

BEDDINGHAM, EAST SUSSEX INVESTIGATIVE CONSERVATION OF MATERIAL FROM THREE ANGLO-SAXON GRAVES

ARCHAEOLOGICAL CONSERVATION REPORT

Elizabeth Beesley



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Beddingham, East Sussex: Investigative Conservation of Material from Three Anglo-Saxon Graves

Elizabeth Beesley

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SUMMARY

This report describes the conservation and analysis of grave goods from three sixth century Anglo-Saxon inhumations. The objects and their typology are discussed with the results of material analysis and identification of mineral preserved organic material.

KEYWORDS

Early Medieval
Conservation
Copper alloy
Iron
Amber
Mineral preserved organic material

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INTRODUCTION

The site near Beddingham, East Sussex, was found in October 2008 by metal detectorists who uncovered the cauldron (g1-2-sf1) and skull fragments. Following the reporting of the discovery to the police, East Sussex County archaeologists and the Portable Antiquities Scheme, three furnished graves were excavated by the East Sussex County archaeologists. The graves are likely to be of two females and one male.

The excavated artefacts, except any bone or pottery, were taken to Fort Cumberland for investigation. Initially, this was undertaken to analyse the composition of two metal discs from Grave 1, g1-2-sf5a and b, which were suspected to be silver. As this was the case, the graves' contents may constitute treasure under the Treasure Act 1996, and compositional analysis was required for the coroner's inquest.

The remaining objects were largely of copper alloy and iron, and there was one amber object. The aims of investigative conservation were to:

- Identify the materials, manufacture, use and type of each object
- Stabilise each object for transport, storage and handling

The information gained from this investigation may then be used for illustration and future research.

In order to carry out these aims, the following steps were generally taken:

- Initial examination using a binocular microscope and X-radiography
- Removal of soil and corrosion to clarify any surface detail, usually using mechanical means or swabbing with a solvent
- Identification and recording of mineral preserved organic material using scanning electron microscopy (SEM) and Fourier Transform Infrared spectroscopy (FTIR)
- Characterisation of materials and gilding type by X-ray fluorescence (XRF) using an EDAX Eagle II spectrometer with settings of around 40kV and 260mA. This method produces qualitative information on the composition of the surface and is only a guide to the alloy used.
- Repackaging

The soil from which the artefacts were lifted was very chalky so little remains of any organic materials and the soil is firmly attached to the objects.

GRAVE I

This grave contained a supine skeleton facing south with grave goods indicating that it was female. It was the least disturbed of the three excavated graves, but it was partially excavated by metal detectorists.

Cauldron/pail g1-2-sf1



Figure 1: Cauldron g1-2-sf1

This object was lifted by metal detectorists and so its exact position and orientation in the grave is uncertain, although it was located by the skull. It has a flat base, curved sides tending to vertical near the rim, with triangular lugs for an arc-shaped handle. It is similar in form to the Gotland cauldrons found elsewhere in England and northern Europe (Vierck 1973, p.31). It is very fragile, having broken into several pieces probably during burial. The X-ray shows hammer marks from manufacture in a spiral shape, the body being raised or sunk from a single piece of metal. No decoration was visible.

In order to stabilise the object for handling and transport, a Plastazote (expanded cross-linked polyethylene foam) support was constructed for the interior so that the exterior could be examined and given initial cleaning to remove some of the soil. 60% w/v cyclododecane (CDD) in white spirit was then used to attach Japanese tissue to the most fragile areas where the metal was fractured or projecting and in danger of loss. After the white spirit had evaporated, the object was wrapped in aluminium foil and X-lite (cotton

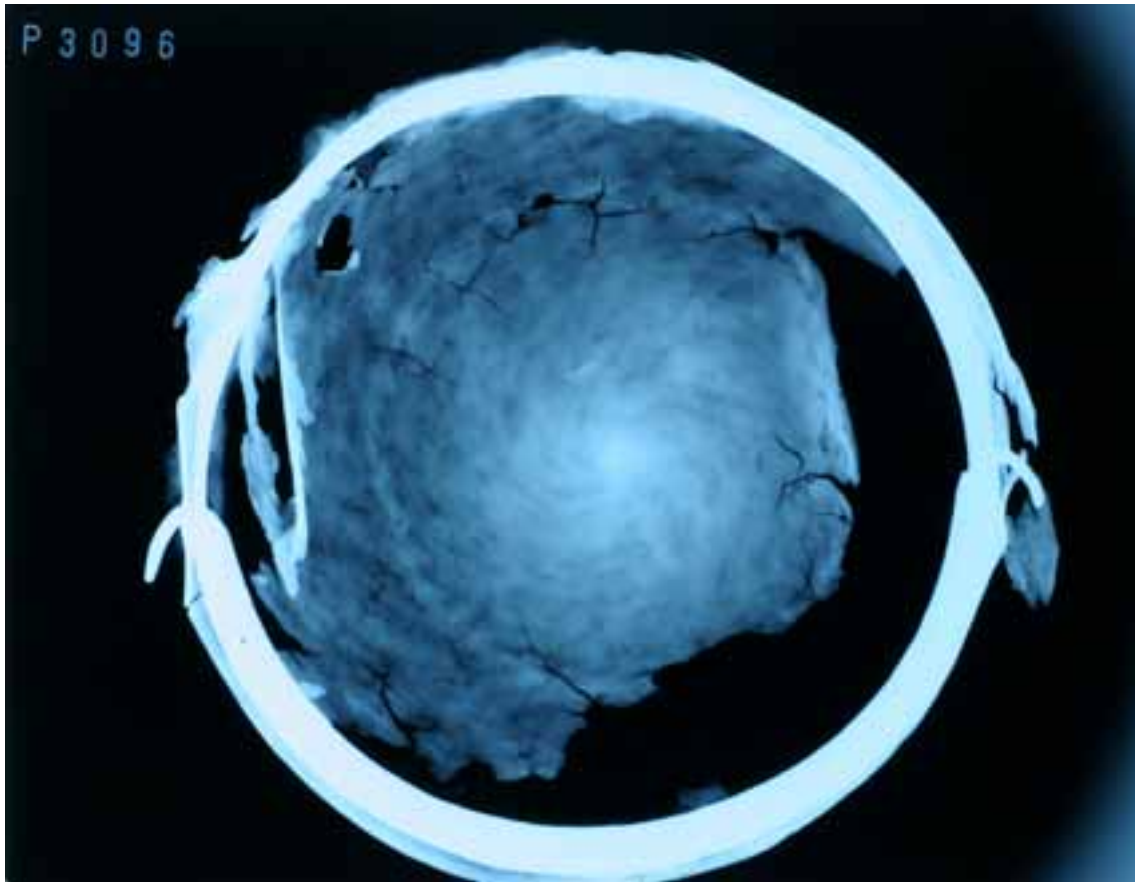


Figure 2: X-ray of cauldron gl-2-sf1, showing spirals of hammer marks.

mesh coated in thermoplastic polymer) was softened by heating with a hairdryer and allowed to slump over the object where it then became rigid.

