

# SPRINGHEAD AND NORTHFLEET, KENT IDENTIFICATION OF ORGANIC MATERIALS ASSOCIATED WITH SELECTED METALWORK FROM THE CTRL II EXCAVATIONS

ARCHAEOLOGICAL CONSERVATION REPORT

Jacqui Watson



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Research Department Report Series 12/2008

Springhead and Northfleet, Kent.  
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ISSN 1749-8775

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Summary

This report covers the identification of organic materials preserved on metalwork from the multi-period site at Springhead, excavated in advance of the Channel Tunnel Rail Link in North Kent by Wessex Archaeology between 2000 and 2003 (ARC SHN02, ARC SPH00 and ARC EBB01). A group of metal objects, mainly associated with burials, was selected because they had visible organic materials preserved in the corrosion layers. The group includes the nails and other fittings from two Romano-British casket burials, along with weapons and personal items from a small group of Anglo-Saxon burials. In some cases it has been possible to put forward possible reconstructions of some of the original organic objects that are now only represented by the metalwork.

Keywords

Roman  
Early medieval  
Mineral preserved organic material  
Iron  
Copper alloy  
Wood (worked)

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## INTRODUCTION

This report covers the identification of organic materials preserved on metalwork from the multi-period site at Springhead, excavated in advance of the Channel Tunnel Rail Link in North Kent by Wessex Archaeology between 2000 and 2003 (ARC SHN02, ARC SPH00 and ARC EBB01). A group of metal objects with visible organic materials preserved in the corrosion layers was selected by Jörn Schuster for further study. The group includes the nails and other fittings from two Romano-British casket burials, along with weapons and personal items from a small group of Anglo-Saxon burials. In some cases it has been possible to put forward possible reconstructions of some of the original organic objects that are now only represented by the metalwork.

Most of the organic material has been preserved by iron corrosion, and even those materials in close proximity to copper alloy objects have been preserved by iron salts produced by small nails or rivets. In many cases it has been possible to identify the original organic material, and some wood species, with the aid of a binocular microscope. In other cases samples have been examined using a scanning electron microscope (SEM: marked \* with the sample number in red type).

A few objects required investigative conservation, but this only amounted to the repair of loose flakes with HMG (nitro-cellulose adhesive) and the removal of accretions to facilitate the identification of traces of organic materials.

## ROMAN

A number of artefacts come from dated Roman contexts including various fittings for burial caskets, and the other objects divide into groups of knives and tools along with a few items of uncertain function.

### Burial caskets

The two groups of box fittings represent different types of burial practice. The first group belongs to a small ornate leather covered box that was used to hold a cremation and the second group comes from a larger container. A third item is a single copper alloy boss that may have been mounted on a further casket.

#### 1. 6355 grave 6345 – Early Roman AD 70-100

This grave contained the remains of a cremation burial that appeared to have been contained in a wooden box at one side of the grave, with numerous ceramic vessels at the other (Fig. 1). The cremation casket itself is approx 250 × 175mm from plan, but the height is uncertain. Analysis shows that it was a wooden box with the sides nailed together, then covered with leather and decorated with copper alloy fittings, including a lock with six lion-headed studs. This is a common form of casket construction found with early Roman burials (Table 1), such as Skeleton Green, Hertfordshire (Borrill, 1981), Godmanchester, Cambs (Fig. 2; Watson, forth), and Mansell Street, London (Fig. 3; Watson, 1997). The box was made from beech, like most of the other cremation caskets.

Although the burial appears to be complete and undisturbed, the casket itself is minus a

number of expected fittings – such as hinges or a hasp to connect the lid to the sides of the casket. Also, only three nails remain, which is barely enough to hold together a single corner of a casket. Possibly the casket is incomplete, like the examples from Brougham, Cumbria (Cool, 2004), or was originally made with doweled or articulated joints and was repaired with nails before being used to hold the cremation.



