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The Early Bronze Age Log Coffin Burials of Britain: The Origins and Development of a Burial Rite(s)

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This paper describes the results from a project to obtain radiocarbon determinations from Early Bronze Age log coffin burials. Log coffins have been recognised as a burial tradition since antiquarian excavations uncovered the first examples. However, comparatively few are associated with radiocarbon determinations and many old determinations are very imprecise. To address this, seven log coffin burials were identified across England, and 11 samples from these were submitted for radiocarbon dating. The dates from the project were reviewed with previously obtained reliable determinations to reconsider the origins and development of the log coffin burial by region. The resulting study indicates that the earliest log coffins were associated with Beaker burials but that regional variations involving different rites soon developed.

Keywords: Early Bronze Age, log coffins, burials, radiocarbon dating

Burial within a log coffin is one of the most iconic Bronze Age rites. Antiquarian excavations in both Britain and in Scandinavia captured the public imagination, especially those where human remains and organic artefacts were preserved within them (Williamson 1872; Ashbee 1960, 86–91; Glob 1973). Since then, these burials have continued to fascinate and yield important information and stories about life in the Bronze Age of northern Europe (Melton *et al.* 2013; Frei *et al.* 2015; Felding 2015; Reiter *et al.* 2019).

Important new research into the log coffin burials at Rylstone, North Yorkshire and West Overton, Wiltshire and their contents (Melton *et al.* 2016; Needham *et al.* 2010), and particularly the seminal study of Gristhorpe, East Yorkshire (Melton *et al.* 2013), demonstrated that burials in log coffins commenced before the start of the 2nd millennium BC. The end of the tradition is less well understood, with log coffin burials occurring in Yorkshire during the Late Bronze Age. However, most log coffins in Britain do not contain closely datable artefacts and the preservation of human remains is often poor. Furthermore, prior to this project there were relatively few chronometric measurements directly associated with this burial practice, just 16 sites with determinations were included in the Gristhorpe publication (Parker Pearson *et al.* 2013, 41), not all of which were high precision and of which several, including the date from Hove, were likely to be unreliable.

On the Continent there are two distinct clusters of Bronze Age log coffin burials, one in north-western Europe and another in the flat inhumation cemeteries of central Europe (Harding 2000, 105–6). The British and Dutch examples can therefore be seen as being at the western fringe of the current northern distribution, with no Bronze Age log coffin burials known from Ireland or France. In Denmark and northern Germany an overview of the burial rite in the Bronze Age counted 712 tree trunk coffin finds from 484 barrows (Aner & Kersten 1984). In those areas internment in an oak log coffin was the most common rite (Holst & Rasmussem 2013, 64) while in Britain and the Netherlands it was far less common (Theunissen 2006). The chronology of

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the Continental examples has not been collated but it extends beyond the well-known cluster of Danish log coffin burials dendrochronologically dated from 1415 to 1350 BC, with some continuing as late as 1260 BC (Holst *et al.* 2001; Randsborg & Christensen 2006). The chronology of the British examples therefore must be seen in the light of the evidence from countries around the North Sea, where the burial rite was far more common and of long duration.

The objectives of the current project were to enhance the overall chronology of log coffin burials in Britain and establish any patterns of regional or chronological variation. It was evident that, although there were notable concentrations of burial in north-east Yorkshire and central southern England (for example, Parker Pearson *et al.* 2013), there was a much wider distribution pattern.

To achieve these objectives, seven log coffin burials with a wide geographical distribution across England were identified which had suitable material available for radiocarbon dating (Fig. 1). Two sites were identified in Yorkshire (Loose Howe and Willie Howe), two in the Midlands (Piper Hole Farm and Sproxton), two in southern England (Milton Lilbourne and Newbarn Down), and one in Suffolk (Risby). In addition to the new dates, skeletal analysis was undertaken on burials from four log coffin burials: Loose Howe, Towthorpe 139, Milton Lilbourne, and Risby. A core from Cartington, Northumberland, contained sufficient annual rings but could not be matched to the existing prehistoric master dendrochronology. A chronological overview was generated from a compilation of both the 11 new dates and those compiled in the Gristhorpe volume (Parker Pearson *et al.* 2013, table 4.2). In addition, newly obtained dates including those from Rylstone, and Petersfield Heath, Hampshire (Melton *et al.* 2016; Needham & Anelay 2021) were incorporated into the model.

Fig. 1.
Map showing location of log coffin burials dated by this project

RADIOCARBON DATING

Eleven samples from seven log coffins were submitted to the SUERC for accelerator mass spectrometry measurements (Table 1). They were pre-treated, processed, and measured as outlined in Dunbar *et al.* (2016). They are conventional radiocarbon measurements (Stuiver & Polach 1977). With the exception of Newbarn (see Fig. 1), samples were selected from human remains directly associated with the log coffins or, in one instance, a hazel nutshell that appeared to have been deposited as part of the burial. Where there were multiple human individuals associated with coffins, each of these individuals was sampled for radiocarbon measurements. The results were compared with extant 'legacy' measurements using Bayesian analysis produced in the program OxCal v4.3 (Bronk Ramsey 2009; 2017; Bronk Ramsey & Lee 2013) and the measurements analysed using the calibration data of IntCal20 (Reimer *et al.* 2020). The OxCal CQL2 commands and the brackets shown in the figures define the models. The date ranges quoted below in italics are the Highest