The support and foil could then be removed and acid-free tissue placed around the bowl before the X-lite support was replaced. The bowl was then inverted and the interior Plastazote™ support removed. The inside of the bowl could then be mechanically cleaned using a scalpel and swabbed with industrial methylated spirits (IMS). After cleaning, 20% w/v Paraloid B-72 (methyl acrylate and ethyl methacrylate copolymer) in acetone was used to attach nylon gossamer across the most fragile parts of the object. Then the Plastazote supports were replaced and the object inverted so that the exterior could be cleaned.

No mineral preserved (MP) organic material was found on the bowl itself, although textile and textile pseudomorphs were found on the detached fragments, particularly the large piece retrieved from the metal detectorists' spoil. A sample of this textile was analysed using FTIR, which indicated that it is made from bast fibres, likely to be linen or hemp. The

threads are Z twisted and a small patch of textile could be identified as ZZ 1/1 tabby. SEM imaging showed the threads were around 500 μ m in diameter.

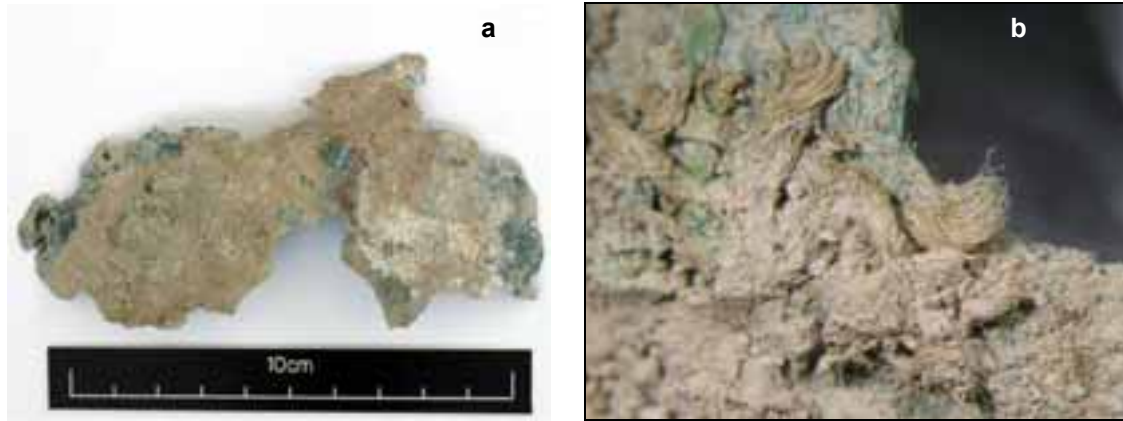


Figure 3a and b: Large fragment from g1-2-sf1 b) Close up of textile on outer surface of fragment.

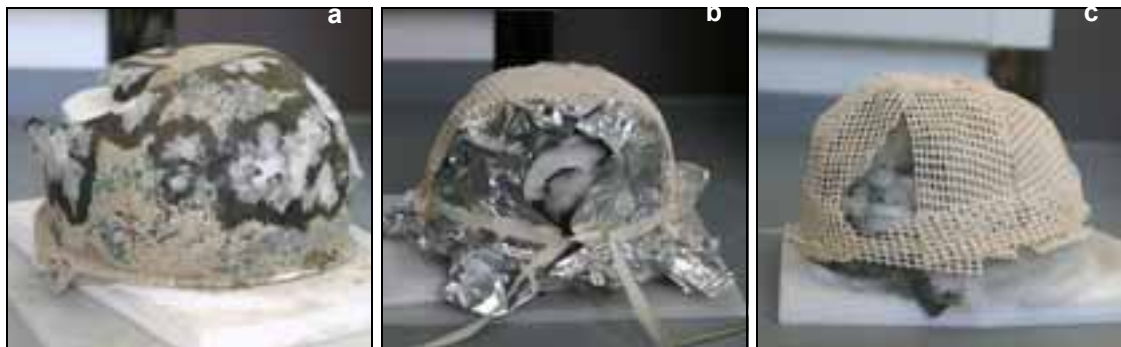


Figure 4a, b and c: Stages in the construction of the X-lite support for cauldron g1-2-sf1. a) The object is strengthened with Japanese tissue and CDD. b) Aluminium foil is used to protect the cauldron and strips of X-lite are applied. c) The complete X-lite support, lined with Jiffy foam.

Knife g1-2-sf2

This knife has a clearly defined tang, but the shape of its back and cutting edge are not clear enough to categorise by Evison's typology (Evison 1987, p.113). The inward curve of

the cutting edge may indicate repeated sharpening during use. Soil accretions were removed to reveal mineral preserved horn on the tang. The break is likely to have occurred in antiquity.



Figure 5: Knife g1-2-sf2, cutting edge down.

Silver scutiform discs g1-2-sf5

These silver objects, initially thought to be belt plates, are circular in shape with a perforated raised central boss. The boss is surrounded by a groove which in turn is surrounded by a ring of repoussé or punched raised dots; a similar design is around the edge. The objects were given preliminary analysis by X-ray fluorescence which indicated that they were around 96 wt% silver with some copper. The soil was removed, leaving the surface tarnished. During cleaning, green patches of copper corrosion were revealed. Energy-dispersive analysis in the scanning electron microscope indicate tin, lead and copper in these areas in addition to confirming the initial composition of the silver.