*Figure 1. Grave 6345 with the cremation and vessels in position (photo © Channel Tunnel Rail Link).*

*Table 1. Romano-British caskets.*

# - caskets used to hold cremations

Site	Dimensions	Materials
Skeleton Green, Hertfordshire #	c.300mm x 250mm x 150mm	
Godmanchester, Cambs #	410mm x 290mm x 150mm	Beech box, held together with small iron nails, covered with leather and decorative brass fittings.
Springhead, Kent #	250mm x 175mm x >80mm	Beech box, held together with small iron nails, covered with leather and decorative copper alloy fittings.
Mansell St., London	240mm x 170mm x 90mm	Willow or poplar box, held together with iron nails, covered with leather and decorative copper alloy fittings.

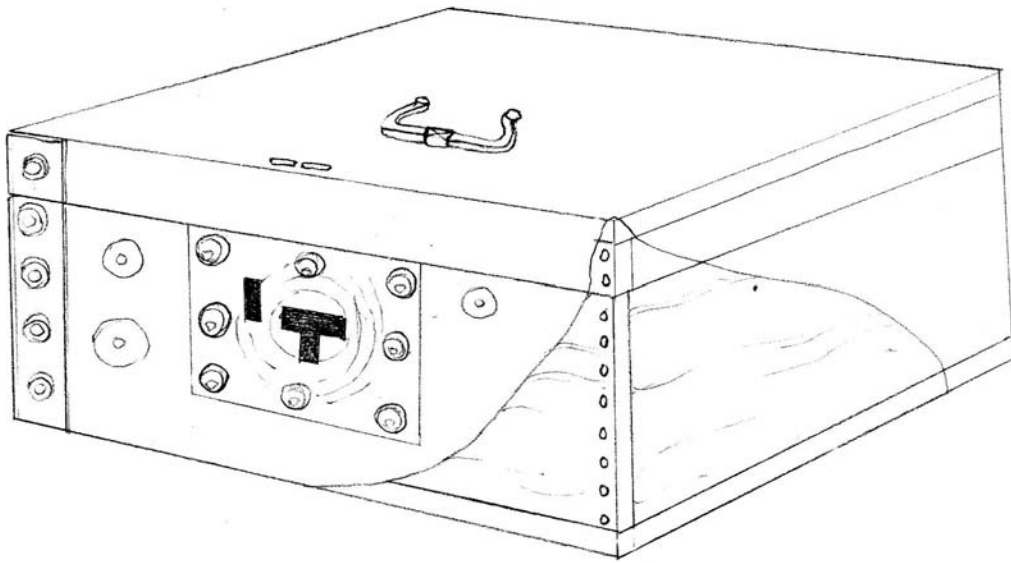


Figure 2. Reconstruction of a cremation casket from Godmanchester, Cambridgeshire.

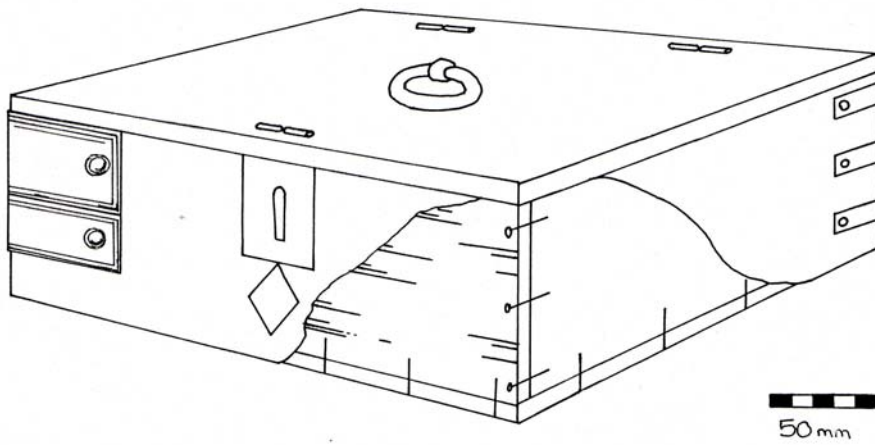


Figure 3. Reconstruction of a jewellery casket from Mansell Street, London.



