of deep blue annular beads is typical of fifth-century bead fashion, and are often found combined with opaque red-bodied 'traffic light' beads, but opaque bead bodies became much more popular in the sixth century. This colour profile suggests a community on the cusp between these phases, around the late fifth century and early sixth.

Only five of the beads from the 2015-16 excavations (18%) can be identified with good probability, and all are from surface scatter context 0134 (Figure 5.20). The group contained six bead fragments, three of which are from 'traffic light' beads, in this case with an opaque red body and opaque yellow and translucent green reticella (or more accurately '*a retorti*') trailed decoration. One of the three is a small fragment, so these probably represent two original beads, one of which appears to have been cylinder-shaped. A nearby parallel came from the settlement at West Stow (Evison and Cooper 1985, 73, Fig. 276.4) and two from the West Stow cemetery (74, Fig. 276.2 and 3), located just downstream on the opposite (northern) bank of the River Lark from Lackford. Three long and square-sectioned and two round traffic light beads were found in inhumation Grave 16 in the cemetery excavated at Westgarth Gardens, Bury St Edmunds in 1972, which is only seven miles south-east of Lackford (West 1988, 24, Figs. 18 and 64). Also in the same grave at Westgarth Gardens were two beads of the P23bi/8 Mucking type that were also found at Lackford in grave 1950.38 B.3 (see below), as well as nine other glass beads, four amber and a crystal bead. Two round traffic light beads were amongst six beads in Grave 44 (West 1988, 31, Figs. 39 and 72) and one amongst 21 glass beads in Grave 48 (ibid., 32, Figs. 42 and 73). Five were found at Mucking, Essex, including one from Grave 123A (types P28a/1 and P28a/2, Hirst and Clark 2009, Table 9.23, 791, Fig. 266). The other three bead fragments from scatter 0134 are half a melted, translucent blue green bead, probably melon-shaped; a translucent blue fragment; and a complete annular bead in dark glass. Grave 30 from Morning Thorpe features the same combination of a cylindrical traffic light bead, melon beads and annular blue beads, albeit amongst a grave assemblage of 140 beads (Green, Rogerson and White 1987, Figs. 303 and 304). Similarly, inhumation Grave 48 at Westgarth Gardens contained the combination of an almost annular traffic light bead alongside six melon beads and 14 annular blue beads amongst 21 glass beads in Grave 48 (West 1988, 32, Figs. 42 and 73).

Traffic light beads were placed in Brugmann's phase A1 (c. AD 450-530), and the distribution is concentrated in East Anglia (Brugmann 2004, 77, Fig. 49). The formerly long and probably cylindrical bead (0134 1030) is similar to one of the collection of traffic light beads from Morning Thorpe grave 30 (Brugmann 2004, Fig. 121.1) and 304 (Green, Rogerson and White 1987, Fig. 395 Gii). The translucent melon bead type, of which an even clearer example was found in 1947-8 (1950.46 B1), was placed in Brugmann's phase A2b (c. AD 530-580), but in this case she describes the main distribution area as continental Europe (ibid., 76, Fig. 45 and 158). In Pion's *mérovingiennes* typology the translucent melon beads are more broadly sixth century in date, beginning at the end of the fifth century (Pion 2014). They appear in at least 18 graves at Spong Hill, where beads overall are described as fitting 'well chronologically into the fifth century' (Hills and Lucy 2013, 51,54, Fig. 2.11). Other examples from East Anglia are numerous and include beads from West Stow (Evison and Cooper 1985, 74, Fig. 275.35 and 36); Morning Thorpe graves 30 and 309 (e.g. Green, Rogerson and White 1987, Fig. 303 dvi and dvii; Fig. 395 Aiv, Av, Avi and 396 Avii); the highly-furnished Grave 93 at Boss Hall, Ipswich (Scull 2009, 16-18, Figs. 2.20 and 2.21; Brugmann 2009, 97); and Hadleigh Road, Ipswich (e.g. grave 116, Plunkett 1994, 28-30). The complete annular bead is likely to have been deep blue, and the type that Brugmann calls simply 'blue'. These appear mainly within Brugmann's phase A1, but the type was very long-lived and the beads were is use much earlier, while there are later examples found alongside phase B2/C

amethyst, cowrie and orange beads as at Dover Buckland grave 67, for example (AD 580-700, Brugmann 2004, Fig. 167). In inhumation burials of the second half of the fifth century these beads are often found *en masse*, e.g. at Spong Hill (Hills and Lucy 2013, 50-51, 54), Linton Heath grave 72 and Wasperton graves 85 and 114 (Brugmann 2004, Figs. 76-78).

Burial context 0159 (Figure 4.9) from the 2015-16 excavations also contained six bead melts, at least one of which was probably two beads originally (1049, dark glass and opaque white), but none can be assigned to a specific type. The other five are all broadly dark glass, and three have visible traces of opaque red as well. Similarly, there were three melted beads in burial context 0123 (Figure 4.4), but none could be identified typologically. All three appear to have had an opaque white base with decoration in other colours – one dark with a trace of red, one blue and dark with a trace of red, and one blue with a trace of dark glass. Also likely to derive from from burial 0123 were two beads from surface scatter 0124(opaque red, and opaque white with blue). Four 2015-16 contexts contained two beads each: surface scatters 0119 (both probably dark blue) and 0154 (both dark with opaque red) which may be a single group; burial 0140 (dark, and dark and opaque red; Figure 4.5), and surface scatter 0155 (dark, and dark and opaque red). One bead each was found in surface scatter 0131 (dark, with opaque red and white) and pot 0151 (dark; Figure 4.8).

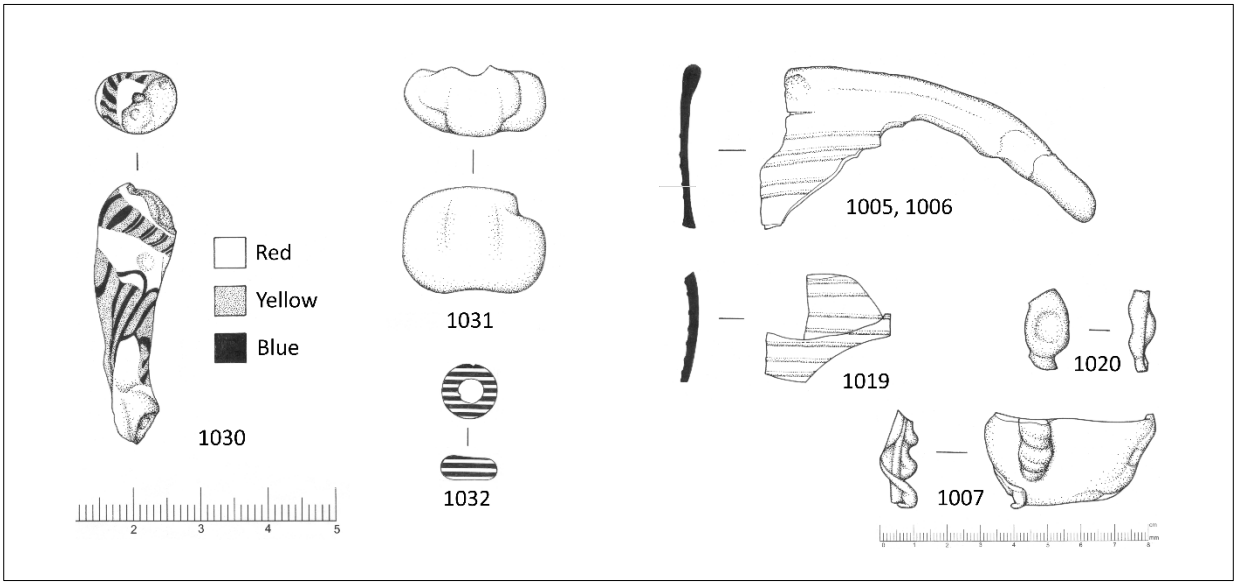

Figure 5.20 Glass beads from 0134 and glass vessel fragments from 0120

Glass vessel fragments (Figure 5.20)

Six fragments of pale green and pale green-blue glass vessel fragments were found in 2015-16, all six are from context 0120 (a surface scatter with the glass found with cremated bone above pot 0140) and are probably from a single vessel.

Of the six green-blue fragments from context 0120, three feature a series of fine, parallel applied self-coloured and partially-blended trails, two of which are barely-melted upper body fragments and one of which is very melted but probably a rim fragment. Two are melted shapes with no identifiable features, other than that they are the same pale green-blue as the other fragments. The final fragment features the end section of a very thick crimped self-coloured trail. However, the remainder of the fragment has been heavily distorted by heat – both surfaces are rough and pitted and the morphology very altered. Thick, crimped trails are found on claw beakers, bag beakers, earlier cone beakers, glass drinking horns and globular beakers. The most usual arrangement on vessels that are not claw beakers is a horizontal, circumferential band. Any vertical arrangement on bag or cone beakers usually meets a horizontal crimped trail at the top, which is not the case here. The most likely scenario is that this fragment is from the top of a claw that had a crimped trail, although the morphology at the edges of the fragment especially mean

that secure identification is not possible. Meanwhile, the horizontally-trailed fragments could be from a claw beaker, or a cone or bag beaker. The total quantity of vessel glass present is only a fraction of a complete vessel, which, assuming this is not entirely due to modern plough damage, may indicate poor retrieval from the pyre again, although another possibility is that only fragments representative of a complete vessel were included in the first place.

5.9 Wood charcoal from cremation urns

By Dana Challinor, MA (Oxon), MSc

Excavations at the Anglo-Saxon cemetery at Lackford, Suffolk, revealed a series of damaged cremation urns. Two of the urns, 0153 and 0158, produced wood charcoal remains, which were submitted for identification. Standard identification procedures were followed using identification keys (Hather 2000, Schweingruber 1990) and modern reference material. All of the charcoal fragments >2mm in transverse section were appraised, by fracturing and examining at low magnification (up to X45), with representative fragments examined in longitudinal sections at high magnification (up to X400). Observations on maturity and other features were made where possible. Classification and nomenclature follow Stace 2019.

		Urn 0153			**Urn 0158**
Taxa	**English name**	*Spit 1*	*Spit 2*	*loose soil around urn*	*Spit 4*
Cytisus/Ulex	broom/gorse			1r	
Maloideae	hawthorn group	7	11	(1)	
Quercus sp.	oak	13	15	32 (hrs)	
Betula sp.	birch			1	
Corylus avellana L.	hazel	2		2	
Alnus/Corylus	alder/hazel		1		
Fraxinus excelsior L.	ash		3 (h)	1	
Bark					2
Indeterminate		3	2	4 (r)	

h=heartwood; r=roundwood; s=sapwood; brackets denotes presence in some fragments only or cf. identification

Table 5.21 Charcoal results (showing fragment count)

Results

The assemblages were generally sparse, with small sized fragments (rarely over 4mm). Condition was fair, though somewhat crumbly in texture. Some vitrified fragments were observed in the loose soil from around urn 0153. The single item from Spit 4 from this urn was not wood charcoal and is not included in Table 5.21. Six taxa were positively identified, all of which are consistent with native species; *Cytisus/Ulex* (broom or gorse), Maloideae (hawthorn, apple, pear, whitebeams/rowan/service), *Quercus* sp. (oak), *Betula* sp. (birch), *Corylus avellana* (hazel and *Fraxinus excelsior* (ash). The two fragments from urn 0158 (Spit 4) were of bark and not identifiable to taxon. Maturity was difficult to determine, owing to the small fragment size, but the assemblage from the loose soil around urn 0153 produced a greater quantity of larger (>4mm) fragments, from which it was possible to distinguish a number of fragments of oak heartwood, along with less common occurrences of sapwood and roundwood. One fragment of ash from Spit 2 of urn 0153 was also confirmed as heartwood.

Discussion

The charcoal associated with urn 0153 produced several discrete taxa, which may have derived from several components of the cremation pyre: chiefly, the remnants of fuel, including kindling;

but also, perhaps, the remains of a bier or coffin wood and pyre goods. The small quantities and fragment sizes of the two spit samples are typical for cremation urns, where the bone has been carefully collected from the pyre for burial, with only occasional/accidental charcoal included. Although the larger charcoal assemblage from the loose soil around the urn was not a direct fill of the urn, it was within the burial pit and clearly associated with the burial. The taxonomic composition of the charcoal assemblage was also similar to those of the urn spits, albeit with two additional taxa (birch and broom/gorse). This may reflect the larger size of the assemblage and/or indicate that the sample derived from a wider area of the pyre and represents additional elements (such as pyre goods, or kindling in the case of the broom/gorse).

It should be noted that since the charcoal had been removed from the pyre site and a small sample redeposited within and around the burial urn, none of the assemblages provide a fully representative picture of the wooden elements of the pyre. Nonetheless, there was sufficient material to suggest that oak was the primary fuel; present in all of the associated samples and comprising 67% by fragment count (Figure 5.21). At 20%, hawthorn group (Maloideae) also represents a significant component, while the remaining four taxa are ≤6% each. Some caution must be applied to these figures, however, as the highly fragmented character of the material and small fragment size can cause bias and over-representation of oak. That said, oak was a common choice for pyre fuel, providing the highly calorific heat required for efficient cremation. The results at Lackford are similar to those of nearby Anglo-Saxon cremation burials at RAF Lakenheath (Challinor 2013) and

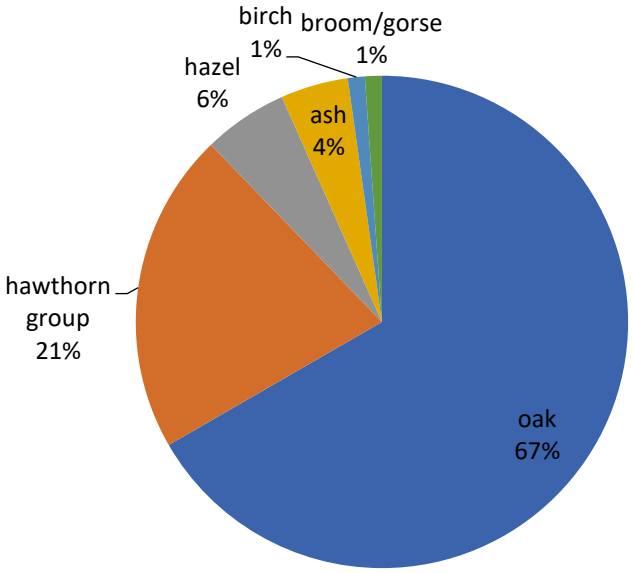

Figure 5.21 Taxonomic composition of charcoal from samples associated with Urn 0153 (excluding indeterminate fragments, N=90).

Snape (Gale 2002). Along with oak, traces of ash, hazel and possible broom/gorse were also found at the former site.

Other Macrofossil remains

The material recovered by flotation of the contents of the semi-intact pots, and of the ploughsoil samples collected with surface calcined bone, was assessed (Anderson *et al* 2018, 35) and mostly provides little useful information, as almost all the small amount of carbonised plant remains were from potentially contaminated ploughsoil, apart from the charcoal from the two pots described above.

5.10 Radiocarbon

A full account of the results of radiocarbon sampling of calcined bone from twelve of the semi-complete pots was included in the assessment report (Anderson *et al* 2018, 27-30). It is included again here in Appendix 12.

6. Discussion of the 2015-6 results

6.1 Numbers of burials

Given the plough damage it is impossible to give an accurate total figure; fifteen pots containing cremated bone were wholly or partially recovered from their original position in the subsoil, one disturbed subsoil find (0154) and a further 34 locations solely located in the ploughsoil were excavated, giving a total of fifty. Of the ploughsoil scatters some were clearly multiple, most clearly demonstrated by the pottery but also with skeletal evidence for more than one individual, whereas a couple seemed to lack evidence for a primary vessel or vessels. The pottery suggests around 66 fairly substantial parts of vessels were recovered. This compares with over 500 (there are 582 pots recorded at CUMAA) burials recorded by Lethbridge in the 1947-9 excavations, where only pots surviving in the subsoil were recovered. Even at that time it was apparent that there was material lost in the ploughed area – Teresa Briscoe suggested that 200 to 300 pots were lost when the field was ploughed in the autumn of 1946 (pers comm Diana Briscoe). Lethbridge also estimated that his excavations represented less than half the potential cemetery, suggesting a total of over 1000 originally (Lethbridge 1951, 1). Of the many earlier finds, 37 in various collections have been included in the pottery database. The recent excavations thus represent a very small proportion of the total cemetery.

6.2 Population

Cremated bone was recovered from fifteen *in situ* and 40 surface scatter contexts in the 2015-6 excavations, representing at least 52 individuals. The sexes and age range represented seem to conform to the norm for this period, with a slightly lower proportion of children to adults (21%) than in other East Anglian cremated groups, probably due to the very disturbed nature of the Lackford material, particularly in the surface scatters (the proportion of children is higher, around 29% in the *in situ* groups).

Given the lack of data from the 1947-9 investigations and the disparity in numbers between the recent finds and 1947-9 this represents a useful but numerically unrepresentative sample of the people buried at Lackford. Assuming that the choice of cremation rather than inhumation involved people from multiple settlements the present evidence does not suggest any sex or age bias in those opting for cremation.

6.3 Associations (see Appendix 13)

In five of the fifteen in situ burials there was evidence for two individuals in the pot, but only one (0143) was considered likely to represent a double burial rather than accidental inclusion of fragments from other individuals at the pyre site. Analysis of the cremated bone in the excavated spits shows an unsystematic collection of fragments from the pyre, probably by several people working together, and all groups were substantially less than the expected total for a single cremated body.

The associated aretefacts and animal bone evidence is shown in Appendix 13. Nine of the fifteen pots found cut into the subsoil contained artefacts, and also the disturbed subsoil group (0154 and 0119). Ten of the remaining 34 solely surface finds groups also included non-ceramic artefacts, only one of which (0114) can be identified as probably a single burial group (ie one pot and probably one individual). Animal bone was found with nine of the subsoil pots, in five cases with no other artefacts, and was present in seven of the solely surface groups.

The numbers of separate objects (counting beads as a single item) varies between one (in nine of the 19 groups) and five (in 0140); the larger groups often include unidentifiable fragments.

There was probably a very incomplete collection of grave goods from the pyre, and some selection for pieces only of the unburnt goods (the antler combs), although the picture is further distorted because almost all the pots have been disturbed after burial by ploughing. The exception is pot 0153 which was complete; here a couple of burnt ivory fragments seem to be part of the burnt deposit, mainly including charcoal, that was perhaps originally placed over the pot and there are no other artefacts associated with the cremated bone inside the vessel.

The pyre goods are predominantly dress accessories, beads and two brooches, but also include ivory purse rings, thought to have been worn at the waist. The burnt fragments of a glass beaker might have contained drink. Meat was also a significant component of the pyre goods, most abundant in association with burial 0144 where a whole horse seems to have been largely collected separately (0145) as well as whole or substantial amounts of a cow, a sheep/goat and a pork joint placed in the pot with a probably male younger adult and no other artefacts. A large amount of both horse and sheep/goat, probably from complete animals, was also found in burial 0158, with more found in the soil (0152) overlying the group of pots 0158-0163, either as a result of plough drag or perhaps again some animal bone was deposited outside the burial urn. This group also has a relatively low number of other pyre goods (beads and purse ring from 0159). Despite the relatively small quantities of identifiable animal most of those found in the subsoil burial groups do potentially represent complete animals, most commonly sheep/goat. This suggests that animal sacrifice on a significant scale could have formed part of the burial ritual before being added to the pyre, rather than simply including a joint of meat as token food such as the pork in burials 0017 and 0144.

A copper-alloy mount, perhaps from a casket, was clearly burnt, but evidence for burning was not apparent on the, generally small, fragments from probable copper-alloy vessels.

All the antler comb fragments were unburnt and added to the burials in the pots as grave goods; in two cases the fragments were found in excavation of the lower spits. The miniature iron razor and tweezers were also probably unburnt.

The brooches and glass beads were or could be associated with female burials, as were the ivory purse ring fragments and the antler combs. However it should be noted that the majority of all the non-ceramic finds were associated with female or unsexed individuals. The only material that could be definitively associated solely with a male or probable male was a few of the animal burials, burial 0144 with the group of animals and surface finds 0108 with a sheep/goat. There were no solely juvenile burials identified.

6.4 Distribution (see Figures 3.1, 3.2)
The 2015 and 2016 excavated burials lie to the south of the, albeit uncertainly located, 1947-9 excavation areas. The 2015 group were identified at the south edge of a marginal belt ploughed for a game cover maize crop; this belt was extended 4m south in 2016 to encompass the 2015 group but this exposed the further, more extensive, material excavated in 2016. This leaves in question how far south the cemetery originally extended.

The 2015 and 2016 excavations are only a sample of the evidence within the area examined, as the subsoil evidence was only examined in the plough furrows marking the southern edge of each area and in those few (five) areas where excavation of the surface finds led to further finds below the ploughsoil. Grave and pyre goods were more often found with the subsoil groups.

There is some suggestion in plan that there were two main areas of burials with a central gap, and the 2015 finds lie in the western group. There were more burials found in the subsoil in the eastern group, but this area included multiple burials 0151/0153 and 0158-0163. The data from all groups, both surface and subsoil finds, suggests that all types of pyre and grave goods are found throughout the area, as are all Spong Hill phases of pots. Given the relatively small sample, the mixed and damaged nature of many contexts and the incompleteness of the examination of the subsoil this is not surprising.

6.5 Chronology
Where possible artefacts were allocated to a phase in the Spong Hill system: Spong phase A covers the first half of the 5th century, phase B is mid to late fifth and phase C later 5th to 6th century (ceasing at Spong Hill before the middle of the 6th century at around 530; Hills and Lucy 2013, 232). Phases A/B and B/C indicate that the date could be within either of the cited phases.

Context (Bold = single burial)	Spong phase (pot unless noted)	Pot cat. reference (Figs 5.1-5.4)	Pot fabric	Radiocarbon date BP
0105	A	30	ESCF	
0130	A	13	ESFS	
0131	A	55	ESOM	
0134	A	56	ESSC	
0147	A	21	ESCM	
0155	A (comb)	61	ESOM	
0126	A	67	ESCF	
0114	A/B	6	ESO2	
0115	A/B	7	ESMS	
0123	A/B	10	ESGG	1589±15
0134	A/B?	17	ESCF	
0017	B	2	ESCQ	
0108	B	3	ESFS	
0118	B	48	ESCQ	
0125	B	11	ESCF	
0127	B	51	ESCF	
0130	B	14	ESCM	
0132	B	15	ESSC	
0133	B	16	ESOM	
0136	B	18	ESGC	
0140	B (also comb)	59	ESSC	1559±23 (from 2 dates)
0143	B	20	ESGC	1564±23
0144	B	39	ESSC	1619±15
0153	B	22	ESFS	1595±15
0159	B	41	ESCM	1579±15
0160	B	23	ESOM	1551±26
0164	B	24	ESCM	1602±15
0007/0008	B?	44	ESCF	
0019	B?	45	ESQF	
0110	B?	62	ESCM	
0135	B?	38	ESCF	
0015	C (brooch)	25	ESOM	
0107	C	4	ESMS	
0112	C (also comb)	5	ESCM	1584±13 (from 2 dates)
0131	C	54	ESCO	
0137	C	19	ESCQ	
0151	C (comb)	40	ESOM	1567±23
0118	C?	9	ESCF	
0158	C?	60	ESCM	1546±24
0161		42	ESFS	1585±15
0163		43	ESO1	1552±25

Table 6.1 Dating for 2015-16 contexts

A total of 39 burials or components within the mixed surface contexts were identifiable to a Spong phase (Table 6.1). Most of this phasing is based on the pots but various other finds could also be included and no major conflicts between attributions were identified. The stratigraphic evidence for 0151 (phase C) being over 0153 (phase B) is consistent. Of the potentially

contemporary group 0158-0163 two are unphased, two are phase B and one possibly phase C . The latter, 0158, could from its position have been deposited separately after the contemporary deposit of four pots.

Although seven of the 40 contexts could be identified as Spong phase A none of these were subsoil burials, and only one of the four phase A/B contexts was a subsoil burial (0123). Half of the attributable groups were phase B or B? including eight of the twelve attributed subsoil burials. The eight phase C or C? groups included four of the subsoil groups. Compared to the overall numbers of pots from Lackford that can be phased (as discussed below, Chapter 8) this suggests that phase A is under-represented in the excavated area.

Radiocarbon dating was done on cremated (human) bone from the thirteen pots excavated from subsoil contexts in 2016. The results suffer from the ambiguities of the 5th-century calibration curve, but suggest that a start date for these burials in the mid 5th and ending in the early 6th century would be likely; however the results are statistically so close that they could have been buried within a shorter time than the suggested 50 years.

6.6 Damage and remaining potential (Figure 5.5)

The existence of the surface scatters and the very incomplete condition of the pots lifted from the subsoil demonstrate the ongoing impact of cultivation on the cemetery. Only one pot was recovered without plough damage, 0153, because it was found beneath burial 0151. The subsoil burials in the southern plough furrow (excluding the group 0158-0163 which extended to the north-east of the furrow) showed that the most recently removed pieces had been deposited on the surface about 0.75m to the north-east; this was true both for pots where this was probably the first plough impact, such as 0123 with surface scatter 0124 providing a complete profile of the vessel, and where the original pot had been almost completely destroyed previously (base sherd 0154 in the furrow with the rest of the base only recovered on the surface as 0119). The same pattern of redeposition of material between 0.6 and 1.1m to the north-east was recorded for two of the other subsoil burials (0112/0104, 0164/0148), whereas 0143 seems to have been redeposited to the south-east (0116). The group 0158-0163 had been damaged from both the north and south sides, with pieces of 0160 (the south half of this pot remained intact) ending up in surface scatter 0129, 1.2m to the north-east. Movement over multiple ploughings had resulted in single sherds from 0158 and 0161 being found over 4m away in surface scatters 0136 and 0137. Similar movement distances were seen in some of the links identified between vessels found solely in the surface scatters.

Given the fragile nature of early Anglo-Saxon pottery, once broken up in the ploughsoil it would be impossible to reconstruct the original numbers of burials in this part of the cemetery. Also, because of the nature of the 2015-6 investigation, focussed mainly on the exposed material, it is impossible to estimate the total number of whole or partial burials surviving below the ploughsoil. In 1947 this area was largely written off as already damaged by agriculture; the 2015-6 excavations show that the southern limit of the cemetery has not been defined and that some, mostly damaged, evidence does remain.

7. The 1947-9 excavations: Comments on the contexts and plans

The minimal amount of surviving site record data from the 1947-9 excavations has been summarised above in section 2. A key asset is the fact that material was deposited at Cambridge Museum of Archaeology and Anthropology (CUMAA), where Lethbridge was curator before the 1951 publication. Within the publication there is reference to both the museum accession number (shortened to the format yy,nnn, eg 50,90 on fig.1) and the site reference (eg TD,3) on most of the artefact illustrations (Lethbridge 1951, figs 1-35); however the letters and numbers are handwritten and sometimes ambiguous and some errors have been identified. Many of the pots were also included in Myres' corpus (1977) again with the museum references and the context references. The museum catalogue contains the site context reference in most cases, and this has been cross-referenced to the Lethbridge excavation notebook which provides an approximate excavation sequence and also occasional location and relationship data.

The table (Appendix 14) identifies 485 contexts, each in theory representing a single cremation. Of these at least 43 are now missing the cremation pot; in some cases these were not retained on site because they were undecorated and in bad condition. In addition, there are gaps in most of the letter/number sequences which suggests that at least 70 contexts may be completely unrecorded, giving an original total around 555. The CUMAA records were accessed under 1948, 1949 and 1950 references and all but 14 of these have some context information; however, a further batch of 170 pots were accessed with a Z-prefix rather than the year and 68 of these lack a context reference (and others are unclear or unlikely).

Although the Lethbridge notebook only provides a very intermittent and incomplete record of the excavations it does provide a rough chronological framework for the development of the context reference system and the occasional sketch plans allow some correlation with the published site plan (1951, Plan II), and an indication of the location of broad groups of contexts (see Figure 7.1). The notebook shows that context identifications moved from numeric (1 to 16) on the first day via letter groups with numbers and then finally 49 A 1 to 49 A 29, presumably excavated in 1949. The number of letters in the group prefixes increased incrementally from one to a single four letter group (BENI 1 to BENI 18) in May 1948. In addition, the groups with letter prefixes also involved a system of letter suffixes to pots found together, for example G 1 was found over G 1 A, and in one exceptional case this involved twelve pots (WDY 32, WDY 32 A to WDY 32 K). The resulting context list is very unsympathetic to computer ordering systems.

All re-examination of the finds used the museum reference as the primary identifier, but the original context has been included wherever possible.

The plan of the context locations draws on two types of sketch plan in the notebook: one shows the distances of individual pots from a base line local to the context group (these exist for six context groups, see for example Figure 2.1); and the others show broader aspects such as a layout of trenches with dimensions or the distance along the southern edge plough furrow. This information was correlated with the published plan of trenches which shows unnumbered dots for the individual pots. The published plan has two main areas, west and east, linked by the edge of ploughing to the south; the earliest finds can be located within the western block, whereas the later three- and four-letter codes (TDY, UDY, WDY, BENI) lay to the east, with the final 1949 finds at the north-east corner of the site. Excavation of the two Roman square structures was described and plotted separately (and minimally) in the notebook and the published plan shows them well to the east and north-east of the excavated cemetery trenches (1951, Plan I).

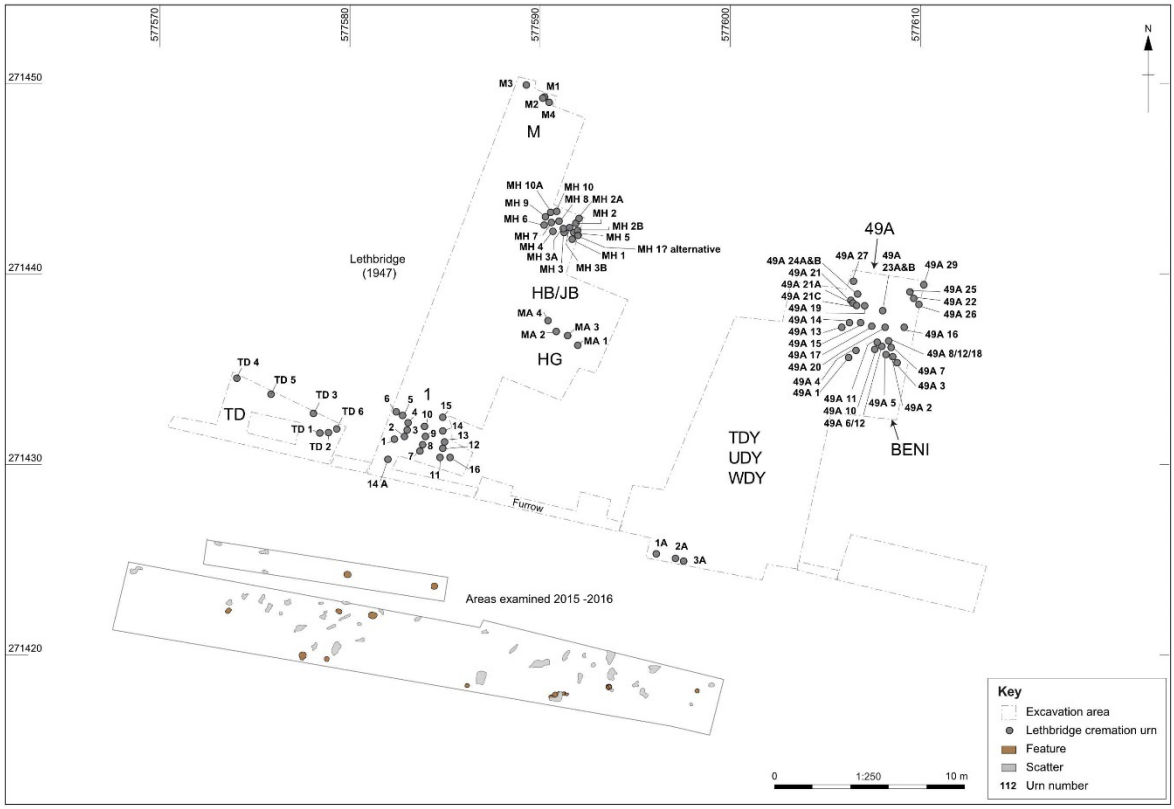

Figure 7.1 Excavation plans with possible locations of 1947-9 contexts

The precise location of the 1947-9 excavation is also not secure. The published location map, although based on the Ordnance Survey has very few points that can be accurately related to the modern landscape. Although it was previously believed that the bulk of the excavated area was under the tree plantation (as stated by Lethbridge, 1951,1) several attempts at geo-locating the plan consistently placed the southern edge of the excavations to the south of the wood within the present field edge game belt. Until any further evidence is found in the field this cannot be checked further, and so the provisional location has been used in the overall site plans (Figures 3.1, 7.1).

8. The 1947-9 excavations: specialist reports and overall discussions

8.1 Pottery vessels from previous excavations on the site and discussion

By Sue Anderson

A survey of the Lackford cemetery pottery held by CUMAA was carried out in 2002 by the author. This involved producing a database, based on CUMAA's records, and adding the fabrics of as many of the vessels as were available to be viewed at that time.[2] The database has been enhanced as part of this project, to incorporate drawings and photographs of as many of the pots as possible, together with descriptive text from Myres (1977) and other sources (such as Lethbridge's 1951 publication report and his excavation notebook). The database includes all known vessels excavated from the site, including the more complete examples from 2015 and 2016, and those scattered in museums across the country. Unfortunately it has not been possible to collect fabric data on every vessel included in the database. This information is not available for pots held by the British Museum, University College London, Wisbech Museum, Mildenhall Museum, Luton Museum, the Elveden Estate and private individuals (the latter listed by West 1998). One vessel at the Ashmolean and six vessels held by CUMAA, all recorded by Lethbridge and/or Myres, have not been located in the relevant stores. There are several large groups of sherds in the CUMAA stores (accessioned under 'Z' numbers) which contain a number of sherds with different fabric types. These groups clearly include sherds from some of the same vessels, but sorting and linking them would have been too time-consuming to be undertaken as part of the current project. Most of the sherds were likely to be topsoil or unstratified finds as few had context information in the CUMAA catalogue. Information from the database is included in Appendix 22.

Table 8.1 presents the quantities of vessels by fabric, including the more complete vessels from 2015–16. In comparison with the 2015–16 group, which includes a lot of vessels represented by only one or a few sherds, the more complete group appears to be dominated by granitic (ESCF), rather than fine sandy (ESFS), wares, although as a group the sandy wares of all types were slightly more frequent than the granitic ones. There were also significantly more calcareous-tempered wares in this group.