These objects appear similar to scutiform pendants, and the tin and copper corrosion may be the remains of a loop from which these objects were suspended or attached. The corrosion was thus left in situ as evidence of this. Similar objects have been found in England throughout the 5th and 6th centuries and are sometimes considered to be amulets and to illustrate the movement of beliefs and people from western Norway (Hines 1984).



Figure 6: Scutiform discs g1-2-sf5.

Gilded saucer brooches g1-2-sf6 and g1-2-sf7

This matching pair of saucer brooches was in a reasonably good condition, the pins being intact and the gilding still present. The design has three decorated fields: a central boss, a design of seven running legs (or whirligig) going anticlockwise and an outer zigzag pattern. These are commonly found in and around the Upper Thames valley (Dickinson 1992, p.38) but are also known in Sussex (Welch 1983, p.51); they date to the first half of the sixth century (Martin Welch, pers. comm.). Their position in relation to the skeleton indicates that they were used to fasten a peplos-style gown at the shoulders (Rogers 2007, p.144). Each consist of a copper alloy disc and pin lugs, cast as one piece, polished and gilded and an iron pin attached (Dickinson 1992, p.36). X-radiography showed that g1-2-sf6 appeared extremely porous; this was confirmed after cleaning as the surface under the gilding contained many small holes. XRF of the gilded surfaces identified the presence of mercury which indicates that the brooches were mercury gilded.

They were cleaned mechanically, using a scalpel and wooden skewer to remove the soil and the friable copper corrosion products. This revealed mineral preserved textile in the iron corrosion products around the pin of both brooches and a small piece of fibre in the copper corrosion on the front of g1-2-sf6. Following mechanical cleaning, the gold was swabbed with 15% v/v formic acid (methanoic acid) in distilled water to remove remaining corrosion products. The reverse was swabbed with ethanol.



Figure 7: Saucer brooches after treatment, g1-2-sf6 (left) and g1-2-sf7.

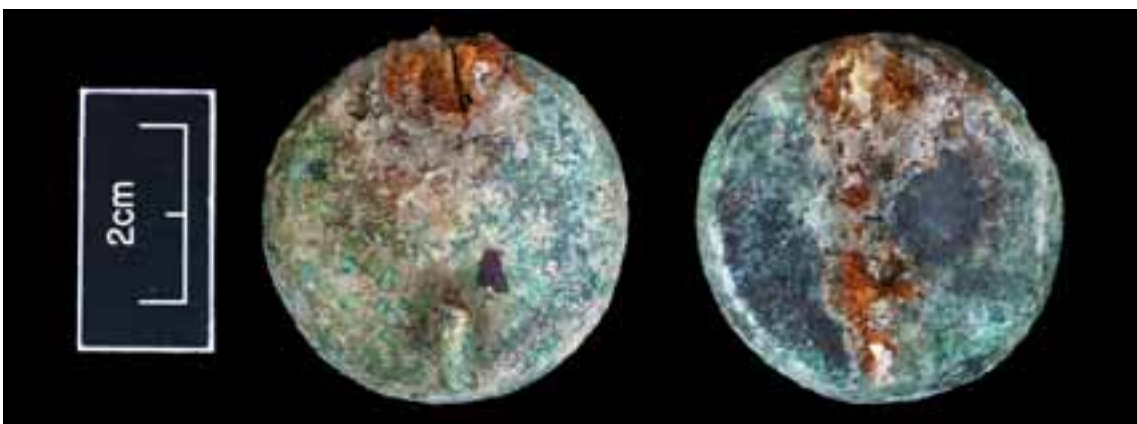


Figure 8: Reverse of saucer brooches g1-2-sf6 (left) and g1-2-sf7.

Tag ends/aglets g1-2-sf8

These consist of thin sheet, wider at one end with a hook at the other, one made from copper alloy and the other from iron. The similar dimensions suggest that they are a matching pair. The copper alloy item is decorated with engraved geometric crosses and parallel lines on both sides; however no decoration was visible on the iron object. The hook and the position on the body by the middle of the femur may indicate that they are decorative tag-ends or part of a chatelaine group. The copper alloy object was cleaned mechanically and swabbed with ethanol. Removal of the soil uncovered small amounts of mineral preserved textile in the corrosion products.



Figure 9: Tag ends/chatelaine components g1-2-sf8.

Belt mount g1-2-sf10

This is a thin square copper alloy sheet which has been decorated by a saltire cross of punched or repousse points, and was originally edged with a similar design. On the reverse, there are two thin plates which were riveted in position along opposite edges. Mineral preserved leather was found on the reverse of the plate and on the rivets. The leather of the belt would have had a maximum thickness of around 4mm, the length of the rivet shanks.

The object is very fragile and the X-ray showed little metal remaining. The soil was removed mechanically with a scalpel and the object was swabbed with ethanol. One detached fragment was re-adhered using a nylon gossamer backing and 20% w/v Paraloid B72 in acetone.



Figure 10 (left): Belt mount g1-2-sf10 after treatment. Figure 11 (right): Mineral preserved leather on the reverse of belt mount g1-2-sf10.

Amber pendant g1-2-sf1 I

This object has a crazed, weathered surface. It was cleaned mechanically with a scalpel and wooden tool, after softening the soil and dirt accretions with distilled water. Such pendants from the early Anglo-Saxon female inhumations are common, although this one is large for its type (Rogers 2007).



Figure 12: Amber pendant g1-2-sf1 I after treatment.

Buckle with belt plate and mounts g1-2-sf1 2

This object was initially fused to the pelvis and covered in soil. X-ray (see Figure 14) revealed the buckle and belt plate inside. This buckle may be classified as Evison type II.4 (1987, p.36). Such buckles are usually dated to the late fifth or early sixth centuries (M. Welch, pers. comm.). The iron buckle has inlaid wires around the loop and its attached rectangular plate has three sets of concentric circles made from a copper alloy (determined by XRF). There are two adjacent belt plates, one in copper alloy and one iron. The latter has inlay in the same circle pattern as the buckle. The presence of inlay on the belt plate and the position of the mounts suggest that the belt itself would have been folded back rather than passing over the belt plate, to display the decoration.