Table 2 Metalwork from the burial casket from grave 6345

△970	C/a lock-plate	Lock-plate with six lion-headed studs on the front. On the reverse leather is preserved with a layer of wood on top. The wood has a radial surface.
△971	C/a lock-bolt	The lock bolt is 10.0mm wide, and gives the minimum thickness for the front of the casket to accommodate it.
△973	Iron nails	Three nails with mineral preserved wood: beech ( <i>Fagus</i> sp.). These represent the joint between two sides, with the thickness of one being 11.5mm.
△974	Iron plate	Square plate with radial surface of wood preserved - this is most likely a cover for the lock mechanism on the inside of the box as no leather is preserved between the metal and the wood.

## 2. 6102 – Middle Roman AD 120-140/60

This context produced two groups of large iron nails with mineral preserved wood, that were used to join oak boards about 22-24mm thick (Fig. 4). The boards originally had radial surfaces, which suggests that they were made from split rather than sawn timber. The size of the boards, and being made from oak, suggests use of long planks more suited to a coffined burial rather than a small cremation casket. Although there are fifteen nails in total this is insufficient for a complete adult coffin – at least 20 are required, 4 for each end, 6 for base and lid. In this case the use of fewer nails could be because the coffin was partially constructed with dowels and no evidence for this survives. Alternatively the base could have been inserted into grooves in the sides and held in place by the nailed sides (Fig. 5).

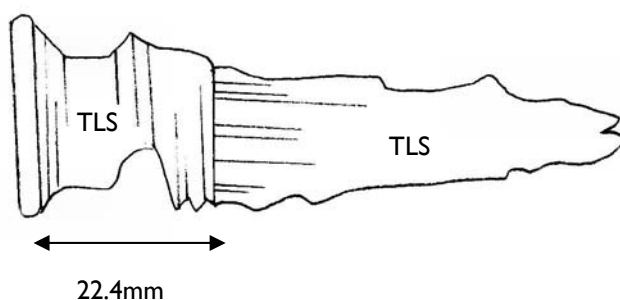


Figure 4. Details of wood preserved on nail △914.

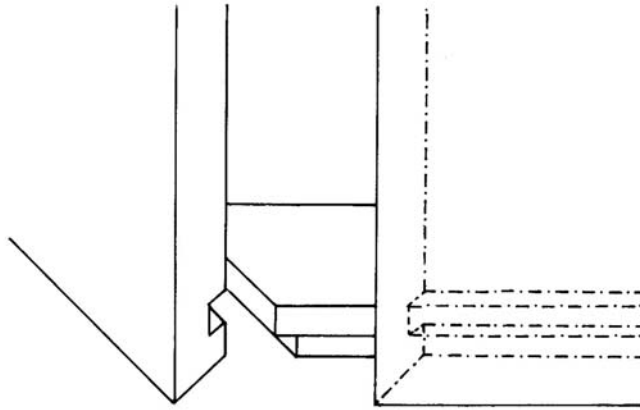


Figure 5. How the base of a box can be held in place by rebated grooves in the sides.

Another possibility is that they could indicate a box burial, made from oak planks which were large enough to hold a cremation along with all the grave goods. These are usually undecorated (Borrill, 1981). The cremation casket from Godmanchester was placed along with several ceramic vessels inside an oak box, held together by 8 large nails (Watson, forth).

- △913 9 large nails with sections of mineral preserved wood: oak (*Quercus* sp.). At least one nail represents the join between two radial surface planks, c.22.4mm thick.
- △914 6 large nails with sections of mineral preserved wood: oak (*Quercus* sp.). At least one nail represents the join between two radial surface planks, c.24.2mm thick.

### 3. 6378 △976

Small copper alloy boss, with charred organic material preserved on the front, but nothing remains on the back to suggest what it was originally mounted on. This item has possibly been burnt or cremated, which suggests it may have belonged with another burial casket.

### Other objects

In addition to the items associated with burials are a number of other metal objects from various Roman levels across the site, including knives, tools, nails and binding, all with organic materials preserved on them.

### Knives

Three iron knives with insufficient organic material remaining to suggest what the handles were originally made from.

- 2559      △416      Cleaver-like knife with no recognisable organic remains.

