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# ORGANIC MATERIAL ASSOCIATED WITH METALWORK FORM THE ANGLO-SAXON CEMETERY AT BECKFORD, HEREFORD AND WORCESTER

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Summary

Identification report on organic material preserved by metal corrosion products on a group of objects selected by the excavator. All the items had previously been conserved by G. Learmouth at Birmingham City Museum and Art Gallery, probably in the early 1970's, and some of the organic material was identified at that time. About 90 objects were examined and these mainly comprised of spearheads, shield fittings and buckles. The report is in two sections - a short discussion followed by a catalogue of all the examined material.

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**Organic material associated with metalwork from the Anglo-Saxon Cemetery at Beckford.**

About 92 items selected by the excavator were examined for traces of organic material preserved in metal corrosion products and these are presented in a catalogue in grave number order. A summary of the organic material associated with different groups of metalwork is presented in figure 1. The majority of these materials were recognised with the aid of a low power binocular microscope. However, most of the wood species were confirmed by observing gold coated samples in a scanning electron microscope (Watson, 1988, 65-76), and where this

| | spearheads / ferrules | shields | buckles | knives | bucket/vessel mounts |
|---|---|---|---|---|---|
| Wood | 32 | 20 | | 1 | 5 |
| Alder | | 2 | | | |
| Ash | 10 | 1 | | | |
| Birch | | 2 | | | |
| Hazel | 12 | | | | |
| Lime | | 1 | | | |
| Maple | | | | | 1 |
| Pomoideae | 1 | | | 1 | |
| Willow/Poplar | 3 | 6 | | | |
| Yew | | | | | 3 |
| not identifiable | 6 | 8 | | | 1 |
| Leather | | 7 | 13 | 1 | |
| Horn | | | 3 | 5 | |
| Textile | | | 5 | | |
| not identifiable/ no organic | | | | 2 | |
| Total | 32 | 20 | 16 | 9 | 5 |

**Fig.1** Summary of organic material associated with different groups of objects.

technique has been used, the sample number is quoted in the catalogue. Some materials were previously identified at Birmingham and these have been noted. Some items, especially the shield fittings, have been conserved and a coating of lacquer and graphite applied to the surface has restricted the identification of organic material.

The largest group of objects examined were the 32 spearheads and ferrules, all of which had the remains of wood in their sockets and with the exception of 6 examples could be identified to species level. In some cases it was possible to see the annual growth rings and suggest what type of timber had been used for hafting - concentric circles and pith indicate the use of coppiced timber, whereas bands suggest the use of mature timber cut to shape. The main species represented was hazel (12), closely followed by ash (10, but this only represents 8 shafts), others include willow or poplar (3, these two woods cannot be distinguished on their microscopic structure) and a fruit wood. It was very common for spearheads to be hafted with coppiced poles, and this small sample suggests that hazel coppices were readily available.

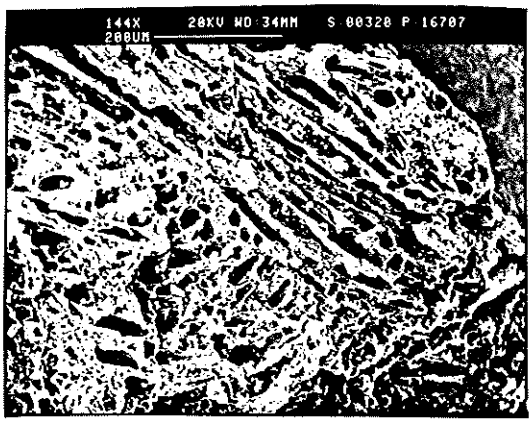
The 20 sets of shield fittings all had traces of wood, but only 12 could positively be identified. Most appear to be made from willow or poplar (6), with alder (2), ash (1), birch (2), and lime (1) also represented. Willow/poplar was commonly used for shield construction as it is a light fine grained wood that is resistant to splitting under impact. Although the other woods are also resistant to splitting, they can weigh as much as 50% more than willow/poplar for the same thickness of shield board. Most of the shields were probably leather covered, but due to the conservation treatment used this was only confirmed on 7 sets of shield fittings. In only 3 cases could one suggest the type of grip attachment, these are described by Harke (1981, 141-4). Two of the shields have evidence for grips made from separate pieces of wood (673237 A2/3; 673392 B27/74) probably held in place by the iron grip and boss. The other shield (673252 u/a) appeared to have a grip that was part of the shield board with 2 D-shaped areas cut out for the hand.