Cleaning was undertaken using a scalpel to remove the soil over the objects. During this, large areas of mineral preserved textile were found on the front of the iron belt mount. Further cleaning was not carried out in order to leave this *in situ*. The warp and weft threads from this have a Z spin and the weave is 2/2 twill (see (Rogers 2007)).



Figure 13: Buckle and mounts, g1-2-sf12, after treatment. The buckle was originally situated above the greater sciatic notch.

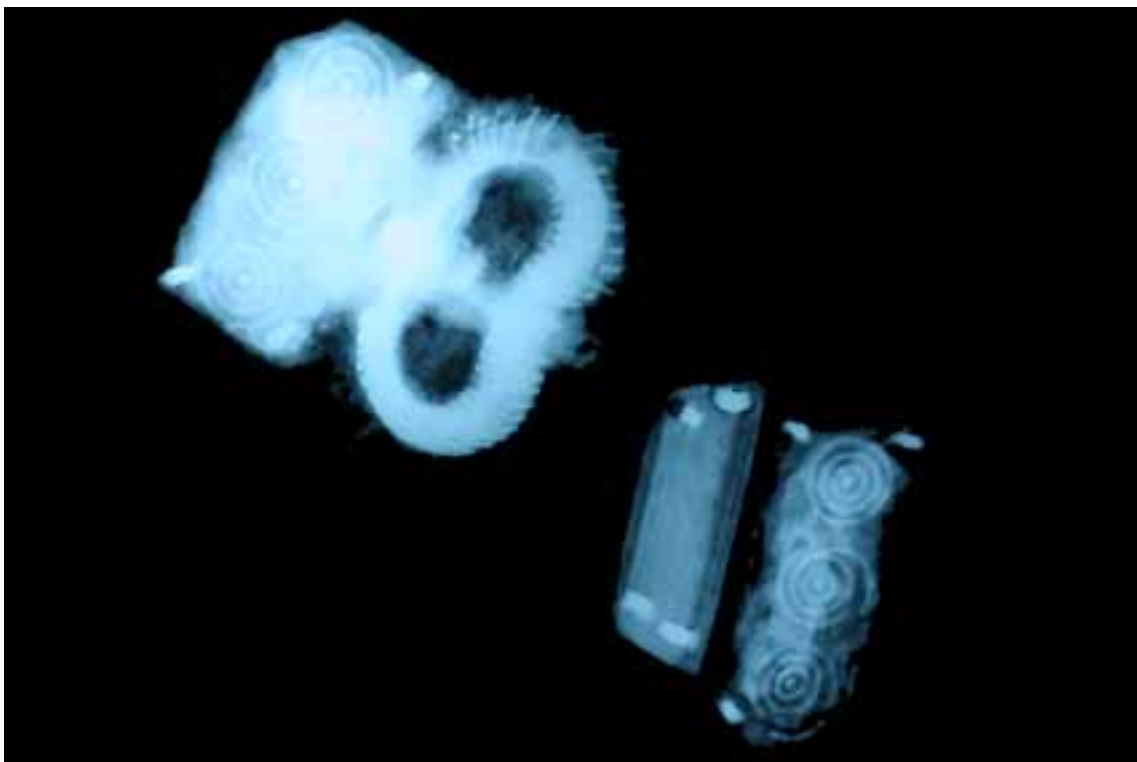


Figure 14: X-ray of g1-2-sf12 showing the inlays.

The corrosion products on the belt plate of the buckle were removed by air abrasion to reveal some of the inlay for analysis, but not taken further due to the fragility of the object. Mineral preserved textile was found on the back of the buckle. There were at least two layers of this, all with the same weave of Z, Z 2/2 twill.



Figure 15: Mineral preserved textile on the front of the iron belt mount.

Table 1: Summary of condition and treatment of objects from Grave 1

Number	Object description	Radiograph Nos	Condition	Conservation (see key below)	MPO
g1-2-sf1	Copper ally cauldron/pail	P3096, P3098, P3099, P3101, P3103, P3104, P3105	fragmentary	M, IMS, repaired	Y
g1-2-sf10	Copper alloy belt mount	P2354	fragile, corroded	M, IMS, repaired	
g1-2-sf11	Amber pendant		crazing	M, IMS	
g1-2-sf12	Iron buckle set fused to pelvis	P2347, PP2348, P2349, P2350	fragile, corroded	M, A/B	Y
g1-2-sf2	Iron knife	P2342	broken	M	Y
g1-2-sf4	Copper alloy fragment	P2354, P2356		M, IMS	
g1-2-sf5a	Silver belt mount	P2354		M, IMS	
g1-2-sf5b	Silver belt mount	P2354		M, IMS	
g1-2-sf6	Gilded saucer brooch	P2354, P2355, P2356	corroded	M, formic acid	Y
g1-2-sf7	Gilded saucer brooch	P2354, P2355, P2356	corroded	M, formic acid	
g1-2-sf8	Iron and copper alloy belt slide	P2354, P3102 iron	corroded	M, IMS	Y

M=mechanical, IMS=swabbed with ethanol, A/B=air abraded. MPO indicates mineral preserved organic was found on the object

GRAVE 2

This grave contained a supine skeleton facing north, equipped with a shield boss and grip by the left shoulder and a spearhead by the skull with a ferrule around the mid femur. Additionally, there were a knife, copper alloy buckle with stud and another iron stud around the waist area. Several extraneous items have also been found in the grave fill including a mineral nodule, and part of a burnt square-headed brooch; a pierced medieval token was found in a separate context.

Shield boss g2-2-sfA and grip g2-2-sfA2

This shield boss is associated with 17 fragments which were retrieved from the metal detectorists' spoil heap. It has features typical of Dickenson Group 1.1 (classified as such by Martin Welch, pers. comm.), with a disc apex, straight cone, overhanging carination concave wall and five rivets on the flange (Dickinson & Härke 1992, p.10). Both boss and rivets are made from iron.

The object was cleaned mechanically initially to facilitate examination for mineral preserved organic material. Small amounts of wood were found around the shanks of two of the rivets. Following this the soil was removed from the object and fragments using the air abrasive.