17573	△ 18658	No wood remains in the socket, but masses of plant stems have been preserved on the outside.
10242	△ 20535	Possibly a razor with a wooden handle*, but too degraded to identify, and attached to the curved blade by a copper alloy rivet. SEM B854

## Tools

Only two iron tools have been included: a possible broken saw blade and a socketed tool. The saw only had the remains of various plant materials on it, but the socket of the other tool had boxwood preserved inside it. Boxwood was commonly used for the hafting of tools such as hammers and chisels.

2262	△ 397	iron binding	Both sides are covered in plant material, including fragments of wood, plant stems and leaves. This item may be a broken saw blade as one side appears to have damaged teeth.
11916	△ 20073	Iron tool	Open socket with wood remains*, <i>Buxus</i> sp. (box). SEM B853
ARC SHN02 16463	△ 20295	Iron dividers	Re-x-rayed to try and see what the organic layers were, but no sign of a wooden case, just layers of wood fragments and straw. Stereo- radiography revealed several parts to this object including at least two flat strips, folded together, and short lengths of chain. To identify what this object is will probably require the removal of extraneous organic materials to reveal the metal components.

## Miscellaneous

10399	△ 15174	Copper alloy socket	Ferrule with wood preserved inside, possibly ash ( <i>Fraxinus</i> sp.)
6619	△ 9215	Iron nails	The organic material preserved on the nails is not wood but probably leather. So this may be part of a hobnailed sole?
ARC SHN02 19095	△ 20090	Iron binding	Wood is preserved on both sides of the binding, and has been identified as ash ( <i>Fraxinus</i> sp.) with an oblique radial surface. The wood appears to follow the curvature of the binding which suggests that it has deliberately been bent into this shape. This could be a small section of a large curved object such as a wheel? It is worth noting that it is possible to steam mould ash into various shapes, and that this process was used in the production of wheels.
ARC EBB01 200043	△ 204017	Iron bar	Fragments of charcoal preserved on one side: <i>Quercus</i> sp. (oak).

## SAXON

The excavations also located a small Anglo-Saxon cemetery which produced a small group of weapons burials containing a sword, two seaxes and six spearheads, along with a small group of personal items.

### Weapons

Both the sword and the seaxes have traces of mineral preserved organic materials that represent the original hilts and scabbards these weapons were buried with. The spearhead sockets all had traces of wood from original haftings.

### Sword

*2645 grave 2643*

*△413*

The sword is heavily corroded in several fragments, and preserved in the corrosion layers are traces of the organic materials that originally formed the hilt and scabbard (Fig. 6).

The hilt is made up of sections of horn, but only the grip and lower guard remain and the components can be distinguished by a change in grain direction. The lower guard is 13mm thick. There are grooves about 3mm wide on the inside of the horn sheath that forms the grip section, these can be seen as a raised area along the tang and is visible in the cross section of the broken end of the tang (see Fig.6). No packing material such as wood or horn wedges, seem to have been used to fill this void to provide a more secure fit for the horn sections of the hilt as has been noted on a seax hilt from Mucking (Hirst forth).

The composite organic scabbard comprises a "Fleece" lining with the hairs next to the blade. On top of this are two thin wooden stiffeners\*, which have a radial surface, made from ash (*Fraxinus* sp.). The iron blade is approximately 54mm wide, and the scabbard 66mm. There are the remains of an outer covering of leather on top of the wood, and near the hilt are marks in the soil and corrosion which possibly correspond to the position of three bands of leather strapping often found in this position on sword scabbards (Cameron 2000).

All the organic components present on this sword have been noted on other Anglo-Saxon swords (Cameron, 2000; Watson and Edwards, 1989).