Most of the buckles have traces of a leather belt, but only one could be identified as possibly calf (673247 B18/59), the rest were too degraded to identify the species from grain patterns. Three of the buckles have horn backing for the belt plate and can presumably be reconstructed like the one from Alton, Hampshire (Evison; 1988, 22, Fig.7).

Only 9 knives were examined from this cemetery, 5 of which had traces of horn handles and one of wood (Pomoideae, 673216 A16/72). Horn was commonly used for hafting knives in the Anglo-Saxon period, whereas wood was rarely used for this purpose but almost excusively used for tool handles.

About 5 copper alloy tubes were examined for traces of organic material and at least two had remains which could be identified. Both were filled with some inorganic material, which may have originally been white but was now discoloured by copper salts, and might be the filler for some kind of adhesive or putty which held the fibres in place. Traces of fibres were preserved in this inorganic matrix and were of two types, long coarse hairs bound by a plied thread. The coarse hairs were aligned along the length of the tube, and presumably originally extended beyond it, these have a similar thickness to pig or badger bristle but unfortunately no surface features remain to identify the

species of animal they came from. The plied threads appear to be made of different fibres, 673148 (A18/77) was a bast fibre, and 673045 (B39/117) an animal fibre which is illustrated in the micrographs below (for fuller details refer to E.Crowfoot's textile report).



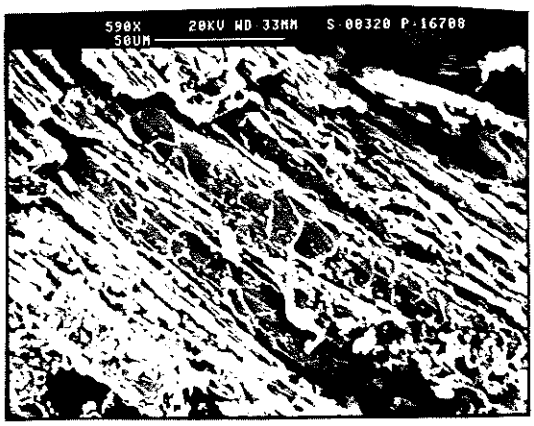




**Fig.2** **Fig.3**

**Fig.2** Cross section of plied thread from copper alloy tube 673045 B39/117.

**Fig.3** Same as figure 2., at a higher magnification to show scale patterns on the individual hairs.

The bucket mounts all had traces of mineral preserved wood which could be identified as yew, which was commonly used for bucket staves. Of the two vessel mounts which had wood remains only one could be identified, and this was found to be maple, a wood which was frequently used for lathe turned vessels.

All the organic materials identified in this report were readily available in the Anglo-Saxon period.

References

Evison,V., 1988
An Anglo-Saxon Cemetery at Alton, Hampshire, Monograph 4, Hampshire Field Club, 20-22.

Harke,H., 1981
"Anglo-Saxon laminated shields at Petersfinger - a myth.", Med.Arch., vol.24, 141-4.

Watson,J., 1988
"The identification of organic materials preserved by metal corrosion products.", in S.L.Olsen (ed), Scanning Electron Microscopy in Archaeology, BAR International Series 452, 65-76.

## Catalogue of Examined Material

[AML No. Grave No./Object No.]

BECKFORD A

673237/50 2/3
Iron shield fittings with mineral preserved organic material. Both the grip and shield board are made from Fraxinus sp. (ash), and the shield board has a radial section. The wooden part of the grip has been inserted between the shield board and boss rim, this can be seen quite clearly as the wood grain runs along the axis of the grip and is perpendicular to the grain of the shield board.