Figure 16: Shield boss g2-2-sfA after treatment.

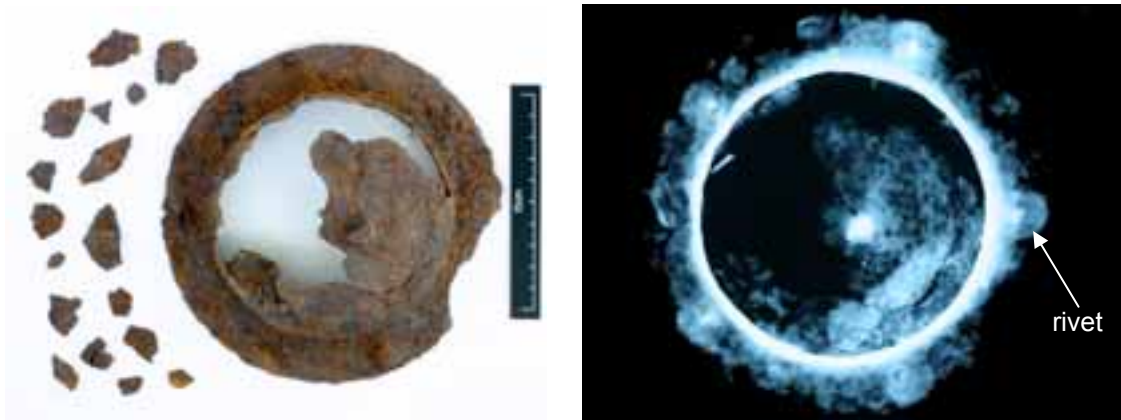


Figure 17a and b: a) Shieldboss g2-2-sfA after treatment. b) X-ray from the same view. The five rivets around the flange are clearly visible.

The shield grip is probably Härke type Ia1, a short flat grip with expanded terminals which is common from the fifth to seventh centuries (Dickenson and Härke, 24). One of the rivets has become detached. The object was cleaned mechanically with a scalpel and then with the air abrasive; mineral preserved wood was discovered near the attached rivet and on its shank.



Figure 18: Shield grip and stud, g2-2-sfA2 after treatment.

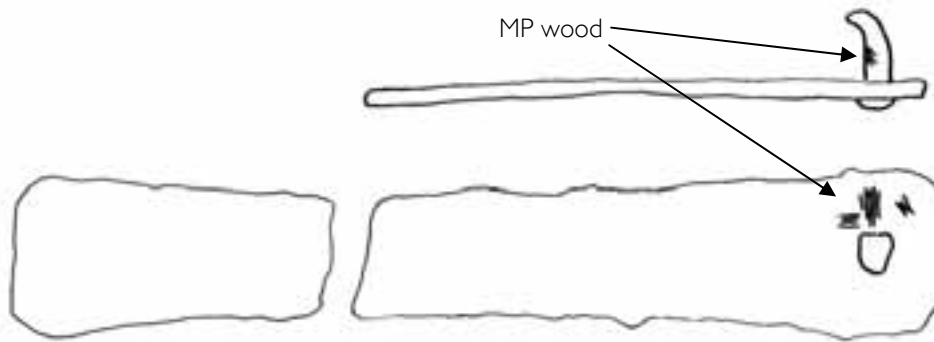


Figure 19: Location of mineral preserved wood on shield grip g2-2-sfA2.

Iron object g2-2-sf1

This artefact was cleaned mechanically to remove the soil. It was found to the left of the skeleton and has not been identified.



Figure 20: Unidentified iron object g1-2-sf1 after treatment.

Footplate lobe from a square-headed brooch g2-2-sf2

The identity of this object was initially unclear. The green corrosion indicates a copper alloy, but the surface is irregular and blackened. The object was covered with soil and charred organic material; this was removed mechanically and the object swabbed with IMS, revealing a mask-like raised centre. The surface texture and charred organic material indicate that this object was burnt, whilst its shape is that of a footplate lobe from a square headed brooch (J. Watson, pers. comm.). These factors indicate that the object may be from a cremation which was present in the soil used to backfill the grave (M. Welch, pers. comm.).



Figure 21: Charred footplate lobe from a square-headed brooch, g2-2-sf2, after treatment.

Knife g2-2-sf3

This iron knife may be Evison type 3 with an angled back and curved cutting edge (Evison 1987, 113). The tang has areas of mineral preserved horn from the handle and mineral preserved bone was lying over the blade. This latter is likely to be part of the bones of the left forearm and it may indicate that the knife was carried in a sleeve or fastened to the left arm, positions described by Evison (1987, 115). The knife was cleaned mechanically using a scalpel. Two pieces of detached corrosion products were adhered in place on the blade using HMG Paraloid B72 (ethyl methacrylate/ethyl acrylate copolymer).



Figure 22: Knife g2-2-sf3 after treatment, cutting edge down.

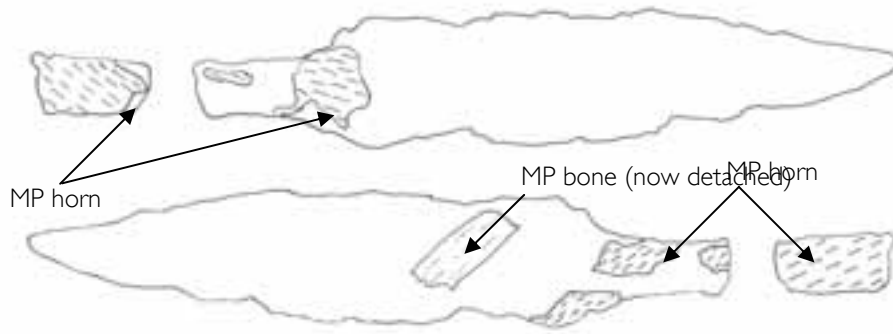


Figure 23: Diagram of both sides of knife g2-2-sf3 showing the site of mineral preserved horn and bone.

Stud g2-2-sf4



Figure 24: Stud g2-2-sf4 after treatment.

This iron object was covered in soil accretions which were removed mechanically using a scalpel. A small area of mineral preserved wood was found on the head, but this was not large enough for sampling.