Description	Fabric	MNV
Quartz tempered		
Coarse quartz in a finer sandy matrix	ESCQ	66
Medium sand tempering with few other inclusions	ESMS	6
Fine sand tempering with few other inclusions	ESFS	111
Fine abundant quartz-tempered (greensand)	ESFQ	22
Very fine sand and abundant white mica	ESSM	11
Granitic tempered		
'Charnwood Forest' type, containing granitic tempering	ESCF	160
Mixed calcareous and granitic inclusions	ESCM	48
Organic tempering in association with granitic inclusions	ESOM	22
Organic tempered		
Heavily grass tempered with few other inclusions	ESO1	12
Grass tempered with moderate to common sand	ESO2	28
Calcareous tempered		
Sparse to moderate fine shell and sand tempering	ESSS	8
Coarse shelly ware	ESCS	2
Coarse limestone-tempered ware	ESCL	34
Sparse limestone and sand	ESSL	27

[2] In some cases there were no broken edges and many of the complete pots were reconstructed with plaster, so a 'best guess' of fabric group had to be made based on surface appearance.

Description	Fabric	MNV
Calcareous and organic-tempered	ESCO	3
Sparse, rounded chalk in a fine to medium sandy matrix	ESSC	20
Grog tempered		
Grog and sand tempering	ESGS	11
Sand, red grog and granitic inclusions	ESGG	7
Sand, grog and calcareous inclusions	ESGC	5
Common flint inclusions		
Coarse quartz and flint-tempered	ESQF	1
Fine flint and sand-tempered	ESFF	3
Miscellaneous		
Sparse sandstone in sandy matrix	ESSA	24
Ferrous oxide and sand-tempered	ESFE	1
Total		*632*

Table 8.1 Pottery fabrics of all recorded near-complete vessels.

Forms were divided into five basic groups: biconical, shouldered, sub-biconical, globular and baggy. All vessels for which it has been possible to define a fabric group and a basic form are included in Figure 8.1, which shows that the majority of vessels from the site can be classified as globular or sub-biconical. In all fabric groups except grog, globular vessels were the most frequent type; the grog group was dominated by sub-biconical types. Baggy vessels were most common in the organic group, but there were very few of this type in the assemblage. In the granite group, sub-biconical types were almost three times as common as biconical and twice as common as shouldererd types, whereas these three types were approximately equal in the quartz group. The calcareous group also had more sub-biconical than biconical and shouldered types.

Vessels for which it has been possible to assign both a fabric group and a Spong phase (based on Hills and Lucy 2013) are shown in Table 8.2. These data are shown graphically in Figures 8.2 and 8.3. These suggest that all fabric groups were most common in Phase B, with the exception of organic-tempered vessels which occur more commonly in Phase C. However, organic tempering occurs throughout the phases, even if it is more frequent at the end of the Spong Hill phasing. The actual numbers of organic tempered vessels are relatively small, however, as would be expected in a pre 7th-century assemblage, and sand-and-organic wares are twice as frequent as the true organic wares, which are generally considered to date to the later 6th and 7th centuries in East Anglia. Grog-tempered and calcareous wares both appear more frequent in Phase B than earlier or later, and granitic and quartz-tempered wares tend to be less frequent in Phase C.

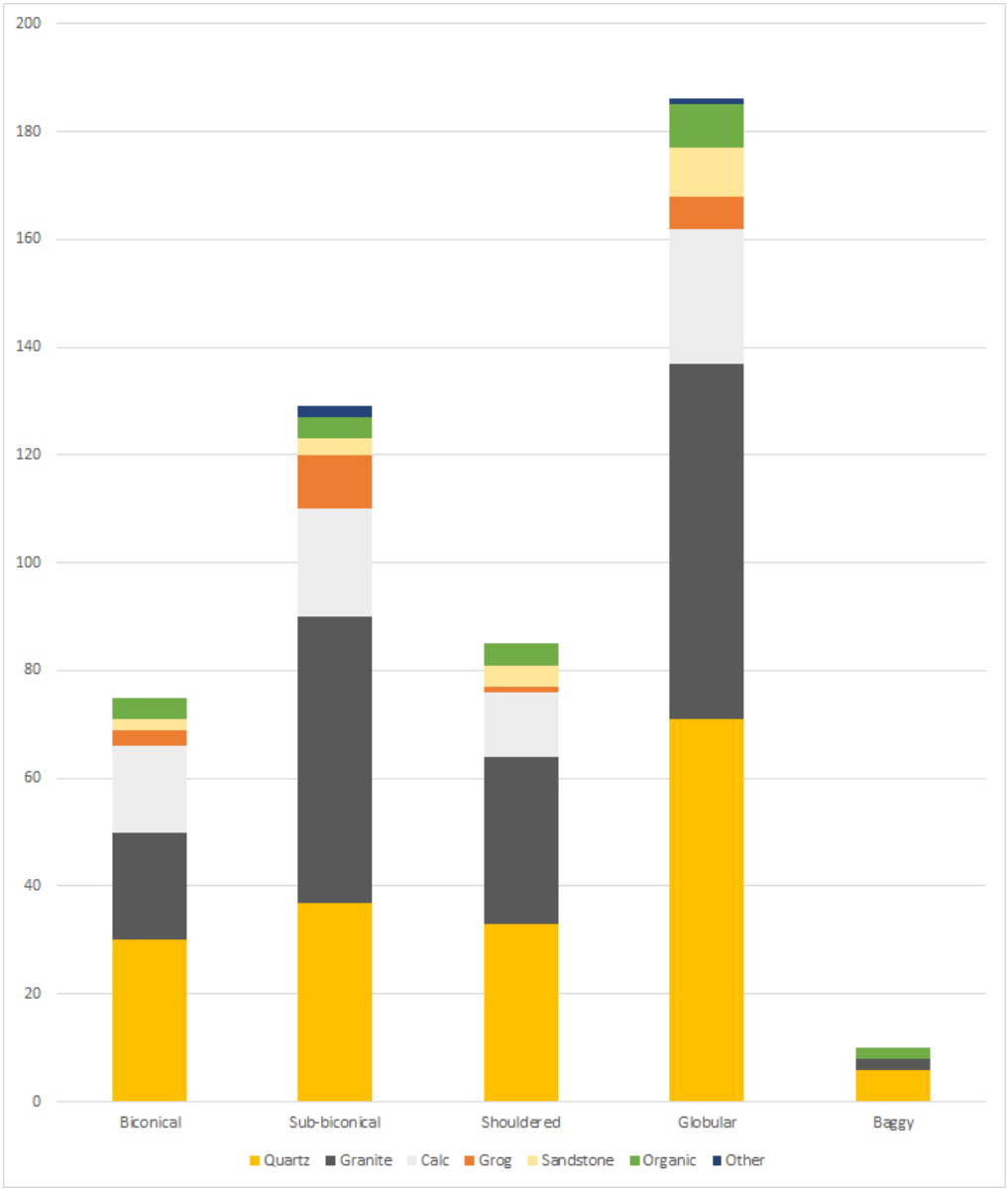

Figure 8.1. Fabric groups and basic form types (MNV).

Fabric group	A	A?	A/B	B	B?	B/C	C	C?	Totals
Quartz	27	9	11	51	8	7	21		134
Granitic	28	9	5	41	18	10	7	8	126
Calcareous	7	4	1	27	7		3	1	50
Grog	1	1	1	6	6		2		17
Organic	3	3	2	3	1		5	1	18
Flint				2	1		1		4
Sandstone	2	1		1	3		1		8
Totals	*68*	*27*	*20*	*129*	*44*	*17*	*41*	*10*	*357*

Table 8.2 Distribution of fabrics across Spong phases.

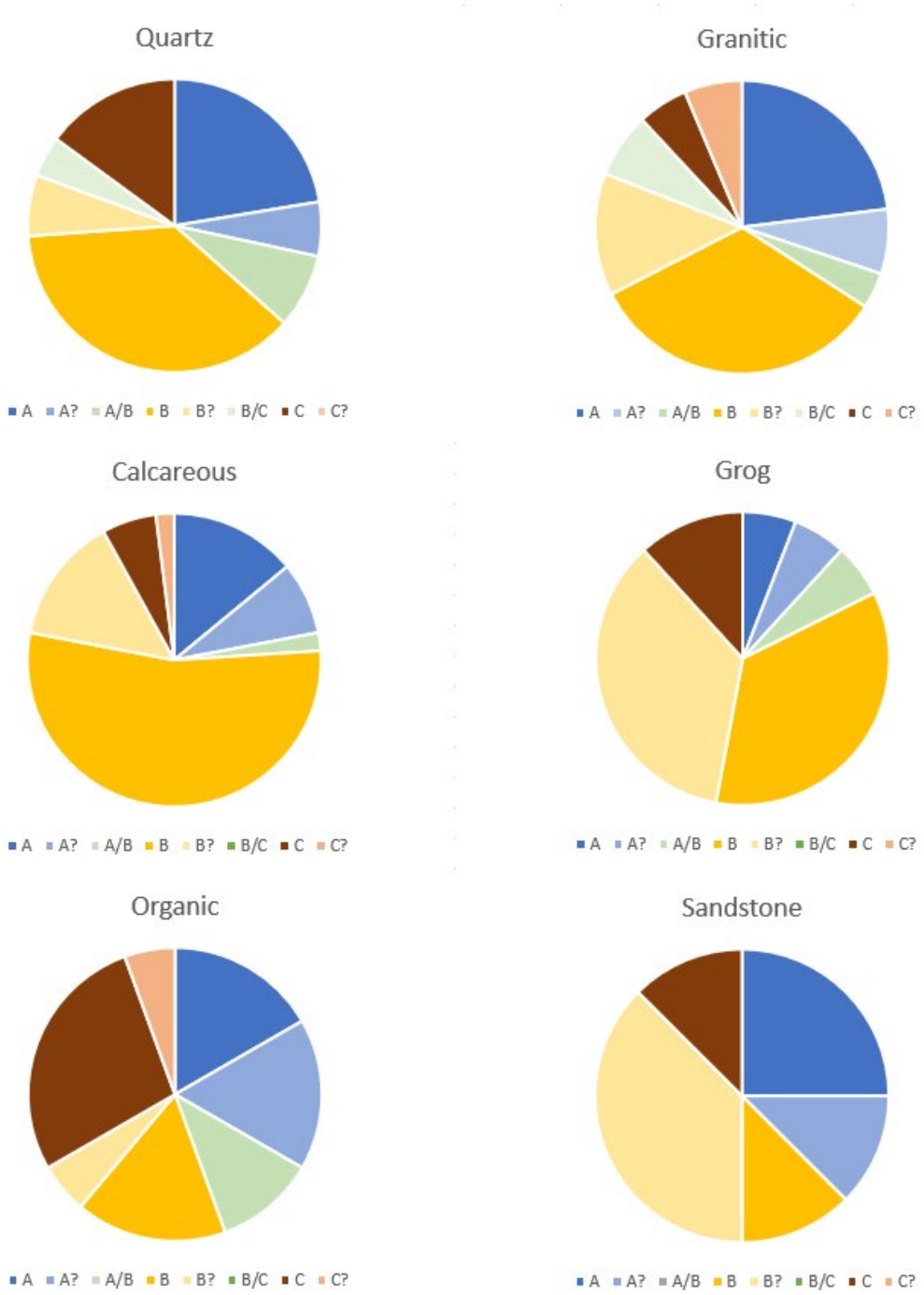

Figure 8.2. Minimum numbers of vessels in each fabric group (except flint) by Spong phase.

The main vessel form quantities by Spong phase are shown in Figure 8.4. Later 'baggy' types were generally undecorated and therefore could not be assigned a Spong phase. All four types were present in all three Spong phases, but the biconical and shouldered types were very rare in Phase C. Sub-biconical vessels were most frequent in Phase B, but were also common earlier and later. Globular vessels showed a proportionate increase through the phases and were the most common type in Phase C. This is in broad agreement with the dating suggested by work at Mucking (Hamerow 1993).

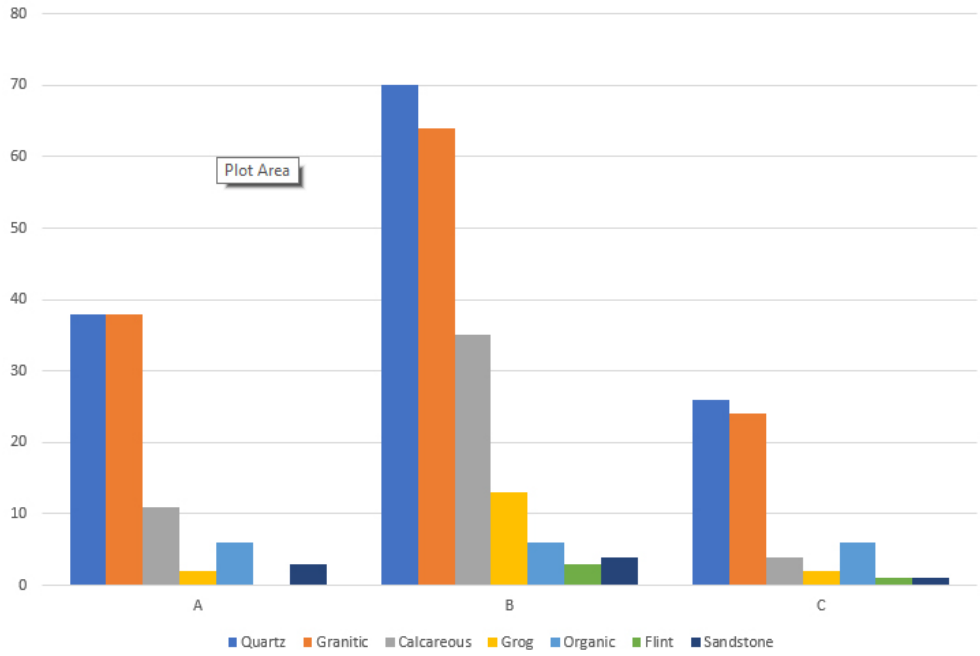

Figure 8.3. Distribution of fabrics in the three Spong phases (A = A and A?; B = A/B, B and B?; C= B/C, C and C?).

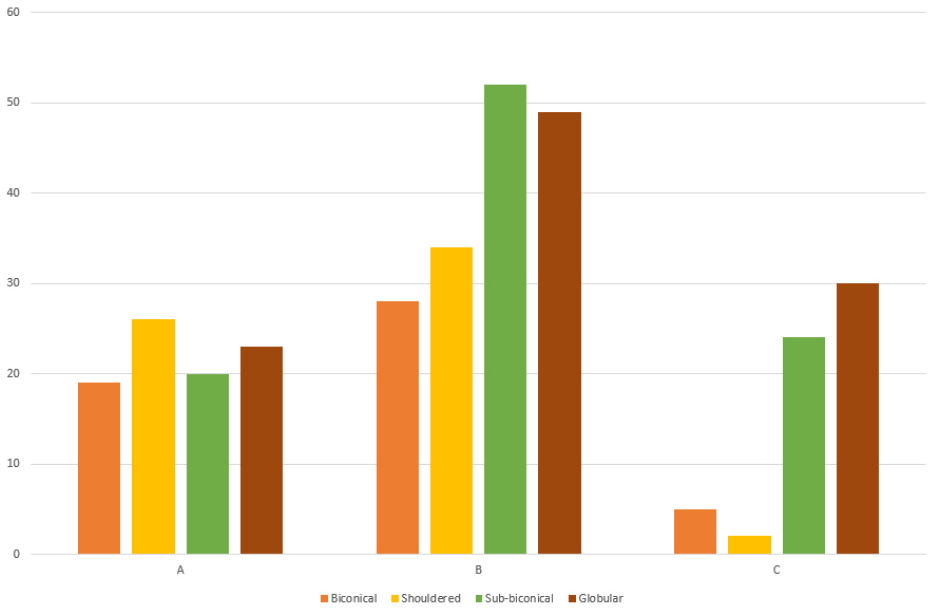

Figure 8.4. Distribution of the main vessel forms in the three Spong phases (A = A and A?; B = A/B, B and B?; C= B/C, C and C?)

The fabrics recorded for the complete vessels at CUMAA show some patterning when compared with forms and decoration. Of particular interest is the inclusion of limestone in three near-identical lidded vessels (Myres 1977, cat nos 917–919; Lethbridge's contexts 6, 8A and 5 respectively), two of which were adjacent burials excavated on the first day of the excavation; the third (8A/A8) was between 5 and 14m away in the plough furrow. These vessels are linked by the band of outlined chevrons with diagonal hatching at the neck of each, and on the two surviving lids. Two vessels with similar incised animal patterns (ibid, cat nos 882–883; Lethbridge's contexts UDY 25A and 26A) were also both tempered with coarse limestone. The amount of limestone within the fabrics of these vessels suggests that they were not made locally. Other groups include two near-identical bossed urns in the same fine sandy micaceous fabric (ibid, cat nos 898 and 899; Lethbridge's contexts WDY 15 and 16), two globular jars in a fine sandy fabric decorated with

large pendant triangles and the same stamp (ibid cat nos 934 and 935; Lethbridge's contexts WDY 39B and T1), and two other fine sandy vessels which shared one stamp in common (ibid, cat nos 2795 and 2796; Lethbridge's contexts unknown and WDY 59). Whether or not these sand-tempered vessels were local, it is likely that the pairs of pots were made with the same batches of clay, presumably at the same time.

Based on Lethbridge's notebook, 39 groups of pots with relationships survived intact in the CUMAA collection and could be studied in relation to fabric, form, and Spong phase, although some were undecorated and could not be placed in a phase group. Nevertheless, some evidence of possible date could be derived from the form of the vessel.

With regard to the Spong phase, where more than one vessel had a phase group, these were generally either the same (*e.g*. Phase B pots overlying other Phase B pots) or in the correct order (*e.g*. Phase C overlay Phase B). One anomaly was found, where a Phase A pot (WDY39C, a carinated vessel) was above a globular jar (WDY39) and below those were two Phase C pots (WDY39A ESO2 globular jar; WDY39B ESFS globular jar). In this case, perhaps the carinated vessel (and also its contents?)[3] was curated and used as a burial urn at a time when it was effectively an heirloom.

Based on forms alone, so that undecorated vessels may be included, again it can be seen that similar forms were generally either on top of each other — for example, G1, a sub-biconical jar, was above G1A, a sub-biconical pedestal jar, both granitic (ESCF) and both having Spong Phase B decoration — or in the expected order based on broad dating suggested by Myres (1977) and Hamerow (1993). However, again there were some anomalies, such as the Buckelurne (TDY22; ESSM; Spong Phase A) sitting on top of a shouldered urn in a granitic fabric (TDY23, ESCF) which should really be later than the former. Some relationships were useful in confirming expected dating sequences, such as the two finger-pinched rusticated vessels in UDY21 and UDY24 which were above three sub-biconical jars, two of which were Phase A types.

Fabrics were less easy to interpret, particularly as most fabrics were present in all three phases. A few groupings contained only granitic, only sandy or only calcareous fabrics, but other groups were mixed and it is likely that the pot groups with only one fabric type occurred by chance.

The Illington/Lackford 'workshop'

The existence of 'workshops', producing defined groups of vessels, was first postulated by Myres (1937). The group excavated at Lackford was discussed by Lethbridge (1951) as 'Icklingham-type', and a further group from Illington, Norfolk was added from Knocker's excavations of a cremation cemetery there in 1950 (Davison *et al*. 1993). Myres later included most of the known vessels of this 'Illington/Lackford' group in his corpus (Myres 1977). Green *et al*. (1981) looked at the vessels in more detail in relation to the West Stow settlement and Illington cemetery groups, Russel (1984; 1993) considered fabric petrology, and Arnold (1988) studied the stamps.

Twenty-seven vessels from Lackford can be assigned to the Illington/Lackford groups defined by Green *et al*. (1981). Table 8.3 shows the distribution by fabric (the original fabric groups suggested by Green *et al*. do not correspond closely to the fabrics used in the present study). This shows that the 'workshop' pots occurred in a variety of fabrics, with sandy and granitic types being most frequent, and calcareous and sand-and-organic fabrics also being relatively frequent. This corresponds with the proportions of fabrics in the wider assemblage at Lackford. Green *et al*. (1981) and Russel (1984, quoted by Arnold 1988, 357) also noted the wide range of fabrics in which these vessels occurred.

[3] cf. Williams (2014, 105), who suggests that 'cinerary urns may have been displayed, transported, and handled aboveground for days, weeks, months or even years'

Design	ESFS	ESCQ?	ESFQ	ESCF	ESCO	ESSL	ESLO	ESGS	ESO2	ESFF	ESSA	Un
1?											1	
3a	2	1		2		1		1	1			
3a/4a					1				1			
3a?							1					
3b						1		1				1
3b?	1											
4a	1			1					1			
4b	1			2								
4b?				1								
5b	1		1							1		
6b	1											
Total	*7*	*1*	*1*	*6*	*1*	*2*	*1*	*2*	*3*	*1*	*1*	*1*

Table 8.3. Illington/Lackford designs by fabric.

Russel (1993, 108) identified as many as 123 fabrics at Illington (86 of which were represented by only one or two vessels), although he distilled these into two main types: silty and sandy. He suggested that the Illington/Lackford vessels from Illington may be non-local (possibly made at West Stow) as they were in a fine silty fabric, although he also stated that this could have been obtained locally. Certainly potters working at both settlements would have had access to fine alluvial clays, based on the surface geology of the area (BGS 2017), although not all of these may be suitable for potting. Russel found a correlation between the presence of pyre goods and the use of Illington/Lackford vessels and suggested that the urns were a high status grave good as a result, but despite his claim to the contrary, this does not necessarily mean that the vessels had to be 'imports' at Illington. Leahy (2007, 123) notes that at Cleatham, grave goods were just as likely to be found in undecorated vessels as decorated ones, suggesting that decoration was not equated with status there. Green *et al*. (1981) had proposed northern and southern groups based on decorative schemes, and Russel also suggested the possibility of northern and southern exchange zones (1993, 109) based on fabric groupings.

Although Williams and Vince (1997) suggested that granitic-tempered fabrics found across the eastern region might derive from the Charnwood Forest area of Leicester, more recent finds in East Anglia suggest that the granite inclusions may be derived from the Boulder Clay in Norfolk and Suffolk (A. Vince, pers. comm.) and pieces of granite have been found on Early Anglo-Saxon sites in the county (*e.g*. Flixton). Russel recorded the presence of 'igneous rock' (*i.e*. granite) in 152 vessels at Illington (Davison *et al*. 1993, fiche app. II, D3–E13), and noted that it may have been deliberately added at West Stow (Russel 1985). Other common inclusions, such as chalk and flint, may also come from this source. The variety of fabrics may simply be the result of different clay sources being used over a period of time. Nevertheless, it is rare to find granite fragments in Early Anglo-Saxon loomweights and other fired clay objects, which were presumably made from clays local to the settlements. The granite in Early Anglo-Saxon pottery may therefore be a deliberate addition, whether for its sparkly appearance (including gold mica), or for its hardness (which provided grinding grits internally once the pot was worn), or perhaps for some superstitious or cultural reason which is now lost to us. Whatever the reason, the presence of a non-local stone such as granite in this pottery does not necessarily suggest that the pottery was made a long distance from the site.

In terms of date, the vast majority of the Illington/Lackford pots belong to Spong Phase C, although the four vessels of types 1, 5b and 6b were assigned to Phase B. Green *et al*. (1981, 189) indicated that a late 6th-century date, as suggested by Myres and Lethbridge, was confirmed by their studies. However, more recent work has shown that Phase C at Spong Hill belongs largely to the early 6th century. In addition, a type 3b pot recovered from a grave at Eriswell (Caruth and Hines forthcoming, G160) was dated by association with male grave goods to the first half of the

6th century.

Discussion

Based on the pottery recovered from the recent and previous excavations at Lackford, together with the size of the excavated area and unexcavated portions of the site, it seems likely that in excess of 1500 individuals were cremated and subsequently buried here. The types of vessels (and other finds) present indicate that the cemetery was in use from the 5th to the early 6th century, suggesting a crude average rate of burial of *c*.8–10 people a year and a possible contributing population in the region of 500 people (see cremated bone report; McKinley 1994, 69–71; Leahy 2007, 31–2; Hills and Lucy 2013, 295). This strongly suggests that more than one settlement contributed to the graveyard. No other cremation cemeteries are known within the surrounding parishes to date, the closest being a small group at Eriswell (Caruth and Hines forthcoming) and a single urn from Culford (West 1985, 156). This is in contrast to the many inhumation cemeteries, both small and large, spread across the area (*ibid*.).

Although there is some contemporaneity between the two types of ritual, it appears that inhumation was more likely to take place closer to home than cremation burial. Does this imply an unwillingness to transport the intact body far and, if so, should we expect pyres to be located close to settlements rather than in the cremation cemetery? McKinley (1994, 82) noted the lack of pyre sites at Spong Hill and suggested the possibility that they were located elsewhere, with urns being easier to transport than a body. Only one possible pyre site has been identified at a cemetery site in Suffolk to date, that at Snape (Filmer-Sankey *et al*. 2001), although despite the authors' protestations there is no reason why this could not be the remains of several plough-scattered cremations similar to those found at Lackford in 2015–16. Indeed, the presence of sherds representing several unburnt pottery vessels would argue for the latter, as there is no particular evidence that pottery vessels were normally included on the pyre (although one very burnt small vessel from context 0133 is likely to have been).

Whether the pots were full or not on arrival, it seems likely that most or all were brought from the contributing settlements. There is no evidence at any cremation site for the production of pottery (although there is equally no evidence at any settlement site in the region either). Residue analysis of the 2015–16 vessels from Lackford, as well as work elsewhere (*e.g*. Perry 2013), has shown that the pots were most likely used as cooking vessels with 'sustained use' prior to burial, suggesting that they were brought from a domestic context. The similarity of fabrics between contemporary funerary and settlement sites within a locality has been cited as further evidence for use of everyday rather than specialist pottery in cremation contexts (summarised by Perry 2013, 5–6).

Changes in pottery style (form, decoration) show an increase in use of the Lackford cemetery from Spong Phase A (early 5th c.) to Phase B (mid 5th c.), and then a sharp decline in Phase C (late 5th–6th c.), as was seen at Spong Hill. Proportions of pottery fabrics appear to have remained fairly constant, with quartz-tempering and granitic-tempering dominant throughout. However in Phase B the calcareous-tempered and grog-tempered fabrics increased at the expense of granitic wares. This may simply indicate a change in the chosen source of potting clay, or perhaps a different settlement group dominating the use of the burial ground for a short period. Quantities of organic tempered pottery are low in all periods, but show a marked increase in Phase C. Unfortunately it has not been possible to look at distributions of fabrics and forms across the entire excavated area of the cemetery, as the plans for the 1950s excavations are poor or non-existent. Plotting the main vessels in the 2015–16 group appeared to show some patterns of fabric distributions, but not of forms or phases.

Petrological analysis of the pottery from several Early Anglo-Saxon cremation cemeteries by Russel (1984; 1993) resulted in too many fabric groups to be of practical use in the recording and analysis of most assemblages. The fabrics used by the present author are based on main inclusions rather than the fineness of the clay matrix, although both methods are valid. Comparison of fabric groups at funerary and domestic sites across Suffolk (Figure 8.5) using

inclusion-based fabrics shows clear similarities between the western sites (*e.g*. Lackford, Kentford, Eriswell, West Stow, Culford), where granite and sand tempering predominate, and sites further to the north and east (*e.g*. Rushbrooke, Eye, Debenham, Carlton Colville and Flixton), where granite is less of a feature and sand is the main temper. At south-eastern sites (*e.g*. Ipswich Handford Road, Leiston, Rendlesham and Bromeswell), shelly wares were more frequent. This seems to be a more practical method for comparing fabrics within a large assemblage and with other sites. Handmade vessels are not uniform in their fabrics, even within a single vessel, so more generic fabric groupings tend to result in patterns which are easier to interpret.

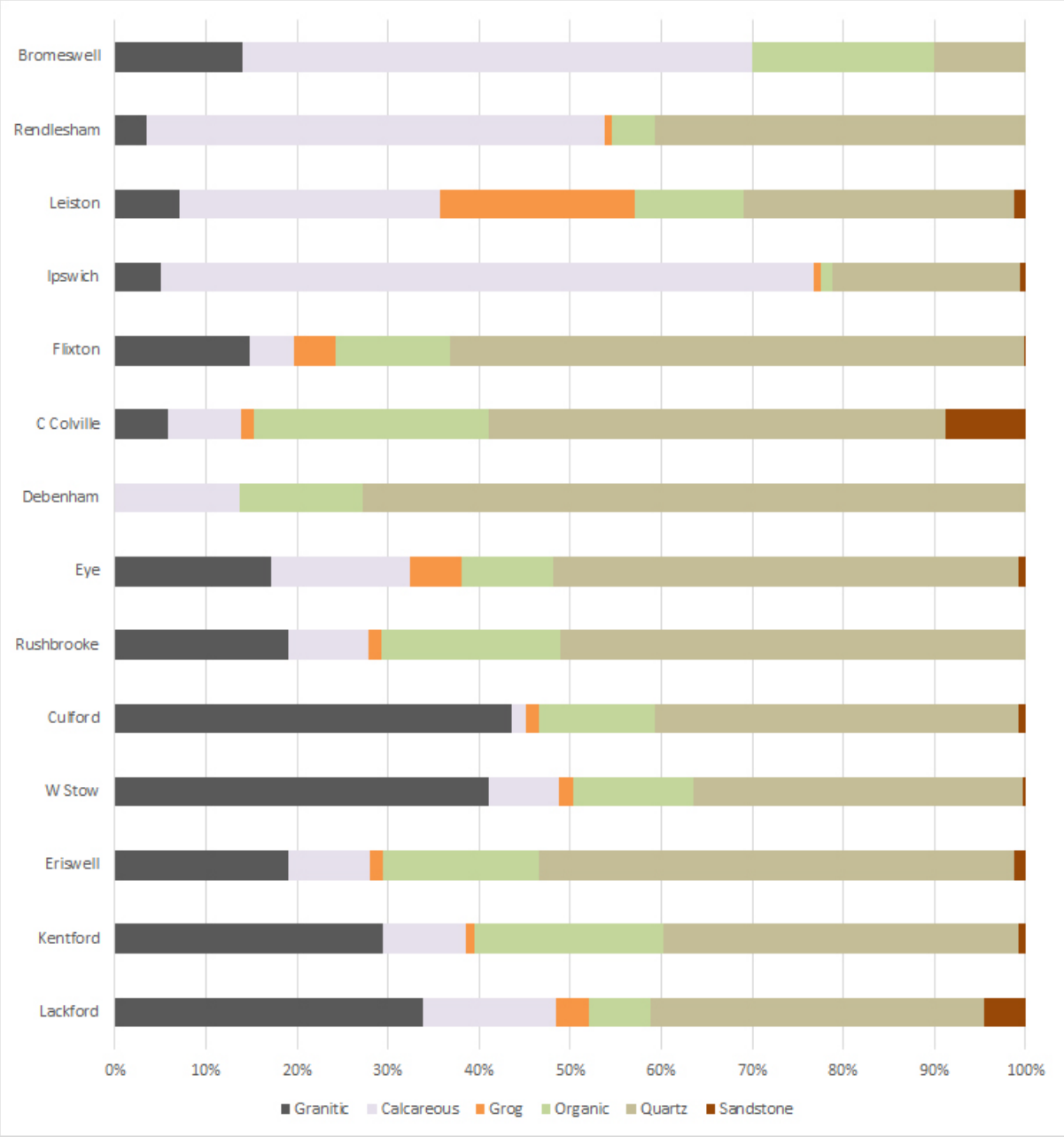

Figure 8.5. Pottery fabric proportions from sites across Suffolk based on MNV (data from Anderson 2005, 2009a–b, 2012a–b, 2013, 2015a–c, 2017a–b, 2018; Tipper 2009)

Although the Lackford group fits well in the local area in terms of its major fabric groupings, there were a few fabrics and forms which appear to have been brought from further afield. These include the limestone- and shell-tempered wares in particular, the former coming from the west and the latter likely to be from the east, although as much of the shell was leached out its

geological origin is less certain. One vessel, the 'horned urn' (Cat no 3, from surface scatter 0108) was in a harder sandy fabric than is typical of the Lackford area and may have travelled from somewhere in the south-east (the closest examples are from Essex and London). These non-local pots may represent immigrants to the area or perhaps emigrants who wished to be buried in a former home or with family members. Whether the pots came to the area as domestic chattels, or whether they already contained their occupants when they travelled is impossible to determine. The putative 'imports' of Illington/Lackford (?West Stow) vessels to Illington, as suggested by Russel (1993), may simply represent the movement of family groups who wished to be interred together. Even if the vessels were made at West Stow, as he suggested, perhaps they were taken to other local settlements through trade or marriage, and ended up at Illington because that cemetery was closer to, or preferred by, the settlement in which the pots were used in daily life.

8.2 Cremated Bone: human and animal

The cremated bone is the biggest gap in the Lethbridge excavation record; it seems very likely that it was discarded on site. There are no records of any systematic examination of the bone, and only very occasion fragments survive in the CUMAA collection, usually because they are stuck to another object. One of these fragments, 1950.122 B.5 from context UDY 38 A, is a piece of trepanned skull. In both the published account and the notebook there are just 31 references to cremated bone in context. In five cases the bone is described as found without a pot container; in two cases pots are recorded as having no cremation, and in one case only a few cremated bones. Aging data consists of eight adults, one young adult, seven children, one very young child and five infants; the report says that "It was observed that children were frequently cremated, often very young ones" (1951, 3). On the sexing of the bones there is even less data: one group of two pots is described as possibly a man and wife because one has very large bones and the other is smaller; one further adult and the one young adult are described as female without this being a conclusion based on grave goods, which is how the report suggests the burials could be sexed (1951, 3). This minimal information, including a note of associated objects, is summarised in Table 8.4.