On the shield stud there is leather preserved between the wood and metal, suggesting that the wooden shield was originally covered with leather before the metal fittings were applied.

673197 2/4
Iron spearhead and ferrule with mineral preserved wood in socket, probably Fraxinus sp. (ash).
SEM No.B293

673194 4/7
Iron spearhead with mineral preserved wood in socket, probably Fraxinus sp. (ash).

673190 4/8
Iron spearhead with mineral preserved wood in socket, not well enough preserved to identify the species, but it was probably made from coppiced wood rather than mature timber.
SEM No.B292

673411 6/12
Iron spearhead with mineral preserved wood in socket, Fraxinus sp. (ash) from mature timber.

673191 6/13
Iron spearhead with mineral preserved wood in socket, poorly preserved sample but one of the following - Alnus sp. (alder), Corylus sp. (hazel), Populus sp. (poplar), or Salix sp. (willow).
SEM No.B297

673234-5 6/14
Iron shield fittings, but only the studs had sufficient mineral preserved wood to take a sample for identification, Alnus sp. (alder).
SEM No.B312

673226-7 8/21-2
Iron spearhead with mineral preserved wood in socket, Fraxinus sp. (ash).

673209 8/23
Iron bucket binding with mineral preserved wood, Taxus sp. (yew).
SEM No.B316

673182 8/27
Iron buckle plates with the remains of the leather belt preserved between them.

673176 11/37
Copper alloy tube with mineral preserved organic material inside which were possibly roots.

673124 12/42
Iron knife with remains of mineral preserved horn on tang.

673163 12/47
Iron mount or repair with mineral preserved wood, but not enough to identify species.

673352 12/48
Iron buckle and copper alloy plate with the remains of a leather belt between the plates.

673201 12/49
Rim of a lathe turned vessel with neck bound by a copper alloy strip, the thickness of the vessel at this point was originally 6mm. The wood is probably Acer sp. (maple).

673127 13/52
Iron mount, possibly part of shield below, with mineral preserved wood Salix sp. (willow) or Populus sp.
SEM No.B311

673241/3 13/52
Iron shield boss and studs, with leather preserved between wood and rim. Wood is Salix sp. (willow) or Populus sp. (poplar).
SEM No.B307

673348 13/53, 58
Buckle with mineral preserved organic material, but nothing diagnostic, probably small stems and lacquer. Possible patch of mineral preserved leather on the back.

673217 13/54
Iron knife with traces of mineral preserved horn on tang.

673222 13/56
Iron spearhead with mineral preserved wood in socket, but too heavily consolidated with wax to identify the species.

673220-1 14/57-8
Iron spearheads with mineral preserved wood in sockets. In 673220 there was not enough to identify species. 673221 is probably Corylus sp. (hazel).
SEM No.B296

673248-9 ?14/60
Iron shield boss and studs with possible mineral preserved leather between wood and rim. Not enough wood to identify species.

673350 14/61
Iron buckle and plate with the remains of the leather belt, but

species is unidentifiable.

673216 16/72
Iron knife with mineral preserved wooden handle, possibly one of the Pomoideae family which includes Crataegus sp. (hawthorn), Malus sp. (apple), and Pirus sp. (pear).
SEM No.B303

673148 18/77
Copper alloy tube with mineral preserved organic material inside which appears to be made up of coarse fibres held together with a plied thread, probably made from a bast fibre. There also appears to be a dense material between the thread and the tube.
SEM No.B319

673223 18/78
Iron buckle and copper alloy plate with mineral preserved textile and possible remains of a leather belt.

673225 22/86
Iron spearhead and ferrule with mineral preserved wood in their sockets, Fraxinus sp. (ash) made from a quarter section of a coppiced pole.

673240 22/87
Iron shield boss with mineral preserved wood on the rim, made from a tangential board of Salix sp. (willow) or Populus sp. (poplar). As the object is covered in graphite it is not possible to tell if leather is present between the the wood and iron.

673395 25/107
Iron shield boss with mineral preserved leather and wood on the rim, but too consolidated with wax to identify the species.