Buckle and stud g2-2-sf5

This object is a copper alloy oval buckle with a shield-tongue, classified as Evison type I.2 (Evison 1987, p.19) and a copper alloy stud. The soil was removed from the object by swabbing with IMS small amounts of loose corrosion was removed mechanically. This revealed areas of mineral preserved leather around the axis and under the tongue (see Figure 25). Evidence of the method of manufacture was provided by the presence of

dendrites in the surface of the tongue, produced by preferential corrosion of the interdendritic phases. The existence of dendrites shows that the object was originally cast.



Figure 25: Copper alloy buckle and stud, g2-2-sf5, after treatment. The diagram right illustrates the location of mineral preserved leather on the back of the buckle.

Mineral nodule g2-2-sf6



Figure 26: Mineral nodule g2-2-sf6 after treatment.

This object consists of three lobes of mineral crystals. It was cleaned mechanically and swabbed with IMS to remove the soil. The orange colour suggested the presence of iron and analysis with XRF confirmed this. It may be a nodule of iron pyrites, the sulphur having been corroded away, a known phenomenon (Tylecote and Clough 1983, p.115)

Its presence in the grave may be accidental or it may have been an artefact placed there deliberately; there are known examples of the latter from other Anglo-Saxon sites (Meaney 1981).

Spearhead g2-2-sf7

The length and shape of this spearhead, with a slight concavity in the mid section of the blade and a convex tip, mean that it is classified (by M. Welch, pers. comm.) as Swanton type H2 (Swanton 1974, p.107). The soil accretions were removed mechanically using a scalpel. This revealed a large number of mineral pseudomorphs including pupae cases and some textile on the blade surface, as well as wood in the socket. The textile (Z twist) may indicate that the spearhead was wrapped in a cloth before burial, or it may be from clothing or a cover over the burial. The large quantity of pupae cases have probably come from an infestation of the corpse and possibly the textiles.



Figure 27: Spearhead g2-2-sf7 after treatment.

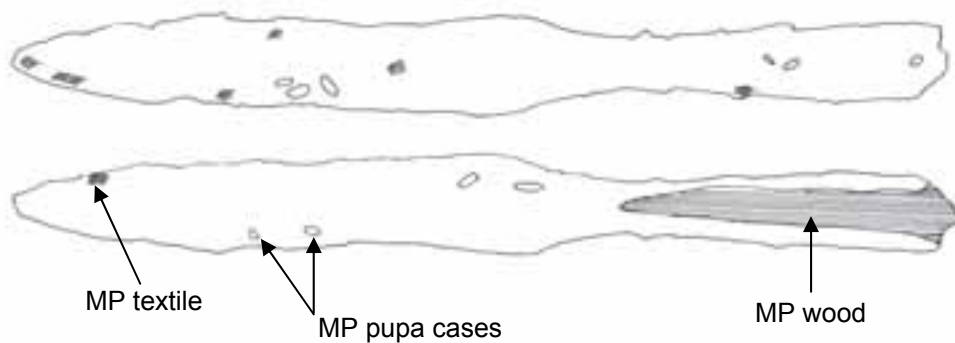


Figure 28: Diagram of mineral preserved textile, wood and pupa cases on spearhead g2-2-sf7.

Samples of the wood were examined using the scanning electron microscope (Fig. 29). The wood may be ring porous, has simple perforation plates with bi- and tri-seriate rays that suggest the use of ash *Fraxinus* sp. (Jacqui Watson, pers. comm.; Schweingruber 1990, p.92).

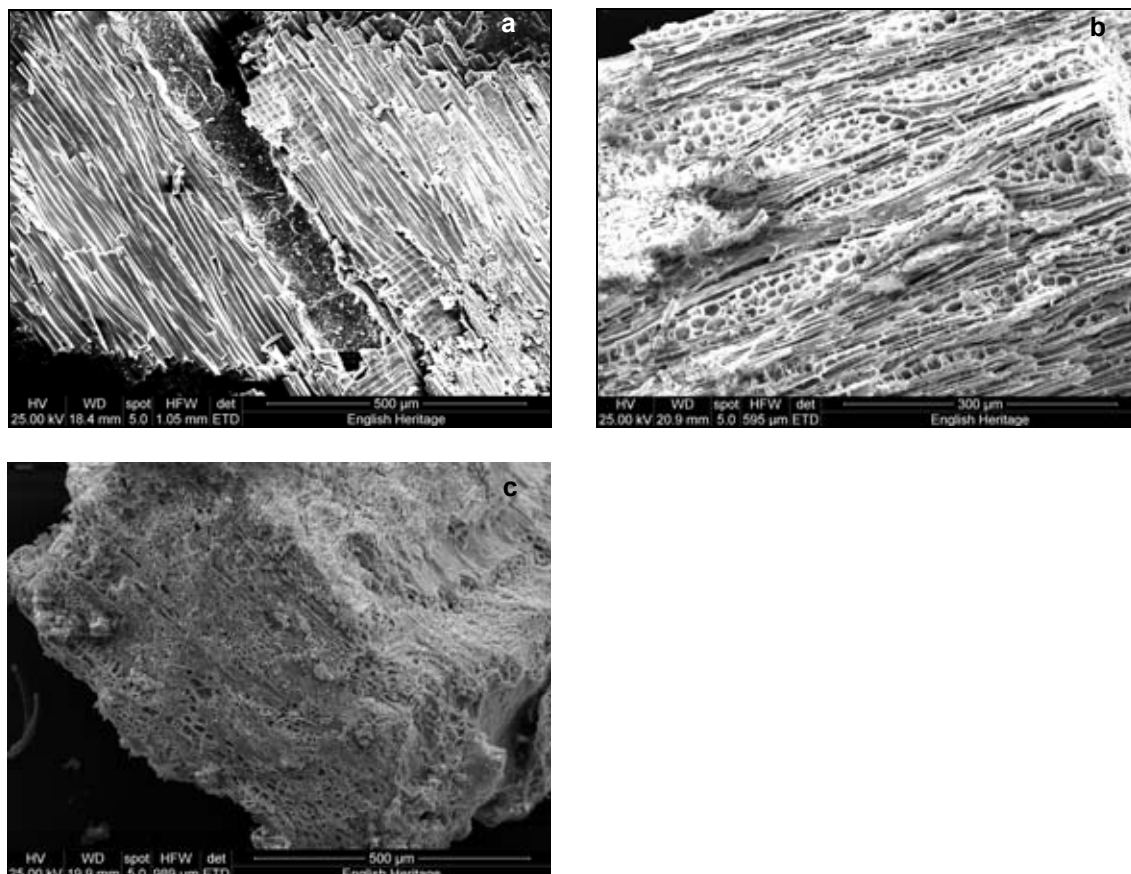


Figure 29a, b and c: Electron micrographs of wood samples from the spearhead g2-2-sf7. a) Radial section showing a simple perforation plate. b) Tangential section with bi- and tri-seriate rays. c) Transverse section