Context	Notebook page	Lethbridge 1951	Age	Sex	Other information
6	4		adult		premolar tooth much worn; assoc comb, miniature tweezers
49 A 5	55		child		assoc comb
49 A 29	57		child		assoc comb and bronze fragments, not recorded
F 17 A		p 18 caption to Fig 12	child		
FGT 4		p 16 caption to Fig 3	child		
J 2		p 16 caption to Fig 3	very young child		
MA 3	20		large adult		assoc comb, brooch knob, knife
MH 5	23		adult		assoc vessel
MH 10	23		adult		assoc tweezers
MH 10 A	23		child		possibly contemporary with MH 10
TD 3	26		young adult	F	Not obviously sexed on grave goods; assoc comb
TD 4	26		adult	F	Not obviously sexed on grave goods; assoc ivory ring, spindle whorl, vessel
UDY 43	40		adult		assoc comb

Context	Notebook page	Lethbridge 1951	Age	Sex	Other information
UDY 43 A	40		child		beneath (?contemp) UDY 43; assoc buckle
UDY 54 A	40		child		UDY 54 on top of 54 A containing child (?contemp)
WDY 15	44	badly cremated bones of a large man...' p17-8, caption Fig11	adult	M	assoc iron shears, ?key, antler waste
WDY 16		bones of a smaller individual' than WDY 15 p18 caption to Fig 11	adult	?F	Lethbridge hypothesised WDY 15 and WDY 16 were a man and wife; assoc comb, ivory ring
WDY 18	45		infant		assoc glass bead (not recorded)
WDY 20	45		infant		
WDY 21	45		infant		
WDY 23	45		infant		
WDY 46	48		infant		

Table 8.4 1947-9 information about cremated individuals

The evidence for animal bone in the cremations is also extremely slight, although Lethbridge states that "bones of dog, sheep and red deer show that these animals were also burnt with the dead" (1951, 3). The only specific references are to the deer antler in WDY 15 (table 8.4) – this is one of the two groups of antler waste discussed by Riddler and Trzaska-Nartowski below. Two sheep or goat astragali were retained, presumably both as possible gaming pieces; Lethbridge refers to one (from 49 A 26) in the notebook as an 'unburnt knuckle bone for gaming' although as the discussion below indicates neither shows any use wear and the second one (from UDY 26) was burnt.

In the description of pots UDY 13 and 13 A in the notebook Lethbridge noted below the sketch 'bones all around' suggesting an external deposit of bone comparable to the horse bone found around the base of burial 0144 in 2016; a similar pattern occurs at Spong Hill (Hills & Lucy 2013, 161-2)

8.3 Objects and Waste of Antler, Bone and Ivory

By Ian Riddler and Nicola Trzaska-Nartowski

8.3.1 Introduction

Antler, bone and ivory objects and waste were widely distributed across the Lackford cemetery. Lethbridge published a number of the objects of these materials and mentions others that were not illustrated; but a substantial quantity of objects, as well as several pieces of antler waste, were not mentioned in the report, and are published here for the first time.

These finds include the museum accession number, usually a cremation group with a suffix denoting the specific object, and the site context is included where known in parenthesis for example 1949.39 C (T 1).

The material from Lackford is substantially similar to that recovered from other cremation cemeteries within East Anglia, Lincolnshire and Nottinghamshire. These have attracted increasing attention in recent years, particularly in putting together the whole range of evidence for each cremation and comparing the dead with the ceramics and small finds from the burial (Hills and Lucy 2013, Squires 2012; 2013; 2016; Williams 2003). The publication of the Spong Hill cemetery has undoubtedly provided a standard against which to judge all of the other cemeteries. A detailed study of the objects from Spong Hill allowed them to be placed into three phases. The

results of the seriation of grave goods and the consequent phasing of the cemetery have been incorporated here and they allow the objects from Lackford to be placed within a typological sequence. This is outlined after the objects from the cemetery have been described.

Functional Category	Object	Quantity
Dress Accessories	Beads	4
	Pins	1
	Pendants and Amulets	2
	Antler Burr Rings	5
Personal Possessions	Ivory Bag Rings	28
	Combs	65
	Casket Mounts	1
	Handles (Cylinder)	1
Textile Manufacture	Spindle Whorls	5
	Needle Cases	1
Antler Working	Waste	2
Recreation	Gaming Pieces	39

Table 8.5 Bone and antler objects from Lackford, by functional category

The objects are discussed broadly by functional category, beginning with dress accessories and continuing with personal possessions, textile manufacture, antler work and recreation (Table 8.5).

8.3.2 Beads

Four antler or bone beads were recovered from separate cremations. All four have been burnt. Three were found in Lethbridge's excavations and one has come from the more recent work and has been described above (section 5.7 and Figure 4.10). Antler or bone beads can be defined as small oval, circular or rectangular objects of flat, plano-convex or cylindrical section, pierced by a central perforation (Hills 1977, 30; Richards 1987, 82; Riddler 1988a). Unlike gaming pieces, they do not have base marks. They can be separated into six types, three of which occur at Lackford. An incomplete antler bead of oval shape and plano-convex section (1949.2 B (TDY 34)) includes a central perforation and is decorated with ring-and-dot motifs forming a cruciform pattern on the upper surface. It belongs to type A, the most common form seen at both Spong Hill and Loveden Hill (Riddler and Trzaska-Nartowski 2013, 94). A second bead (1950.124.2 (HG 16)) of this type was published by Lethbridge and described as coming from cremation 50.19 (HG 16)and being 'the remains of a burnt ivory toggle or button' (Lethbridge 1951, 18 and fig 11). At first sight it appears to be undecorated, but faint saltires have been inscribed in a loop around the central perforation.

Type A beads resemble gaming pieces for their shape, size and plano-convex section, but differ from them because they invariably include a central perforation and they lack any base marks. In some cases, at both Spong Hill and Liebenau, gaming pieces had been remodelled to form type A antler beads by adding a central perforation to them (Riddler and Trzaska-Nartowski 2013, 94; Siegmann 2003, 338 and taf P13). Beads of type A are fairly common on the Continent, occurring at the cemeteries of Bordesholm, Flögeln, Issendorf, Pritzier and Schmalstede, amongst other sites (Saggau 1986, 47; Weber 2000, 43; Bode 1998, 89). They have been found in a number of early Anglo-Saxon cremation cemeteries, including Baston, Cleatham, Illington, Newark, Rempstone and Sancton (Mayes and Dean 1976, figs. 8.15b and 9.34a; Leahy 2007, fig 74.566; Davison *et al* 1993, fig 45; Kinsley 1989, figs 44, 55, 83 and 87; Myres and Southern 1973, fig 23.2321; Riddler and Trzaska-Nartowski forthcoming).

On the Continent, type A antler beads have been placed in the late 4th to 5th century (Bode 1998, 89; Weber 2000, 43). The 42 examples from Spong Hill include twelve from cremations of phase A, nineteen from cremations of phase B, seven from phase A/B and just one of phase B/C; three cremations could not be phased. This places type A beads firmly in phases A and B, their use essentially spanning the first two thirds of the 5th century within Anglo-Saxon England.

The similarity in form between type A beads and gaming pieces extends to the re-use of gaming pieces as beads, as noted above. Beads and gaming pieces seldom overlap within burials, however. There are no associations of beads (of whatever type) with gaming pieces at Lackford, whilst they were found together in five cremations from Spong Hill and seven from Loveden Hill. These are small numbers, compared to the quantity of cremations from both sites that included gaming pieces, and it seems unlikely, therefore, that type A beads were used as king pieces for the game of *taefl*. In effect, they have no significant association with gaming pieces.

A third bead (1949.39 C (T 1)), also made from antler, is discoidal in shape with a flat upper surface, decorated with two concentric circles. It belongs to type B (Riddler and Trzaska-Nartowski 2013, 94). The type occurred in phases A and B at Spong Hill, with just one example of phase B/C and none of phase C. It appears to be a relatively early type of antler bead (but this example was found with no other grave goods in a phase C pot). Nineteen examples came from Spong Hill and six from Loveden Hill, and there are also fragmentary beads of this type from Illington and Newark (Davison *et al* 1993, fig 45.137a; Kinsley 1993, fig 38.96ii and 66.289i).

8.3.3 Pin

A fragment of the upper part of an antler or bone pin came from cremation 1949.57 B (49 A 16). The head of the pin is rectangular in shape with a flat apex and lightly tapering sides, pierced by an oval perforation and set above a series of roll mouldings. Antler or bone pins are scarce within early Anglo-Saxon cremations, although they are not entirely unknown. None of them are complete and in a number of cases only a part of the circular-sectioned shaft survives, and it is not clear whether the object is a pin or a needle (Riddler and Trzaska-Nartowski 2013, 99). A similar situation prevails on the Continent. Most of the antler or bone pins from Schmalstede, for example, come from early cremations, pre-dating the 5th century, and this situation had previously been highlighted by Genrich and Schach-Dörges for Schleswig-Holstein as a whole (Genrich 1954, 15; Schach-Dörges 1970, 82; Bode 1998, 93). Whilst there are quantities of antler and bone pins from 2nd- and 3rd-century cremations in that area, some of which emulate Roman forms and are probably of Roman origin, only a few pins have come from 5th-century contexts.

An antler or bone pin from Illington has a rectangular-shaped head set above a moulding but it is square in section and is not perforated, and it does not form a close parallel (Davison *et al* 1993, fig 44.278a). The rectangular form of the Lackford pin head resembles, in broad terms at least, some of the spangle-headed pins described by Ross (1991, 169 and fig 5.8c), which have perforated heads, some rectangular in shape, set above mouldings. It is possible that this was a spangle-headed pin, produced in antler or bone instead of copper alloy, and belonging to phase C.

8.3.4 Pendants and Amulets

Two antler objects from the same cremation at Lackford can be described as pendants. In each case they also possessed amuletic value. A conical amulet (1950.71 D (HG 9)) was illustrated by Lethbridge and described as ‘an ivory pendant of unknown type’ (Lethbridge 1951, 18 and fig 14). It was subsequently identified by Werner as part of a series of pendants derived ultimately from Roman Hercules club amulets. Werner listed the early Anglo-Saxon examples known to him from Lackford, Nassington and Wallingford, and illustrated most of them, suggesting that they could be dated to the 6th century (Werner 1964, 179, 184 and abb 3.17-19). More recent discoveries include antler conical or pyramidal pendants from Ipswich, Lechlade, Souldern and Spong Hill (Meaney 1981, 162-4; Ager 2011; Riddler and Trzaska-Nartowski 2013, 93; Riddler *et al* forthcoming). Four pendants were found in three cremations at Spong Hill and placed in phases A/B and C. These pendants have usually been found as single items in graves and occasionally in

pairs, as with Spong Hill cremation 2143. There were three pendants in Wallingford grave 15, whilst larger groups of up to seven pyramidal pendants are known from Aalsum and Pritzier (Meaney 1981, 164; Werner 1964, 179). They are known variously as Hercules Club amulets and 'Thunor' or Donar amulets, or more neutrally as club pendants (Masanz 2017, 96), the antler examples having either a square or a circular base. The four pendants from Spong Hill all have square bases, as do the three pendants from Wallingford, two from Souldern and the single example from Lechlade grave 133, whilst the Ipswich and Lackford pendants, as well as the three from Nassington, have circular bases. Pendants with circular bases were more common than those with square bases at Issendorf (Weber 2000, 44). They are widely regarded as amulets deposited in graves with young and adult women, a situation confirmed at Spong Hill (Werner 1964, 180; Weber 2000, 45; Prummel 2011, 75; Riddler and Trzaska-Nartowski 2013, 93) but their precise meaning is a little uncertain. For Werner they were the Germanic descendants of Roman Hercules Club amulets, with close formal similarities to them, and were intended to symbolise protective power and fertility (Werner 1964, 181). They appear to be miniature versions of the club used by Hercules that can be seen in some representations and they can be linked back to conical earrings and pendants of the late Roman period, found largely in provinces located on the edges of the Roman Empire (Werner 1964, 176; Masanz 2017, 96 and abb 20; Noll 1984, 447). As Meaney noted, 'the bone objects strike the beholder as something out of the ordinary – and therefore as quite probably amulets' (Meaney 1981, 165).

A second pendant (1950.71 E (HG 9)) consists of the naturally-shed burr of a roe deer antler, retaining the coronet and a part of the beam on one side. It has been perforated at the centre and resembles a spindle whorl, but the perforation is only 5mm in diameter – well below the dimensions of contemporary whorls – and neither face has been flattened or smoothed. The pendant was described by Lethbridge as 'a button or whorl made from the burr of a roe deer antler' (Lethbridge 1951, 18 and fig 14). It can be compared with two similar objects from Spong Hill, which have been defined as coronet and burr rings (Riddler and Trzaska-Nartowski 2013, 99 and fig 2.35). The Spong Hill rings have both been cut from red deer and, as a result, they are larger in size. One came from a cremation of phase A and the other has not been phased. As a group they belong with a series of Roman pendants that form a sub-set of the antler medallion series that is well-established for the Roman period (Greep 1994; Gostenčnik 2005, 272-9). This example has a central perforation and accordingly belongs to Greep's type 2 (1994, 81). Roman medallions often have off-centre perforations and may have as many as four or five on a single object, but otherwise they are treated in a similar way to this object, with the two faces lightly trimmed and the coronet usually remaining intact on examples of types 1 and 2 (Rodet-Belarbi and Amiel 2006; Rodet-Belarbi and Dieudonné-Glad 2011, 150). Several examples of type 2 pendants include rings of metal through the central perforation, notably an example from Sisak that appears to have been cut from a roe deer antler and is very similar to the Lackford example (Radman-Livaja 2017, figs 1 and 4). Antler medallions have mainly been found in the north-western Roman provinces and have been associated with the Roman military, their occurrence on civilian sites conceivably relating to the presence of army veterans, although this idea has been contested and their distribution actually appears to be widespread across a range of site types (Feugère and Prévot 2011, 235; Radman-Livaja 2017, 142; but *cf* Gostenčnik 2005, 272; 2008, 3). They belong predominantly to the earlier part of the Roman period (Greep 1994, 86; Gostenčnik 2005, 273) and it is possible that this example was acquired in the local area, perhaps from a Roman settlement like Icklingham. They were used as amulets or talismans, worn either as pendants or sewn to garments, applied to horse harness or even fixed to wall surfaces (Radman-Livaja 2017, 142). Antlers were linked to regeneration, strength and fertility, and were also thought to have curative properties (Greep 1994, 82-3; Gostenčnik 2005, 273-6).

8.3.5 Antler Burr Rings

Antler burr rings were found in five cremations, two of which (1078 and 1079) are described above. Three more were recovered by Lethbridge, two of which are small burnt fragments (1948.2483 D.2, 1950.239 C.3,), whilst a more substantial, oval-shaped ring with smoothed outer

edges came from another cremation (1950.127 B.9). This latter ring was described by Lethbridge as 'a girdle-ring made from the burr of a red deer antler' (Lethbridge 1951, 18 and fig 14). The two small Lackford fragments can be identified as coronet rings and are similar to the pieces retrieved from the recent excavations. The more substantial ring (1950.127 B.9) has a coronet that has been smoothed on both the inner and outer surfaces and it belongs with the group of plain antler burr rings. Both ring types were present at Spong Hill, with coronet rings more common than plain rings there, as also at Issendorf (Weber 2000, 48). At Pritzier, however, plain rings were more common than coronet rings (Schuldt 1955, 89). The plain ring appears to have come into use after the coronet ring, and not before phase B at Spong Hill. Ament has drawn attention to the ability of antlers to regenerate each year and has suggested that the rings also had an amuletic function, much like the pendants described above (Ament 1992, 19-20).

8.3.6 Ivory Bag Rings

Ivory bag rings were recognised during the previous excavations at Lackford from around thirteen urns, according to Lethbridge (1951, 8), although a re-evaluation of the material from that cemetery provided twenty separate assemblages. He noted that 'the large number of these rings found in the urns (thirteen), and the fact that they are found in all our local cemeteries, indicate a considerable trade in expensive foreign imports' (Lethbridge 1951, 17). The discussion of these has been combined and is above (in section 5.7).

8.3.7 Combs

Sixty-five combs were recovered, largely as separate items within cremations, although there are also ten unstratified examples, gathered together under a single number (1950.241). Sixty of the combs were recovered by Lethbridge, with five coming from the more recent work. Twenty-two of these combs were illustrated by Lethbridge, amounting to just over a third of the total from his excavations. All of the combs illustrated by Lethbridge have been identified and recorded, alongside 43 further examples. They can be separated by class, form, type and group, following a hierarchy utilised initially for combs of early medieval date (Riddler *et al* forthcoming) The class of a comb is a straightforward distinction between simple (one-piece) combs and composite combs. Eleven of the combs are simple and fifty-four are composite. There are six comb forms from Lackford, most of which can be sub-divided into sixteen types, a few types including one or more groups (Table 8.6).

<u>Lackford, Spong Hill and West Stow</u>

The impressive comb sequence from Lackford can be compared, in the first instance, with the larger assemblage from Spong Hill, which has been comprehensively described, with the combs set into three main phases. Phase A extends from c 375 to 450, Phase B encompasses the middle third of the 5th century and Phase C goes from c 470/480 to 525 (Hills and Lucy 2013, 232). There are close similarities between the combs from Lackford and Spong Hill and that enables most of them to be placed within the phases established for the latter cemetery.

The situation at West Stow is a little different, and is worth considering at this point. The site was phased by Stanley West on the basis primarily of the ceramics found there. If, however, the small finds from the sunken-featured buildings are brought into the equation, the phasing for the site can be revised. An increasing concern with chronology and with aligning early Anglo-Saxon dating with that of the Continent has permeated object studies over the last twenty years or more. This interest has understandably been centred on objects that appear to have date ranges that are both confined and well-understood, within categories like jewellery and weapons. This range of objects is common in cemeteries but comparatively rare in settlements: there are few early Anglo-Saxon weapons from West Stow and they were all recovered from Layer 2, and there are few brooches from the structure backfills. It is the structure backfills, above all, that form the basis for the site phasing. It is necessary, therefore, to look at other objects in order to correlate the material culture from West Stow with revised cemetery chronologies. The three object

Class	Form	Type	Group
SIMPLE	Single-Sided Simple	Semi-Circular	A
			B
			Rounded Rectangular
		Triangular	
		Rectangular	
COMPOSITE	Triangular	Böhme E	Group E2
		Plain Crested	
		Upright	
		Elongated	
	Semi-Circular	Type A	
	Barred Zoomorphic	Type 2	
		Type 4	
	Single-Sided Composite		
	Double-Sided Composite	Late Roman profiled back edges	
		Curved Back Edge	
		Cut-Out Back Edge	
		Rectangular Section CPs	Linear Decoration
			Linear & Ring-and-Dot
		Shallow D-shaped Section CPs	Linear Decoration
			Ring-and-Dot
		Cylindrical Undecorated	

Table 8.6 Classification of Combs from Lackford

categories utilised here are vessel glass, beads and combs. Early Anglo-Saxon vessel glass is rare at West Stow too, and just four fragments of one or more claw beakers were found, alongside a single fragment possibly from a squat jar (Evison 1985, 75-6). The claw beaker fragments come from structures 46 and 50, and the squat jar from structure 64. The suggested dates for these vessels coincide well with other dating in some cases, but not in all.

A total of 78 beads came from the settlement (Evison and Cooper 1985, 71), but some of these are of Roman date; 68 of the beads are glass and they form the focus of this study. They are well-illustrated in the West Stow publication and it is possible to identify most of them to type, following the sequences proposed by Brugmann (2004), with revisions of dating from subsequent work on East Anglian material (Penn and Brugmann 2007, 26–8 and 48; Brugmann 2011; 2013). Forty-six beads of glass and amber from structure backfills have been identified to type and correlated with these chronologies. Over 100 combs came from West Stow, 67 of which were found in structure backfills. Some of these are merely tooth segments, but the majority of combs can be identified to type and set in a chronological framework, following the sequences developed for Spong Hill, Ipswich and Lackford (Riddler and Trzaska-Nartowski 2013, 92-155; Riddler *et al* forthcoming).

Thus glass vessels, combs and beads formed the basis for a re-examination of the West Stow phasing, supported by other objects where they occur, and compared against the diagnostic ceramic evidence. This material allowed forty of the structure backfills to be dated to within a century. It should be emphasised at this point that this is very much a paper exercise, based on

the original publication and not on any examination of the objects themselves, with the exception of the combs, which have been analysed. As such, it merely provides an indication of the relative phasing of the structure fills – and those fills alone – and points to the need for future, more comprehensive work. There is no correspondence analysis here, nor any scientific dating, both of which would greatly enhance the chronology of West Stow. Within the following text, the revised phasing for West Stow is highlighted in the discussion.

The Lackford combs are described below in a broadly chronological sequence, with reference to Spong Hill and West Stow in particular. The main comb forms are defined for their technology, as much as for their outward appearance, both elements being of significance in identifying their types.

Triangular Combs

The nineteen triangular combs include ten end segments, two tooth segments and seven comb fragments. All but one of them can be assigned to a specific type within the triangular form, the exception lying with a fragmentary comb (LKD001 1043, 1044 and 1066) from surface scatter 155 (Figure 5.19). All of the triangular combs were found in separate cremations. They can be separated into four types, namely Böhme type E (1 comb), plain crested (6 combs), upright (2 combs) and elongated (9 combs), with one indeterminate.

In the study of triangular combs, as with other comb forms, technology and design are as important as typology and decoration. Technology includes the nature of the riveting, the number of teeth per centimetre, saw traces, the shape and section of the tooth segments and the relative elongation of the comb form. All of the combs are fastened with iron rivets and these were set either through the tooth and end segments (centre-riveted), or along their edges (edge-riveted). In some cases both systems can be seen on the same comb, although that practice is rare at Lackford. The combs are consistent in their riveting and a centre-riveted comb will be secured in that way across all of its tooth and end segments. Centre riveting was the earlier practice, superseded by edge riveting at Spong Hill during Phase B, probably quite early in that phase (Schach-Dörges 1994, 692; Riddler and Trzaska-Nartowski 2013, 110).

The number of teeth per centimetre is very restricted across the triangular comb form and centres on five per centimetre, with few variations. With earlier combs the tooth segments can be split into two pieces, the lower piece including the teeth and the upper piece forming a wedge above it, separately secured by rivets. This practice is rarely seen amidst triangular combs found in England although it does occur on one comb from Lackford, alongside several combs from Spong Hill and a comb from the settlement at Hartmere School, Eye. With these early combs the tooth segments are wider at the apex and taper lightly to the base of the teeth, whilst with later combs the section is rectangular throughout. The elongation of a comb can be determined by measuring the angle at the base of the connecting plates. Upright combs have an angle in excess of 35°, whilst for elongated combs the angle is less than that figure. The elongation of a triangular comb was a fundamental typological marker for Thomas and Böhme and it form a useful distinction between combs of 3rd- and 4th-century date; but it is generally less useful for combs of the 5th century (Thomas 1960, 77 and 96; Böhme 1974, 122-3).

Lethbridge illustrated some of the combs and briefly mentioned others (see Appendix 23. All of the combs that he mentions have been recorded and described, alongside a group of combs that he did not mention at all.

Böhme Type E Comb

A single example of a Böhme type E comb came from cremation 1950.22 (WDY 30). The end segments of the comb do not survive and one of the four schematic beasts rising above the connecting plates is missing. These parts of the comb were absent when it was published by Lethbridge, who noted that the comb ‘deliberately broken before burial, is of small size and ornamented with three carvings of pigs, one of which is complete’ (Lethbridge 1951, 17 and fig 6).

The comb type was originally identified by Sigrid Thomas and defined as her Typ II, Variant III (Thomas 1960, 96). The Lackford comb was noted by Böhme, in his more developed definition of the type (Böhme 1974, 124-5). This comb type includes distinctive tooth segments that rise above the connecting plates and end in more-or-less schematic beast heads, seen in profile. Böhme distinguished between two main groups of the type and included a third, variant group. The early group, which can be described as E1, includes combs with two beast heads. They are more likely to represent horses than pigs. The later group (E2), which includes the Lackford comb, has at least two pairs of beast heads. The variant group lay beyond Böhme's remit and consisted of several combs found in south-eastern Europe. Böhme added a number of Type E combs to the original lists of Thomas and Koch, and subsequent discoveries have been correlated by Stadler, Boosen and Quast (Koch 1965, 119-20; Stadler 1981, 158; Boosen 1985, 308-9; Quast 1993, 98). The most exhaustive listing of these combs to date, by Sofia Petković, has identified 39 examples (Petković 1998, 216). A recent example with four animal heads has emerged from Obernai (Picod *et al* 2016, fig 4).

The comb type is therefore both well-known and well-listed, if not always well-illustrated. In recent years the two extremes of its distribution have been considered. In several important articles Sofia Petković has collected these combs together, mapped their distribution and considered their origins and development (Petković 1995, 26-7; 1998; 2006, 357 and 361-2). At the other extreme of the distribution, Catherine Hills has discussed the early Anglo-Saxon examples, her list superseding the earlier work of Böhme (Hills 1981, 99-100). The list of early Anglo-Saxon type E combs includes examples from Colchester, Lackford, Richborough (two examples), Sancton and Spong Hill (two examples), and possibly St John's at Cambridge (Hills 1981, 100). A comb from London, although resembling the type, is of medieval date (Soden Smith 1877). This total of seven or eight combs makes it one of the smallest groups of the triangular form known from Anglo-Saxon England.

The comb type was dated to the late 4th- to early 5th century by Thomas (1960, 102) but the numerous north-western European additions to her original list mean that a dating of *c* 375 – 450 is now more acceptable (Quast 1993, 98). Petković has noted that the series from the Danube area forms the earliest group of the type and they largely derive from late Roman forts and other settlements, with a handful coming from contemporary inhumation graves (Petković 1998, 217-8). The northern Gaul examples, in contrast, come almost entirely from inhumation graves, located within late Roman cemeteries. The early Anglo-Saxon sample differs slightly in its distribution from Böhme type D combs, as Hills has noted, for their absence from continental post-Roman contexts (Hills 1981, 100). The dating of the early Anglo-Saxon examples relies essentially on the Continental evidence but it is at least possible to example the two groups within the sample (E1 and E2) and to consider their technology. Most of the early Anglo-Saxon examples survive merely as fragments, however, and the Lackford comb is one of the most complete. Of the two Spong Hill combs, one of them (2183/4) includes two fragmentary, schematic heads and the comb was centre-riveted throughout. It belongs to group E1. The second comb (1534/3) has similarly schematic heads, matched by heads rising from the ends of its accompanying comb case, placing it in group E2 (Riddler and Trzaska-Nartowski 2013, fig 2.40). This comb includes both centre and edge riveting, much like the Lackford comb. Both combs came from cremations placed in phase A at Spong Hill and there is little doubt that the Lackford comb should also be placed in phase A.

Plain Crested Combs

The six combs of this type include two end segments, a tooth segment and three comb fragments. They are placed together as a type on the basis of the cresting of their tooth and end segments, which extends beyond the connecting plates but is not decorated; the segments merely have bevelled or rounded edges. The combs all include five teeth per centimetre and they were secured with iron rivets throughout. Three out of five of them were riveted through the centres of their tooth and end segments, whilst two of them (1950.87 B (49 A 5)and 1949.19 B.1 (UDY 69)) secured segments with rivets on their edges; the riveting of the sixth piece (1948.2497

B (WDY 6)) is unclear. The three centre-riveted combs have backs set at angles of 28° to 30°, whilst the edge-riveted combs include shallower, more elongated connecting plates, with angles of 24° and 25°. Following the definitions provided for Spong Hill (Riddler and Trzaska-Nartowski 2013, 115), these five combs can be described as elongated, whilst the sixth fragment (1948.2497 B (WDY 6)) has an angle of 37° and falls into the upright category.

The centre-riveted comb fragment (1948.2498 A and Z 21378) (HGS 3) is decorated with broad bands of framing lines (encompassing four or five lines) and a large ring-and-dot pattern lies at the centre, surrounded by two smaller and denser motifs. All three motifs are ringed with smaller ring-and-dot motifs; the decoration is the same on both sides of the comb. Lethbridge illustrated this comb, noting that it could be exactly matched by a comb from Roman Chesterford (Lethbridge 1951, 17 and fig 6). Only small parts of the connecting plates survive from the edge-riveted fragment (1950.87 B (49 A 5)) and these merely have paired framing lines. The third comb fragment (1949.19 B (UDY 69)) includes triple framing lines and a different decorative scheme, with double ring-and-dot motifs of the same size throughout, arranged in several lines across most of the available space; the decoration is the same on both sides of the comb. It was illustrated by Lethbridge (1951, fig 6).

At Spong Hill plain crested combs formed one of the most common types, equal in number with upright combs but exceeded by elongated combs (Riddler and Trzaska-Nartowski 2013, table 2.19). The relative quantities of each comb type are broadly replicated at Lackford, but with fewer upright combs. Plain crested combs are thought to have superseded Böhme type D combs (whilst overlapping with them in part), with the earliest (centre-riveted) examples emerging *c* 425/435, around the beginning of phase B. They may have continued into phase C (Riddler and Trzaska-Nartowski 2013, 112; Hills and Lucy 2013, 224).

Upright Triangular Combs

There are just two end segments of this comb type. Both are fragmentary and little can be said of the combs to which they originally belonged. They can be assigned to the type on the basis of the angle of their back edges. One of them (1948.2492 B (UDY 9)) is centre-riveted and that may have been the case with the other, unstratified segment (1950.241 L), but this is not certain. The segment is decorated on both sides with ring-and-dot motifs and it is possible that it was fastened with one centre rivet and two edge rivets. Both segments have steep back edges, rising at angles of 40° and 43°. Those figures are comfortably greater than 35°, the arbitrary boundary between upright and elongated combs (Riddler and Trzaska-Nartowski 2013, 115). Both segments end with small uplifts at their terminals, rising above the line of the back edge. One of them (1948.2492 B UDY 9)) was illustrated by Lethbridge (1951, fig 9). Triangular combs with uplifted end segment terminals also occurred at Spong Hill. One of those combs has a slight upward lip, whilst two decorated end segments also rise to points ((Hills *et al* 1987, figs 109.2452/3 and 110.2524/3; Hills *et al* 1994, fig 121.3049/3). These are fragments of combs from cremations of phase A/B or B. Further end segments with this feature are known from Alwalton, Cleatham and Newark (Gibson 2007, figs 33.1274.3 and 36.1328.1; Leahy 2007, fig 105.T; Kinsley 1989, fig 51i). The Alwalton cremations were dated to the 5th century and late 5th- to early 6th century (Gibson 2007, 257-61). At Spong Hill upright triangular combs were found in cremations of phases A and B in equal numbers, with a single example from phase C.

Elongated Triangular Combs

The largest group of triangular combs belong to the elongated type, with nine combs altogether. This type consists of combs that are not crested and have base angles for their connecting plates of less than 35°. With the Lackford combs the angles vary from 17° to 32° and lie well inside that boundary. The combs include six end segments, one tooth segment and two comb fragments. Some of them were illustrated by Lethbridge (1951, fig 5).

There is slightly more variability in their tooth values. Four combs have five teeth per centimetre, three combs have four teeth per centimetre and one comb has six teeth per centimetre. The riveting schemes vary as well, with four centre-riveted combs and two edge-riveted; the riveting

of three fragmentary end segments is unclear. At Spong Hill, the quantity of centre-riveted combs of this type also exceeded those with edge riveting (Riddler and Trzaska-Nartowski 2013, 117). The forms of the end segments vary from those where the angle of the back edge is steeper below the connecting plate line (1949.5 B (GC D 3) and 1950.125 B (A 14)) to those where there is a slight uplift above that line (1950.62 B (UDY 52) and 1950.194 B (TDY 21)). One end segment (1950.222 B.2 (49 A 7)) has a sinuous back edge below the connecting plate line, whilst another (LKD001 1038) has an uplifted terminal, as seen with the two upright triangular end segments. Just one connecting plate survives from one of the comb fragments (1950.216 B, 1951 Fig 33 50.99 (G 1)) and it is decorated with double ring-and-dot motifs of the same size, lying within a border of paired framing lines. The second comb (1950.169 B (F 14)) includes overlapping semi-circles of the same size with small ring-and-dot motifs within them, arranged in a continuous pattern lying along the triple framing lines. Only a small fragment of the second connecting plate survives, revealing similar decoration.

The design of this comb type reflects that of other types in terms of the riveting and the tendency for some end segments to become steeper below the connecting plate line. At the same time, there are innovations within the type, including a preference for edge riveting with some combs, the use of a larger number of tooth and end segments (a direct reflection of their more elongated form) and decorative schemes that utilise fewer framing lines and include main motifs of the same size throughout. These developments follow from the phasing of the comb type, which at Spong Hill spanned phases B and C (Hills and Lucy 2013, 224). Lethbridge noted that one of these combs (1949.5 B (GC D 3)) came from an urn that looked to be late, although 'the end of a triangular bone comb was found in it' (1951, 16); the current analysis of the pottery suggests phase B for this urn.

Barred Zoomorphic Combs

Lethbridge illustrated a barred zoomorphic comb from Lackford, alongside part of an accompanying case. He described the assemblage as 'a double-sided comb and comb case. The comb does not fit the case' (Lethbridge 1951, 16 and fig 1; 1949.6 B.1-B.3 (H 13)). He clearly believed that the comb was a late Roman double-sided form with narrow, paired connecting plates. However, his reconstruction of the comb is inherently flawed. In the first instance, it is easy to establish that the comb is not a double-sided composite at all, but is a barred zoomorphic comb, but it is also clear that the end segment does not belong with the upper connecting plate, to which Lethbridge attached it. Paired connecting plates on barred zoomorphic combs share precisely the same decoration. Here, however, the long upper plate, which is longer than Lethbridge drew it (with an additional piece that he left out), is much too long for a comb and must belong to a case. Moreover its decoration does not match that of the end segment of the comb precisely, as it should. In effect, therefore, Lethbridge applied an end segment from a barred zoomorphic comb to a barred plate from a comb case. The cremation contained a barred zoomorphic comb and its case, but they have not been reconstructed properly.

A second end segment from a barred zoomorphic comb came from a different cremation (1950.65 A.2 (TDY 3)). The typology for these combs established for Spong Hill is based in part on the shape of the end segments and the four types of comb can be briefly summarised. Heavily curved back edges and beast heads with ears form Type 1, lightly outward-sloping edges and edge riveting encompasses Type 2, the beasts just about retaining their ears, more overtly outward-swept back edges with sparse riveting and schematic animal heads define Type 3, whilst Type 4 consists of end segments with vertical back edges and animal heads without ears and sometimes without eyes (Riddler and Trzaska-Nartowski 2013, 124-5). The Lackford assemblage includes one end segment of Type 2 (1950.65 A.2 (TDY 3)) and one of Type 4 (1949.6 B.2 (H13)), the most common of the four types.

Barred zoomorphic combs occur in 5th-century cremations on the Continent at Issendorf, Süderbrarup and Schmalstede and are widely distributed across eastern England within contexts

of the same date. Spong Hill retains the largest quantity of these combs by some distance, and it is likely that they were manufactured near to the cemetery. Unlike Böhme type D and type E combs, they do not occur in late Roman contexts, but are found in cremation cemeteries and contemporary settlements (Riddler and Trzaska-Nartowski 2013, 121). At Spong Hill 43 combs of this type came from cremations that could be phased, with 17 from phase A, 16 from phase A/B, 8 from phase B, 1 from phase B/C and one from phase C. The phase C comb fragment is not certainly from a barred zoomorphic comb and the overall distribution suggests that most of the combs belong to phase A, with a continuation into phase B, and it is unlikely that they were produced beyond *c* 460/470.