673211 25/108
Iron spearhead with mineral preserved wood in the socket, Salix sp. (willow) or Populus sp. (poplar).
SEM No.B291

673125 25/109
Iron knife with the remains of a mineral preserved leather sheath.

673224/46 U/a/97/105
Shield boss rim with mineral preserved wood and leather. Not enough wood to identify species.

673244 U/a
Three iron rivets with mineral preserved wood, probably Fagus sp. (beech).
SEM No.B313

673252 U/a
Shield boss with mineral preserved leather between the iron rim and wood. The shield board appears to be made from tangential planks of Betula sp. (birch). The wood grain on the grip is orientated the same as the shield which suggests that it has not been made from a separate piece of wood, instead semi-circles have been cut out from the shield

board, and the residual strip of wood reinforced with the iron grip.
SEM No.B305

BECKFORD B

673293 1/2
Copper alloy buckle with remains of leather belt, but species is unidentifiable.

673300 5/10
Iron spearhead with mineral preserved wood in the socket identified at Birmingham as Fraxinus sp. (ash), and the hafting has been cut from mature timber.

673313 7/23
Iron spearhead with mineral preserved wood in the socket, but not enough wood to identify the species.

673315 7/25
Iron shield stud with mineral preserved wood, but not enough to identify the species. As the iron is covered in graphite it is not possible to see if leather is present.

673323-4 10/37
Copper alloy bucket mounts with mineral preserved wood, identified at Birmingham as Taxus sp. (yew).

673327 11/40
Iron spearhead with mineral preserved wood in the socket, identified at Birmingham as Corylus sp. (hazel).

673337 16/49
Copper alloy tube with no recognisable organic material remaining.

673247 18/59
Iron buckle with copper alloy plates has the remains of mineral preserved horn between them. In between the iron counter-plates are the remains of the leather belt, possibly calf, but only the top surface is left. Textile is also preserved.

673119 18/60
Iron buckle and copper alloy plate with no leather visible, but textile has been preserved.

673291 20/64
Iron spearhead with mineral preserved wood in the socket, identified at Birmingham as Fraxinus sp. (ash), but using the SEM enough features were found to suggest that the wood species was Corylus sp. (hazel).
SEM No.B298

673199 20/66
Small fragments of iron with mineral preserved wood, but not enough to identify species.

673392 27/74

Shield fittings with a small section of mineral preserved wood, Salix sp. (willow) or Populus sp. (poplar), remaining on the grip. The direction of the grain on the grip is perpendicular to that of the shield board, and was probably inserted between the shield board and the boss rim.
SEM No.B317

673104 29/79

Iron buckle with copper alloy plate has the remains of a leather belt, but the species is unidentifiable.

673102 32/86

Copper alloy mount with mineral preserved wood, but not enough to identify species.

673115 32/87

Iron shield stud with mineral preserved wood, Alnus sp. (alder). As the iron has been coated with graphite it is not possible to see if leather is also preserved.
SEM No.B309

673112 33/90

Iron buckle with the possible remains of a leather belt, but most of the detail is obscured by small stones.

673249 35/99

Shield boss and grip with mineral preserved wood, possibly Betula sp. (birch).
SEM No.B306

673074 39/112

Iron knife with surface covered in a mass of intersecting roots rather than the remains of a sheath.

673045 39/117

Copper alloy tube containing mineral preserved organic material which appears to be made up of coarse fibres (keratinous tissue) held in place by a plied thread of animal hairs.
SEM No.B320

673098 40/119

Iron spearhead with mineral preserved wood in the socket, too degraded to identify the species.
SEM No.B304

673232 47/132

Iron spearhead with mineral preserved wood in the socket, probably Corylus sp. (hazel).
SEM No.B299

673039 47/134

Iron shield stud with mineral preserved wood on the reverse, but not enough to identify the species.

673038 48/139

Copper alloy tube with no recognisable organic material remaining.

673286 51/141
Iron spearhead with mineral preserved wood in the socket, identified at Birmingham as Corylus sp. (hazel).