Ferrule g2-2-sf9

The iron ferrule is likely to fit with the spearhead g2-2-sf7, described above. The external surface of the artefact was cleaned initially with a scalpel, but was then gently air abraded to more effectively remove the soil. Soil was gently removed from the socket, uncovering mineral pseudomorph wood. Small samples were removed for examination, but there was insufficient to determine the wood species.



Figure 30: Ferrule g2-2-sf9 after conservation

Table 2: Summary of condition and treatment of objects from Grave 2

Number	Object description	Radiograph Nos	Condition	Conservation (see key below)	MPO
g2-1-sf1	Copper alloy token	P2354, P2356		M	
g2-1-sam1	Black material	P2354	Mixed with soil		
g2-2-sf1	Iron lump	P2342		M	
g2-2-sf2	Copper alloy belt plate	P2354	Black surface	M, IMS	
g2-2-sf3	Iron knife	P2342	Broken	M, repaired	Y
g2-2-sf4	Iron stud	P2342		M, IMS	Y
g2-2-sf5	Copper alloy buckle and mount	P2354, P2355, P2356		M, IMS	Y
g2-2-sf6	Iron lump	P2342, P2355, P2356		M	
g2-2-sf7	Iron spearhead	P2351, P2353		M, A/B	Y
g2-2-sf9	Iron ferrule	P2342		M, A/B	Y
g2-2-sfA	Iron shield boss	P2357, P2358, P2359	Fragile and fragmentary	M, A/B	Y
g2-2-sfA2	Iron shield grip	P2342		M, A/B	Y

M=mechanical, IMS=swabbed with ethanol, A/B=air abraded. MPO indicates mineral preserved organic was found on the object

GRAVE 3

This grave was disturbed and contained a belt mount, a single saucer brooch, a knife, a copper alloy buckle and six iron nails or bars. The brooch suggests that it was a female grave.

Belt mount g3-1-sf1

A copper alloy belt mount with incised line decoration, this was cleaned mechanically and by swabbing with ethanol.

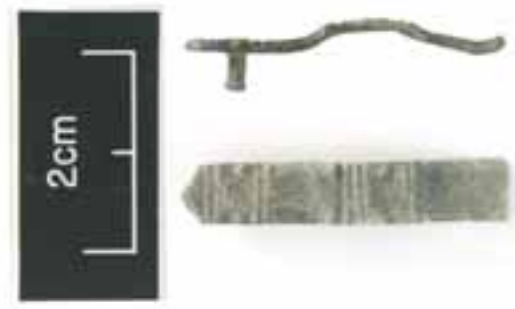


Figure 31: Belt mount g3-1-sf1.

Gilded saucer brooch g3-3-sf3

This brooch has a five spiral design and is likely to have been one of a pair, the other lost through disturbance of the grave. The gilding is worn, perhaps from use, and the copper alloy base is corroded and the iron pin missing. The soil and friable corrosion products were removed mechanically; while the thicker copper corrosion was dissolved using 15% v/v formic (methanoic) acid in distilled water was applied with a swab to remove thicker copper corrosion. There are the remains of what is likely to be mineral preserved textile around the pin fastenings on the reverse of the brooch. A number of pupae cases were found amongst the soil on the front of the object (see Figure 3).



Figure 32: Gilded saucer brooch g3-3-sf3.

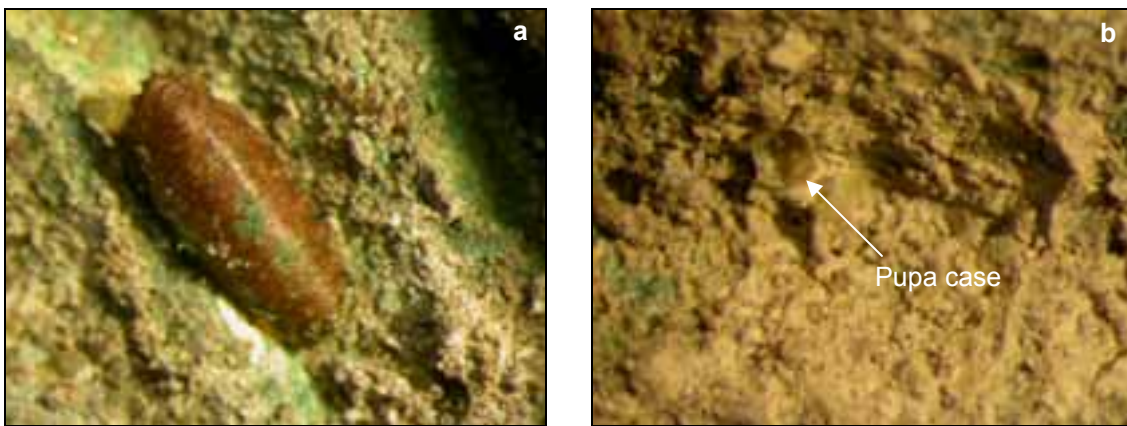


Figure 33a and b: Pupal cases found on the front of saucer brooch g3-3-sf3. a) Pupal case is around 8mm in length. b) Pupae case is around 3mm across.

Knife g3-3-sf5

This knife has a tang and a blade with a curved back and curved cutting edge and may be classed as an Evison type I (Evison 1987, p.113). Removal of the soil revealed mineral preserved horn on the tang and a very small area of textile which may have been part of the sheath or a method of attaching it a belt or similar. The horn handle extends below the shoulder and onto the blade.