Barred zoomorphic combs differ from other single-sided composite combs in several respects, beyond the obvious point that their design is quite individual. Whilst some of them have five teeth per centimetre, reflecting the standard for triangular combs, others extend to seven or eight teeth per centimetre, and that can be seen at Lackford as well. The Type 2 end segment has lost all of its teeth and their fineness cannot now be determined, whilst the Type 4 segment included eight teeth per centimetre. The other remarkable thing about the combs of this form from Spong Hill is that scarcely any of them were buried with adults: they were combs deposited with infants, children and sub-adults (Riddler and Trzaska-Nartowski 2013, table 2.20).

Semi-Circular Combs

Two semi-circular combs from separate cremations consist of a comb fragment and an end segment. The comb fragment (1950.106 A.2 (WDY 13)) has a fully rounded back, allowing it to be assigned to type A, the equivalent of Thomas' Typ I Variante I (Riddler and Trzaska-Nartowski 2013, 125; Thomas 1960, 77). The connecting plates are secured to two end segments and two tooth segments by eight copper alloy rivets. All of the segments are centre-riveted. The original form of the end segments is unclear but the teeth are graduated in length and are not quite as illustrated by Lethbridge (1951, fig 33). The connecting plates have paired framing lines but are otherwise undecorated, placing them in Thomas' Motivgruppe C (Thomas 1960, 81 and abb 30.1). The second comb (1950.88 B (WDY 12)) consists merely of part of an antler end segment with graduated teeth, fractured across a rivet hole. It probably also had a fully rounded back and can be placed in type A.

Type A semi-circular combs have rarely been found in England and examples are restricted to several late Roman contexts and to the cremation cemeteries of Alwalton, Lackford and Spong Hill (Riddler and Trzaska-Nartowski 2013, 128). It is difficult to date them precisely but known examples are all centre-riveted and they can conceivably all be placed in Spong Hill phase A, particularly when the five examples from Spong Hill itself have all been set in that phase. The Lackford comb fragment is fastened throughout with copper alloy rivets and it is the only comb from the cemetery to include rivets of that material. Indeed, it is the only comb of the Anglo-Saxon type A sequence to include copper alloy rivets. They were more commonly used on the Continent, both in Scandinavia and in Germany (Schach-Dörges 1994, 668). With that in mind, there is a strong suspicion that this comb was made on the Continent and came to England in the early part of the 5th century.

Single-Sided Simple Combs

Eleven single-sided simple combs were recovered from ten cremations. They were found in separate cremations except for one instance (1950.49 (49 A 4)), where two combs of this type were found together. Seven of the combs were illustrated by Lethbridge (1951, figs 1, 11, 15, 27, 28 and 35). Most of them are complete or near-complete and just two are fragmentary. The original form of the two fragmentary examples can be reconstructed. Single-sided simple combs largely reflect the basic forms of their larger composite counterparts, including triangular and semi-circular forms, but with no simple equivalent to the barred zoomorphic comb (Trzaska-Nartowski and Riddler 2014, 50). There are five semi-circular simple combs from Lackford and three triangular combs, but there are also three rectangular combs, which have no equivalent amidst the composite series. The single-sided simple combs of semi-circular form include one

with a fully rounded back of type A (1949.17 B.4(WDY 69)) and two of type B with a rounded apex and straight outswept sides (1949.25 B.1 (WDY 16) and 1950.94 A.4 (UDY 39 ?A)). Two further combs are essentially rectangular in form, but with rounded corners to the apex (1950.157 B.2 (WDY 19) and 1949.18 B.1 (6)). They have vertical or lightly outswept sides.

The three triangular combs include a simple, plain form (1949.177 B.1 (HB 10 A)) and two combs with imitation connecting plates, one set defined by the presence of paired framing lines (1950.90 B (TD 3)) and the other including unbounded double ring-and-dot motifs of a single size (1950.185 B (J 14)). The three rectangular combs consist of the pair from cremation 1950.49 (49 A 4) and a single comb from cremation 1950.160 (WDY 41 A). All three combs appear to have been manufactured from segments of antler cut with the use of a knife, rather than a saw, and they have teeth of uneven fineness, varying in their values per centimetre.

The nine single-sided simple combs from Spong Hill all came from cremations of phase B, with just one exception, of phase A/B. This strongly suggests that they were not a feature of the earliest phase of burial within the cemetery. At Lackford, however, two of the combs came from cremations that can be placed in phase A and a third comb may also belong to that phase. They do not continue into phase C at Spong Hill but are known elsewhere from contexts of that phase (Trzaska-Nartowski and Riddler 2014, 54), and the comb type as a whole can be placed in phases A-C and mainly (but no longer exclusively) in phases B and C. They are not common on the Continent, although four examples came from Issendorf and two antler single-sided simple combs came from the settlement of Feddersen Wierde (*ibid*, 53).

Beyond their form and type, single-sided simple combs can be separated into functional and symbolic groups. Functional combs have well-cut teeth that can show evidence of use. The teeth of symbolic combs are poorly cut and they could not have been used; they show no traces of wear. The size of combs is also related to the question of their function, the larger combs showing wear traces, which are absent on the smaller combs (*ibid*, 51). The larger combs tend to have been used, whilst the smaller combs have not. An examination of the teeth and the wear traces on the Lackford combs shows that three of them are functional (1949.177 B.1 (HB 10 A), 1949.25 B.1 (WDY 16) and 1950.185 B.1 (J 14)). They include two of the triangular combs and the largest of the semi-circular combs. A further comb from Lackford adds a further significant dimension to the question of wear and use. A triangular comb (1950.90 B (TD 3)) is well-made and the teeth taper neatly to blunt ends. On that basis, this could be seen as a functional comb. However, the teeth have been cut across the grain of the antler and not along it and that, in effect, renders them useless. As a result, parts of the teeth have laminated away. Thus, although the teeth have been well-cut and shaped, they could never have been used. Seven further combs, of rectangular, rounded rectangular and semi-circular forms, include teeth that have not been used, and they can be regarded as symbolic combs. The teeth do not survive on the semi-circular comb from cremation 1949.17 (WDY 69).

The tooth values of these combs generally reflect those of their composite counterparts, although they are not as precisely cut and vary between values on five of the combs. One comb (1950.94 A.4 (UDY 39 ?A)) has just three teeth per centimetre, a lower value than would be seen with any single-sided composite comb. The remainder vary between three to four teeth per centimetre and five teeth per centimetre, although one comb of rounded rectangular form (1950.157 B.2 (WDY 19)) has seven teeth per centimetre.

At Lackford functional single-sided simple combs are in the minority and symbolic combs are more common. Rectangular and rounded rectangular combs are almost invariably symbolic, whilst semi-circular combs are mostly functional and triangular combs can be set in both groups (Trzaska-Nartowski and Riddler 2014, 51-2). Williams suggested that symbolic combs were mainly buried with infants at Spong Hill, but this significant correlation was less apparent elsewhere (Williams 2003, 109; Trzaska-Nartowski and Riddler 2014, 52). Symbolic combs were more likely to be buried with males than females (Trzaska-Nartowski and Riddler 2014, 53).

Single-Sided Composite Comb

One example of a fragment of a single-sided composite comb came from cremation 1950.222 (49 A 7). An end segment from a triangular comb (1950.222 B.2) was found in the same burial. The single-sided composite comb consists merely of an end segment, with a small part of a connecting plate on one side, attached by two closely-spaced iron rivets. It is very difficult to identify the original form of the comb but the end segment is clearly winged, rising lightly above the line of the back of the connecting plates, with a straight, vertical back edge. There were no single-sided composite combs from Spong Hill but a small number of early forms are known from West Stow. They include combs from structures 12, 22 and 43 (West 1985, figs 61.3, 94.16 and 147.5). None of these combs has quite the same end segment shape although it is interesting that one of them (*ibid*, fig 94.16) has several closely-spaced iron rivets securing the end segment, whilst another (*ibid*, fig 147.5) is crested throughout and comes closest to the form of the Lackford end segment. These combs come from structure fills that can be placed in phase B/C, with the emphasis lying with the phase C. These single-sided composite combs may have emerged out of the triangular and semi-circular series, essentially as elongated versions of these forms. Dickinson had earlier drawn attention to a comb from Great Chesterford, which is another early single-sided composite, which she compared to a comb from Issendorf. A comb fragment from Little Wilbraham may also belong with this group (Dickinson 1979, 44-5; Janssen 1972, 78 and taf 7). All of these combs represent early attempts at moving away from triangular and semi-circular sequences, towards more elongated combs with winged end segments, and they can all be placed in phase B/C.

Double-Sided Composite Combs

With twenty-six combs, double-sided composites are the most numerous form to have come from the cemetery, and they can be divided into six different types and several groups. They can claim to be the most neglected of the comb forms, with just three of them illustrated by Lethbridge (1951, figs 7 and 10). They are also the least stratified, with ten examples gathered together under the nominal listing of 1950.241, indicating that they are unstratified. Each type of double-sided comb is considered here, in a broadly chronological sequence.

Late Roman Combs

The earliest combs within this sequence are represented by two end segments, one from a cremation (1950.140 B.1.3 (UDY 34)) and the other unstratified (1950.241 9.B). Both segments have profiled back edges, which identifies them as late Roman in date. One of them has three perforations beyond the connecting plates, whilst the other has five. They both include coarse and fine teeth, with seven and nine teeth per centimetre on one end segment (1950.140 B.1.3 (UDY 34)) and five and nine teeth per centimetre on the other (1950.241 9.B). The former segment was riveted through its centre, the latter including a second rivet on the inner edge. The back edge of the stratified end segment has three incurved indentations and recalls similar designs on combs from Easton Hill, Keill Cave Strathclyde and Thorplands (Cunnington and Goddard 1934, pl LXXXI.5; MacGregor 1985, 92; Hunter and Mynard 1977, fig 19.278). The profiling of the unstratified end segment follows a design that can also be seen on combs from Canterbury, Ickham, London and Winchester (Riddler 1988b; 2010; Clarke 1979, fig 31.323).

Late Roman double-sided composite combs are a relatively common feature of early Anglo-Saxon cremation assemblages, occurring at Alwalton, Cleatham, Little Wilbraham, Loveden Hill, Newark, Sancton and Spong Hill (Riddler and Trzaska-Nartowski 2013, 136). Late Roman double-sided composite combs were produced from the middle of the 4th century into the early part of the 5th century (Blaich 1999, 312-5; Crummy 2004, 175; Masanz 2017, 64-5), placing them within Spong Phase A. All of the examples from Spong Hill could be attributed to that phase and the same phasing can be applied to the Lackford examples.

Curved Back Edges

The profiling of the back edges of late Roman double-sided composite combs is a feature of the entire British series, although the practice had already been abandoned on the Continent during

the 4th century. Two further sequences of double-sided composite combs continue the practice of modifying the back edges of combs, but in different ways. A single end segment (1949.15 B (HB O2)) has a back edge that is lightly curved throughout; it was one of the few double-sided composite combs to be illustrated by Lethbridge, who noted that it had not been burnt (Lethbridge 1951, 17 and fig 7). The segment is decorated with double ring-and-dot motifs and includes a suspension hole. Two combs with this distinctive type of end segment design came from Spong Hill and they are known also from cemeteries at Alwalton, Cleatham and Sancton, as well as settlement contexts at Abingdon Vineyard, Barton Court Farm, St. Mary Cray and West Stow (Riddler and Trzaska-Nartowski 2013, 136; Timby 1993, fig 34). The two combs from Spong Hill were recovered from cremations placed in phase A/B. If they succeeded the sequence of late Roman composite combs (and did not overlap with them) then phase B is the more likely alternative. The remaining combs came from 5th-century contexts, with the exception of the comb from Alwalton, placed in the 6th century. That comb has connecting plates of rectangular section and should date to the mid 5th- to early 6th century, as noted below.

Indented Back Edges

A contemporary treatment of the back edge is visible on three further combs. They include a comb fragment and two end segments. In each case the indentations of the back edge correspond with the area just beyond the connecting plates. Most of the combs with this feature have connecting plates of rectangular section and this is the case with the one comb from Lackford (1948.2484 B (TDY 42) for which they still survive. One end segment (1950.135 B (TDY 2)) includes a simple indentation in this area, whilst a comb fragment (1948.2484 B (TDY 42)) has two indentations. The third comb (1950.241 9A) has a heart-shaped cut-out. Two end segments from Spong Hill included simple indentations of the first group and they can be seen also on combs from Illington and West Stow and, in a rounded form, at Blewburton Hill and Hammersmith (Blackmore and Riddler 2008; Riddler and Trzaska-Nartowski 2013, 138 and fig 2.58; Collins 1952-3, fig 19.4). The paired indentations of the comb fragment (1948.2484 B) are seen also on an end segment from Sancton (Myres and Southern 1973, fig 41.7). A heart-shaped indentation occurs on a double-sided composite comb from Abingdon (Avery and Brown 1972, fig 5.2). The Spong Hill combs came from cremations of phase A and phase A/B, making them more or less contemporary with the late Roman double-sided composite combs, whilst some of the other combs may extend into the early part of phase C.

Connecting Plates of Rectangular Section

Double-sided composite combs with connecting plates of rectangular section form another conspicuous component of the Lackford comb sequence, represented by five comb fragments and part of a connecting plate. Three of the combs are unstratified. They consist of combs with straight back edges to the end segments and with tooth segments secured either through their centres (1948.2482 B (TDY 44) and 1948.2484 B (TDY 42)) or on one or both edges (1950.237 B.1 (F 29) and 1950.241 9.E). Three of the combs have four teeth per centimetre on one side and five per centimetre on the other, whilst one comb (1950.237 B.1 (F 29)) has finer teeth, with five on one side and seven on the other. The tooth values could not be established for the other combs. At Spong Hill, the six comb fragments of this type included four with noticeably fine teeth (not represented at Lackford) and two with coarser teeth, resembling the combs from Lackford (Riddler and Trzaska-Nartowski 2013, 138).

There is some variation in their decoration. Five combs have paired framing lines, in two cases (1950.241 9.D and 9.H) without any further decoration. This is a common design, well-represented at West Stow, for example, and present also at Spong Hill (West 1985, figs 42.5 and 154.14-15). The West Stow combs come from structures of phase B and B/C. Two combs (1948.2482 B (TDY 44) and 1948.2484 B (TDY 42)) are closely related for their decoration, with paired framing lines and groups of ring-and-dot motifs arranged around the rivets, in the manner of combs from Canterbury, Illington and West Stow (Blockley *et al* 1995, fig 509.1140; Davison *et al* 1993, fig 43.272A and 282A; West 1985, fig 252.4). A further comb (1950.237 B.1 (F 29)) includes a single continuous row of ring-and-dot motifs at the centre, much like combs from Abingdon, Alwalton, Spong Hill and West Stow (Avery and Brown 1972, fig 5.2; Gibson 2007, fig 32.1254.1; West 1985, fig 173.2). The framing lines are all-but-invisible on this comb, as it now

survives, but were originally present. The fifth comb (1950.241 9.E) is decorated entirely with horizontal lines, in the manner of combs from Hammersmith and Spong Hill (Blackmore and Riddler 2008; Riddler and Trzaska-Nartowski 2013, 138).

The comb type is well-represented within early Anglo-Saxon cremation cemeteries at Alwalton, Illington and Spong Hill, as well as Lackford, and it is commonly seen within contemporary settlements, notably at West Stow. On the Continent, it is an established early Merovingian comb form, dated by Ursula Koch to SD phase 3, of *c* 480-510 (Koch 2001, 63, 188 and abbn 13 and 20). Her dating has been endorsed in subsequent texts (Stauch 2004, 173-4; Baumann 2014/2015, 102). At Spong Hill the six examples of the comb type came from cremations phased to A/B or B and it can be regarded as a form of phase B, continuing into the early part of phase C. This makes its start date a little earlier than that seen on the Continent, going back perhaps to *c* 450 and continuing to *c* 525, but this is a reflection of the fact that the Continental dating is based on their presence within inhumation graves.

Connecting Plates of Shallow D-Shaped Section

Six combs include connecting plates of shallow D-shaped section that do not taper at the ends but are of the same width throughout. Four of them came from Lethbridge's excavations and two from the recent work. One of the combs is incomplete, whilst the other five are fragments. A comb fragment (1950.241 9.F) includes fine teeth (of seven and ten per centimetre) and is decorated merely with framing lines, much in the manner of combs with connecting plates of rectangular section. As well as the slight change in connecting plate section, however, the riveting scheme fastens end segments through their centres and tooth segments on one edge only. This riveting scheme is not a feature of early double-sided composite combs and does not emerge before the late 5th- to early 6th century, within Phase C. Another comb of this type is one of the most complete examples to have come from the Lackford cemetery (1950.151 B (49 A 11)). Its reconstruction by Lethbridge (1951, fig 10) is flawed once again and the comb is shorter and more complete than he imagined it to be, with every one of its tooth and end segments surviving. The connecting plates have a shallow D-shaped section and are decorated with three horizontal lines at the centre, in a band that encompasses the five iron rivets. All of the tooth and end segments are secured through their centres, in a riveting scheme reflecting that of several of the combs with connecting plates of rectangular section. This comb was also equipped with fine teeth, of eight and ten per centimetre. A related comb (1950.241 9.G) includes similar decoration (with five horizontal lines at the centre) but the tooth segments are secured on one edge only and the teeth are slightly coarser, at seven and eight per centimetre. A fourth comb (1950.105 B (UDY 20)) is decorated with two rows of ring-and-dot patterns, with the end and tooth segments secured through their centres. There are just three teeth per centimetre on the one surviving edge.

A further comb (LKD001 1041, 1042 and 1072; Figure 4.8) from cremation 0151 includes connecting plates of D-shaped section, decorated with ring-and-dot motifs, probably forming a continuous pattern. The specific comb type is unclear, particularly in terms of the shape of the ends of the connecting plates, making it difficult to place it within the comb sequence. Double-sided composite combs decorated with ring-and-dot patterns alone are known from cremations at Illington and Spong Hill and they should probably be assigned to phase B (Riddler and Trzaska-Nartowski 2013, 140). A comb fragment (LKD001 1015, 1016 and 1071; Figure 4.3) from cremation 0112 includes part of an undecorated connecting plate with a shallow D-shaped section, as well as an incomplete end segment. The connecting plate tapers towards its end but is also a broad plate. The combination of these attributes can be seen on combs from Abingdon and Pennyland, which can probably be placed around the middle third of the 6th century, although a slightly later date is possible (Riddler 1993, 111; Dickinson 1976, II, 16). This could be one of the latest combs to have come from Lackford.

Significantly, perhaps, there are no combs of this type from Spong Hill. They can be found instead at West Stow, where several combs are decorated with horizontal bands at the centre of

connecting plates of shallow D-shaped section. They come from three structure fills of Phase C (West 1985, figs 49.2, 123.6 and 150.15). Comparable combs occur within merovingian contexts in northern France, at Bayeux, Chaouilley, grave 20 and Lavoye (Delacampagne 1995, 151 and 163; Petitjean 1995, pl III.9; Joffroy 1974, fig 17).

Cylindrical Undecorated

One of the most characteristic forms of early Anglo-Saxon double-sided composite comb includes undecorated connecting plates of D-shaped section, cylindrical in form. The comb type has been discussed on several occasions (Riddler 2009a, 187; Riddler and Trzaska-Nartowski 2013, 139-40; 2015, 133). The earliest examples can be found at Spong Hill and West Stow. At Spong Hill three examples came from contexts of Phase B and Phase C, whilst the earliest examples from West Stow come from contexts equivalent to Phase C. Continental phasing follows the Anglo-Saxon, with the earliest examples coming from contexts of the late 5th century, whilst the series continues through the 6th century and into the 7th century (Riddler and Trzaska-Nartowski 2013, 139-40). There is likely to be some sense of typological development within this large and enduring series of combs, one of the largest sequences to have come from East Anglia as a whole. The earlier combs are generally broad, secured with five iron rivets in a number of different riveting schemes, and have both coarse and fine teeth on the same comb. Later examples have narrower connecting plates, teeth of similar values and more rivets and tooth segments, secured usually on a single edge. The small unstratified fragment (1950.241 9.C) from Lackford has coarse teeth, of four and five per centimetre, with broad connecting plates and closely-spaced riveting, indicating that it falls towards the earlier part of the spectrum. The larger fragment (1950.93 B.1 (TDY 9)) has similar tooth values and broad connecting plates, with the tooth and end segments secured through their centres, again suggesting that it is reasonably early within the sequence. A third comb (1950.93 B.2 (TDY 9)) also has coarse teeth of four and five per centimetre, with the tooth segments secured on one edge. It could be a little later than the other two combs, although all three can be placed within Phase C.

Smaller Fragments of Combs

The smaller fragments of double-sided composite combs include a tooth segment which, unusually, has been burnt to a black colour (1948.2485 B.33 (UDY 25 A)), and three fragmentary end segments (1948.2474 B.5 (UDY 2), 1950.38 B.2 (WDY 59 A) and 1950.241 9.J). These all have straight back edges and one of them (1950.38 B.2) includes ring-and-dot decoration beyond the graduated teeth. Given that they are fragmentary, it is not possible to associate them with a particular comb type. They all have five teeth per centimetre on one side and the most complete example (1950.241 9.J) has finer teeth of seven per centimetre on the other side.

Small fragments of antler tooth segments (1950.241 9.K) may possibly be part of the triangular comb (1950.241 9.I), whilst several comb teeth (1950.157 B.1 (WDY 19)) cannot be assigned to a particular comb type.

Chronology, Use and Deposition

Within early Anglo-Saxon cremations, combs are one of the most common of all object types to be found, exceeded only by glass beads (Williams 2003, 101 and fig 5; Squires 2013, 171). Across cemeteries where the data is available, it is clear that they were buried with both sexes, but more often with females than males, except at Cleatham (Riddler and Trzaska-Nartowski 2013, 144; Squires 2013, 192 and figs 16-17). The Lackford combs have been placed in their forms, types and groups, and compared throughout with the assemblages from Spong Hill and West Stow, in particular. For these three sites, the relative proportions of comb forms can also be considered, with the later combs of 7th- and 8th-century date from West Stow taken out of the equation. Eighteen forms and types of comb can be examined. The number of combs from Spong Hill is considerably greater than the quantities from Lackford or West Stow and as a result the forms and types have been considered here by percentage, rather than number. Some interesting, if not entirely unexpected, results emerge (Figure 8.6).

Spong Hill dominates the assemblage of the earlier forms of triangular comb of phase A and A/B (Böhme D and upright) and includes so many barred zoomorphic combs that it is reasonable to suggest that they were made somewhere close to the cemetery. Lackford and Spong Hill include similar proportions of Böhme type E, semi-circular type A and late Roman double-sided composite combs, forms of phase A that are entirely absent at West Stow. Double-sided composite combs with curved or indented back edges of phase A/B or B are found at Spong Hill and Lackford, but not at West Stow. Böhme type E and semi-circular type A combs are rare types, but the absence of late Roman combs from West Stow (with the Roman settlement of Icklingham lying nearby) is a little surprising. It suggests that within Phase A these combs were made and used in late Roman settlements and were also reserved for deposition within cremation cemeteries, but they were not used in contemporary, early Anglo-Saxon settlements. They are absent from all of the other early Anglo-Saxon settlements in East Anglia.

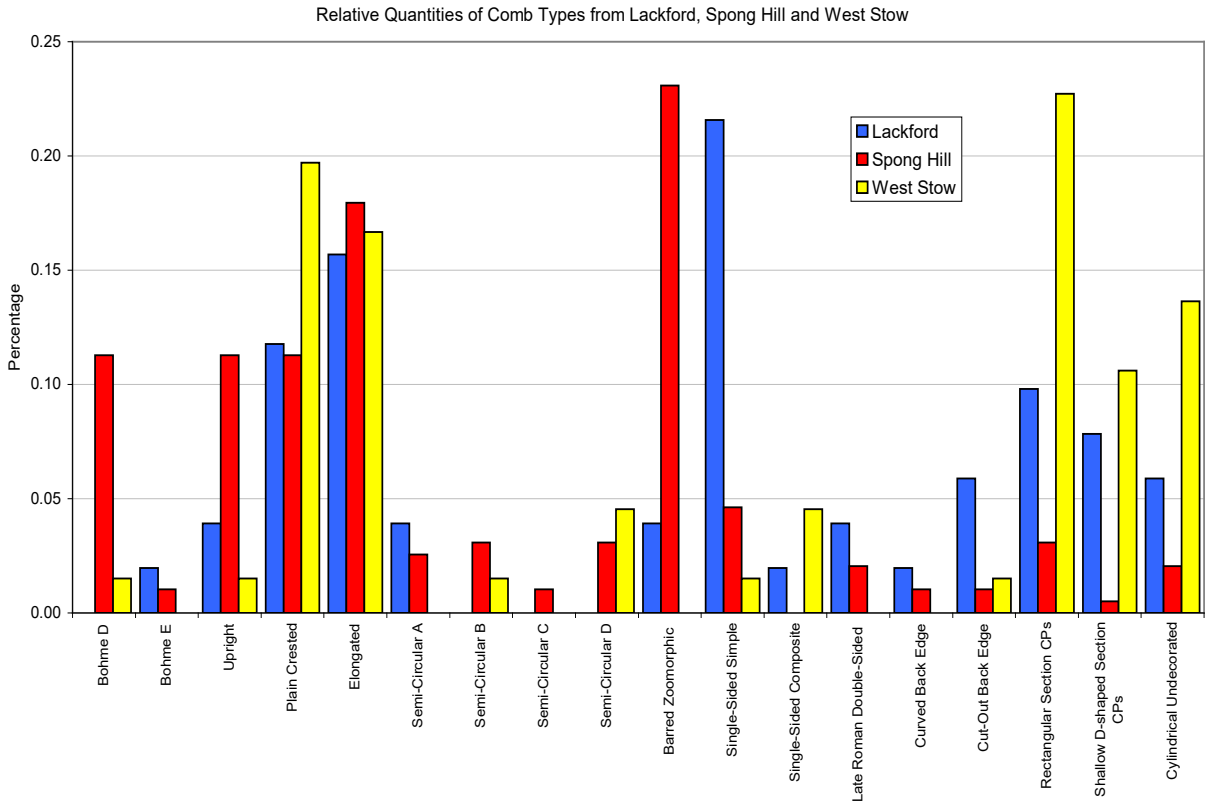

Figure 8.6 Relative Quantities of Comb Forms and Types from Lackford, Spong Hill and West Stow

Upright triangular combs were found in phases A and B at Spong Hill, with one example from Alwalton attributable to phase C. They are prominent at Spong Hill, but are poorly represented at both Lackford and West Stow. Both plain crested and elongated triangular combs occur in similar quantities at all three sites, with slightly more from West Stow than elsewhere. Both triangular comb types can be placed in phases B to C. As we move, therefore, from phase A to phases B and C, both Lackford and West Stow become more prominent.

The quantity of phase B to C single-sided simple combs from Lackford is impressive. The eleven examples can be compared with nine from Spong Hill and ten from the mixed cemetery at Abingdon. Other cremation cemeteries provide up to four examples at most, notably at Cleatham and Newark. In relative terms it dominates the assemblages from the three sites. The comb assemblage from Spong Hill diminishes as we move towards the double-sided composite combs of phases B to C, whilst they are well-represented at Lackford and particularly at West Stow. Thus the balance of comb deposition at Spong Hill lies firmly towards the earlier phases, diminishing over phases B and C. At Lackford, in contrast, there are small numbers of combs of phase A but

increasing quantities across phases B and C, mirroring West Stow in this respect. This point has been made previously (Riddler and Trzaska-Nartowski 2013, 141) but can be reiterated here on the basis of a consideration of the full assemblage of combs from Lackford.

Burning, Fragmentation and Wear

One of the surprising things about the Lackford comb assemblage is that scarcely any of the combs have been burnt. There is clear evidence for the burning of combs at Spong Hill and Loveden Hill, but it is scarcely seen here at all. This strongly suggests that the combs were either placed well away from the incinerated part of the funeral pyre, or were added to the ceramic vessel after the cremation had taken place. Following the definitions of McKinley and Squires, they can be regarded as grave-goods, rather than pyre-goods (McKinley 1994a, 133; Squires 2013, 161). Almost every other category of antler, bone or ivory object from Lackford is a pyre-good, burnt during the cremation process. McKinley suggested that combs had been worn in the hair at Spong Hill and had fallen away from the cremation as the hair had burnt (McKinley 1994b, 91). It is more likely, however, that they had been deliberately placed near the head, which would be seen as one of the most appropriate places to locate them. Other combs may have been carried in pouches or suspended from the belt. Within later graves they can also be found around the feet. Around 75% of the Spong Hill combs had been burnt and can be regarded as pyre-goods, a figure that contrasts noticeably with Lackford, where only one of the combs shows any traces of burning (Riddler and Trzaska-Nartowski 2013, 143).

Most of the combs are fragmented. We can use the same system as for Spong Hill to assess the level of fragmentation for the triangular combs from Lackford (Table 8.7). As a balance against this evidence, the survival level of the triangular combs from the settlements of West Stow, Eye, Handford Road at Ipswich and Kentford can also be included (Tables 8.8 and 8.9).

	Böhme E	Upright	Plain Crested	Elongated
Single end segment only		2	2	5
End Segments and one connecting plate missing				1
One or two tooth Segments			1	1
Less than half of a comb			1	
Fragmentary comb, lacking both end segments	1		1	2

Table 8.7 Triangular Comb Fragmentation for Lackford

At Lackford the most common fragmentation of the triangular combs lies with the presence of end segments only, making up half of the entire sample and suggesting that the arguments of Trollope and Williams, that portions of combs were deliberately added to burials, is substantially correct (Riddler and Trzaska-Nartowski 2013, 142; Trollope 1857, 276; 1863, 31; Williams 2003, 107-8). In two cases single tooth segments were deposited in burials and these pieces effectively follow the same depositional practice. Where less than half of a comb was deposited, which occurs with one cremation, it too can be regarded as part of the same practice.

	Böhme D	Böhme E	Upright	Plain Crested	Elongated
Single end segment only					4
End Segments and one connecting plate missing					
One or two tooth Segments	1				4
Less than half of a comb					
Fragmentary comb, lacking end both segments				4	2
Fragmentary comb, lacking one end segment				6	1
Connecting plate only			2		6
Substantially complete comb				2	

Table 8.8 Triangular Comb Fragmentation for West Stow

	Böhme D	Böhme E	Upright	Plain Crested	Elongated
Single end segment only					2
One or two tooth Segments				1	2
Fragmentary comb, lacking end both segments				2	1
Substantially complete comb	1				

Table 8.9 Triangular Comb Fragmentation for Eye, Handford Road at Ipswich and Kentford

The other half of the story, consisting of the deposition of triangular combs lacking their end segments and, in one case, also lacking a connecting plate, is less obviously deliberate and intentional. This can be seen with four of the Lackford combs and was common at Spong Hill where, however, many more of the combs had been burnt and fragmented. But it is reasonably common at West Stow and the other East Anglian settlements as well, where combs were deposited lacking either one or both of their end segments. The end segments were a particular point of weakness for this comb type and it is likely that the combs continued in use after one or both of their segments had fractured away. Many of the West Stow combs, for example, show traces of considerable wear on the teeth, indicating that they were used for as long as possible, before finally being discarded. Thus triangular combs without end segments placed in cremations have not necessarily had those segments deliberately removed before burial. The end segments may have been discarded well before burial. The triangular combs from settlements differ also in the occasional presence of substantially complete combs, retaining both of their end segments, although their edges may have fractured away. Near-complete combs like this were not found at Lackford and were rare also at Spong Hill.

Most of the combs from Lackford are fragmentary and only a proportion of them still retain their teeth. Where the teeth are present it is possible to assess the extent of wear on them. Four categories of wear have been used, ranging from ‘none’ and ‘slight’ to ‘some’ and ‘considerable’. The level of wear for each comb class and type has been assessed, although only the stubs of teeth survive on some combs and it is not possible to add those to the analysis. Of the seventeen triangular combs, eleven survive only as end or tooth segments. The wear on end segments is usually less than in the centre of the comb and it can vary on either side of the single set of teeth. Three of the end or tooth segments now lack any teeth at all. Of the remainder, three show no wear, one has slight wear, two have some wear and two have considerable wear.

This pattern is repeated with the double-sided composite combs where, however, it is also common for one set of teeth to show less wear than the other set. This can be seen with one of the late Roman end segments (1950.140 B.1.3 (UDY 34)) for example, where the coarse teeth show some wear and the fine teeth show slight wear. The near-complete double-sided composite comb (1950.151 B (49 A 11)) shows some wear on the fine teeth and considerable wear on the coarse teeth. Of the twenty-two double-sided composite combs, nine survive only as end segments or tooth segments. Less than a quarter survives of five combs, and less than a half of six more. Around half of one comb survives and one comb is near-complete. In general, they are as fragmented as the triangular combs, with almost the same number of them represented merely by end segments. As with the triangular combs, they were mostly utilised in daily life before they were deposited in burials. Eight are indeterminate, one shows no wear, four have slight wear, five show some wear and four have considerable wear on the teeth.

Study of the wear patterns indicates that the composite combs, whether single-sided or double-sided, had been used before burial and there is no real evidence to suggest that any of them were prepared specifically for the cremation process. They are the combs of daily life, produced in classes and forms found also in contemporary settlements, but with around half of the assemblage, only the end segments were added to the urn after the cremation. This practice can be seen with combs across all three phases and appears to have continued during the entire duration of the cemetery.

In terms of wear, the situation is quite different with the single-sided simple combs. Most of them are complete or near-complete, although only the stubs of teeth survive on two of them. Of the remainder, only one comb shows any traces of wear at all. As noted above, the majority of these combs could not easily have been used in any case and they were added to cremations as grave-goods, rather than pyre-goods. It is important to note, however, that one of them at least, had been used before burial. They are not all combs prepared specifically for burial as grave-goods.

The deposition of combs in Lackford cremations differs in some respects from Spong Hill, although the quantity and range of the assemblage is similar. There are 65 combs from 500 cremations, indicating that they were deposited in 13% of the burials, a comparable figure to Spong Hill, where the deposition of combs is approximately 15%. At Spong Hill, however, 75% of the combs were cremated with the dead and can be regarded as pyre-goods. At Lackford, the figure is just 1.5%, and almost all of the combs are grave-goods and not pyre-goods. The range of comb types is similar at both sites and it is roughly the same across most early Anglo-Saxon cremation cemeteries, but some local preferences are identifiable, as with Spong Hill and its preference for barred zoomorphic combs. Where the Spong Hill combs are predominantly early in date, the Lackford assemblage includes a small number of early combs but increases in number across the later phases. The fragmentation of combs is similar at both sites and Lackford usefully indicates that the practice of depositing end segments only in burials continues across all of the phases of comb deposition. At both sites small replicas of combs were also deposited in some cremations, conceivably in the burials of infants, although this cannot be tested for Lackford. In relative terms, they are much more apparent at Lackford, where they form 17% of the comb assemblage, against just 2.5% at Spong Hill.