673397/009 51/142-3
Shield boss and decorative fitting with mineral preserved wood, probably Salix sp. (willow) or Populus sp. (poplar).
SEM No.B308

673287 56/151
Iron spearhead with mineral preserved wood in the socket, identified at Birmingham as Corylus sp. (hazel), and appears to have been made from coppiced timber.

673024 57/153
Iron mount with mineral preserved horn on the reverse, possibly part of 154 below.

673044 57/154
Iron buckle with mineral preserved horn between the plates.

673052 57/156
Iron knife with mineral preserved horn handle. (Previously identified as bone at Birmingham.)

673288 60/162
Iron spearhead with mineral preserved wood in the socket, identified at Birmingham as Fraxinus sp. (ash).

673023 61/165
Iron buckle and copper alloy plate with remains of leather belt passing through loop, and mineral preserved textile.

673206 64/171
Iron spearhead with mineral preserved wood in the socket, Fraxinus sp. (ash) from mature timber.

673153 64/172
Iron shield boss with mineral preserved wood and possibly leather preserved between them on the rim. The wood was possibly Salix sp. (willow) or Populus sp. (poplar).
SEM No.B314

673228-30 68/187-9
Iron buckle with possible remains of a leather belt, but very degraded. Mineral preserved textile.

673162 71/196
Fragments of elephant ivory purse ring with copper alloy mounts.

673205 72/197
Iron spearhead with mineral preserved wood in the socket, probably Corylus sp. (hazel) made from coppiced wood.
SEM No.B294

673431 74/209
Organic backing is antler.

673384 77/216
Iron shield studs and grip with mineral preserved wood, but too degraded to identify the species.

673398 81/226
Stave built bucket bound with copper alloy. Wood identified at Birmingham as Taxus sp. (yew).

673289 84/218
Iron buckle and copper alloy plate with possible remains of a leather belt and textile.

673361 85/219
Iron spearhead with mineral preserved wood in the socket, possibly Corylus sp. (hazel) made from coppiced wood.
SEM No.B295

673360 85/220
Iron knife with mineral preserved horn handle. (Previously identified at Birmingham as bone.)

673370-1 92/231/2
Five shield studs with mineral preserved wood, Salix sp. (willow) or Populus sp. (poplar).
SEM No.B318

673374 93/235
Iron spearhead with mineral preserved wood in the socket, possibly one of the Pomoideae family such as Crataegus sp. (hawthorn), Malus sp. (apple), or Pirus sp. (pear).
SEM No.B301

673375 94/236
Iron shield fittings with mineral preserved wood, Tilia sp. (lime).
SEM No.B310

673376 94/237
Iron spearhead with mineral preserved wood in the socket, probably Salix sp. (willow) or Populus sp. (poplar).
SEM No.B290

673259 94/238
Iron buckle and copper alloy plate with remains of leather belt passing through loop, but not identifiable.

673377 95/239
Iron shield boss with mineral preserved wood on rim, but too degraded to identify species.
SEM No.B335

673379 96/242
Iron spearhead with mineral preserved wood in the socket, identified at Birmingham as Corylus sp. (hazel), made from coppiced timber.

673290 99/251
Iron spearhead with mineral preserved wood in the socket, Salix

sp. (willow) or Populus sp. (poplar).
SEM No.B300

673268 101/254
C/a and iron belt mounts with mineral preserved organic material identified at Birmingham as leather, but on further examination was found to be horn.

673274 104/262
Iron spearhead with mineral preserved wood in the socket, Corylus sp. (hazel).
SEM No.B302

673432 U/a/274
Iron spearhead with mineral preserved wood in the socket, identified at Birmingham as Corylus sp. (hazel), made from coppiced wood.

673057
Iron knife with mineral preserved organic material, but too degraded to identify.

673156
Iron knife with mineral preserved horn handle.

673393 U/a
Shield rim fragments, but not enough mineral preserved organic material to identify wood species or note if leather is present.

673407
Lumps of iron corrosion or iron pan, but no recognisable mineral preserved organic material.

U/a
Iron spearhead with mineral preserved wood in socket, probably Corylus sp. (hazel).
SEM No.B315