Figure 34: Knife g3-3-sf5 (cutting edge down).

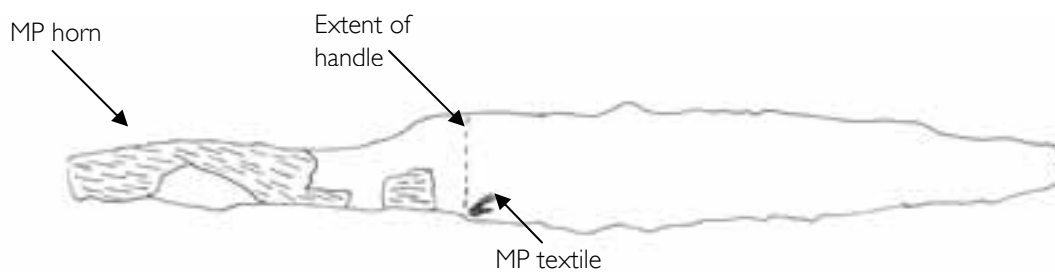


Figure 35: Diagram of knife g3-3-sf5 showing location of mineral preserved organic materials.

Copper alloy buckle g3-3-sf6

This buckle was made by bending a copper alloy bar into an oval to form the loop and attaching the tongue by curving the anchorage around the loop. It is likely to be a Marzinzik type group I.1 I a-ii (Marzinzik 2003, p.33). The surface is badly corroded and friable, so soil was removed gently with swabs of ethanol.



Figure 36: Copper alloy buckle g3-3-sf6.

Iron nails and bars g3-1-sf2, g3-1-sf3, g3-3-sf2, g3-3-sf4, g3-3-sf7, g3-3-sf8

Six iron fittings were found in Grave 3. Three (g3-1-sf3, g3-3-sf2 and g3-3-sf7) have irregular shaped heads and may thus be classed as nails, two (g3-1-sf2 and g3-3-sf4) are curved at one end and one narrows to point in cross section at both ends. g3-1-sf2 and g3-3-sf4 may be clench nails without the head; alternatively they may be part of a broken staple-like fastener.

The soil was removed from the nails to reveal that g3-1-sf2 and g3-1-sf3 had very small amounts of mineral preserved wood on the shank and head respectively.



Figure 37: Iron nails and bars. From left to right: g3-1-sf2, g3-1-sf3, g3-3-sf2, g3-3-sf4, g3-3-sf7, g3-3-sf8.

Table 3: Summary of condition and treatment of objects from Grave 3

Number	Object description	Radiograph Nos	Condition	Conservation (see key below)	MPO
g3-1-sf1	Copper alloy mount	P3102		M	
g3-1-sf2	Iron bar	P2342		M	Y
g3-1-sf3	Iron nail	P2342		M	Y
g3-3-sf2	Iron nail	P2342		M	
g3-3-sf3	Gilded saucer brooch	P2354, P2355, P2356	Corroded, gilding worn	M, IMS, formic acid	Y
g3-3-sf4	Iron bar	P2342		M	
g3-3-sf5	Iron knife	P2342		M	Y
g3-3-sf6	Copper alloy buckle	P2354, P2355, P2356	Poor surface with powdery corrosion	IMS	
g3-3-sf7	Iron nail	P2342		M	
g3-3-sf8	Iron bar	P2342		M	

M=mechanical, IMS=swabbed with ethanol, A/B=air abraded. MPO indicates mineral preserved organic was found on the object

SUMMARY

These artefacts are a small group of grave goods associated with inhumations and dating from the early part of the sixth century AD (M. Welch pers. comm.). The presence of the charred footplate lobe indicates that cremations were also carried out on the site.

The objects comprise a variety of materials in a range of conditions. Investigative conservation was able to identify many of the objects and reveal their form and the presence of mineral preserved organic material. Much of the latter was too degraded to identify, but bast fibre textiles were found in Grave 1 on the cauldron, saucer brooches and buckle, showing that Z,Z 1/1 tabby and Z,Z 2/2 twill textiles were present. Z twist fibres were also preserved on objects in Graves 2 and 3. Mineral preserved wood was discovered on several artefacts, but could not be identified with confidence except for the possible use of ash for the spearshaft.

REFERENCES

Dickinson, T.M., 1992. Early Saxon Saucer Brooches: A Preliminary Overview. In W. Filmer-Sankey, ed. *Anglo-Saxon Studies in Archaeology and History*. Oxford: Oxford University Committee for Archaeology, pp. 11-44.

Dickinson, T.M. and Härke, H.G.H., 1992. *Early Anglo-Saxon Shields*, London: Society of Antiquaries.

Evison, V.I., 1987. *Dover: The Buckland Anglo-Saxon Cemetery*, London: Historic Buildings and Monuments Commission for England.

Hines, J., 1984. *The Scandinavian Character of Anglian England*. Oxford: British Archaeological Reports

Marzinzik, S., 2003. *Early Anglo-Saxon Belt Buckles (late 5th to Early 8th Centuries A.D.): Their Classification and Context*, Oxford: Archaeopress.

Meaney, A.L., 1981. *Anglo-Saxon Amulets and Curing Stones*, Oxford: British Archaeological Reports.

Rogers, P.W., 2007. *Cloth and Clothing in Early Anglo-Saxon England, AD 450-700*, York: Council for British Archaeology.

Schweingruber, F.H., 1990. *Microscopic Wood Anatomy 3rd ed.*, Birmensdorf: Swiss Federal Institute for Forest, Snow and Landscape Research

Swanton, M.J., 1974. *A Corpus of Pagan Anglo-Saxon Spear-types*, Oxford: British Archaeological Reports.

Tylecote, R and Clough, R., 1983. *Recent Bog Iron Ore Analyses and the Smelting of Pyrite Nodules*. *Offa* 40, 115-118

Vierck, V.H., 1973. Redwalds Asche. *Offa*, 29, 20-49.

Welch, M.G., 1983. *Early Anglo-Saxon Sussex Part i*, Oxford: British Archaeological Reports.



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