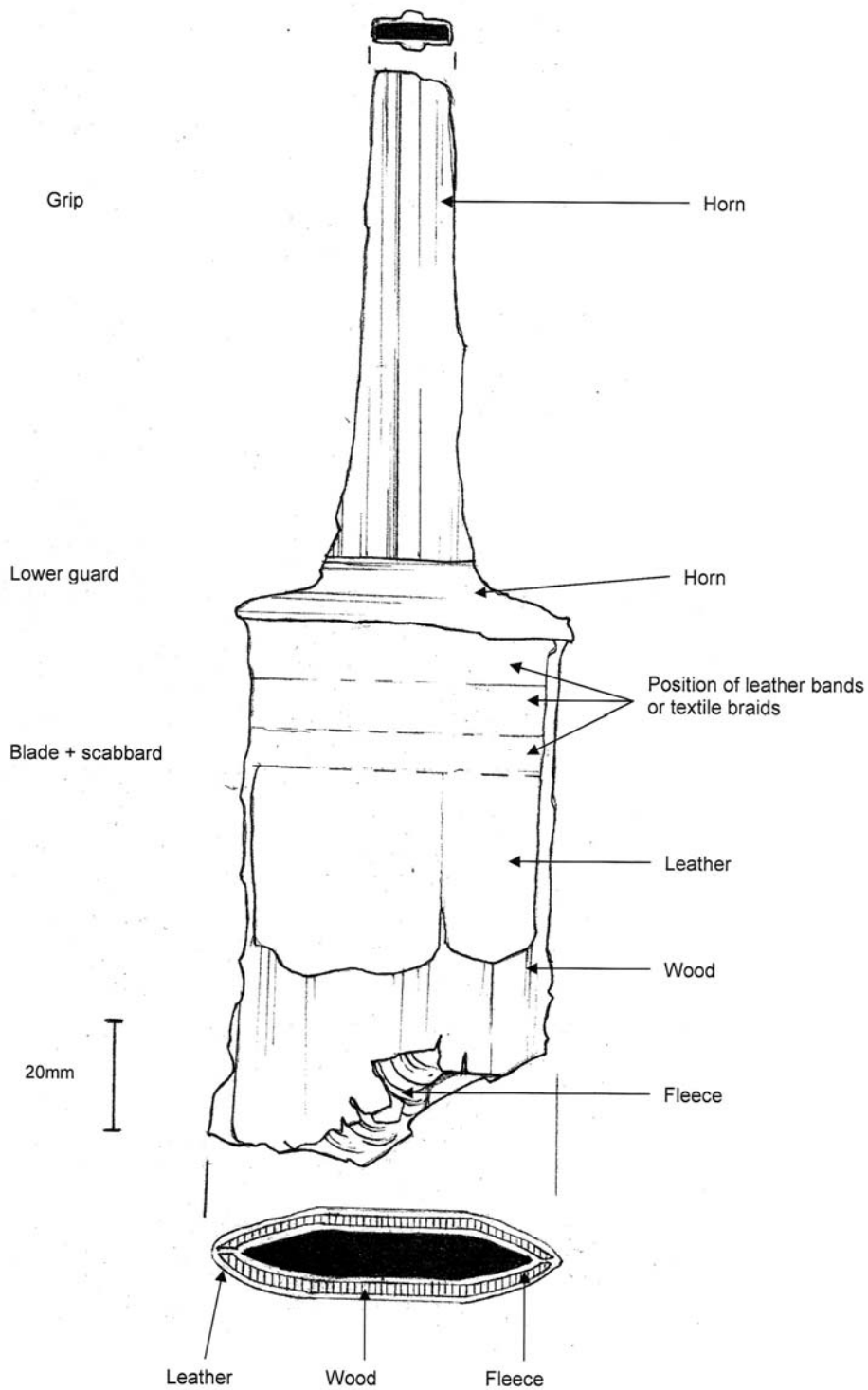


Figure 6. Details of the organic materials preserved on the upper portion of the sword.

## Seaxes

Although similar materials are preserved on seaxes as on swords, it is more common for seax hilts to be made from a single piece of horn rather than several pieces, and to have a leather sheath encasing the blade, and often the hilt, rather than a composite wood and leather scabbard. The sheaths are usually made from a single piece of thick leather, such as cattle hide or, like  $\Delta$  1681, pigskin, and joined at the blade edge with copper alloy rivets, studs or wire (Cameron, 2000). The two seaxes from Springhead, at least in part, follow the same construction.