8.3.8 Casket Mount

A small fragment of a bone casket mount (1948.2474 B.6 (UDY 2)) includes traces of two closely-spaced perforations. It has been made from animal rib and no decoration is now visible. Mounts from caskets are known from contemporary cremations at Caistor-by-Norwich, Cleatham, Illington and Spong Hill (Riddler and Trzaska-Nartowski 2013, 106). Caskets with decorated bone strips are known also from late Roman contexts and it is possible that some of the examples from early Anglo-Saxon cremations go back to that period. With smaller fragments like this, however, it is very difficult to judge what the casket may originally have looked like and what its date might be. The numerous fragments recovered from Caistor-by-Norwich cremation X ii provide some indication of their original appearance (Green 1973, 85-7, fig 27 and pls XX-XXI). Green regarded these caskets as essentially late Roman and made in the late 4th and early 5th century (Green 1973, 87). However, the three examples from Spong Hill all came from cremations of phase B, placing them around the middle third of the 5th century.

8.3.9 Spindle Whorls

The spindle whorls from Lackford include five of antler and two of fired clay (for the latter see below section 8.4.4). One of the antler whorls (1950.241 8) is unstratified, whilst the others came from separate urns. All of the antler whorls have been burnt and only one of them is near-complete; the remainder survive merely as fragments. Their original dimensions can be reconstructed, alongside an estimate of their weights; but the cremation process will have reduced these figures and it would be unwise to make direct comparisons with spindle whorls that have not been burnt. They vary in diameter from 37mm to 49mm, placing them well within the range of sizes established for contemporary East Anglian settlements (Riddler and Trzaska-Nartowski forthcoming Eye), although here also a reduction in size from the cremation process should be noted.

The spindle whorls can be assigned to type, following the sequence established by Walton Rogers (2007, 23-6). Three of the spindle whorls belong to type B2, which has two flat surfaces and rounded edges. This was the dominant type at Spong Hill and it is an early form, occurring in 5th-century contexts. Type A1 whorls, in contrast, are a later form, not seen before the 6th century (Phase C), as noted originally by Green (1973, 113). Two antler whorls of this type came from

Lackford (1949.427 B (M 1) and 1950.63 B.2 (TD 4)). The two flat surfaces of one spindle whorl (1950.221 B.2 (WDY 61)) no longer survive. The remaining four antler whorls are all decorated with one or more concentric circles, either grouped in two bands or, in one case (1949.427 B (M 1)) covering the entire surface on one side. This decoration reflects the fact that all of these whorls have been carefully made, and were lathe-turned.

The spindle whorls from Lackford are limited to five of antler and two of fired clay. The larger sample from Spong Hill was also dominated by antler whorls, but included three of chalk as well as ten of fired clay. A similar range of spindle whorl materials occurs at Cleatham and Sancton (Riddler and Trzaska-Nartowski 2013, 145). Within contemporary settlements there are also spindle whorls of lead and fine-grained siltstones, and the ceramic spindle whorls are usually dominant, rather than those of antler or bone. Antler does not survive well in East Anglian soils and this may account, in part at least, for the discrepancy in material types between settlements and cemeteries. The absence of lead spindle whorls from burials may be a consequence of the cremation process, but siltstone spindle whorls are present in small numbers in settlements but not in cremations.

8.3.10 Needle Case

A near-complete needle case (1950.126 B.3 (X 1)) was described by Lethbridge as 'a bone object which was evidently a pottery stamp' (Lethbridge 1951, 19 and fig 17) but that is unlikely to have been its function. It consists of a section of sheep or goat metatarsus midshaft, trimmed to a square section and decorated with punched dot patterns on two of the four sides. It has been burnt and is now incomplete and distorted.

Bone needle cases are well-attested in Continental cremation cemeteries, particularly examples made from sheep or goat metapodia (Articus 2004, 126; Masanz 2017, 83). They form the majority of bone needle cases within these cemeteries, with those of circular section, made from other skeletal elements, occurring in a minority of burials (Masanz 2017, abb 16). They differ significantly from late Roman bone metapodial needle cases, which customarily retain the distal end of the bone (Riddler 2013, fig 4.49.4). Early Anglo-Saxon bone metapodial needle cases, in contrast, are open at both ends and they were probably sealed with leather, animal skin or textile, which retained the needles in the case (Böhme 1974, 48; Gaedtke-Eckardt 1991, 111; Walton Rogers 2007, 41). Böhme mentions the use of animal hair in one particular case (Böhme 1974, 48). The question of how they were carried on the body is slightly more problematic, but in this case part of a lateral perforation is visible at one end and a cord may have been threaded through that to secure the case to a belt. Other needle cases, with no obvious means of suspension, may have been retained in pouches or containers.

The earliest examples come from graves of the late 3rd century, whilst the Anglo-Saxon series comes predominantly from graves of the 5th century and includes examples from Alwalton and Spong Hill (Gaedtke-Eckardt 1991, 112; Masanz 2017, 84; Gibson 2007, fig 32.1254; Riddler and Trzaska-Nartowski 2013, 106). At Pritzier two copper alloy needles adhered to the remnants of a bone needle case (Schuldt 1955, abb 438). They do not occur in this square-sectioned form in merovingian inhumation graves (Masanz 2017, 85). Although found predominantly in the graves of females, they occur occasionally with cremated individuals sexed as males (*ibid*, 84). Masanz has linked them to the preparation of the body for the afterlife, as implements used to maintain and repair clothing (Masanz 2017, 74).

8.3.11 Antler Handle

A fragmentary antler cylinder (1949.582 C.1 (HB 3)) has been cleanly sawn at one end and is decorated with two bands of lateral incised lines. It has been burnt. Lethbridge described the object as 'a piece of the ivory hilt' of a sword (Lethbridge 1951, 18 and fig 16). It bears a closer resemblance to the small antler handles utilised with rod-like firesteels, several examples of which came from Spong Hill (Riddler and Trzaska-Nartowski 2013, 104); but it has a wide internal aperture, suggesting that it was used in a different way. A variety of bone and antler rings are

known from Roman contexts (Béal and Rodet-Belarbi 2003, 77-8). Small Roman vessels or pyxides and the bone components of furniture are mostly lathe-turned and can include decoration in the form of bands of lateral incised lines; but they tend to be larger than this example (Béal 1983, 91-2; Deschler-Erb 1998, tafn 45 and 53). A handle from Magdalensberg, possibly for a clasp knife, is similar in diameter and decoration but is a little taller (Gostenčnik 2005, taf 48.4) and this is a more likely functional interpretation of the object. It may well be an antler handle for an implement, which has fractured at one end. Early Anglo-Saxon antler handles occurred at Spong Hill and are known from Harnham Hill and Pakenham (Riddler and Trzaska-Nartowski 2013, 104; Akerman 1853, 264 and pl II.2; Brown *et al* 1954, fig 30d). As an alternative, it is possible that this is a small antler spacer, broadly similar to an example from Carlton Colville, possibly used on a belt (Riddler 2009b).

8.3.12 Gaming Pieces

A total of 37 gaming pieces were recovered from four urns. They consist of antler or bone pieces of shallow plano-convex section. Most of them are complete and they have all been burnt to a greater or lesser extent. The single gaming piece from cremation 1948.2474 (UDY 2) has a flat base of circular form and the piece has been lightly burnt to a brown to black colour. Lethbridge referred to it as 'an ivory playing man as well-turned as a billiard ball' (Lethbridge 1951, 17). It has a small mark at the centre of the base, suggesting that it might have been lathe-turned. In contrast, the set of at least 32 counters from cremation 1948.2485 (UDY 25 A) consists of pieces that are more heavily burnt, to buff, grey and white colours. Their bases are mostly oval in shape, rather than circular, and some have been distorted by the cremation process and are no longer flat. The same level of cremation can be seen with the gaming pieces from cremations 1950.94 (UDY 39) and Z21421 (49 A 23) and their bases are also oval in shape, rather than circular. The gaming pieces may also have been reduced in size by cremation, as well as being distorted in shape. The lightly burnt piece from cremation 1948.2474 (UDY 2) is 20mm in diameter, whilst the gaming pieces from the other cremations are 14-18mm in diameter. Thus variations in colour, size and shape largely reflect differential burning. It is very unlikely that the gaming pieces were deliberately burnt to provide colour differentiations, as intimated by Green (1973, 100; *cf* Riddler 2007, 251; Riddler and Trzaska-Nartowski 2013, 150).

Lethbridge noted that 'No. 48.2485 contained more than two dozen badly burnt playing men' (Lethbridge 1951, 17). This represents a minimum number for the assemblage, based on the presence of 24 complete or near-complete pieces. The smaller, additional fragments can be reconstructed into a further six pieces. The assemblage of gaming pieces from the cemetery almost falls neatly into the two categories established by Richards, of single pieces on the one hand and sets of counters on the other hand (Richards 1987, 82). In reality, however, the distribution of gaming pieces from early Anglo-Saxon cremation is a little more complicated.

The examination of the gaming pieces from Spong Hill suggested that there were four categories of deposition, rather than two (Riddler and Trzaska-Nartowski 2013, 154). This idea is based on the assumption that these are counters for the game of *taefl*, one of a small number of board games known to the Anglo-Saxons. The object of the game was for the king piece to be escorted from the centre to the edge of the board without being captured. The assailants outnumbered his defendants in a ratio of 2:1 and they attempted to surround the king, preventing him from reaching the edge of the board (Murray 1952, 55-64; Bell 1960, 77-81; MacGregor 1985, 134; Parlett 1999, 196-204; Riddler 2007, 256; Breyer 2010, 165-7). With the ratio of 2:1 in mind and using a total of 1,050 counters from 125 early Anglo-Saxon cremations, it can be argued that the four categories of deposition reflect:

A single pieces or small numbers of pieces, from 1 to 7;

B defendants of the king, from 8 to 18 pieces;

C assailants of the king, from 16 to 18 pieces;

D complete or near-complete sets, usually lacking the king piece, from 21 to 48

(Riddler and Trzaska-Nartowski 2013, 154).

These four depositional categories are compared with the quantities of counters from early Anglo-Saxon cremation graves in Figure 8.7 with the Lackford assemblages highlighted in black. Categories B and C overlap slightly, whilst A and D are quite distinct. The Lackford gaming pieces belong to categories A and D, with small numbers from three cremations and a complete or near-complete set from one cremation. A similar situation prevailed at Caistor-by-Norwich, with single gaming pieces coming from two cremations and a set of 33 pieces recovered from a third urn (Green 1973, 98). The presence of 32 gaming pieces from a cremation at Lackford can be compared with the same number from cremations at Cleatham and Loveden Hill, as well as 34 pieces from Caistor-by-Norwich N59 (Riddler 1988a; Leahy 2007, 211-2; Green 1973, 98). No king pieces could be identified from any of these burials and they remain very difficult to find within any assemblage of this period (Riddler and Trzaska-Nartowski 2013, 154-5).

The minimum number of gaming pieces for taefl is likely to have been 24, with eight defendants and sixteen assailants (as well as a king piece), a game that could conceivably be played on a board with a 7 x 7 lattice. It is worth noting, however, that Breyet suggests that Brandub, an Irish variant of the game, could be played with just four defendants and eight assailants (Breyet 2010, 167).

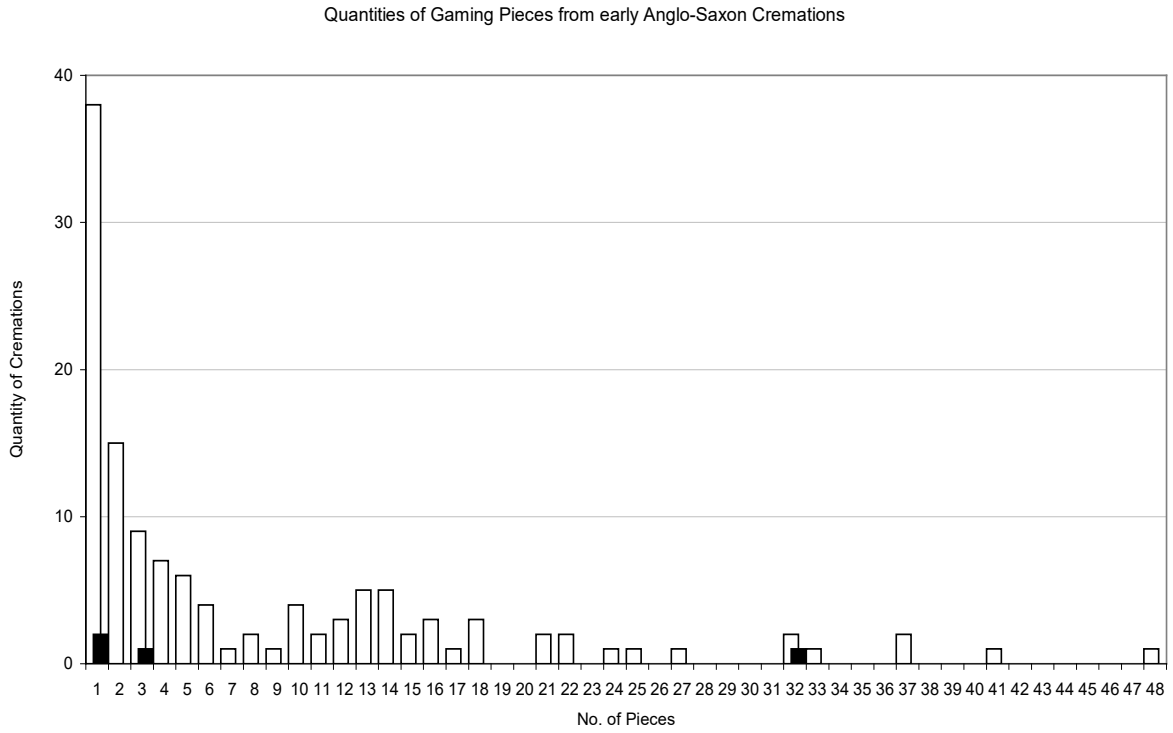

Figure 8.7 Quantity of Gaming Pieces from Early Anglo-Saxon Cremations. Lackford cremations in black

Green noted that 'gaming pieces are of little value for dating purposes, though the largest groups seem to occur mainly in early urns' (Green 1973, 99). The set from Caistor-by-Norwich was thought to have come from one of the earliest urns in the cemetery and Lackford cremation 1948.2485 (UDY 25 A) was also considered to be early (Myres 1973, 46; Green 1973, 99). Within the chronology established for the Spong Hill cemetery gaming pieces occurred across phases A and B, but (with the possible exception of cremation 1911) they were not present in phase C. It is clear that 'the inclusion of playing pieces and astragali is evidently an early practice at Spong Hill' (Hills and Lucy 2013, 225). Green had argued that some cremations, including Lackford 1948.2474 (UDY 2), belonged to the sixth century (and the inclusion in UDY 2 of an annular brooch suggests a late 5th- to 6th-century date) but, following the establishment of a robust chronology at Spong Hill, it now seems likely that the majority are of 5th-century date, possibly deposited from *c* 375-475.

A prominent feature of the gaming pieces from one cremation (Z21421 (49 A 23)) is the presence of two marks on their bases. All three pieces from this cremation include these marks, set close together towards the centre of the base. At Spong Hill they could be seen on just under half of the gaming pieces, with most of each set marked in this way (Riddler and Trzaska-Nartowski 2013, 151). For some they have been regarded as hidden symbols, forming part of a board game or used perhaps in divination (Green 1973, 99; Meaney 1981, 261-2). It seems more likely, however, that they were part of the manufacturing process and represent the marks left by an implement (conceivably part of a lathe) designed to hold the pieces in place for shaping. This has been demonstrated from experimental attempts to replicate these pieces (Krüger 1982, 219). As noted above, the single gaming piece from cremation 1948.2474 (UDY 2)also carries a lathe mark, albeit a more subtle one.

At Spong Hill gaming pieces were buried with adults, rather than infants or children (Squires 2013, 191). They were found with both males and females, although the sex of the individuals buried with the majority of the gaming pieces could not be determined (Riddler and Trzaska-Nartowski 2013, table 2.28).

8.3.13 Astragali

Single examples of sheep or goat astragali were found in two separate cremations. One of the astragali (1950.26 B (UDY 26)) has been lightly burnt to a buff to light grey colour, whilst the other (1950.67 B (49 A 26)) shows no signs of burning. Neither astragalus shows any signs of wear. Groups of nine or more astragali are also recorded from cremations at Caistor-by-Norwich, Loveden Hill and Spong Hill, and can be regarded as gaming pieces, not used, however, in board games (Riddler and Trzaska-Nartowski 2013, 150). Single astragali found in cremation graves could easily be remnants of cremated animals, particularly when, as at Lackford, the human and animal remains were not judiciously sorted. Bond (1994, 128) has noted that they occurred as the only identifiable sheep bone in thirteen cremations at Spong Hill. A single astragalus from cremation 1673 from the cemetery could be identified as a gaming piece on the basis of its worn edges, but unworn astragali could relate to animal remains or gaming practices and it is not possible to decide between these alternatives. Thus the two examples from Lackford are not certainly gaming pieces and they are not further discussed here.

8.3.14 Antler Waste

One of the more unusual features of the worked antler and bone from Lackford is the presence of waste material in two of the cremations. A rhomboidal piece of antler waste (1949.181 B (HG 15)) is perforated in one corner and resembles a tooth segment from a triangular comb, except that it is too short for that purpose. Instead, it represents waste material sawn from a tooth segment during the later stages of manufacture of a comb. At this stage of manufacture the comb has been put together and secured with rivets, but the teeth have not been cut. Excess material lying above the comb back is sawn away, leaving offcuts of precisely this form. It is unusual for an offcut of this type to be perforated and it is possible that in this case a piece of antler waste was transformed into a pendant with the addition of a suspension hole. It has not been burnt.

A much larger fragment of a red deer antler was deposited in a second cremation (1949.26 C (WDY 15)). Lethbridge noted that the cremation ‘contained the badly cremated bones of a large man together with large portions of red deer antler. It has been suggested that this man may have worn the antlers in life and was some kind of magician or shaman’ (Lethbridge 1951, 19). Twelve fragments survive, including a section of beam from the upper part of an antler, together with several tines from the crown area. There are no pieces from the lower part and, despite its burnt condition, all of these fragments can be recognised as a single large offcut, sawn from the remainder of the antler in the initial stages of working. Given that there is a long segment of beam present, it could not easily have been worn by an individual, although it could conceivably have been held aloft. However, it should be regarded instead as a large piece of antler waste. In the initial stages of working the component parts of an antler were separated, with the burr, tines and crown sawn from the beam. The beam itself was either retained as a long, near-cylindrical

piece of waste, or was sawn into two pieces, usually just above the trez tine. It is that specific offcut which is represented here. Large offcuts of antler have not been noted in other cremations, either in England or on the Continent. It is possible that this offcut served as a mnemonic of the deceased, who may have been an antler and bone worker. It has been burnt and is therefore a pyre-good, placed near the individual on the pyre.

8.4 Objects of metal, stone and fired clay

By Faye Minter

This report re-examines the objects excavated by Lethbridge, excluding those made of antler, bone, ivory and glass which are covered separately.

All but five of the *c* 255 objects are metal, and these are predominately made of copper-alloy or iron, three silver objects and a couple of lead pieces are also present. The non-metal items include two of fired clay, two of stone plus an unstratified quern fragment which is not included in the analysis. Many of the objects were mentioned and/or illustrated by Lethbridge in his 1951 publication, with the exception of most of the numerous copper-alloy sheet fragments, which now can often be identified as probable vessel remains.

The aim of this re-examination is to place the objects within various modern typologies to refine their dating; where possible they will be placed within the typological sequence of three main phases used for Spong Hill (Hills and Lucy 2013, 157-232). The object types for which this can be done are focused upon.

The objects are arranged by functional category and object type.

8.4.1 Dress Accessories

Brooches

Twenty nine brooches were identified; for the most part these were fragmentary or incomplete, they were all copper-alloy and most had some evidence of burning. (see Table 8.10)
As at Spong Hill the majority are bow brooches, mainly cruciform or small longs (Hills and Lucy 2013, 28) although the proportions of types are rather different. There is at Lackford an apparently higher proportion of small long as against cruciform types, more square-headed types and annulars and an absence of some of the earliest types such as the supporting arm brooch.

Brooch type	**Quantity**	**Spong Hill**
Penannular	1	1
Applied disc	4	7
Cruciform	10	44
Small long	3 (+1 in 2015)	9
Long brooch (small long or cruciform type)	4	33
Square headed	3	1
Annular	2	2
Brooch pin	1	
Unidentified disc	1	
Supporting arm (2), saucer (2), chip-carved equal-armed (3), iron bow (1), tutulus (1)	0	9
Total	**30**	**106**

Table 8.10 Brooches by type and quantity with equivalent numbers from Spong Hill cremations (Hills and Lucy 2013 table 2.1)

Penannular brooch

One unburnt penannular brooch was recovered (1950.241.2), this was a ploughsoil find rather than from within a burial; although Lethbridge states his belief that it was ploughed out of a

cremation (Lethbridge 1951, 22 and fig 35). It is of Fowler type E, but with a markedly zoomorphic terminal similar to type F, and so categorised by Booth as E/F (Booth, 2014, 179-80). The Lackford brooch was listed by Mackreth under PEN part 4 (2011, 216-26). Fowler type E is generally found in late Roman or later contexts, and as Lethbridge noted silver examples were found with an early 5th-century coin hoard at Icklingham. Fowler types E and F and hybrids are rare in East Anglia, but a type E copper-alloy fragment was identified from West Stow by Mackreth (2011, Pl 148, 12795; listed and illustrated in West 1985, 54, Fig 229, 1). The only penannular brooch recovered from Spong Hill was iron and of Fowler type C (Hills and Lucy 2013, 42). Examination of the Lackford brooch showed that the remains of the pin are made of iron, which might be original or a later repair.

Applied disc brooches

The four examples of this fragile brooch type include 1950.71.B2 (HG 9), illustrated in Lethbridge 1951, fig 14, which is in three fragments and which was previously discussed and identified by Evison as an applied disc brooch (Evison 1978, 267). Also illustrated in 1951 (fig 17), 1950.234 B.2 (G 11) was not seen but again was previously identified by Evison as a star-shaped applied brooch (Evison 1978, 262). Finally, 1950.127 B.2 and B.3 (UDY 45), are brooch pins with attached copper-alloy sheet fragments through which the coil of the pin passes, indicating they are also possibly of the applied disc type.

Five cremations at Spong Hill contained definite remains of applied brooches (Hills and Lucy 2013, 40), four of which were from Phase A (Hills and Lucy 2013, 250, table 4.10) and one from Phase A/B (ibid, 252, table 4.11).

Cruciform brooches

Ten cruciform brooches were recovered by Lethbridge. All examples have evidence of burning and there is only one complete brooch (1950.71 B.1 (HG 9)), there is no evidence of repairs on any. All but two detached knobs were illustrated by Lethbridge 1951. Martin classified these brooches as part of his PhD and subsequent publication. All are assigned to a Martin type and Phase (See Table 8.11). They all occur within his Phases A or B, with a date range of AD 420-550 (Martin 2015, 128).

Martins typology was not available when the cruciform brooches from Spong Hill were examined for the 2013 publication, but the Hills and Lucy Cruciform groups 1-4 are broadly equivalent to Martin groups 1-4 and Martin subsequently classified all 47 Spong Hill examples into his types. (Martin 2015 online).

CUMAA accession number	Martin type	Martin phase	Complete	Lethbridge 1951
1948.2282 B.1 (WDY 67)	hp2c	B	No	fig 2
1948.2282 B.2 (WDY 67)	1.2	A	No	fig 2
1948.2491 B (F 5 A)	1.2	A	No	fig 2
1950.114 A.2 (MH 2)	1.2.1	A	No	fig 22
1950.127 B.1 (UDY 45)	2.1.3	B	No	fig 14
1950.71 B.1 (HG 9)	2.1.1	B	Yes	fig 14
1950.76 B.1 (FGT 1)	2.1	B	No	fig 16
1950.78 B (G 3 A)	3.3	B	No	fig 16
1950.34 B.1 (MA 3)	Kb2	A or early B	No	n
1948.2471 B (WDY 34)	Kb2	A or early B	No	n

Table 8.11 Cruciform brooches by Martin type and phase.

The majority of the Spong Hill examples are both Martin and Hills and Lucy cruciform groups 1 and/or 2 (Hills and Lucy 2013, 31-33), and fit into Martin Phases A and B, as is the case with the Lackford examples. They are found in Spong Phases A/B, B and C, predominately in the former two (*ibid*, 250, table 4.10, 252, table 4.11, 255, table 4.12, 258, table 4.14).

Small long brooches

The three small long brooches can be assigned to Penn and Brugmann types (2007, 25): 1950.241.2 (ploughsoil) (Lethbridge 1951 fig 35) is a sm1 dated to Phase FA1; 1950.234 B.3-B.4 (G 11) (*ibid* fig 17) is a type sm2, dated to phases FA1-FA2a and finally 1948.2486 B (G 10 A) (*ibid* fig 22) is a sm3, which are found mainly in phase FA2a (Penn and Brugmann 2007, 25).

The nine small long brooches from Spong Hill were also grouped using the Penn and Brugmann classification, two were of sm1, six of sm2 and one unclassifiable. There were no examples of sm3 in the cremations but examples of all three types were found in the inhumations (Hills and Lucy 2013, 35). At Spong Hill the sm2 types were phase B and B/C (*ibid* 257, tables 4.12 and 4.13) and sm1 and sm2 were both found in phase C (*ibid*, 258, table 4.14).

Great square headed brooches

The three square-headed brooches were illustrated by Lethbridge (1951, fig 17) and were classified by Hines: 1950.178 B.2 (H 4), two adjoining fragments of a foot plate Hines group X (Hines 1997, 86-92, pl 36 a), 1950.126 B.1 (X 1); four fragments of the upper part of a square headed brooch of Hines group IX (ibid, 80-86, pl.32.b) and 1950.234 B.5 (G 11), a fragment of the headplate of Hines informal sub-group iv (ibid, 183, 187, pl.95a). The former two examples are dated to Hines Phase 2, 500-570 (Hines 1997, 201).

There was only a single fragment of a square headed brooch from the Spong Hill cremations, but three further brooches were found in the inhumations (Hills and Lucy 2013, 35).

Annular brooches

Two annular brooches, 1948.2474 B.3 (UDY 2) illustrated in Lethbridge (1951, fig 7) and 1950.239 A.2 (F 25) are both of Høilund Nielsen type BR3-c, narrow flat annular brooches, and the most common form nationally (Hines and Bayliss 2013, 223). This type occurs in phases AS-FB to AS-FE (ibid, 561). 1948.2474 B.3 (UDY 2) can also be classified as a Penn and Brugmann Aslot type, as it has an oval pin slot (Penn and Brugmann 2007, 25), which are assigned to their Phase FA2a.

At Spong Hill annular brooches occur in greatest numbers in the inhumations (28 brooches) with only two found in cremations, this may have chronological implications (Hills and Lucy 2013, 42). The two examples within cremations were found in Phases B and C (ibid 255, 258).

Beads

1950.85 B.2 (TDY 39) is a pentagonal facetted incomplete crystal bead, illustrated in Lethbridge 1951 (fig 35). This is similar to an example from Spong Hill (Hills and Lucy 2013, 49, fig 2.11, no 2601/2), where seven large crystal beads were found in female graves in Phases A/B and B (ibid, 50, 253-255).

Wrist clasps

Six of the seven copper-alloy wrist clasps were identified to Hines class B and one to Hines class C (1993) and are broadly 6th century in date (see table 8.12). A further complete catch piece of Hines type B7 was illustrated by Lethbridge (1951 fig 20) as 1948.2472 (TDY 38); this was not seen and is not in the CUMAA catalogue.

CUMAA accession number	Hines Type	Burning	Lethbridge 1951
1950.241.3 (unstratified)	B7	No	-
1950.97 A.2 (WDY 48)	B7	Yes	-
Missing (TDY 38)	B7		fig 20
1950.95 B (BENI 8)	B7 or B13	No	fig 24
1948.2475 B (UDY 79)	B13c	No	-
1949.12 B.1 (GC E 1)	B17	Yes	-
1948.2483 B (TDY 37)	B18e	Yes	fig 20
1950.178 B.3 (H 4)	C1	Yes	fig 17

Table 8.12 Wrist clasps by Hines type

As at Spong Hill the greatest number of Class B clasps halves were of class B7 or B13 but the contextual associations of the clasps from Spong Hill do not provide more chronological precision (Hills and Lucy 2013, 56-57).

Belt fittings

1950.127 B.5 (UDY 45), illustrated by Lethbridge (1951, fig 14), is a belt mount similar in form to an example from Alton Gr 16 (Marzinzink, 2003, 451, plate 129) and Holywell Row Gr 34 (ibid 463, plate 141) such mounts are probably associated with Marzinzik type II.24b-i , that is buckles with small strip-like plates. Dating for the buckles is not precise, possibly later 5th and 6th century at earliest but generally later 6th and 7th century (ibid, 51).

1950.109 B.1 (49 A 20), illustrated by Lethbridge (1951, fig 29). A copper alloy strap protector originally included a raised area at the centre with Style I decoration, now barely discernible, set in a small triangular panel. It was secured to a belt with rivets in each corner and a strap could pass through the rectangular slot. Strap protectors were used to retain the strap in place and to prevent it from fraying. Within Anglo-Saxon England most examples have come from graves of the 7th century and there are few examples dating before the middle of the 6th century on the Continent (Marzinzik 2003, 63; Marti 2000, 108-9). (pers comm Ian Riddler).

Two buckles were recovered:

1950.142 B (UDY 43 A), illustrated by Lethbridge (1951, fig 35) is a small buckle, with an iron probable kidney-shaped loop (although this is not certain without X-ray), and a copper alloy rectangular folded sheet plate with a single copper alloy rivet. Buckles with an iron kidney-shaped loop are Høilund Nielsen form BU2-a, from AS-MB and AS-MF A indicating they can occur before 525-550 (Hines and Bayliss, 2013, 137, 561). The kidney-shaped frame of this example can also be classified as a Marzinzik type I.7b, although at the smaller end of the group and dating evidence for this type is sparse, these are dated relatively early from the later 5th to mid-6th centuries (Marzinzik 2003, 26-27). There were several similarly shaped buckle loops from Spong Hill where they are believed to have had a predominately 5th century date and are found in Phase A/B (Hills and Lucy, 2013, 58, 252).

1950.51 B (H 13) is a copper-alloy incomplete rectangular frame, now in two joining fragments. There is an incomplete rectangular decorated frame from Spong Hill, (2206/1) with a similar narrow frame, and it is suggested that this may belong to an earlier northern tradition of rectangular buckle loops, which have been found in 4th-5th century burial contexts, and not to the later Frankish types (Hills and Lucy, 2013, 57-58).

Bracelet

1950.126 B.2 (X 1), a silver fragment of a probable bracelet or armlet with punched decoration. Lethbridge (1951, 19, fig 17) noted the similarity to a pair of punched silver spiral bracelets from Holywell Row grave 11, a 6th-century group (Lethbridge 1931, 8 and fig 2.3).

Finger rings

1949.584 B (2), illustrated by Lethbridge (1951, fig 28), is a silver wire finger ring with the ends each coiled to form two spiral bezels. No parallels could be found with two spiral bezels but rings of this type with one spiral bezel are known from Anglo-Saxon graves dating to the 6th and early 7th centuries (Hines and Bayliss 2013, 217, 366-367). They are categorised by Hines and Bayliss as Type WR3, who point out that, while typically identified as finger-rings, most excavated examples have been found in the necklace area of the dead (ibid, 217, fig. 5.183). Excavated examples of this type of ring in Anglo-Saxon contexts come from grave IV at Chatham Lines, Kent and from St. Albans, Hertfordshire (MacGregor and Bolick 1993, cat. nos. 27.18 and 27.19); grave F at Buckland, Dover, Kent (Evison 1987) and grave 60 at Edix Hill, Cambridgeshire (Malim and Hines 1998). There are five examples in iron wire twisted together at the end to form a spiral bezel from Spong Hill, where they are identified as a Roman form with a few examples known from early Anglo-Saxon graves (Hills and Lucy 2013, 46, fig 2.9).

1948.2474 B.7 (UDY 2) is also silver, it was not seen, but from the illustration (Lethbridge 1951, fig 7 no 3) it can be identified as a Guiraud Type 3 or Henig's equivalent type VIII, which appears to include 'keeled' rings and those with concave or cutaway shoulders. Guiraud dates type 3 rings to the end of the 2nd and first three-quarters of the 3rd century (Guiraud 1989, 185) and Henig dates Type VIII to the 3rd century (Henig 1974, 13).

1950.210 B (UDY 77) is a copper-alloy spiral finger ring MacGregor and Bolick (1993 169) suggest a 5th to 6th century date range for this style of finger ring, which appears to be a development of Roman and earlier styles.

Pins

The only copper-alloy pin is 1949.17 B.1 (WDY 69) classified by Ross as type LXXII.i Shudy Camps-Facet-headed, a form which he dates to the 7th century (Ross 1991, 306-308, fig 5.43c, Lethbridge 1951, fig 28). However there are a couple of earlier occurrences of this type cited in Ross, suggesting that they occur very occasionally in 5th century contexts as discussed further in chapter 9 below. This raises the question as to whether these are part of the mainly fourth-century Roman pin group with facet heads (Cool 1983 Group XVII and 1990 Group 15). One example from Silchester (Cool 1983 cat no 32, fig 22 no 7 and 1990 fig 9 no 13) is noted by her as having a much smaller head (25mm wide) than usual and resembles the Shudy Camps type in having a shaft that is only very slightly narrower than the head; examining the dimensions recorded by Cool shows that other examples with a small head (30 - 35mm wide) have a relatively much narrower shaft (diameters 12 - 15mm). It therefore seems unlikely that the occasional finds of this type in 5th and 6th century contexts are Roman survivals.

No copper-alloy pins were recovered from Spong Hill.

Two iron pin fragments were also found, but both were corroded, in one case, 1950.187 B.1 (JB 10) onto other objects, so they could not be classified. Possible identifications include brooch pins, particularly in the case of 1950.130 A.3 (WDY 32 A) where a copper-alloy probable long brooch fragment was also found.

