
7 The Coffin Wood by Rod P McCullagh

This report considers wood recovered from the five coffins preserved to a degree sufficient to allow reconstruction (SK31 and SK45 from Period 2b, BP3; SK22 and SK46 from Period 3, BP4; SK18 from Period 3b, BP5), and the wooden remains of two further coffins from burials SK24 and SK25 (both Period 3, BP4).

The coffin wood itself was preserved in both fossil and ‘skeletal’ forms (see below) and as such is normally considered impossible to identify. However, after an initial examination by the author, it was felt that identification to species was possible and that some comment could be made upon the original form of the coffins.

7.1 Methodology

The wood was preserved in two forms – as a fossil within the corrosion products of iron nails and as desiccated and shrunken cellulose skeletons. The two forms indicate contradictory decay regimens within the coffins, the one in which the iron nails corroded must have been aerobic, while the latter form indicates an anaerobic environment. The resulting preservation makes identification by normal procedures difficult. It is not possible to cut thin sections from either form so the use of a high-powered microscope is limited. The technique adopted is basically the same as for charcoal: fresh breaks are made in the specimen approximately aligned to the three planes necessary for identification. The fresh surfaces are then examined using a stereoscope (a Kyowa–2DZ) adapted to magnification of 190; this adaptation reduces the quality of the image and, in each case of doubt, a Nikon compound microscope (adapted to give incident light through the objective) was used. At all times identification was made using a published identification key (Schweingruber 1978) and confirmed by comparison to the reference slide collection of AOC Archaeology Limited.

Nomenclature of species follows *Flora of the British Isles* (Clapham *et al.* 1962). Despite various publications (such as Barber & Crone 1991) there is no established nomenclature for wooden structural elements which is intelligible to an archaeological readership, and the terms used here are, it is hoped, reasonably self-explanatory.

7.2 Results

Wood from eight coffins was identified and described; a catalogue of this information has been deposited with the archive. A synthesized account appears below.

7.2.1 The samples

A total of 37 identifications were made, representing a minimum of 21 separate timbers. Eight identifications were of wood preserved as a fossil within the corrosion products of iron nails from coffin 24.

7.2.2 The species

Only two types of wood had been used: *Pinus silvestris* (Scots pine) and *Picea abies* (spruce). There was no evidence for the use of oak (*Quercus* sp) though this species was reported as present on site (Boyd *et al.*, unpublished data). The commonest type, Scots pine, is native to Scotland, while the spruce would have been imported from Northern Europe. Spruce has been identified from a coffin at Bordesley Abbey (Rahtz *et al.* 1983).

There is little evidence of a choice of species made on the basis of structural performance (see Table 1), except that the spruce was only used on baseboards. Both trees will produce timber that is easily split or sawn and neither wood is generally regarded as suitable for coffins; Corkhill (1979) lists chestnut, elm, hazel pine (an American red gum-type), oak and pitch pine as coffin woods.

7.2.3 The coffins

Only four coffins can be reconstructed in any form (18, 24, 31 and 46; Table 2). No evidence of dovetailed joints nor, in fact, of any sophistication in the construction was discovered. From the excavation record it is clear all the coffins were well nailed, indeed over-use of nails was suggested by coffin 46 (60 nails). Only slight evidence survived for the form of the lid (coffin 46). The principal component seems to have been slim, thin boards which were produced with the minimum of effort or expense.

Coffin 31, P2b, BP3 (illus 24) The single sample contained a large number of fragments from which two pieces were selected at random. Both species were represented in the assemblage, which also included a piece of bark. This was identified as probably spruce by a small area of preserved wood on its inner surface. Another fragment of spruce was pierced by small insect channels. It would seem probable that this coffin, or at least its end, was constructed with undressed timber.

Coffin 24, P3, BP4 (not illustrated) This coffin was mostly represented by wood preserved in the corrosion products of iron nails and represents the main assemblage of nails examined. Two fragments

Table 1 Position of wood and species, by coffin

Coffin number (SK)	Position of wood	Species*
11	Scaffold	<i>Pinus silvestris</i>
18	Base, 1st from E	<i>Picus abies</i>
18	Base, 2nd from E	<i>Pinus silvestris</i>
18	Base, 3rd from E	<i>Picea abies</i>
18	Base, 4th from E	<i>Pinus silvestris</i>
18	Base, 2nd from E	<i>Picea abies</i>
18	Foot-board	<i>Pinus silvestris</i>
18	Base, 6th from E	<i>Pinus silvestris</i>
22	Not known	
24	Not known	<i>Pinus silvestris</i>
24	Not known	<i>Pinus silvestris</i>
24	Nail wood	<i>Pinus silvestris</i>
24	Nail wood	<i>Pinus silvestris</i>
24	Nail wood	<i>Pinus silvestris</i>
24	Nail wood	<i>Pinus silvestris</i>
24	Nail wood	<i>Pinus silvestris</i>
24	Nail wood	<i>Pinus silvestris</i>
24	Nail wood	<i>Pinus silvestris</i>
24	Nail wood	<i>Pinus silvestris</i>
28	Not known	<i>Pinus silvestris</i>
28	Not known	<i>Picea abies</i>
28	Not known	<i>Picea abies</i>
31	W side at base	<i>Pinus silvestris</i>
31	Base-board	<i>Pinus silvestris</i>
31	Foot-board	<i>Pinus silvestris</i>
31	Lid	<i>Pinus silvestris</i>
31	Not known	<i>Pinus silvestris</i>
31	Not known	<i>Pinus silvestris</i>
31	Not known	<i>Pinus silvestris</i>
31	Not known	<i>Picea abies</i>
31	Not known	<i>Picea abies</i>
31	Not known	<i>Picea abies</i>
31	Not known	cf <i>Picea abies</i> bark
31	Not known	<i>Pinus silvestris</i>
46	Board 5	<i>Pinus silvestris</i>
46	Side of coffin	<i>Pinus silvestris</i>
46	Board 4	<i>Pinus silvestris</i>
46	Lid	<i>Pinus silvestris</i>