2623 Grave 2620	$\Delta$ 414	The handle was made from a single piece of horn. There are fragments of leather along the blade and over the back, even extending over part of the handle.
2122	$\Delta$ 1681	No trace of a handle remains. Single piece leather sheath, grain pattern suggests it was pigskin. No evidence as to how it was joined at the blade edge.

## Spears

Six spearheads all with wood remains in their sockets; alder (2), hazel (2), ash (1), and not identifiable (1). Three have clearly been fashioned from mature timber, with the annual rings visible as horizontal bands across the width of the socket. The use of mature wood rather than a sapling probably allows greater control and accuracy when throwing the spear, in much the same way that medieval arrow shafts were made from carefully selected mature timber rather than using saplings or branches of an appropriate size (Urbon, 1991).

2131 Grave 2129	$\Delta$ 278	Wood in socket*: possibly <i>Fraxinus</i> sp. (ash). Fine, but degraded textile on the outside of the socket. <a href="#">SEM B845</a>
3132 Grave 2134	$\Delta$ 279	Wood present in socket*: <i>Alnus</i> sp. (alder). <a href="#">SEM B846</a>
2645 Grave 2643	$\Delta$ 413	Small spearhead found with sword. Mineral preserved wood* in socket, <i>Corylus</i> sp.(hazel) from mature timber. <a href="#">SEM 856</a>
2622	$\Delta$ 415	Mineral preserved wood* in socket: <i>Corylus</i> sp. (hazel), from mature timber. <a href="#">SEM B848</a>
3994	$\Delta$ 1674	Mineral preserved wood* in socket: <i>Alnus</i> sp. (alder) from mature timber. <a href="#">SEM B851</a>
2102 Grave 2101	$\Delta$ 1677/8	Wood preserved in socket* (1677), not well enough preserved to identify, but nothing on spearhead blade. <a href="#">SEM B852</a>

## Personal items

The personal items found in the graves include knives, a strike-a-light, a vessel mount and a spiral ferrule or ox-goad, all with mineral preserved organic material on them.

### Knives

There are five knives from different graves, all with the remains of leather sheaths, and where the tang remains all have evidence for a horn handle. There is some evidence for the construction of the leather sheaths, which can be seen to be made from a single piece of leather that was joined along the blade edge and in at least one case also covers the handle. In most cases the condition of the mineral preserved leather is little more than a compact powder, but a grain pattern remains on  $\Delta$ 283 which suggests it was made from pigskin.

3132 grave 2134	$\Delta$ 283	The handle appears to be made from a single piece of horn and the sheath or scabbard from a single piece of leather. The sheath still retains areas with a grain pattern that resemble pigskin, and although badly damaged it is still possible to see that the leather covers the back of the blade and was originally joined at the blade edge - but there is no evidence for stitching, thong or wire closures.
2641	$\Delta$ 441	On the iron knife there are traces of the leather sheath, but little remains of the tang and no identifiable organic material relating to the original handle. Small iron socket with mineral preserved wood*, possibly <i>Fagus</i> sp. (beech); in cross section this appears to be from young growth such as a sapling or branch wood. This is possibly the socket from an arrowhead. <a href="#">SEM B849</a>
2630 Grave 2620	$\Delta$ 454	The iron knife has the remains of horn handle with traces of the leather sheath partially enclosing it.
2636	$\Delta$ 463	The knife has traces of the horn handle which extends over the shoulder of the blade, and remains of the leather sheath.
2102 Grave 2101	$\Delta$ 1679	Iron knife with the remains of a horn handle that extend onto the shoulder of the blade, and this has been highlighted by the cleaning. Traces of leather sheath remain on the blade tip. On the broken cross-section the leather is continuous over the back and is joined at the blade edge, where a section is preserved of the layers of leather complete with stitches of a plyed thread.

### Strike-a-light

2624 Grave 2620

$\Delta$ 443

Iron strike-a-light

The iron mount has leather remains on both sides, and on one side are wood remains which on closer inspection turned out to be an iron point with a wooden handle (Fig.7).