Coin pendants

Four pierced copper-alloy Roman coins: two later 3rd century radiates, one *nummus* (330-5) and one earlier Roman *as* or *dupondius* were found in three contexts (J2, HG 9 two coins, UDY 45, illustrated in Lethbridge 1951, fig 14). These were presumably for use as pendants defined as type PE7-b (Hines and Bayliss 2013, 213). Although they might have been pierced and worn at any time after minting late third- and fourth-century copper alloy issues re-used as pendants are a feature of 5th to 7th-century furnished inhumations and contemporary settlement assemblages (King 1988; White 1988; Geake 1997; Hines and Bayliss 2013, 213). Only six Roman coins were found in Spong Hill cremations, of which only one was pierced, found in burials of phases A and B (Hills and Lucy 2013, 92, tables 4.10-12).

Strap ends

1950.94 A.1 (UDY 39) is an iron narrow tongue-shaped strap end, illustrated by Lethbridge (1951, fig 35). Although it is unusual to be made of iron, copper-alloy tongue-shaped strap ends (with or without simple incised decoration) are found in East Anglian inhumations of AS-FA–B, for example, at Spong Hill, graves 24 and 39 and at Morning Thorpe, Norfolk, graves 249, 384, and 393 (Hills et al 1984; Green et al 1987; Penn and Brugmann 2007; Hines and Bayliss 2013).

1950.103 C.2 (UDY 56) is a possible copper-alloy strap end; it is unusual as it has tweezer like arms with a central plate, in this way similar to some medieval strap ends. No early medieval parallels have been identified.

8.4.2 Personal possessions

At Spong Hill over 300 cremations (12%) contained combs and toilet items, these cremations were predominately associated with Phase B and earlier; the equivalent number at Lackford is around 56 cremations of a possible total of 550, so about 10%. The toilet items appear to have

been added unburnt to the cremation urn (Hills and Lucy 2013, 312). This also seems to have been the case at Lackford as none of the toilet implements discussed below were burnt.

Tweezers

Thirteen copper-alloy and five iron pairs of tweezers were examined, thirteen were complete. As at Spong Hill the Lackford tweezers could be divided by length (Hills and Lucy 2013, 62-64). Fourteen examples are full size, with a length of 50mm or longer, one of midi size, with a length between 35mm-45mm and three mini, with a length of 35mm or less. Seventy of the 212 tweezers from Spong Hill were miniature in size and were often associated with miniature shears, supporting previous arguments that these were non-functional symbolic items within the cremation ritual (Hills and Lucy 2013, 64, 312).

Five examples are suspended from copper-alloy wire or iron slip knot rings and one from a solid copper-alloy ring.

All examples have straight or gently flaring arms, sometimes with incised decoration or side bevelling, a type known from late Roman and 5th-7th century contexts (MacGregor and Bollick 1993, 220–5; Hills and Lucy 2013, 62-4). Tweezers occur in all of the Spong Hill phases.

CUMAA ref	Context	Material	Size group	Lethbridge 1951	Suspension ring	Decoration
1949.10 B	HG 11	iron	Full size			
1949.19 B.2	UDY 69	copper alloy	Full size	fig 6		incised line, facets
1949.580 B	HB 1	copper alloy	Full size	fig 5	copper alloy	incised line, facets
1949.581 B	F 5	copper alloy	Full size	fig 2	copper alloy	incised line, notched
1950.107 A.2	WDY 56	iron	Full size		iron	
1950.119 B.1	WDY 40	copper alloy	Full size	fig 22	copper alloy	incised line, facets
1950.122 B.1	UDY 38	copper alloy	Full size			
1950.132 B	MH 10	copper alloy	Full size			incised line
1950.157 B.1	WDY 19	iron	Full size			
1950.160 A.3	WDY 41A	copper alloy	full size			incised line, punchmarks, facets
1950.165 B	GC A?	copper alloy	Full size	fig 35	copper alloy	punched circles
1950.19 B	H 16	copper alloy	Full size	fig 2	iron	incised line
1950.232 B	TD 5	iron	Full size			
1950.50 B	JB 12	copper alloy	Full size	fig 12		facets
1950.156 B.3	WDY 10	copper alloy	Midi			
1948.2498 B	HGS 3	copper alloy	Miniature	fig 6		
1949.18 B.2	6	iron	Miniature	fig 15		
1950.237 B.2	F 29	copper alloy	Miniature			

Table 8.13 Tweezers sizes and materials

Ear scoop

One copper-alloy ear scoop, 1950.107 A.3 (WDY 56) was examined, it is similar to ear scoops found on cosmetic sets hanging from slip knot wire rings from Barrington and Frilford (MacGregor and Bolick, 1993, 217, 37.2-37.2). There are also examples from Spong Hill, found as toilet sets with tweezers (Hills and Lucy 2013, 63, fig 2.16), they occur in Phases A and B (ibid, 253-256).

Shears

Three incomplete sets of iron miniature shears and one iron blade fragment, probably from full size shears, were examined. One miniature set, 1950.94 A.2 (UDY 39; Lethbridge 1951 fig 35), was

found with the iron strap end described above; the full size blade fragments, 1948.2498 C (HGS 3, ibid, fig 6) were found with miniature copper-alloy tweezers.

At Spong Hill sets of miniature shears had a stronger male association (Hills and Lucy 2013, 312-313). Both miniature and full-size shears occur at Spong Hill in Phases A and B (Hills and Lucy 2013, 312-314).

Spoon
1948.2474 B.2 (UDY 2) is a complete copper-alloy Roman circular spoon bowl of later 1st or 2nd century date, illustrated by Lethbridge (1951 fig 7 no 4).

Wire ring
1950.30 B.2 (F 10) a copper alloy wire slip knot ring of type Wr1-c (Hines and Bayliss 2013, 216, fig 5.181) which is probably for the suspension of toilet items.

Latch lifters and keys
Two probable iron latch lifters, 1948.2473 B (WDY 24) and 1950.239 B.1 (F 23), now corroded and fragmentary and a possible iron key, 1949.26 B.2 (WDY 15) were seen.

A possible simple copper-alloy key, 1950.149 B (BENI 1), consists of a straight rectangular section shaft with a loop handle held on a worn suspension ring, the handle area is bounded by multiple transverse grooves. At the working end the shaft bends ninety degrees and divides into two shafts, possibly wards. This object does not conform to standard key types of early medieval or earlier date and it is unclear that it would have functioned as such, but the style is comparable to toilet implements and other possessions designed to be worn suspended at the waist.

Knives
Three corroded iron possible knife blades were seen.

One blade (1949.10b (HG 11)) has a straight back and distinctive cutting edge that is curved throughout. It belongs to Beilke-Vogt's type I, the length of the blade (at around 50mm) suggesting that it was a full-sized knife and not a miniature implement (Beilke-Vogt 1998, 15-16). It corresponds with the early Anglo-Saxon type B knife (Riddler 2016, 37-8) but with the important proviso that with type B knives the cutting edge is usually straight and parallel with the back in the area close to the tang. The curving of the cutting edge in this way, which is not a consequence of extensive wear, relates the knife to the contemporary series of razors, most of which have curved cutting edges, although they usually possess lightly curved backs. Several knives from Spong Hill that belong with toilet sets (including tweezers and miniature shears) form close parallels for this specific form (Hills and Penn 1981, figs 147.1824 and 153.152.2234) and it seems likely that this is a knife from an iron toilet set. (pers comm Ian Riddler), which is supported by the occurrence of iron tweezers in the same context.

8.4.3 Household

Vessels
A total 27 stratified contexts at Lackford contained possible vessel fragments. The 78 vessel fragments include 61 copper-alloy sheet fragments with diameters greater than 20mm, which makes them likely to be too large to belong to other types of artefacts, 64 such fragments were recovered from Spong Hill (Hills and Lucy 2013, 84). The majority of these plain bronze fragments are burnt and could have come from a range of vessels including bead-rimmed bowls, cauldrons, and plain hemispherical bowls (Hills and Lucy 2031, 84).

There are five copper-alloy fragments where a rim with a row of raised bosses survives, which can conclusively be assigned to bead-rimmed bowls. Of these one context, 1950.239 C.1 and probably C.2, (A9) seems to have the bead row very close to the rim edge which is a 5th century characteristic (pers comm I Riddler citing Koch 2001, abb 12). Others, 1948.2491 C (F 5 A), 1950.241.5 (unstratified) and 1950.172 B.1 (F32 and illustrated in Lethbridge 1951, fig 24) may be the later form with narrower rim having central bosses, similar to Spong Hill inhumation 24 (Hills

et al 1984, fig 81 no 1), with a date range in the later 5th to early 7th century; however all are too damaged to be certain.

There are 10 examples of copper-alloy rim bindings, strips folded longitudinally, four of which are burnt, these like the Spong Hill examples could have derived from plain hemispherical bowls, buckets or other wooden vessels, and perhaps some of the smaller examples from drinking horns (Hills and Lucy 2013, 86). One with a separate loop attached, 1948.2483 C (TDY 37) was illustrated by Lethbridge (1951, fig 20).

There is one burnt copper-alloy possible drop ring handle from a vessel, 1950.122 B.2 (UDY 38 A/B), there are six examples from Spong Hill (Hills and Lucy 2013, 84).

1950.242 A (unstratified) is a lead pot mend, similar to that described by Lethbridge (1951, 16) as filling a hole in urn 1950.18 (F 40); a lead patch was also noted in the base of pot 1949.31 A (UDY 59).

Twenty one of the Spong Hill cremations, across all phases, had probable bronze vessels remains within them and they seem to occur especially in cremations which are relatively well equipped with other grave goods and in those containing animal bones. They can therefore be interpreted as an indicator of status (Hills and Lucy 2013, 87).

8.4.4 Textile production

The two ceramic spindle whorls, 1950.198 B (UDY 1) and 1950.209 B (UDY 67, Lethbridge 1951, fig 35), are both of Walton Rogers type A1, with one flat face and one domed, a type which appears briefly in the Roman period, and are not seen again before the 6th century (Walton Rogers 2007, 25), Spong Phase C. There were also five antler spindle whorls, discussed above.

8.4.5 Military equipment

1950.17 B (8 A) is a copper-alloy scabbard mouth-piece incomplete and burnt, as illustrated in Lethbridge (1951, fig 15). It is of Menghin type 3b and Høilund Nielsen SW-6e, dated in England to AS-MA–B (Menghin 1983, 336–7; Hines and Bayliss 2013, 187). Hills and Lucy list a similar scabbard mouthpiece from Spong Hill, placed in their Phase B, which has other parallels in England (Hills and Lucy 2013, 71, 256).

1950.232 B (TD 5) is a copper-alloy stud with iron corrosion, a flat disc head with a probable ring of punched dots. The long rectangular-section shaft of copper-alloy is bent twice, suggesting that it was burnt or rotted out of an object c. 10mm thick. A group of similar copper-alloy studs with flat circular heads and integral shanks are interpreted as shield board fittings of Dickinson and Härke's type a, of 5th-7th century date (Dickinson and Härke 1992, 27–8, fig 18). The heads are 10–20mm in diameter, as is this example (c18mm), with most examples towards the higher end of the range, and most have a white metal coating.

A copper-alloy oval-shaped burnt mount, 1949.582 B (HB 3) can be identified as a plate for the hilt of a sword; it was illustrated in Lethbridge (1951, fig 16). It survives in two pieces and is slightly damaged at one end but its original form, as an elongated oval strip, remains clear. It would have been placed at the top of the sword blade as part of a composite arrangement of several components forming the guard below the grip. It is not possible to date a simple hilt plate with any precision (Høilund Nielsen 2013, 182-9). Hilt plates were often removed from swords before they were buried in graves, although examples can be seen on the swords from Little Wilbraham in Cambridgeshire and Dover Buckland grave C (Evison 1967, figs 2c and 4d) (pers comm Ian Riddler).

8.5 The glass

By Rose Broadley

8.5.1 Glass beads (Appendix 16)

Twenty-eight melted or partially-melted beads were found in 2015-16, during excavation of 59 cremations (39 surface scatters and 13 excavated deposits). Approximately 104 beads were found in 1947-8 from over 500 urns excavated. However, in many cases the number of original beads within a melted agglomeration is necessarily an estimate. The beads came from 10 different grave groups in 2015-16 and 27 in 1947-8, so together there are a combined total of 37 grave groups of glass beads from Lackford. As the total number of graves and grave groups excavated at the site is above 560, the percentage with associated glass beads is 7% across both excavation periods. The percentage for the 2015-16 excavations 17% and the percentage for 1947-8 is 5%. These figures are all lower than Spong Hill and other cemeteries in East Anglia, especially inhumation cemeteries (Hills and Lucy 2013, 48). The average number of beads per grave is 3.6 at Lackford, which is below the average calculated for 'near complete and complete cremation burials' at Mucking, Essex, of 5.7, for example (Hirst and Clark 2009, 613), and the latter figure is approximately a fifth of the average number of beads in each inhumation burial at Mucking (ibid.), suggesting that poor retrieval from the pyre is also a factor at both sites. It is also possible that some beads were not retrieved during the 1940s excavations in particular, and that damage to the site has played a role in the low numbers. Overall, the prevalence of dark glass (32%) among the bead melts is noticeable – it is likely that most of this material came from dark blue annular beads, although some could be from beads with opaque red or Brugmann's 'brown' bodies. Thirty-one percent of the beads had an identifiable opaque red body colour, 11 percent opaque white, nine percent blue-green and seven percent deep blue.

Significant proportions of deep blue annular beads is typical of fifth-century bead fashion, and are often found combined with opaque red-bodied 'traffic light' beads, but opaque bead bodies became much more popular in the sixth century. This colour profile suggests a community on the cusp between these phases, around the late fifth century and early sixth.

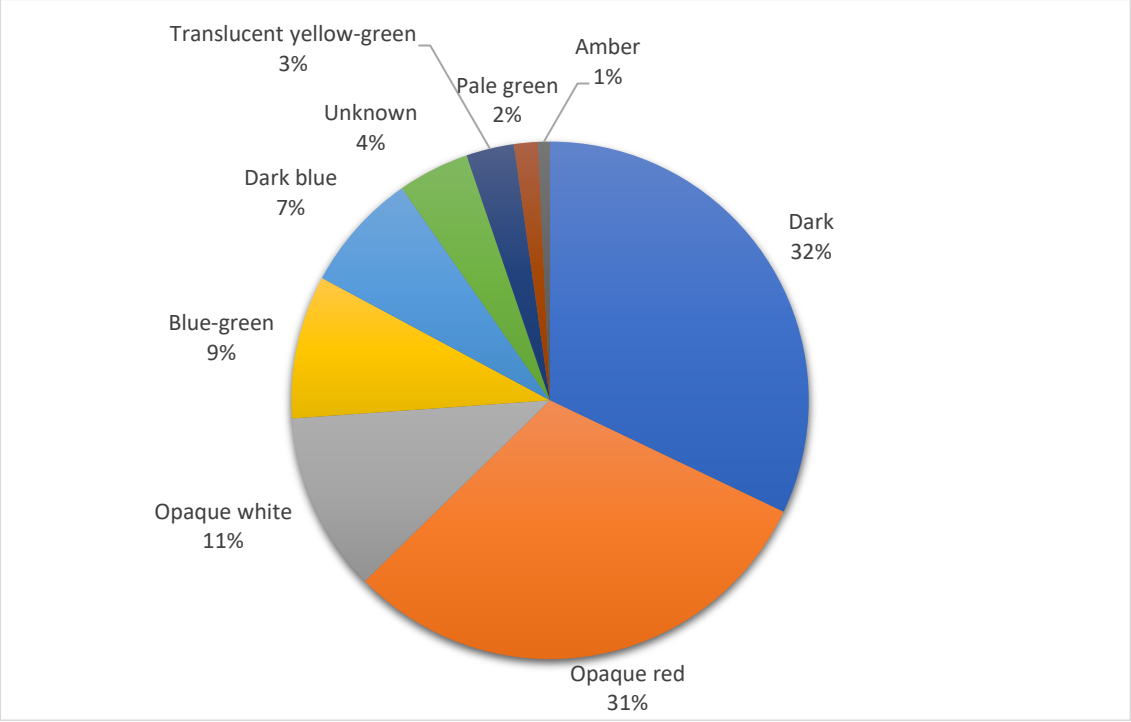

Figure 8.8 Bead body colours

Three beads from the 1947-8 excavation assemblage are almost unmelted and belong to unusual and diagnostic types. One appears to be a spherical mosaic bead (1950.46 B.1 (WDY 68)), with the colours darkened and distorted by heat but the shape of the bead retained. The present appearance is largely dark glass with a paler asymmetric design, although the darker glass may have been black, opaque red or dark green, and the paler glass opaque white or yellow. Its original appearance may have been similar to the mosaic beads from Morning Thorpe grave 402 (Green *et al* 1987, Fig. 452 Dix and Dx), Dover Buckland Grave 132 (Brugmann 2004, fig. 146a) or Harford Farm grave 33 (ibid., Fig. 168). Three of the five mosaic beads illustrated in Guido's Plate 8 are probably also very similar to the original appearance, although it is not clear which sites they are from (Guido 1999). This type belongs to Brugmann's phase A2b (c. AD 530-580), and the main distribution is in continental Europe (ibid., 79). Pion's *mérovingiennes* type E1.1-03 (*verre mosaïqué, globuleuse, sans bande latérale*, Pion 2014, *typologie* 19) are attributed to between the second third of the sixth century (c. AD 530) and the turn of the seventh century. A single mosaic bead was found at Mucking (995/1a), which came from a bead string featuring 'types dated to the later sixth to early seventh centuries' (Hirst and Clark 2009, 517). This bead is the latest identifiable bead in the Lackford assemblage. It was found in the largest grave assemblage, which contains 13 beads (see below).

1948.2282 B.3 (WDY 67) appears to be a very globular variant of Guido's 8x 'terracotta or brick red' type, decorated with two visible opaque yellow trails (Guido 1999, Pl. 6). It is clearly closely related to the single stripe type P1 (opaque red barrel with a single white horizontal stripe around the middle, grave 621) and the single spiral type P2/1 and P2/2 from Mucking (Hirst and Clark 2009, 784, Fig. 264 and cover), where seven of ten are also opaque red with either opaque yellow or white trails. Guido regarded these beads as imports to southern and eastern England in the sixth to seventh centuries, although highlighted their presence in fifth century graves 989 and 924B at Mucking (Guido 1999, 62) and allocated the former specifically to the first half of the fifth century (ibid., 300). Guido listed 14 sites with the type in her schedule, of which seven are in Kent, two in Surrey, and one site each in Essex (Mucking), Gloucestershire, Middlesex, Suffolk (Mitchell's Hill) and Sussex (ibid., 300-301). This bead is also very similar to Pion's *mérovingiennes* types B5.1-01, B5.2-02a and b and B5.3-04 (Pion 2014, *typologie* 11-12), which are attributed to between the second third of the sixth century (c. AD 530) and the first third of the seventh century (c. AD 630). A similar bead was amongst the Grave 30 assemblage from Morning Thorpe, although the horizontal trails are in green as well as white/yellow (Green *et al* 1987, Fig. 304, dxii).

1950.38 B.3 (WDY 59 A) is a sub-cuboid, opaque white bead, decorated with deep blue-green trails and opaque red dots. The deep blue-green trails form a circular line around a central red dot on each of the four faces without perforations, which were formed via a large overlapping waves design. A similar bead was found in SFB 47 in the settlement at West Stow (Evison and Cooper 1985, 73, Fig. 276.17) – it is not clear whether the opaque red dots were present, but the cube-shaped opaque white base and arrangement of light blue translucent trails are comparable. Globular forms were found at Westgarth Gardens, with two in a larger bead assemblage in grave 16 (West 1988, 24, Figs. 18 and 64) and one as the only grave good in Grave 38 (ibid., 30, Fig. 70). Another approximate parallel was found in Morning Thorpe grave 90, although the colour-coding shows the trails as green (Green *et al* 1987, Fig. 324 Ax). The P23bi/8 type from Mucking were made in the same colours, but the beads are annular in shape, whereas P23bi/7 is exactly the opposite colourway, with red trails and blue dots on the opaque white body, but has a similar shape (Hirst and Clark 2009, 789, Fig. 266). Meanwhile, slightly further afield, an exact parallel was found in Bifrons Grave 64 (east Kent, Maidstone Museum). The type has previously been dated broadly to 550-650. However, the group may have appeared much earlier than previously thought: variants appear in both of the graves at Mucking featuring beads that have been recently assessed as early fifth century date (cemetery II inhumations 610 and 989, Lucy and Evans 2016, 436). In Grave 16 at Westgarth Gardens, two globular versions were found with a set of five traffic light beads, which date to 450-530 (Brugmann's phase A1).

Thirteen glass bead melts were found in 1950. 46 B.1 (WDY 68), which is the largest number for a single grave context across both phases of excavation: the spherical mosaic bead discussed above; half of a blue-green translucent melon bead; two fused beads, with the larger probably opaque red with opaque white/yellow and possibly green/blue; a warped opaque green-blue bead; a dark bead with red and white decoration that may have been a mottled blue type; one opaque red bead, one dark and one dark with traces of opaque red; two fused beads with two red spots on the larger bead; and four severely heat-damaged beads that may have been blue. Eight glass objects probably representing 12 original beads were found in 1950.24 B (49 A 13), including a good example of an opaque white and blue bead melt, which was probably a Norfolk Short but could have been a Koch 34 or Pion B3.3-02/03, and a colourful arrangement including opaque red, opaque white, translucent yellow-green and blue beads. However, in contrast to the Mucking material (Hirst and Clark 2009, 516-526) the small quantities of beads, size of bead groups and overall poor condition of the beads mean that further consideration of bead strings (defined as groups of six or more by Hirst and Clark) is not possible in the case of Lackford.

Five glass objects were found in 1950.215 B.2 (WDY 28), including three beads fused together and one likely Blue bead. The three fused together include two opaque red melts, while the middle one is opaque white with a blue trail – possibly a Norfolk Short. 1950.127 B (UDY 45) featured three glass finds, one of which is three beads fused together. Two appear to be deep blue-green, opaque red and opaque white, and the third appears to feature opaque red trails, opaque yellow dots on a dark body. The second glass find is more clearly two beads fused together, one of which is predominantly opaque red and the other annular and white with some traces of blue decoration. The third is one or two melted beads, fused to metal object that may be an iron ring, pierced copper alloy coin, and part of another copper alloy object. Where colour is visible, the glass is opaque red. 1948.2282 B.3 (WDY 67) also contained three finds, one of which is the terracotta or brick red' type, decorated with two visible opaque yellow trails described above (Mucking type P1/P2). 1950.85 B3 (TDY 39) contained two opaque red beads and one very damaged bead with evidence of a circumferential wave or zigzag decoration, although the original colours and type are not discernible. 1950.122 B.3 (UDY 38 A/B) was a single bead find with an opaque red body and opaque yellow decoration. Context 1949.18 B.3 (6) contained seven glass objects, although none could be allocated to a specific type. 1950.172 B.2 (F 32) contained four, although they appear to comprise seven beads. 1950.241.6 (unstratified) contained six and 1950.65 A.3 (TDY 3) four. Including the context groups listed above, six grave groups contained three bead melts, three graves contained two, and 10 grave groups contained one bead.

It is noteworthy that there are no 'Constricted Cylindrical', 'Constricted Segmented' ('gold-in-glass'), Norfolk YellowRed', 'Norfolk Crossing Trails' or 'YellowGreen' beads from Penn and Brugmann's Phase A2 in either Lackford group (2007, 27, Pl. 2, 4, 5 and 7); no likely 'Cylindrical Round' or 'Cylindrical Pentagonal' from Phase B (approximately AD 550-650, 2007, Pl. 8); and no orange beads from Phase B2/C (AD 580 onwards), although the sample of identifiable beads is admittedly small. There are 'traffic light' and blue beads from Phase A1 (AD 450-530, *ibid,* Pl. 1) or earlier, and a couple of clear melon beads, which generally seem to belong to Phase A2b *ibid*, Pl. 9) but can be later fifth century, plus several translucent melts that may well have been melon beads. There are 11 blue and white melts that could have been 'Norfolk Shorts' (A2, AD 480--550) or Koch 34 (B, AD 555-650) (Pl. 3 and 9). Surface group 0134 from 2015-16 and 1948.2282 B.3 (WDY 67) from 1947-8 probably belong within the national group A1 (e.g. Penn and Brugmann 2007, 28). Grave 1950.46 B.1 (WDY 68) is A2b based on the mosaic bead. These graves support the case for a temporal range of *c* 450-580 for cremation burial at the cemetery, with 450-530 in the 2015-16 area scatter 0134 and 530-580 in the 1947-8 area of grave 1950.46 B.1 (WDY 68). The number of grave groups where the glass beads can assist with establishing a chronology is small, given that the total number of graves containing glass beads was 37, but the degree of melting and burning across the assemblage was considerable, and it is probable that many of the beads were undecorated annular types that were in use for centuries. If many of the 'dark' beads were translucent blue or purple/brown then there is an approximately even balance between

translucent and opaque beads, which would again point to the cemetery being in use during the transition between the fifth and sixth centuries.

8.5.2 Glass vessel fragments (Appendix 15)

Six fragments of pale green and pale green-blue glass vessel fragments were found in 2015-16 and approximately 23 in 1947-8. However, all six fragments found in 2015-16 are from context 0120 and are probably from a single vessel (see above Chapter 5). Similarly, the fragments clearly identifiable as vessel glass found in 1947-8 are from graves 1948.2281 B (UDY 21 A) (13 fragments) and 1950.119 B.2 (WDY 40) (10 fragments) and probably also represent one vessel in each grave, make three vessels in total from the cemetery at Lackford.

The ten pale green fragments found in 1950.119 (WDY 40) include one with a crimped trail, although in this case it is finer and of higher quality than the fragment from 0120. The fragment is much smaller, but barely melted in comparison. The trailed fragment and three others all appear to be claw fragments, while the other six are all heat-damaged beyond recognition. Again, only a small percentage of the original vessel was retrieved. These fragments are likely to be from the most common type 3c claw beaker: types 2a or 1 are also possible but progressively less likely based on known numbers. Type 1 is rare and dated to the early fifth century, while type 2a is traditionally dated to the mid-to-late fifth century and type 3c to the mid-sixth (Evison 1982, 48-49; 2000, 63-65; 2008, 13-15; 2009, 673). A brown type 3c claw as found in Cremation 367 at Mucking (Evison 2009, 619), and a complete 'light green brown' beaker in inhumation 92 at Mucking that Evison considered 'was probably made in Anglian territory' in the mid-sixth century (ibid., 672-3, fig. 375). However, nine definite or probable type 3c claw beakers were found in cremation graves at Spong Hill (Evison 2013, 351-352), and there the claw fragments have been dated to the second half of the fifth century based on comparisons with sites and cemeteries in Germany and Ringlemere in Kent, and the comprehensive analysis of all the evidence from Spong Hill (Hills and Lucy 2013, 82-83). This could be the result of blurred lines between other claw beaker types that can have crimped trails and type 3c, which are the most numerous and the type best known for that feature. The types may also have overlapped more than previously thought. In this case, the fragments from both 1950.119 and LKD 001 0120 are heat-damaged and lacking the quantity and detail of diagnostic features for a secure sub-type identification or focussed date for the fragments. 1950.119 (WDY 40) is the only Lackford grave with a glass vessel that also contained beads (two fused together), although unfortunately it is not possible to closely date those either. One is a short opaque red annular bead that is almost unmelted, and the other a dark melted bead with opaque white trailed decoration. Opaque monochrome beads became more popular in the early sixth century, but first appeared much earlier.

1948.2281 B (UDY 21 A) is the only glass item mentioned and illustrated by Lethbridge in his 1951 publication: no mention is made of the other glass vessel fragments or of almost all of the glass beads found. 1948.2281 B is described a 'fragments of a cup of very pale greenish-yellow glass… somewhat distorted by heat', which is very brief, although the reconstruction illustration is probably relatively accurate (Lethbridge 1951, 20, fig. 23). The original form of this vessel would now be described as a bowl, and in this case a larger proportion of the original is present, although still probably only about half. The bowl had a heat-softened and slightly everted rim, with a series of fine, self-coloured, horizontal, and parallel trails from below the rim to about half-way down the body. Below that another, thicker self-coloured trail was applied in a wave formation around the base and lower part of the vessel body. This bowl belongs to a sub-group of a type known as the York Group after a bowl found there (Harden 1956, pl. XVI g), although the majority of overall distribution is in the Rhine and Meuse valleys (Evison 2000, 59, fig. 2.8; Evison 2008, 9-10). The heat-softened rather than folded rim is a defining characteristic of the sub-group, and distribution of known examples is concentrated in England. Evison dated the type to the late fifth to early sixth century and listed examples from Mill Hill, Deal, Kent and Islip, Northamptonshire (*ibid*.). It is also very similar to a slightly-deeper olive-green fragment from Rendlesham, which also features two loops from a lower self-coloured wave-formation trail and

finer horizontal trails above (publication forthcoming). The Rendlesham fragment is unburnt, and was found in a cremation pot (grave 301) that has been provisionally dated to the fifth century. Other finds from the same grave were an unburnt fragment of Roman window glass, and some metal objects provisionally identified as copper alloy beads, an iron pin and nails (Jude Plouviez, pers comm) Four fragments of bowls were found in separate graves at Spong Hill (three cremations and an inhumation), although all had opaque white rather than self-coloured trails (Evison 2013, 352), meaning that they probably belong to other slightly later bowl forms (Evison 2008, 9, 47, fig. I, Plate 1). Similarly, the only probable bowl fragment from Mucking is of the type with a band of horizontal white trails hooked downwards to create an arcaded pattern (Evison 2009, 554).

Although the vessel fragments probably represent only three glass vessels across more than 560 graves, those three reflect the same broad date range as other artefact groups from Lackford: the bowl is an early form, probably dating to the second half of the fifth century, and the probable type 3c claw beaker fragments from grave 1950.119 may date to as early as the fifth century or as late as the mid-sixth. As at Spong Hill (Hills and Lucy 2013, 81), the graves containing glass vessels at Lackford are not especially well- or extensively- furnished.

9. Associated groups (pots and finds) in the 1947-9 excavation

Of the approximately 500 excavated contexts 154 can be listed as having associated grave or pyre goods. Lethbridge 1951 illustrates 25 of these groups fully and 30 partially, with a selection bias towards identifiable metal objects and antler combs.

A table showing all the groups of associated objects that have been identified is in Appendix 17, ordered by context alphabetically. In a few cases associated objects were recorded in the Lethbridge Notebook which do not correspond with material in the museum and there are also occasional ambiguities about precisely which pot contained which objects; these are noted in the final column of the table.

Number of objects	**Number of contexts**	**Specific contexts**	**Lethbridge 1951**
11	1	UDY 45	fig 14 (5 items)
9	1	HG 9	fig 14 (7 items)
7	1	UDY 2	fig 7 (5 items)
5	1	TDY 37	fig 20 (2 items)
4	4	G 11, TDY 39, UDY 38 A/B, WDY 69	figs 17 (2), 24/35 (1), 28 (2)
3	22		
2	38		
1	85		
4?	1	BENI 10	objects not located at CUMAA
Total	**154**		

Table 9.1 Numbers of objects in associated groups (multiple beads, gaming counters, fragments of ivory ring and copper-alloy vessel each counted as single items)

Table 9.1 shows the quantity of objects in contexts, with just eight contexts having four or more objects (all shown incompletely in Lethbridge 1951) and over half (85) containing just a single item. Using the minimum number of contexts recorded (485) just 32% had any associated objects, in contrast with the 2016-7 excavation where 9 of the 15 pots from the subsoil contained artefacts, representing 60%. This difference must be largely due to excavation methods.

Based mainly on the pottery dating the associated groups were split into broad chronological groups:

Identified as Spong phase A or A? pots with no obvious artefact contradictions

Identified as Spong phases A/B, B, B? and undecorated pots thought to be 5th century, with no associated objects of later date

Identified as Spong phases A/B, B, and undecorated pots thought to be 5th century with associated finds, mostly copper-alloy dress accessories, suggesting a late 5th or early 6th century date

Identified as Spong phase C or C? and undecorated pots thought to be 6th century.

The full lists with identifying CUMAA references for each object are in Appendices 18 - 21. Table 9.2 shows the numbers of object types in each of the chronological groups, with antler combs the commonest grave good in all phases.

Spong phase or date	Pot	Brooch	Glass bead	Bead (not glass)	Belt fitting	Roman objects	Pin	Wrist clasp	Silver dress accessory	Comb (and case)	Tweezers	Iron shears	Ivory ring	Iron keys etc	Iron knife	Weaponry	Bronze Vessel	Glass vessel	Gaming pieces & astraguli	Spindle whorl	Iron staple	Antler burr ring	Bone or antler object	Iron or bronze object	Unidentified
Phase A, A?	31	2	6	2	0	1	0	0	0	11	4	2	4	1	1	0	5	0	1 (set)	0	0	0	0	1	3
Phase B/5th C	63	5	13	1	1	0	1	0	0	20	13	1	6	1	1	2	12	2	2	1	1	0	1	2	3
Late 5th / early 6th	15	13	6	0	2	6	0	5	1+(1)*	1	0	1	1	1	0	1	2	0	2	0	2	2	2	2	2
Phase C / 6th C	31	5	2	2	1	0	1	2	1	11	0	0	4	0	1	0	5	0	0	4	0	0	1	0	3
Unphased	14	2	6	0	1	0	0	0	0	3	1	0	2	1	0	0	2	0	0	1	1	1	0	1	2
Total	**154**	**27**	**33**	**5**	**5**	**7**	**2**	**7**	**2**	**46**	**18**	**4**	**17**	**4**	**3**	**3**	**26**	**2**	**5**	**6**	**4**	**3**	**4**	**6**	**13**

* also listed as a Roman object

Table 9.2 Objects summarised by chronological group

The three largest groups of objects (UDY 45, HG 9, UDY 2) fall within the late 5th or early 6th century group and include the typical 'female' dress associations of brooches and beads. In the same chronological group TDY 37, with five associated objects, is more mixed but includes probable beads and a wrist clasp. Of the contexts containing four objects G 11 is in the latest chronological group, again containing brooches and a bead, and contexts TDY 39 and WDY 69 are in the fifth-century group. The latter context looked problematic, as it includes a copper-alloy facetted-head pin, a type normally attributed to the 7th century (Ross type LXXII.i. Shudy Camps facet-headed Sub-type) as Lethbridge recognised (1951, 20-1, fig 28). The pin was found in a probably 5th-century pot with a simple single-sided antler comb (ibid, fig 28) and a burnt glass bead and probable miniature iron shears – none of the items other than the pin is at all likely to be later than mid 6th century and all would be quite acceptable as 5th century. There is indeed occasional evidence for such pins in pre-7th century cremation burials: Ross cited an example from Long Wittenham as probably 6th century in his discussion (Ross 1991, 309) and he also catalogues another example from a cremation at Abingdon in a bossed biconical jar, again with a single-sided comb, burnt blue glass bead and a copper-alloy needle (Leeds and Harden 1936, cremation 82, 23, pl 3; Myers 1977, fig 184). The Abingdon example strongly suggests that these small facetted-head pins do occur in 5th century cremation contexts.