of preserved wood were also identified. All the wood was Scots pine. The wood preserved by the iron salts appears to be wider than the dessicated wood but this presumably indicates some shrinkage in the latter type. It was hoped that the coffin could be reconstructed from the nail evidence. This was not possible because it was not possible to establish the alignment of the nails to the original alignment of

the timber. In general, the curvature of the growth rings and the concentration of knot-holes indicates that wood used was of small diameter (10–20cm diameter).

Coffin 46, P3, BP4 (illus 25; illus 26) The sample of this coffin recovered was four heavily weathered fragments, representing part of the base, side and lid of the coffin. All the pieces were from Scots pine.

Table 2 Identifiable elements of the coffins

Coffin	Species		Base-board max width (mm)	Other	Nails present	Worked surfaces
	Pine	Spruce				
18	4	3	9.00	Foot	None	Yes
24	9	0	12.00	None	7	Yes
31	8	4	5.2	Lid, foot	None	Yes
46	4	0	10.5	Side	None	Yes

On one fragment, that from the base, soil and small stones adhered to the most weathered face, suggesting that, if truly a base fragment, the worst of the damage was done to the outer face. Again no reconstruction was feasible.

Coffin 18, P3b, BP5 (not illustrated) Seven samples were submitted, all from the base of the coffin, and these appear to be slats or battens arranged across the width of the coffin. Although generally in a poor state of preservation, the degree of decay differed between surfaces of three of the specimens. In two cases, the most weathered surface was impregnated with soil and small stones, one of which retained a resinous deposit on the smoother surface, while a third had small stones impressed into the smoother surface. It is reasonable to assume that the smoother surface represents the side best protected from the agents of weathering. Therefore, the third board mentioned above has suffered the least damage on the face in contact with the soil. This indicates some variation in the weathering regimen within the coffin as all three specimens were described as 'base-boards'. If, as an alternative, the position of this third board was a product of the collapse of the coffin within the grave, it is possible that the state of preservation records variation inside and outside the coffin. This may be a result of misidentification of the structural elements in the field and makes reconstruction of the form more problematical.

7.2.4 The nails

In coffin 24, all the nails had been driven through two timbers set perpendicular to each other. While this may represent the attachment of the cross pieces in an openwork structure, the number of nails present is far less than would be necessary, so either some have been lost, or the coffin was not a complete structure, or the components were a few broad boards rather than narrow planks.

The lack of nails from the other graves is, perhaps, the product of small-scale variations in the soil chemistry within the vicinity of decaying corpses, but also may indicate a genuine lack of nailed structures. The use of pegs has been recognized on better-preserved sites (see below).

The form of the nails is best illustrated by the contents of the grave around SK24. All the nails

survived as extensively corroded objects, and consequently the dimensions are somewhat distorted. The shafts ranged in length from 39mm to 65mm, with an average of 56mm. The heads were all severely corroded and retained no intact metal. The heads appear to have been relatively thin and, in plan, were often oval. The shafts were square and rectangular in section, ranging in dimension from 5 × 5mm to 5 × 7.5mm, and tapered down to a narrow, but in every case blunt, terminal. The actual points had presumably been lost as the wood decayed.

The nails were in most cases driven into the wood at right angles to the grain, but in several instances they had penetrated at a marked angle. This may be explained by the timber being cut or split at this angle, the nail thus penetrating at right angles to the prepared surface, or by the nail being driven into the wood at this angle. In one instance it was clear that the latter was the case.

Two of the eight nails examined in detail were buckled. It would appear that not only was the joiner content to misplace the nails but also that he was equipped with nails of variable quality.

The probable poor positioning of the nails and the lack of any joinery technique must indicate the resulting structure was poorly built. The over-use of nails in at least one case, while perhaps reflecting an occupant of great bulk, may again testify to a poverty of carpentry skills either used or available.

7.2.5 The timber

The timber had survived both as fossils within metallic corrosion products and as dessicated wood, and the wood was generally well preserved. In thin section it was clear that the some of the wood had shrunk to a considerable degree.

An average of 9.5mm is given for the thickness of the preserved wood, while the fossilized wood has an average thickness of 19mm. Variation in the thickness along the length of any plank is likely to have been considerable but it would seem reasonable to infer that there has been shrinkage of the wood after the date of the corrosion of the nails.

The form of the decomposition of the wood is probably complex, and the coffin will have experienced major fluctuations in its environment after interment. Initially, some aerobic agents will have operated, but as the body degenerated

the regimen would have become anaerobic, with a harsh environment based on the chemical status of the decomposed remains and a rich population of micro-organisms. As the degenerative processes progressed, a state of equilibrium would have

pertained in which decay would have almost ceased until the grave was disturbed. In the case of an urban graveyard, one must assume that reuse of the plot would have caused frequent re-exposure of the grave contents.