## Iron point

Small iron point with wooden handle\*, possibly *Alnus* sp. (alder), and appears to be attached to the strike-a-light with a plyed cord - see sketch. Both the cord and part of this object seem to be inserted inside the leather container with the strike-a-light.

SEM B850

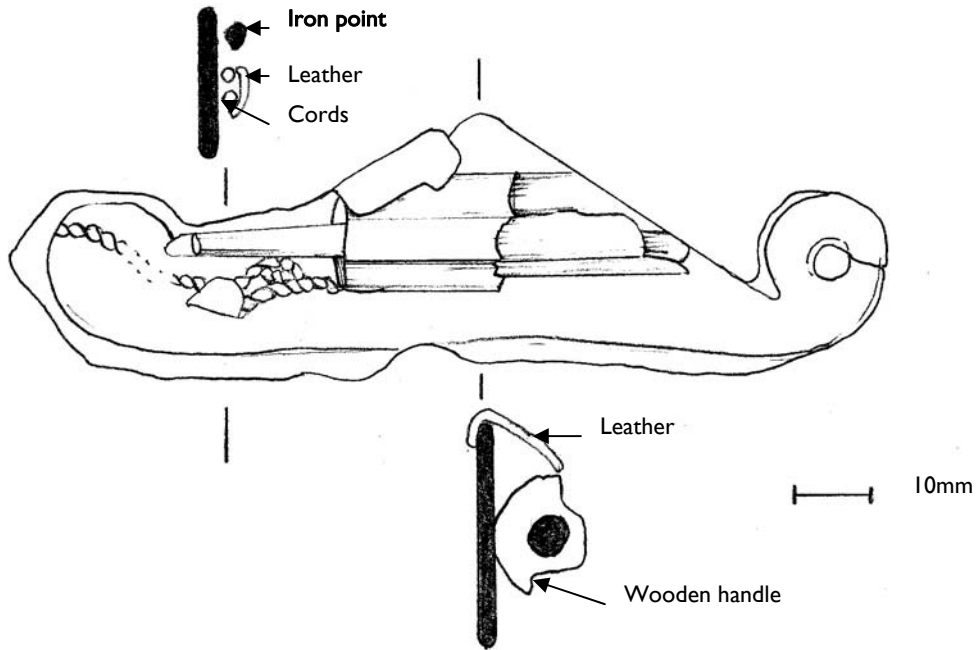


Figure 7. Organic material present on the strike-a-light.

## Wooden vessel

3132  
Grave 2134

△282  
C/a sheet

This appears to be a copper alloy mount/repair attached to the rim of a wooden\* vessel with iron pins, possibly *Betula* sp. (birch). As they are attached to a radial surface it is more likely to be a mount rather than a repair, but the sheet is too flattened to establish a reliable profile or diameter for the original vessel.

SEM B847

## Other

2107      △190

Iron object, possibly an ox-goad, with mineral preserved wood in the socket\*, *Alnus* sp. (alder). The annual ring boundary appears to follow the inner circumference of the socket, so the shaft was probably made from young grown wood.

SEM B843



## UNDATED OBJECTS

- |      |        |   |
|------|--------|---|
| 2125 | △ 196  | Iron handle with mineral preserved wood attached*, <i>Corylus</i> sp. (hazel).<br>SEM B844  |
| 6445 | △ 1831 | Copper alloy stud with organic material preserved on the underside; but this was identified as root material and not part of the object that the stud may have been mounted on. |

## CONCLUSION

It has been possible to identify most of the organic materials preserved on the selected metalwork, and these are discussed in detail above. All of the woods and other organic materials that have been identified were available in the British Isles and Northern Europe during the Roman and Anglo-Saxon periods, so it has not been possible to identify where any of these objects originated on the basis of the materials used in their construction.

In addition to identifying the organic materials preserved on the metalwork, enough detail has remained in some cases to suggest what the original wooden object looked like – in particular the caskets associated with Roman cremation burials. In other cases, for example the Anglo-Saxon sword and strike-a-light, the fragmentary layers of organic materials and metalwork are complicated and I have tried to produce drawings that illustrate how the separate fragments are related.

## ACKNOWLEDGEMENTS

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