10. Lackford 1947-9 re-considered

10.1 Chronology

Roman objects and background:

At the time of the 1951 Lackford report Lethbridge was well aware that there was significant late Roman activity north of the river Lark in Icklingham and he identified a Roman site from surface pottery finds to the north of his excavations which equates with HER site LKD 018 (Figure 3.1). He also sought local information about the location of the Cavenham crowns findspot and established that this was somewhere near to the Anglo-Saxon cemetery; Layard's description suggests that it was close to the Roman site at LKD 018 (Lethbridge 1951, 8).

During the 1947-9 excavations there was excavation on two small sub-square structures set into the ground and a section across the ditch of an enclosure that included one of these. Information in the 1951 account is slight but maps their locations and states that these were Roman tombs or mausolea which had been thoroughly dug over later, leaving only scattered pieces of human bone. However the Lethbridge notebook shows that he initially believed that the first structure investigated, inside the enclosure, was Anglo-Saxon in date because pottery, including stamp-decorated pieces, was found throughout the layer of mixed mortar, flint rubble and Roman tile described as making up the structure. It seems that there were no walls surviving, though a sketch section of the second (undescribed) structure indicates walls. Given that these structures are minimally described and seem isolated from the definite Roman and Anglo-Saxon features (they are about 38m apart, over 150m from LKD 018 and about 25m and 50m from the planned cremations) (Figure 3.1) they remain enigmatic; tombs are possible but would be very unusual in rural Suffolk, and no other inhumation burials have so far been found in the area south of the river. There are several cemeteries associated with the Icklingham settlement to the north.

Various objects of Roman date were present in the cemetery. A wheel-thrown grey ware jar with everted rounded rim and six post-firing holes around the centre is held in the CUMAA collection as 1948.2489 A (BENI 13), although shown in Lethbridge 1951 fig 25 as 49.180; this is said to have been 'in a Saxon paste' (1951, 20) but is much more likely to be a re-used Roman jar, in a sandy grey ware and not closely datable as it is a relatively simple form. There were no recorded associated finds. At Caistor by Norwich at least four cremations were in Roman jars of various forms, and the authors suggest that some of these may have been retrieved from long-abandoned Roman kilns (Clough and Myres 1973, 74-6, fig 33). Roman pottery kilns have been recorded at both West Stow and Icklingham which similarly might have been re-discovered.

Five copper-alloy, one silver and one antler objects are of pre-fifth century date and so likely to be either long-lived heirlooms or objects collected from nearby abandoned sites such as Icklingham and LKD 018. Most were in large groups of late 5th or 6th century date: two coins and an antler coronet and burr ring pendant in HG 9 (1951, fig 14); a silver ring and a copper-alloy spoon in UDY 2 (1951, fig 7); one coin in UDY 45 (1951, fig 14). One pierced coin, a nummus of 330-7, was found with an infant and no other objects in a probably phase A pot, 1949.579 A (J2). All are object types found in Anglo-Saxon inhumations (White 1988) and perhaps less frequently in cremations – at Spong Hill for example there were six Roman coins (one pierced) and few other objects.

The early cemetery

The assumption in the 1951 publication was that the cremation burials began in the middle of the 5th century (1951, 10). The results of work at Spong Hill suggest that Spong phase A falls entirely within the first half of the fifth century (Hills and Lucy 2013, 232) and activity at Lackford includes similar material; some 19% (68) of the pots attributed to a phase are identified as of phase A, and a further 8% as probably phase A (see Table 8.2 above).

The other objects also include some of potentially earlier 5th century date. Analysis of the combs has shown the presence of three early types, only one of which was illustrated in Lethbridge 1951. These

are: a late Roman double-sided composite type 1950.140 B.1 (UDY 34) found with glass beads and ivory ring fragments in a probably phase A pot, as well as an unstratified example of this type; a triangular Böhme type E, 1950.22 B.1 (WDY 30) found with unidentified iron fragments in a phase A pot (1951 fig 6, where the context is wrongly given as TDY 40); and a semi-circular type A 1950.88 B (WDY 12) found in a probably phase A pot. Slightly later in date range the barred zoomorphic type was found with a case, 1949.6 B.1 - B3, (H 13), in a phase A pot (1951 fig 1 but mis-reconstructed, see Chapter 8.3.7 above); a second, 1950.65 A.2 (TDY 3) was found with glass beads and a copper-alloy fragment in a phase B pot (not illustrated in 1951).

There are fewer examples of very early copper-alloy brooches from Lackford than from Spong Hill, for example no supporting arm brooches, and early types are quite often found with later material. The only type to date from the later Roman into the 5th century is the unstratified penannular of Booth type E/F (1951 fig 35). One substantial fragment of a Martin type 1.2 cruciform brooch was found in a phase A pot (1951 fig 2, context F 5 A), along with glass beads and fragments of copper-alloy vessel including a bead-rimmed bowl. A single cruciform knob of early type, 1950.34 B.1 (MA 3), along with a plain crested comb fragment and an iron knife, were found in a possibly phase A pot (not illustrated in 1951, and there are some uncertainties about which MA context contained the comb and knife). However another Martin type 1.2 cruciform (1948.2282 B.2 WDY 67; 1951 fig 2) was found with a later cruciform brooch and a bead in a phase B pot, and the other type 1 fragments were also associated with phase B pots.

The other brooch group regarded as early at Spong Hill, the applied brooches, occur only in later fifth century or later groups: large groups HG 9 which also includes a cruciform of Martin type 2.1.1 (1951 fig 14) and UDY 45, again with a cruciform brooch foot, (1951 fig 14 which does not include the two probable applied brooch fragments) and the star-shaped fragment in a sixth century group, G 11, in a phase C pot with square headed brooch fragment (1951, fig 17)

The later cemetery

The numbers of pots allocated to the Spong Hill phases suggest a comparable expansion of activity at both sites in the second half of the fifth century (129 vessels, 36%, allocated to phase B) and then a drop in phase C (41 vessels, 11%) which at Spong Hill is suggested to finish before the mid sixth century. However various elements suggest possible differences in character in the later groups and probably a later closing date for cremation at Lackford.

Amongst the stamp decorated pots from the 1947-9 excavations are 23 attributed to the Illington-Lackford group, as discussed above (Chapter 8.1). These have formerly been dated to the late sixth century, but recent evidence suggests this could be revised back into the first half of the sixth century. There is an association with square-headed brooches (contexts G 11 and X1, 1951 fig 17) of types dated 500-570. The total of three[4] brooches of square-headed type (the third from H 4, found with a wrist clasp, 1951, fig 17) is a marked contrast to Spong Hill, where only one fragment was found in a cremation although three were found in inhumations at the site.

The cruciform brooches include five examples of Martin types 2 and 3 (1951, figs 2, 14, 16), which are dated between 475 and 550; two were found in large groups HG 9 and UDY 45; the others were associated with pots attributed to Spong A (G 3 A) and Spong B. Small long brooches, also dated from the mid 5th century onwards, were found with the square headed example in G11 (1951 fig 17) and unstratified (1951, fig 35). A later variant, Penn and Brugmann sm 3 found in G 10 A, a phase B pot (1951 fig 22) is again absent from Spong Hill cremations but present in the inhumations; this small long type was also found in the 2015 excavation, from pot 0015 (Figure 4.1). The two annular brooches, again likely to be late 5th or 6th century, are found in large group UDY 2 (1951 fig 7) and in F25, a phase

[4] A possible fourth fragment from UDY 24 or UDY 24 B, which Lethbridge described as too worn and shapeless to be illustrated in (1951, 20, fig 23), is apparently not now in CUMAA

A/B pot; two were found at Spong Hill in phases B and C, but again many more (28 in 16 graves) were found in the inhumations (Hills *et al* 1984).

The brooches, and perhaps some of the other metal items, for example the seven wrist clasps, seem to suggest a stronger affinity in the later phases of the Lackford cemetery with the range of goods typical of late 5th and 6th century inhumations in East Anglia than is common in the large cremation cemeteries. At present there is no hint of any inhumations at Lackford, again in contrast to most of the large cremation cemeteries, where sometimes inhumations form a discrete final phase and sometimes, as at Spong, an overlapping phase of burial, suggested there to end in the mid 6th century.

Lethbridge in 1951 suggested that the cemetery could have been in use up to the mid 7th century; this was based on a few key metal items and an assumption that the early Anglo-Saxon 'pagan' period extended from 450 to 650. He deduced from the association with the square headed brooches (Lethbridge 1951, fig 17) that at least the Illington Lackford potter was in production around 550-600 and from this that the majority of the stamped vessels were later 6th century (ibid, 22) and so the more 'degenerate' types allocated to the 7th century (ibid, 11, 18). The metal objects that are probably mid 6th century or later include a probable drinking horn or other organic vessel mount from TDY 37 (ibid, fig 20) and the strap protector from 49 A 20 (ibid fig 29). The silver ring with double spiral front, 1949.584 (2), probably from a necklace, was identified by Lethbridge as mid 7th century by comparison with Shudy Camps and Burwell (ibid, 11, fig 28) but the type, normally with a single spiral, is now identified as 6th to early 7th century. The other potentially 7th century item is the bronze facetted head pin from WDY 69 (ibid, fig 28) discussed above (Chapter 9) as probably a longer-lived occasional form.

The antler combs also show a potential later date range than the Spong Hill material as discussed above (Chapter 8.3.7) with later types of double-sided composite combs occurring more frequently at Lackford (and at West Stow) than at Spong Hill (Figure 8.6). In particular those examples with connecting plates of shallow D-section which include one from 49 A 11 (mis-drawn in Lethbridge 1951, fig 10) and two from the 2016 excavation (Figures 4.3 and 4.8), and the cylindrical undecorated type with two stratified examples both from TDY 9.

It should also be noted that a recent radiocarbon date has been obtained on cremated bone probably associated with a plain pot in fabric ESO1 from Lackford in the West Suffolk collection, 1977.889, (illustrated in West 1998, fig 104.3). The date is 1520 +/- 19 BP which is likely to fall between 537 and 586 (at 68.2% probability) (Laboratory Code SUERC-94475 (GU55456)). This supports the evidence suggesting that the latest phase at Lackford may extend into the second half of the 6th century.

10.2 Distribution

As described above (Chapter 7) only a small proportion of the Lethbridge excavation contexts can be individually located and a few other broad areas can be indicated (Figure 7.1). This makes identifying any distribution variations difficult. The only distribution plan in Lethbridge 1951 show the urns he classified as Saxon, Frisian Angle and Angle in the earlier phases of the cemetery (Lethbridge 1951, Plan III). On this plan his 'Saxon' spots appear commoner in the west of the excavation.

The only distribution pattern which can be examined is between contexts in the two main areas shown on the 1951 plan, east and west, as interpreted in light of the sparse locational information in the notebook. Table 10.1 shows the groups of contexts attributed to these areas and the number of spots representing urns shown in each area on the 1951 plan. The two areas are very similar in size, around 120 sq m; the plough furrow finds along the south edge of the site have been excluded, as have small areas with sparse urns shown towards each end of the furrow (area TD at the west end).

	Contexts	1951 spots	Area sq m	1951 urns per sq m	Phase A/A? pot	Phase C/C? pot	All Groups	Groups 4+	Ivory ring	Glass bead
West area										
1 to 16	16	16	10.2	1.6	2	0	4	0	1	1
M	4	4	1.9	2.1	0	1	1	0	0	0
other single letter	75	102	70.2	1.5	14	7	26	1	0	5
HG	9	18	9.4	1.9	4	0	4	1	1	1
MA	5	4	3.8	1.1	3	0	1	0	0	0
HB/JB	21	24	7.3	3.3	2	2	6	0	0	0
MH	15	16	3.3	4.8	1	0	3	0	0	0
other 2-letter	12	10	15	0.7	4	0	4	0	0	0
TOTALS WEST	**157**	**194**	**121.1**	**1.6**	**30**	**10**	**49**	**2**	**2**	**7**
					19% of contexts	**6% of contexts**	**31%**			
East Area										
TDY/UDY/WDY	230	221	90.5	2.4	45	24	76	6	14	16
BENI	25	27	11.4	2.4	3	4	5	1	0	0
49 A	34	27	18	1.5	0	3	10	0	0	1
TOTALS EAST	**289**	**275**	**119.9**	**2.3**	**48**	**31**	**91**	**7**	**14**	**17**
					17% of contexts	**11% of contexts**	**31%**			

Table 10.1 Distribution of contexts and selected artefacts across the east and west areas of the 1947-9 site

The west area was the earlier excavation, with the first day area at the south, and probably with single letter context areas along the main western edge including area M at the north end. Two letter context areas project eastwards from these, including MH and MA, with possible adjacent locations for HB and/or JB and for HG. The average density of urns shown in 1951 is around 1.6 urns per square metre, rising to nearly 5 per square metre in MH and over 3 in HB/JB area to the south and then dropping rapidly to the east. Whether such gaps are related to actual burial distribution or to previous excavations by warreners (Lethbridge 1951, 1) or reflect less intense excavation in the 1940s is impossible to tell. The TD area to the west seems to show less intense activity, except that the numbers of urns within the plough furrow, which marks the north edge of cultivated land at that time, shows that the west limit of the burials extends beyond this.

The east area is assumed to include all the three-letter area codes (located here on a notebook sketch as 'WDY etc'), with areas BENI and 49 A to the north-east in the final phases of excavation. The average density of urns shown in 1951 is higher, at 2.3 per square metre, with less variation between the significantly larger areas except for a slight reduction towards the north (area 49 A). The density appears less on the west side of the main TDY/UDY/WDY area, but with a dense cluster of spots in the north-west which might represent contexts WDY 32 A to K that were excavated as a single group. It seems just possible that preservation was actually better in the gap between the two areas, with less surface evidence to attract excavation. Some reduction in density towards a hypothetical east edge of the cemetery might be visible in areas BENI and 49 A.

Table 10.1 shows the distribution, between the east and west site blocks, of pots allocated to Spong phase A and A? to establish whether there is any sign of an initial focus area; however the difference between 19% of contexts in the west and 17% of contexts in the east looks insignificant. Of the other finds the three earliest combs were all in the east, in UDY and WDY, but the early cruciform brooches were in both blocks. There is a very slightly stronger difference between the late, Spong phase C and C?, pots with 6% of contexts in the west and 11% of contexts in the east; late comb types also occur in the east (49 A and TDY) but two square-headed brooch fragments were found in the west (areas G and H).

The evidence for pots with associated finds is evenly distributed across both areas at 31% of contexts. The larger groups (four or more associated objects) do occur more often in the east block, perhaps implying higher status burials in this area. There is however a possibility that finds retrieval improved over the course of the excavation: the distribution of glass beads and of ivory ring fragments, particularly the latter, might suggest better retrieval of these less conspicuous finds from the east block.

Overall the lack of certainty about the excavated contexts in relation to the plan makes detailed analysis impossible, but with hints that there were variations that might be tested if better site records are ever located.

10.3 Broader context

The 1951 report drew attention to the significant Roman sites in the immediate context (Lethbridge 1951, 8), namely the potential temple suggested by the findspot of the Cavenham Crowns just to the north of the cemetery, about which we have more information since metal detecting and excavations in the 1970s-80s (report to be included as an appendix in publication) and the substantial late Roman settlement at Icklingham on the north side of the River Lark, where excavations took place in 1974, 1976, 1997-2000 and extensive magnetometry survey in the 1980s. The survey provided information about the layout of the settlement, excavations suggested a late Roman Christian church and burials and identified the course of the road along the valley. Overall the evidence suggests that there was an official presence, perhaps military, as well as the religious focus, in the late 4th and early fifth century (West 2014).

Lethbridge also noted the potential for an early Anglo-Saxon settlement to be explored at West Stow (1951, 8) and the presence of other cemeteries at West Stow and Icklingham, as well as drawing attention to pottery decorative style and stamp links further afield (ibid, 15).

We can now identify the very large, mainly or entirely cremation cemeteries such as Lackford as a relatively unusual phenomenon compared to the more numerous mixed rite or solely inhumation cemeteries that presumably served very local communities. The evidence for these was collated by Hills and Lucy (2013, appendix 1) and Lackford falls at the southern edge of the distribution which includes Spong Hill and Caistor in Norfolk, with a smaller site at Illington, and then through Lincolnshire, Nottinghamshire and into east Yorkshire. Spong Hill demonstrates also that these cemeteries were very likely serving multiple settlements during the 5th century; Hills and Lucy calculate a potential contributing population of over 800 perhaps representing some 25 settlements (2013, 294-5) and assuming that Lackford was smaller we have suggested a contributing population of around 500. As discussed above (see Chapter 8.1 pottery discussion) there is still a question as to where the cremation process took place, but Lackford was presumably the burial place chosen for some individuals from a wide area, and cremation is rare in cemeteries in north-west Suffolk. Perhaps this catchment area was similar to the likely area served by the Roman small town at Icklingham, which would have included much of the Lark valley and the Suffolk fen margin area?

References

Ager, B., 2011 ‘‘Thunor’s’ or Hercules Club Pendant’, in A. Boyle, D. Jennings, D. Miles and S. Palmer, *The Anglo-Saxon Cemetery at Butler’s Field, Lechlade, Gloucestershire. Volume 2: The Anglo-Saxon Grave Goods. Specialist Reports, Phasing and Discussion*, Thames Valley Landscapes Monograph 33, Oxford (Oxford Archaeology), 39

Akerman, J. Y., 1853 ‘An account of excavations in an Anglo-Saxon burial ground at Harnham Hill, near Salisbury’, *Archaeologia* 35, 259-278

Ament, H., 1992 *Das alamannische Gräberfeld von Eschborn (Main-Taunus-Kreis)*, Materialen für Vor- und Frühgeschichte Hessen 14, Wiesbaden

Anderson, S., 2005, *Handford Road, Ipswich (IPS 280): pottery*. Archive report for SCCAS

Anderson, S., 2006, *Handford House, Colchester, Essex (2003.5): the cremation burials*. Archive report for Colchester Archaeological Trust.

Anderson, S., 2009a, *Eriswell Cemetery Sites (ERL 046, 104, 114, 161): Saxon pottery*. Archive report for SCCAS

Anderson, S., 2009b, *Rushbrooke Treatment Works (RBK 020): post-Roman pottery*. Archive report for SCCAS

Anderson, S., 2012a, *Winston Road, Debenham (DBN 132): Early Saxon pottery*. Archive report for SCCAS

Anderson, S., 2012b, ‘Pottery’ and ‘Pottery vessels’, in Boulter, S. and Walton Rogers, P., *Circles and Cemeteries: Excavations at Flixton Volume I*. E. Anglian Archaeol. 147, 138–142, 187–8 and contributions to the inventory

Anderson, S., 2013, *New Museum Store, West Stow Country Park (WSW 076): post-Roman pottery*. Archive report for SCCAS

Anderson, S., 2015a, *Park Field and Sand Walk, Rendlesham (RML 054–055): post-Roman pottery*. Archive report for SCCAS

Anderson, S., 2015b, ‘Pottery’, in Fern, C., *Before Sutton Hoo: the prehistoric remains and Early Anglo-Saxon cemetery at Tranmer House, Bromeswell, Suffolk.* East Anglian Archaeology 155, 130–33

Anderson, S., 2015c, *Culford School hockey pitch, Culford (CUL 051): post-Roman pottery assessment*. Archive report for SACIC

Anderson, S, 2015. *Lackford Anglo-Saxon cemetery (LKD 001): the pottery.*

Anderson, S., 2017a, *Hartismere School, Eye (EYE 083): Saxon and later pottery*. Archive report for SACIC

Anderson, S., 2017b, Big Field, Sizewell, Leiston (LCS 223): Saxon and later pottery. Archive report for SACIC

Anderson, S., 2018, *Kentford Lodge, Kentford (KTD 019): Early Anglo-Saxon and later pottery*. Archive report for Cotswold Archaeology

Anderson, S., F. Minter and J. Plouviez (2018). *Lackford (LKD 001) Assessment Report on excavations on the early Anglo-Saxon cremation cemetery 2015-2016*. Unpublished report for Historic England, Suffolk County Council Archaeological Service.

Annable, F. K. and Eagles, B. N., 2010 *The Anglo–Saxon Cemetery at Blacknall Field, Pewsey, Wiltshire*, Wiltshire Archaeological and Natural History Society Monograph 4, Devizes

Arnold, C.J., 1988, ‘Early Anglo-Saxon pottery of the ‘Illington-Lackford’ type’, *Oxford J. Archaeol.* 7, 343–59

Articus, R., 2004 *Das Urnengräberfeld von Kasseedorf, Lkr. Ostholstein. Die Entwicklung des südöstlichen Schleswig-Holstein während der jüngeren römischen Kaiserzeit*, Internationale Archäologie 75, Rahden (Marie Leidorf Verlag)

Avery, M. and Brown, D., 1972 'Saxon features at Abingdon', *Oxoniensia* 37, 66-81

Barker, H. R.1917 'Anglo-Saxon Urns found near Lackford' *Proc Suffolk Institute of Archaeology* 16.2, 180-2

Baumann, N., 2014/2015 'Das ältermerowingerzeitliche Gräberfeld von Merxleben, Unstrut-Hainich-Kreis', *Alt-Thuringen* 44, 57-166

Béal, J.- C., 1983 *Catalogue des Objets de Tabletterie du Musée de la Civilisation Gallo-Romaine de Lyon*, Lyon (CNRS)

Béal, J.- C. and Rodet-Belarbi, I., 2003 'Le travail de l'os, du bois de cerf et d'ivoire à Vertillum-Vertault (Côte d'Or)', *Bulletin Archéologique et Historique du Chatillonnais* 6, 51-104

Beilke-Voigt, I. 1998, *Frühgeschichtliche Miniaturobjekte mit Amulettcharakter zwischen Britischen Inseln und Schwartzen Meer*. (Universitätsforschungen zur prähistorischen Archäologie 51), Bonn, R.Habeltü

Bell, R. C., 1960 *Board and Table Games from many Civilisations*, Oxford (Oxford University Press)

Berstan, R., A. W. Stott, S. Minnitt, C. B. Ramsey, R. E. M. Hedges and R. P. Evershed (2008). 'Direct dating of pottery from its organic residues: new precision using compound-specific carbon isotopes'. *Antiquity* 82(317): 702-713.

BGS, 2017, *Geology of Britain 3D*, available: http://mapapps.bgs.ac.uk/geologyofbritain3d/ accessed 22.2.21

Blaich, M. C., 1999 'Die alamannischen Funde von Nagold, Kreis Calw. ', *Fundberichte aus Baden-Württemberg* 23, 307-365

Blackmore, L. and Riddler, I. D., 2008 'Double-Sided Comb with decorative end plates', in R. Cowie and L. Blackmore, *Early and Middle Saxon Rural Settlement in the London Region*, MoLAS Monograph 41, London (Museum of London Archaeology Service), 207-208

Blockley, K., Blockley, M., Blockley, P., Frere, S. S. and. Stow, S., 1995 *Excavations in the Marlowe Car Park and Surrounding Areas*, The Archaeology of Canterbury 5, Canterbury (Canterbury Archaeological Trust)

Bode, M-J., 1998 *Schmalstede: Ein Urnengräberfeld der Kaiser- und Völkerwanderungszeit*, Offa-Bücher 78, Neumünster (Wachholtz Verlag)

Böhme, H. W., 1974 *Germanische Grabfunde des 4. bis 5. Jahrhunderts zwischen Unterer Elbe und Loire,* Munchener Beitrage zur Vor- und Frühgeschichte 19, Munich

Bond, J. 1993. 'Cremated animal bone'. In J.Timby, 'Sancton I Anglo-Saxon cemetery: excavations carried out between 1976 and 1980'. *Archaeological Journal* 150, 300-308.

Bond, J. 1994. 'The cremated animal bone'. In J.I.McKinley, 1994, 121-135.

Bond, J. 1996. 'Burnt offerings: animal bone in Anglo-Saxon cremations'. *World Archaeology* 28: 76-88.

Bond, J. 2005. 'The cremated animal bone'. In M.Carver, *Sutton Hoo, a seventh century princely burial ground and its context.* London: British Museum Press. 275-280.

Bond, J. & Mustchin, A. 2015. 'Cremated animal bone'. In Fern, C. 2015, 155-157.

Bond, J. & Worley, F. 2006. 'Companions in death: the roles of animals in Anglo-Saxon and Viking cremation rituals in Britain'. in Gowland, R & Knusel, C. (eds.) *Social Archaeology of Funerary Remains*. Oxford: Oxbow. 89-98

Boosen, J. D., 1985 'Ein Alamannisches Frauengrab des 5. Jahrhunderts von Graben-Neudorf, Kreis Karlsruhe', *Fundberichte aus Baden-Württemberg* 10, 281-317

Booth, A., 2014 *Reassessing the long chronology of the penannular brooch in Britain: exploring changing styles, use and meaning across a millennium* PhD thesis, University of Leicester

Breyer C., 2010 *Jeux et Jouets à travers les Âges*, Brussels (Éditions Safran)

Briscoe, D C, 2013. 'Stamps on Pots – a personal, tribal or national choice?'. In Ludowici, B (ed) *Individual and Individuality? Approaches towards an Archaeology of Personhood in the First Millennium AD*. Hannover, Germany: *Neue Studien zur Sachsenforschung,* Band 4 (BWV GmbH).

Briscoe, D., 2020, 'Lackford 2015 and 2016, Suffolk (LKD 001)', *Archive of Anglian and Saxon Pottery Stamps* (unpubl.)

Brown, A., 2015 *Anglo-Saxon cremations from Lackford Anglo-Saxon cemetery (LKD 001) A report on the archaeological excavation 2015.* Archive report, Suffolk County Council Unpubl.

Brown, B. J. W., Knocker, G. M., Smedley, N and West, S. E., 1954 'Excavations at Grimstone End, Pakenham', *Proceedings of the Suffolk Institute of Archaeology* 26, 189-207

Brugmann, B., 2004 *Glass Beads from Early Anglo-Saxon Graves. A Study of the Provenance and Chronology of Glass Beads from Early Anglo-Saxon Graves, Based on Visual Examination*, Oxford (Oxbow)

Brugmann, B., 2009, 'Glass beads' [from Boss Hall], in Scull, C., 2009*, Early medieval (late 5th-earlth 8th centuries AD) cemeteries at Boss Hall and Buttermarket, Ipswich, Suffolk*. Society for Medieval Archaeology Monograph 27, 92-97.

Brugmann, B., 2011 'Wire Rings, Toilet Sets, Pendants and Beads', in K Penn (ed), *The Anglo-Saxon Cemetery at Shrubland Hall Quarry, Coddenham, Suffolk*, E Anglian Archaeol 139, Bury St Edmunds (Suffolk County Council), 67-73

Brugmann, B., 2013 'Beads', in P. Walton Rogers, *Tyttel's* Halh*: The Anglo-Saxon Cemetery at Tittleshall, Norfolk*, East Anglian Archaeology 150, Lincoln (Network Archaeology), 33-43

Buikstra, J. E. and Swegle, M. 1988. 'Bone modification due to burning; experimental evidence', in R. Bonnichsen and M. H. Sorg (eds) *Bone Modification*. Institute for Quaternary Studies, University of Maine, pp. 247-58.

Caruth, J. and Hines, J., forthcoming, *The Anglo-Saxon Cemeteries at RAF Lakenheath, Eriswell, Suffolk: Excavations 1997–2008*, E. Anglian Archaeol.

Challinor, D. 2013. *The Wood Charcoal from RAF Lakenheath ERL104.* Report for Suffolk County Council, unpubl.

Charrié-Duhaut, A., J. Connan, N. Rouquette, P. Adam, C. Barbotin, M. F. de Rozières, A. Tchapla and P. Albrecht (2007). 'The canopic jars of Rameses II: real use revealed by molecular study of organic residues'. *Journal of Archaeological Science* 34(6): 957-967.

Charters, S., R. P. Evershed, P. W. Blinkhorn and V. Denham (1995). 'Evidence for the mixing of fats and waxes in archaeological ceramics' *Archaeometry* 37(1): 113-127.

Charters, S., R. P. Evershed, L. J. Goad, C. Heron and P. Blinkhorn (1993). 'Identification of an adhesive used to repair a Roman jar'. *Archaeometry* 35: 91-101.

Clarke, G., 1979 *The Roman Cemetery at Lankhills*, *Pre-Roman and Roman Winchester Part II*, Oxford (Oxford University Press)

Clough, T.H.McK. and Myres, J.N.L., 1973 'Roman Pottery used for Anglo-Saxon Cremations', in J.N.L.Myres and B.Green 1973, 74-76

Collins, A. E. P., 1952-3 'Excavations on Blewburton Hill, 1948 and 1949', *Berkshire Archaeological Journal* 53, 21-58

Cool, H., 1983 *A Study of the Roman Personal Ornaments made of metal, excluding Brooches, from Southern Britain* PhD thesis, University of Wales

Cool, H., 1990 'Roman Metal Hair Pins from Southern Britain', *Archaeol J,* **147**:1, 148-182

Copley, M. S., R. Berstan, S. N. Dudd, G. Docherty, A. J. Mukherjee, V. Straker, S. Payne and R. P. Evershed (2003). 'Direct chemical evidence for widespread dairying in Prehistoric Britain'. *Proceedings of the National Academy of Sciences of the United States of America* 100(4): 1524-1529.

Copley, M. S., F. A. Hansel, K. Sadr and R. P. Evershed (2004). 'Organic residue evidence for the processing of marine animal products in pottery vessels from the pre-colonial archaeological site of Kasteelberg D east, South Africa'. *South African Journal of Science* 100(5-6): 279-283.

Correa-Ascencio, M. and R. P. Evershed (2014). 'High throughput screening of organic residues in archaeological potsherds using direct acidified methanol extraction'. *Analytical Methods 6*(5): 1330-1340.

Craig, O. E., M. Forster, S. H. Andersen, E. Koch, P. Crombe, N. J. Milner, B. Stern, G. N. Bailey and C. P. Heron (2007). 'Molecular and isotopic demonstration of the processing of aquatic products in northern European prehistoric pottery.' *Archaeometry* 49: 135-152.

Cramp, L. and R. P. Evershed (2013). 'Reconstructing aquatic resource exploitation in human Prehistory using lipid biomarkers and stable isotopes', in T. E. Cerling. *Treatise on geochemistry: archaeology and anthropology*. Oxford, Elsevier: 319-339

Crummy, N., 2004 'Small Finds', in R. Gardner, Archaeological Investigations at 24 Friary Fields, Dunstable, Bedfordshire, *Bedfordshire Archaeological Journal* 25, 174-176

Cunnington, M. E. and Goddard, E. H., 1934 *Catalogue of Antiquities in the Museum of the Wiltshire Archaeological and Natural History Society at Devizes, Part II*, Devizes

Davison, A., Green, B. and Milligan, B., 1993, *Illington: A study of a Breckland parish and its Anglo-Saxon cemetery*, E. Anglian Archaeol. 63, Norfolk

Delacampagne, F., 1997 'Les thermes de la rue Laitièrre à Bayeux (Calvados). Reflections sur la topographie antique et médiévale d'un quartier de la ville', *Revue archéologique de l'ouest* 14, 125-174

Deschler-Erb, S., 1998 *Römische Beinartefakte aus Augusta Raurica. Rohmaterial, Technologie, Typologie und Chronologie*, Forschungen in Augst 27, Augst

Dickinson, T., 1976 *The Anglo-Saxon Burial Sites of the Upper Thames Region, and their bearing on the History of Wessex, circa AD 400 – 700*, Unpublished Phd Thesis, University of Oxford

Dickinson, T., 1979 'On the origin and chronology of the early Anglo-Saxon disc brooch', *Anglo-Saxon Studies in Archaeology and History* 1**,** 39-80

Dickinson, T. and Härke, H., 1992 *Early Anglo-Saxon Shields*, Archaeologia 110, London

Dobney K and Reilly K 1988. 'A method for recording archaeological animal bones; the use of diagnostic zones'. *Circaea* 5, 79-96.

Drauschke, J., 2011 *Zwischen Handel und Geschenk. Studien zur Distribution von Objekten aus dem Orient, aus Byzanz und aus Mitteleuropa im östlichen Merowingerreich*, Freiburger Beiträge zur Archäologie und Geschichte des Ersten Jahrhtausends 14, Rahden/Westfalen (Verlag Marie Leidorf)

Dudd, S. N. and R. P. Evershed (1998). 'Direct demonstration of milk as an element of archaeological economies'. *Science* 282(5393): 1478-1481.

Dunne, J., R. P. Evershed, M. Salque, L. Cramp, S. Bruni, K. Ryan, S. Biagetti and S. di Lernia (2012).

'First dairying in green Saharan Africa in the fifth millennium BC'. *Nature* 486(7403): 390-394.

Evershed, R. P. (1993). 'Biomolecular archaeology and lipids' *World Archaeology* 25(1): 74-93.

Evershed, R. P. (2008). 'Organic residue analysis in archaeology: the archaeological biomarker revolution' *Archaeometry* 50(6): 895-924.

Evershed, R. P., K. I. Arnot, J. Collister, G. Eglinton and S. Charters (1994). 'Application of isotope ratio monitoring gas chromatography–mass spectrometry to the analysis of organic residues of archaeological origin'. *The Analyst* 119: 909-914.

Evershed, R. P., M. S. Copley, L. Dickson and F. A. Hansel (2008). 'Experimental evidence for the processing of marine animal products and other commodities containing polyunsaturated fatty acids in pottery vessels'. *Archaeometry* 50(1): 101-113.

Evershed, R. P., C. Heron and L. J. Goad (1991). 'Epicuticular wax components preserved in potsherds as chemical indicators of leafy vegetables in ancient diets' *Antiquity* 65(248): 540-544.

Evershed, R. P., H. R. Mottram, S. N. Dudd, S. Charters, A. W. Stott, G. J. Lawrence, A. M. Gibson, A. Conner, P. W. Blinkhorn and V. Reeves (1997a). 'New criteria for the identification of animal fats preserved in archaeological pottery'. *Naturwissenschaften* 84(9): 402-406.

Evershed, R. P., S. J. Vaughan, S. N. Dudd and J. S. Soles (1997b). 'Fuel for thought? Beeswax in lamps and conical cups from late Minoan Crete'. *Antiquity* 71(274): 979-985.

Evison, V.I., 1967 'The Dover ring-sword and other sword rings and beads', *Archaeologia* 101, 63-118

Evison, V. I., 1976 'Sword Rings and Beads', *Archaeologia* 105, 303-315

Evison, V.I., 1978. 'Early Anglo-Saxon applied disc brooches Part II: In England', *Antiq J*, 45, 260-277

Evison, V.I., 1982, 'Anglo-Saxon glass claw beakers', *Archaeologia* 107, 43-76.

Evison, V.I., 1985 'The Glass' in S. West 1985, 75-76

Evison, V.I., 1987 *Dover: the Buckland Anglo-Saxon Cemetery,* HBMC(E), London

Evison, V.I., 2000, 'Glass vessels in England AD 400-1100', in Price, J. (ed.), *Glass in Britain and Ireland AD 350-1100*. Brit Mus Occas Paper 127, 47-104.

Evison, V.I., 2008, *Catalogue of Anglo-Saxon glass in the British Museum*. British Museum Research Publication 167.

Evison, V.I., 2009, 'Glass vessels', in Hirst, S. and Clark, D., 2009, *Excavations at Mucking, Volume 3, The Anglo-Saxon cemeteries*. Museum of London Archaeology, 551-554, 619-620 and 672-673.

Evison, V.I., 2013, 'Appendix 3: Handlist of glass vessels', in Hills and Lucy 2013, 351-355.

Evison, V.I. and Cooper, V., 1985 'The Beads' in S. West 1985, 71-75

Fairnell E (ed.) 2014. *Animal bones and archaeology: guidelines for best practice.* English Heritage/Historic England.

Fern, C. 2015. *Before Sutton Hoo: the Prehistoric Remains and Early Anglo-Saxon Cemetery at Tranmer House, Bromeswell, Suffolk*. East Anglian Archaeology 155

Feugère, M. and Prévot, P., 2011 'Les matières dures animales (os, bois de cerf et ivoire) dans la vallée de l'Herault: production et consommation', in I. Bertrand, *Le Travail de L'os, du bois de cerf et del al corne à l'époque romaine: un artisanat en marge?*, Monographies Instrumentum 34, Montagnac Éditions Monique Mergoil), 231-268

Filmer-Sankey, W., Carnegie, S. and Pestell, T., 2001, 'The cremation pyre', in Filmer-Sankey, W. and Pestell, T., *Snape Anglo-Saxon Cemetery: Excavations and Surveys 1824–1992*, E. Anglian Archaeol. 95,

252–5

Gaedtke-Eckardt, D., 1991 *Der Pfingstberg bei Helmstedt. Studien zu einem Gräberfeld der Römischen Kaiserzeit bis Völkerwanderungszeit*, Forschungen und Berichte der Braunschweig Landesmuseum 2, Braunschweig

Gale, R, 2002. 'The Charcoal' in W. Filmer-Sankey and T. Pestell, *Snape Anglo-Saxon Cemetery: Excavations and Surveys 1824-1992*, 223-226, East Anglian Archaeology **95,** Suffolk County Council

Geake, H., 1997 *The Use of Grave-Goods in Conversion-Period England,* c.*600* – c.*800* Brit Archaeol Rep Brit Ser 261

Genrich, A., 1954 *Formenkreise und Stammesgruppen in Schleswig-Holstein nach geschlossenen Funden des 3. Bis 6. Jahrunderts*, Offa-Bücher 10, Neumünster (Karl Wachholtz Verlag)

Gibson, C., 2007 'Minerva: an Early Anglo-Saxon Mixed-rite Cemetery in Alwalton', Cambridgeshire, *Anglo-Saxon Studies in Archaeology and History* 14, 238-350

Gostenčnik, K., 2005 *Die Beinfunde vom Magdalensberg*, Klagenfurt (Verlag des Landesmusems Kärnten)

Green, B., 1973 'The Grave Goods from the Cremations' in J.N.L. Myres and B.Green 1973.

Green, B., Milligan, W.F. and West, S.E., 1981, 'The Illington/Lackford workshop', in V.I.Evison (ed.), *Angles, Saxons, and Jutes: essays presented to J.N.L. Myres*, 187-223 (Oxford, Clarendon)

Green, B., Rogerson, A. and White, S., 1987, *The Anglo-Saxon cemetery at Morning Thorpe, Norfolk*. East Anglian Archaeology 36.

Greep, S. J., 1988 'Bone and Antler', in T. W. Potter and S. D. Trow, Puckeridge-Braughing, Hertfordshire. The Ermine Street Excavations, 1971-1972, *Hertfordshire Archaeology* 10, 85-88

Greep, S. J., 1994 'Antler Roundel Pendants from Britain and the North-Western Roman Provinces', *Britannia* 25, 79-97

Gregg, M. W., E. B. Banning, K. Gibbs and G. F. Slater (2009). 'Subsistence practices and pottery use in Neolithic Jordan: molecular and isotopic evidence.' *Journal of Archaeological Science* 36(4): 937-946.

Guérin, S. M., 2013 'Forgotten Routes? Italy, Ifrīqiya and the Trans-Saharan Ivory Trade', *Al-Masāq* 25, 70-91

Guido, M., 1999, *The glass beads of Anglo-Saxon England c. AD 400-700*. Reports of the Research Committee of the Society of Antiquaries of London, no. 58.

Guiraud,H., 1989, 'Bagues et anneaux à l'époque romaine en Gaule'*, Gallia* 46, 173-211

Halmemies-Beauchet-Filleau, A., A. Vanhatalo, V. Toivonen, T. Heikkilä, M. Lee and K. Shingfield (2013). 'Effect of replacing grass silage with red clover silage on ruminal lipid metabolism in lactating cows fed diets containing a 60: 40 forage-to-concentrate ratio'. *Journal of dairy science* 96(9): 5882-5900.

Halmemies-Beauchet-Filleau, A., A. Vanhatalo, V. Toivonen, T. Heikkilä, M. Lee and K. Shingfield (2014). 'Effect of replacing grass silage with red clover silage on nutrient digestion, nitrogen metabolism, and milk fat composition in lactating cows fed diets containing a 60: 40 forage-to-concentrate ratio'. *Journal of dairy science* 97(6): 3761-3776.

Hamerow, H., 1993, *Excavations at Mucking Volume 2: The Anglo-Saxon Settlement.* English Heritage/British Museum Press, London.

Harden, D., 1956, 'Glass vessels in Britain and Ireland AD 400-1000', in Harden, D.(ed), *Dark Age Britain: studies presented to E. T. Leeds*. Methuen, 132-167.

Hather, J G, 2000. *The Identification of Northern European Woods; A Guide for Archaeologists and*

Conservators, London, Archetype Publications.

Henig, M 1974 *A Corpus of Roman Engraved Gemstones from British Sites, Parts 1-2*, Brit Archaeol Rep Brit Ser 8.

Hills, C., 1977 *The Anglo-Saxon Cemetery at Spong Hill, North Elmham: Part I*, *Nos. 20-64 and 1000-1690,* E Anglian Archaeol 6, Norfolk

Hills, C., 1981 'Barred Zoomorphic Combs of the Migration Period', in V. I. Evison, *Angles, Saxons and Jutes. Essays presented to J. N. L. Myres*, Oxford (University of Oxford), 96-125

Hills, C. M., 2001 'From Isidore to Isotopes: Ivory Rings in early medieval Graves', in H. Hamerow and A. MacGregor, *Image and Power in the Archaeology of Early Medieval Britain. Essays in Honour of Rosemary Cramp*, Oxford (Oxbow), 131-146

Hills, C and Lucy, S, 2013 *The Anglo-Saxon Cemetery at Spong Hill, North Elmham, Vol. IX (Chronology and Synthesis).* Cambridge: McDonald Institute.

Hills, C. and Penn, K., 1981 *Spong Hill Part II* E Anglian Archaeol 11, Norfolk

Hills, C, Penn, K and Rickett, R, 1984 *The Anglo-Saxon Cemetery at Spong Hill, North Elmham Part Ill: Catalogue of Inhumations*. E Anglian Archaeol 21, Norfolk

Hills, C., Penn, K. and Rickett, R., 1987 *The Anglo-Saxon Cemetery at Spong Hill, North Elmham Part IV: Catalogue of Cremations,* E Anglian Archaeol 34, Norfolk

Hills, C., Penn, K. and Rickett, R., 1994 *The Anglo-Saxon Cemetery at Spong Hill, North Elmham Part V: Catalogue of Cremations,* E Anglian Archaeol 67, Norfolk

Hines, J 1993. *Clasps, Hektespenner, Agraffen. Anglo-Scandinavian Clasps of Classes A-C of the 3rd to 6th Centuries AD. Typology, Diffusion and Function*, Almqvist & Wiksell, Stockholm

Hines, J 1997. *A New Corpus of Anglo-Saxon Great Square-Headed Brooches,* Boydell, Woodbridge

Hines, J and Bayliss, A (eds) 2013. *Anglo-Saxon graves and grave goods of the 6th and 7th centuries AD: a chronological framework,* Society for Medieval Archaeology Monograph 33, London: Society for Medieval Archaeology

Hirst, S. and Clark, D., 2009, *Excavations at Mucking, Volume 3, The Anglo-Saxon cemeteries*. Museum of London Archaeol Monogr

Historic England, 1996 *Weatherhill Farm, Icklingham, Suffolk Magnetometer Surveys 1993-7* Ancient Monuments Laboratory Report, unpublished

Høilund Nielsen, K., 2013 'Typology' in J.Hines and A.Bayliss (eds) 2013, ch 5

Huggett, J. W., 1988 'Imported Grave-Goods and the Early Anglo-Saxon Economy', *Medieval Archaeology* 32, 63-96

Hunter, R. and Mynard, D., 1977 'Excavations at Thorplands near Northampton, 1970 and 1974', *Northamptonshire Archaeology* 12, 97-154

Janssen, W., 1972 *Issendorf. Ein Urnenfriedhof der späten Kaiserzeit und der Völkerwanderungszeit*, Materialhefte zur Ur- und Frühgeschichte Niedersachsens 6, Hildesheim (Verlag August Lax)

Joffroy, R., 1974 *Le Cimetière de Lavoye*, Paris

King, M.D., 1988 'Roman coins from Early Anglo-Saxon contexts' in J.Casey and R.Reece *Coins and the Archaeologist* 2nd ed, Seaby, London

Kinsley, A. G., 1989 *The Anglo-Saxon Cemetery at Millgate, Newark-on-Trent, Nottinghamshire*, Nottingham Archaeological Monograph 2, Nottingham (University of Nottingham)

Koch, R., 1965 'Die spätkaiserzeitliche Gürtelgarnitur von der Ehrenbürg bei Forchheim (Oberfranken)', *Germania* 43, 105-120

Koch, U., 2001 *Das alamannische-fränkische Gräberfeld bei Pleidelsheim,* Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 60, Stuttgart (Konrad Theiss Verlag)

Krüger, T., 1982 'Das Brett- und Wurfelspiel der Spatlatenzeit und romischen Kaiserzeit im freien Germanien', *Neue Ausgrabungen und Forschungen in Niedersachsen* 15, 135-324

Leahy, K., 2007, *'Interrupting the Pots'. The Excavation of Cleatham Anglo-Saxon Cemetery*, Counc. Brit. Archaeol. Res. Rep. 155.

Leeds E T and Harden D B, 1936 *The Anglo-Saxon Cemetery at Abingdon, Berkshire* University of Oxford, Oxford

Lethbridge T C,1931 *Recent Excavations in Anglo-Saxon Cemeteries in Cambridgeshire and Suffolk, A Report*, Cambridge Antiq Soc New Series **3**, Cambridge

Lethbridge, T C, 1947-1949 *Unpublished notebook about the Lackford cemetery excavations* (copies held at Suffolk County Council and at Cambridge University Museum Archaeology and Anthropology)

Lethbridge, T.C., 1951, *A Cemetery at Lackford, Suffolk*,*Report of the excavation of a cemetery of the pagan Anglo-Saxon period in 1947* Cambs. Antiq. Soc., Quarto Pub. N.S. **6** (Cambridge)

Lucy, S. and Evans, C, 2016, *Romano-British Settlement and Cemeteries at Mucking: Excavations by Margaret and Tom Jones, 1965–1978*. Oxbow Books

MacGregor, A., 1985 *Bone, Antler, Ivory and Horn. The Technology of Skeletal Materials since the Roman Period*, London (Croom Helm)

MacGregor, A and Bolick, E 1993. *A Summary Catalogue of the Anglo-Saxon Collections (Non-Ferrous Metals)*, BAR Brit Ser 230, Oxford

Mackreth, D.F., 2011 *Brooches in Late iron Age and Roman Britain*, Oxbow, Oxford

Malim, T. and Hines, J., 1998 *The Anglo-Saxon Cemetery at Edix Hill (Barrington A), Cambridgeshire,* Council Brit Archaeol Res Rep 112, York

Martin, T 2015. *The Cruciform Brooch and Anglo-Saxon England*, Boydell, Woodbridge

Martin, T 2015 online https://doi.org/10.5284/1028833

Marzinzink, S., 2003 *Early Anglo-SaxonBelt Buckles (late 5th to early 8th centuries AD): Their Classification and Context* Brit Archaeol Rep Brit Ser 357, Archaeopress, Oxford

Masanz, R., 2017 *Völkerwanderungszeitliches Brandgräber aus Freystadt-Forchheim (Oberpfalz)*, Bayerisches Landesamt für Denkmalpflege 104, Kallmünz (Verlag Michael Lassleben)

Mayes, P. and Dean, M., 1976 *An Anglo-Saxon Cemetery at Baston, Lincolnshire*, Occasional Papers in Lincolnshire History and Archaeology 3, Sleaford

Mays, S.A., 1998 *The Archaeology of Human Bones*. Routledge, London.

McKinley, J. I., 1994a 'A Pyre and Grave-Goods in British Cremation Burials: Have we missed something?', *Antiquity* 68, 132-134

McKinley, J.I., 1994b, *The Anglo-Saxon Cemetery at Spong Hill, North Elmham Part VIII: the cremations*. East Anglian Archaeology 69. Field Archaeology Division, Norfolk Museums Service.

McKinley, J.I., 2004, 'Compiling a skeletal inventory: cremated human bone', in M.Brickley and J.I. McKinley, (eds), *Guidelines to the Standards for Recording Human Remains*. IFA Paper No.7. BABAO and IFA

McKinley, J.I., 2013, 'Cremation' in L Nilsson Stutz and S Tarlow *The Oxford Handbook of the Archaeology of Death and Burial*, Oxford University Press

McKinley, J.I., forthcoming, 'Cremated bone', in Caruth, J. and Hines, J., *The Anglo-Saxon Cemeteries at RAF Lakenheath, Eriswell, Suffolk: Excavations 1997–2008*, E. Anglian Archaeol.

Meaney, A., 1981 *Anglo-Saxon Amulets and Curing Stones* Brit Archaeol Rep Brit Ser 96, Oxford

Menghin, W 1983. *Das Schwert im Frühen Mittelalter*, Konrad Theiss Verlag, Stuttgart

Mills, J. S. and R. White 1977. 'Natural resins of art and archaeology: their sources, chemistry, and identification'. *Studies in Conservation* 22(1): 12-31.

Minter and Plouviez 2018a, *An assessment of the archaeological context of the early Anglo-Saxon cremation cemetery at Lackford (LKD 001), Suffolk: project reference 7593*. Suffolk County Council Archaeological Service

Minter F and Plouviez J, 2019 *Lackford, Suffolk LKD 001 Updated Project Design: analysis and dissemination Historic England project 7593* Unpubl document for Historic England

Mohnike, K., 2015 'Eborarii in Uelzen? Beobachtungen zu elfenbeinernen Objekten aus ostniedersachsischen Brandgräbern der jungeren Römischen Kaiserzeit bis Völkerwanderungszeit', *Nachrichten aus Niedersachsens Urgeschichte* 84, 45-58

Mottram, H. R., S. N. Dudd, G. J. Lawrence, A. W. Stott and R. P. Evershed 1999. 'New chromatographic, mass spectrometric and stable isotope approaches to the classification of degraded animal fats preserved in archaeological pottery'. *Journal of Chromatography* A 833(2): 209-221.

Mukherjee, A. J. 2004. *The importance of pigs in the Later British Neolithic: integrating stable isotope evidence from lipid residues in archaeological potsherds, animal bone, and modern animal tissues* Unpublished PhD Thesis, University of Bristol.

Mukherjee, A. J., M. S. Copley, R. Berstan, K. A. Clark and R. P. Evershed (2005). 'Interpretation of δ13C values of fatty acids in relation to animal husbandry, food processing and consumption in prehistory' in J. Mulville and A.Outram *The zooarchaeology of milk and fats.* Oxford, Oxbow Books: 77-93.

Murray, H. J. R., 1952 *A History of Board Games other than Chess*, Oxford (Oxford University Press)

Myres, J.N.L., 1937, 'Some Anglo-Saxon potters', *Antiquity* 44, 389–99.

Myres, J.N.L., 1973, 'Human remains: Introduction', in J N L Myres and B Green, 119–20.

Myres, J.N.L., 1977, *A Corpus of Anglo-Saxon Pottery of the Pagan Period*. Cambridge University Press.

Myres, J N L and Green, B 1973 *The Anglo-Saxon Cemeteries of Caistor-by-Norwich and Markshall, Norfolk*, Rep. Res. Cttee Soc. Antiq. Lond. 30

Myres, J. N. L. and Southern, W. H., 1973 *The Anglo-Saxon Cremation Cemetery at Sancton, East Yorkshire*, Hull Museum Publications 218, Hull

Nicholson R A 1993. 'A morphological investigation of burnt animal bone and an evaluation of its utility in archaeology.' *J Archaeol Sci* 20, 411-28.

Noll, R., 1984 'Zwei römerzeitliche GrabFunde aus Rumänien in der Wiener Antikensammlung. Mit einem Exkurs: Goldene Herkuleskeulen', *Jahrbuch des Romisch Germanisches Zentralmuseum Mainz* 31, 435-453

O'Connor T 1994. 'A horse skeleton from Sutton Hoo, Suffolk, UK' *Archaeozoologia* VII/1, 29-37.

Outram, A. K., N. A. Stear, R. Bendrey, S. Olsen, A. Kasparov, V. Zaibert, N. Thorpe and R. P. Evershed 2009. 'The earliest horse harnessing and milking'. *Science* 323(5919): 1332-1335.

Parlett, D., 1999 *The Oxford History of Board Games*, Oxford (Oxford University Press)

Penn, K and Brugman, B, 2007. *Aspects of Anglo-Saxon Inhumation Burial: Morning Thorpe, Spong Hill, Bergh Apton and Westgarth Gardens.* East Anglian Archaeol Rep 119, Dereham: Norfolk Museums and Archaeology Service

Perry, G., 2013, *United in Death: the pre-burial origins of Anglo-Saxon cremation urns* (unpubl. PhD thesis, Univ. Sheffield)

Petitjean, M., 1995 'Les peignes en os à l'époque mérovingienne. Evolution depuis l'Antiquité tardive', *Antiquités Nationales* 27, 145–191

Petković, S., 1995 *Rimski predmeti od kosti i roga sa territorije Gornje Mesije*, Posebna izdanja knjiga 28, Belgrade (Belgrade Archaeological Institute)

Petković, S., 1998 'Meaning and Provenance of Horses' Protomes Decoration on the Roman Antler Combs', *Starinar* 49, 215-228

Petković, S., 2006 'Unilateral Antler Combs from *Romuliana'*, *СТАРИНАР* 66, 353-366

Picod, C., Rodet-Belarbi, I. and Châtelet, M., 2016, 'La fabrication des peignes en bois de cerf et en os de l'Antiquité tardive et du haut Moyen Âge: étude tracéologique et expérimentation sur les peignes d'Obernai et de Marlenheim (Bas-Rhin, FR)', *Instrumentum* 44, 36-44

Pion, C., 2014, *Les perles mérovingiennes: Typo-chronologie, fabrication et fonctions*. Thèse présentée en vue de l'obtention du grade académique de Docteur en Histoire, art et archéologie, Université Libre du Bruxelles.

Plunkett, S., 1994, *Guardians of the Gipping: Anglo-Saxon treasures from Hadleigh Road, Ipswich*. Ipswich Borough Council.

Powers, N., 2008, 'Cremated human remains', in Ennis, T., *An Early Saxon Cemetery at Rayleigh, Essex: excavations at the former Park School*, E. Anglian Archaeol. 127, 46–50.

Prummel, W., Hülja, H. and Verbaas, A., 2011 'The Bone and Antler Tools from the Wijnaldum-Tjitsma terp', *Journal of the Archaeology in the Low Countries* 3-1/2, 65-106

Quast, D., 1993 *Die merowingerzeitlichen Grabfunde aus Gültingen (Stadt Wildberg, Kreis Calw)*, Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 52, Stuttgart (Konrad Theiss Verlag)

Radman-Livaja, I., 2017 'Antler Roundel Pendants from Siscia', in *Ante Portam Aureum. Studia in Honorem Professoris Alexsandar Jovanović*, Zagreb, 141-150

Rainsford C E 2017 *Animals, identity and cosmology: mortuary practice in early Medieval Eastern England*. Unpublished PhD, University of Bradford.

Rees, H., Crummy, N., Ottaway, P. J. and Dunn, G., 2007 *Artefacts and Society in Roman and Medieval Winchester. Small Finds from the Suburbs and Defences, 1971-1986*, Winchester (Winchester Museums Service)

Richards, J. D., 1987 *The Significance of Form and Decoration of Anglo-Saxon Cremation Urns*, British Archaeological Reports, British Series 166, Oxford

Riddler, I. D., 1988a *Loveden Hill, Lincolnshire. Objects of Antler, Bone and Ivory from the Early Anglo-Saxon Cemetery*, unpublished analysis report for English Heritage

Riddler, I. D., 1988b 'Late Saxon or Late Roman? A Comb from Pudding Lane', *London Archaeologist* 5, 372-374

Riddler, I. D., 1993 'Saxon Worked Bone', in R. J. Williams, *Pennyland and Hartigans. Two Iron Age and Saxon Sites in Milton Keynes,* Buckinghamshire Archaeological Society Monograph 4, Aylesbury, 107-

119

Riddler, I. D., 2007 'The Pursuit of *Hnefatafl'*, in I. Finkel, *Ancient Board Games in Perspective. Papers from the 1990 British Museum Colloquium, with additional contributions,* London (British Museum), 256-262

Riddler, I. D., 2009a 'Combs', in S. J. Lucy, J. Tipper and A. Dickens, *The Anglo-Saxon Settlement and Cemetery at Bloodmoor Hill, Carlton Colville, Suffolk*, E Anglian Archaeol 131, Cambridge, 187-190

Riddler, I. D., 2009b 'Hollowed Cylinder', in S. J. Lucy, J. Tipper and A. Dickens, *The Anglo-Saxon Settlement and Cemetery at Bloodmoor Hill, Carlton Colville, Suffolk*, E Anglian Archaeol 131, Cambridge, 278

Riddler, I. D., 2010 'Combs', in P. Bennett, I. D. Riddler and C. Sparey-Green, *The Roman Watermills and Settlement at Ickham, Kent*, The Archaeology of Canterbury, New Series V, Canterbury (Canterbury Archaeological Trust), 213-215

Riddler, I. D., 2012a 'Antler Burr Discs and Rings', in K. Parfitt and T. Anderson, *Buckland Anglo–Saxon Cemetery, Dover. Excavations 1994*, The Archaeology of Canterbury, New Series VI, Canterbury, 160-161

Riddler, I. D., 2012b 'Ivory Rings', in K. Parfitt and T. Anderson, *Buckland Anglo–Saxon Cemetery, Dover. Excavations 1994*, The Archaeology of Canterbury, New Series VI, Canterbury, 158-160

Riddler, I. D., 2013 'Bone and Antler', in C. Evans, G. Appleby, S. Lucy and R. Regan, *Process and History. Romano–British Communities at Colne Fen, Earith*, CAU Landscape Archives: The Archaeology of the Lower Ouse Valley, Volume II, Cambridge, 415-417

Riddler I.D., 2014, *Revisiting the West Stow Phasing*, unpublished

Riddler I.D., 2015 'The small finds: Saxon' in D Gill, R Goffin and J Caruth *New Museum Building, West Stow Anglo-Saxon Village West Stow Suffolk* SACIC Report No. 2015/083

Riddler, I.D. and Trzaska-Nartowski, N.I.A., 2013 'Artefacts of worked bone and antler' in C. Hills and S. Lucy, 2013

Riddler, I. D. and Trzaska-Nartowski, N. I. A., 2015 'Combs', in C. J. R. Fern, *Before Sutton Hoo: the Prehistoric Remains and Early Anglo-Saxon Cemetery at Tranmer House, Bromeswell, Suffolk*, E Anglian Archaeol 155, Bury St Edmunds (Suffolk County Council), 133-134

Riddler, I. D. and Trzaska-Nartowski, N. I. A., forthcoming 'The Grave Goods', in K. Poole, *The Early Anglo-Saxon Cemetery at East Leake, Nottinghamshire*

Riddler, I, Trzaska-Nartowski, N and Hatton, S, forthcoming *An Early Medieval Craft: Antler and Bone Working from Ipswich*, E. Anglian Archaeol

Rodet-Belarbi, I. and Amiel, C., 2006 'Des pendentifs en os et en bois de cerf parmi les mobiliers des tombes gallo-romaines du site "Francois Verdier" à Toulouse (Haute-Garonne, F)', *Bulletin Instrumentum* 24, 10-12

Rodet-Belarbi, I. and Dieudonné-Glad, N., 2011 'Os, bois de cerf et ivoire à Rom (Deux-Sèvres). Quelques elements de réflexion sur l'approvisionnement en matière première et al distribution des objets dans l'aggolmération', in I. Bertrand, *Le Travail de L'os, du bois de cerf et del al corne à l'époque romaine: un artisanat en marge?*, Monographies Instrumentum 34, Montagnac (Éditions Monique Mergoil), 145-163

Ross, S 1991. *Dress pins from Anglo-Saxon England: their Production and Typo-Chronological Development*, unpublished DPhil thesis, University of Oxford

Russel, A., 1984, *Early Anglo-Saxon Ceramics from East Anglia: a Microprovenance Study* (unpubl. PhD thesis, Univ. Southampton)

Russel, A., 1985, 'Petrological report on the West Stow Saxon pottery', in West, S.E., *West Stow. The Anglo-Saxon Village*, E. Anglian Archaeol. 24, 130

Russel, A., 1993, 'Fabric report on pottery from the Illington cemetery', in Davison, A., Green, B. and Milligan, B., *Illington: A study of a Breckland parish and its Anglo-Saxon cemetery*, E. Anglian Archaeol. 63, 107–11

Saggau, H. E., 1986 *Bordesholm. Der Urnenfriedhof am Brautberg bei Bordesholm in Holstein. 1: Text und Karten*, Offa-Bücher 60, Neumünster (Wachholtz Verlag)

Salque, M. 2012. *Regional and chronological trends in milk use in prehistoric Europe traced through molecular and stable isotope signatures of fatty acyl lipids preserved in pottery vessels*. PhD Thesis, University of Bristol.

Schach-Dörges, H., 1970 *Die Bodenfunde des 3. bis 6. Jahrhunderts nach Chr. Zwischen unterer Elbe und Oder*, Offa-Bücher 23, Neumünster (Karl Wachholtz Verlag)

Schach-Dörges, H., 1994 'Zu einreihigen Dreilagenkämme des 3. bis 5. Jahrhunderts aus Südwestdeutschland', *Fundberichte aus Baden-Württemberg* 19/1, 661-702

Schuldt, E., 1955 *Pritzier. Ein Urnenfriedhof der späten römischen Kaiserzeit in Mecklenburg*, Berlin

Schuldt, E., 1976 *Perdöhl. Ein Urnenfriedhof der späten Kaiserzeit und der Völkerwanderungszeit in Mechlenburg*, Berlin

Schweingruber, F H, 1990. *Microscopic wood anatomy*, 3rd Edition, Swiss Federal Institute for Forest, Snow and Landscape Research.

Scull, C., 2009, *Early medieval (late 5th-earlth 8th centuries AD) cemeteries at Boss Hall and Buttermarket, Ipswich, Suffolk*. Society for Medieval Archaeology Monograph 27.

Siegmann, M., 2003 *Bunte Pracht – Die Perlen der frühmittelalterlichen Gräberfelder von Liebenau, Kreis Nienburg/Wester, und Dörveden, Kreis Verden/Aller. Teil 2*, Langenweißbach

Silver I. A. 1969 'The Ageing of Domestic Animals' in D. R. Brothwell and E. S. Higgs *Science and Archaeology.* Thames and Hudson: London. 28 3-302

Soden Smith, R. H., 1877 'Note on a Comb found in London', *Archaeological Journal* 34, 450-451

Spangenberg, J. E., S. Jacomet and J. Schibler 2006, 'Chemical analyses of organic residues in archaeological pottery from Arbon Bleiche 3, Switzerland – evidence for dairying in the late Neolithic.' *Journal of Archaeological Science* 33(1): 1-13.

Squires, K. E., 2012 'Populating the Pots: the Demography of the Early Anglo-Saxon Cemeteries at Elsham and Cleatham, North Lincolnshire', *Archaeological Journal* 169, 313-342

Squires, K. E., 2013 'Piercing Together Identity: a Social Investigation of Early Anglo-Saxon Cremation Practices', *Archaeological Journal* 170, 154-200

Squires, K. E., 2016 'Neighbours and Networks: Funerary Trends among cremation practising groups in early medieval England and north-western Europe', in I. Riddler, J. Soulat and L. Keys, *The Evidence of Material Culture: Le Témognage de la Culture Matérielle, Studies in Honour of Professor Vera Evison*, Europe Médiévale 10, Montagnac (Éditions Mergoil), 119-138

Stace, C, 2019. *New Flora of the British Isles*, Fourth Edition, Cambridge, Cambridge University Press

Stadler, P., 1981 'Volkerwanderungszeitliche Funde: eine Siedlung bei Unterlanzendorf und ein Gräberfeld bei Rannesdorf, Niederösterreich', *Archaeologia Austriaca* 65, 139-185

Stauch, E., 2004 *Wenigumstadt. Ein Bestattungsplatz der Völkerwanderungszeit und des frühen Mittelalters im nördlichen Odenwaldvorland*, Universitätsforschungen zur prähisorischen Archäologie 111, Bonn (Dr Rudolf Habelt GmbH)

Thomas, S., 1960 'Studien zu den germanischen Kämmen der romischen Kaiserzeit', *Arbeits- und Forschungsberichte zur Sachsischen Bodendenkmalpflege* 8, 54-215

Timby J, Bond J, Darvill T. C., Gilmour B., Green F. J., Heyworth M., Hutchinson M. E., McKinley J. I., Manchester K., Mortimer C. M., Walton-Rogers P., Williams D. F. & B. V. Williams 1993. 'Sancton I Anglo-Saxon Cemetery Excavations Carried Out Between 1976 and 1980', *Archaeological Journal, 150:1, 243-365*

Tipper, J., 2009, 'Pottery', in Lucy, S., Tipper, J. and Dickens, A., *The Anglo-Saxon Settlement and Cemetery at Bloodmoor Hill, Carlton Colville, Suffolk,* E. Anglian Archaeol. 131, 202–43

Tite, M. S. 2008. 'Ceramic production, provenance and use - a review' *Archaeometry* 50(2): 216-231.

Trollope, Rev. E., 1857 '...an account of Saxon internments, found in Lincolnshire', *Archaeological Journal* 14, 275-276

Trollope, Rev. E., 1863 'Saxon Burial Ground at Baston, Lincolnshire', *Archaeological Journal* 20, 29-31

Trzaska-Nartowski, N. I. A. and Riddler, I. D., 2014 'The Complexities of the Simple Comb', in G. Owen-Crocker and B. Schneider, *The Anglo-Saxons in their World*, British Archaeological Reports, British Series 595, Oxford (Archaeopress), 39-54

Urem-Kotsou, D., B. Stern, C. Heron and K. Kotsakis 2002. 'Birch-bark tar at Neolithic Makriyalos, Greece'. *Antiquity* 76(294): 962-967.

Walton Rogers, P., 2007 *Cloth and Clothing in Early Anglo-Saxon England AD 450 – 700*, CBA Res. Rep 145, York (Council for British Archaeology)

WEA, 1980, 'Recommendations for age and sex diagnoses of skeletons', *Journal of Human Evolution* 9, 517–49.

Weber, M., 2000 *Das sächsische Gräberfeld von Issendorf, Landkreis Stade. Teil 2*, Studien zur Sachsenforschung 9.2, Oldenburg

Wells, C., 1993, 'Human remains', in Davison, A., Green, B. nd Milligan, B., *Illington: A study of a Breckland parish and its Anglo-Saxon cemetery*, E. Anglian Archaeol. 63, 100–107.

Werner, J., 1964 'Herkuleskeule und Donar-amulett', *Jahrbuch des Romisch Germanisches Zentralmuseum Mainz* 11, 176-189

West, S.E., 1985, *West Stow. The Anglo-Saxon Village*, E. Anglian Archaeol. 24

West, S., 1988, *Westgarth Gardens Anglo-Saxon cemetery: catalogue*. East Anglian Archaeology 38.

West, S.E., 1998, *A Corpus of Anglo-Saxon Material from Suffolk*, E. Anglian Archaeol. 84

West, S 2014, 'Icklingham: a provocative view of a centre of wealth and power in Western East Anglia' in S Ashley and A Marsden, *Landscapes and Artefacts: Studies in East Anglian Archaeology presented to Andrew Rogerson*, Archaeopress Archaeology, 73-8

West S with Plouviez J 1976 'The Roman Site at Icklingham' *East Anglian Archaeology* 3, 63-126

White, R H, 1988, *Roman and Celtic Objects from Anglo-Saxon Graves: A Catalogue and an Interpretation of Their Use*, Brit Archaeol Rep Brit Ser 191, Oxford

Whittingham M and Wubs J, 2022 *West Stow, BFER Project, Suffolk, Archaeological geophysical survey*, Phase Site Investigations Ltd project No. ARC/3053/1205, unpublished report

Williams, D. and Vince, A., 1997, 'The characterization and interpretation of Early to Middle Saxon granitic tempered pottery in England', *Medieval Archaeol.* 41, 214–2

Williams, H., 2003 'Material Culture as Memory: Combs and Cremation in early medieval Britain', *Early Medieval Europe* 12, 86-128

Williams, H., 2014, 'A well-urned rest: cremation and inhumation in Early Anglo-Saxon England', in Kuijt, I., Quinn, C.P. and Cooney, G. (eds), *Transformation by Fire. The Archaeology of Cremation in Cultural Context*, 93–118 (Univ. Arizona Press)