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Table 1: New radiocarbon determinations from log coffin burials obtained by the project

Site	*Sample*	*Lab code*	*$\delta^{13}C$ ‰*	*Date BP*	*Cal BC (intercept method; 95% confidence)*
Piper Hole Farm, Eaton, Leicestershire	Cremation F11	SUERC-64505	–22.0	3599±37	2120–1820
	Cremation F19 in box	SUERC-61577	–23.3	3669±29	2150–1940
Sproxton, Leicestershire	Cremation F51	SUERC-64506	–25.2	3537±37	2010–1740
	Cremation F46	SUERC-64507	–21.0	3461±37	1890–1640
Risby, Suffolk	Inhumation No. 3 left tibia in log coffin	SUERC-62607	–20.9	3791±34	2340–2060
Barrow 4, Milton Lilbourne, Wiltshire	Cremation in log coffin	SUERC-60967	–23.0	3600±30	2040–1880
Newbarn Down, Isle of Wight	Charcoal from log coffin, 427:7:3	SUERC-60839	–25.3	3724±29	2210–2020
Willie Howe, Yorkshire	Rib bone from inhumation in log coffin	SUERC-59187	–20.7	3746±32	2290–2030
Willie Howe, Yorkshire	Rib bone from inhumation in log coffin	SUERC-59188	–20.7	3736±32	2280–2030
Loose Howe, Yorkshire	Hazelnut shell in log coffin	SUERC-69042	–25.8	3550±29	2010–1770
Loose Howe, Yorkshire	Cremated bone in upper part of barrow mound	SUERC-69041	–23.1	3487±29	1900–1690

Posterior Density intervals derived from these Bayesian models. They are quoted at 95% probability, unless otherwise stated.

The significant advance in precision can be seen by comparing the recent measurements from this project and some 'legacy' measurements (for example, West Heslerton). From some of these sites there is diagnostic material culture well-associated with log coffin burial practices. At Cartington, Beaker pottery is associated with the burial, while at Tallington, Lincolnshire, a Food Vessel was recovered (Parker Pearson *et al.* 2019, 110–13). We use these associations for additional analysis detailed in Appendix S1.

Regional chronologies for log coffin results

The log coffin burials with radiocarbon dating evidence were divided into broad regional groups (Fig. 2) and the dating is shown in these groups in Figure 3. Most of the legacy measurements are on human skeletal remains from the coffins, with results on the coffin material itself the next most common sample type. Very few measurements are on artefacts deposited with the burials, for example the results on a textile from Rylstone. These samples therefore have a close association with the archaeological events of interest – the use of log coffins in burial practices. However, some of the results that were produced on wood or charcoal samples could include an inbuilt 'old wood' offset. In these cases, results have been included using the 'After' function in OxCal to reflect this potential. In several cases, internal tensions between multiple results from the same site suggests that there may be issues with some of the results (for example, BM-2522; AA-29064; SUERC-69041). These issues are discussed in Table 2.

We show estimates for the start (Fig. 4) and end (Fig. 5) of use of log coffins overall in different regions. Overall, the use of log coffins first occurred in 2470–2165 cal BC (95% probability; start log coffin; Fig. 4). The end of this burial tradition is estimated overall as occurring in 795–510 cal BC (95% probability; end log coffins; Fig. 5). It is, however, possible that the log coffin burial tradition in Britain can be divided into two phases with a possible gap of around 800 years between them. The first phase covers the majority of coffin burials in the period between *c.* 2300–1750 cal BC. The second is represented by just two sites (Rylstone and Melton, both in Yorkshire). Given the close geographical proximity of these two sites, they may indicate a regional burial tradition that is much later than the main floruit of log coffin burial practices. Indeed, all the radiocarbon dates from these two sites could be of the same actual age, 810–780 cal BC (95% confidence; T'=5.4; T'(5%)=7.8; ν =3; 5% significance level; Ward & Wilson 1978).

The regional chronologies of the burial practice are shown separately in Table 3. Thinking about wider patterns of social change, we can look at how these practices spread geographically. Figure 6 shows the posterior density estimates from the analytical model shown in Figure 3 against time slice mapping. The earliest examples of log coffin burial occur in Scotland and north-east England, followed by an apparent emphasis for the practice in eastern England. There are, however, also some relatively early results from southern England, suggesting that it was adopted as a burial rite by peoples in disparate localities over a wide geographical range.

REGIONAL SEQUENCE

This section considers the radiocarbon determinations from coffins to examine the evidence for regionalised chronologies and trajectories (Jones 2011; Barclay & Brophy 2020). Two major concentrations of long coffin burials have long been known, one in southern England and a second in northern England (eg, Ashbee 1960, fig. 26). There are, however, sites in other areas and the contrasts between the regions has seen much less discussion. Given the uneven distribution of both log coffin sites and available radiocarbon dates, the following discussion divides Britain into six geographical regions: Scotland and North-east England, Northern England, the Midlands, Eastern England, Southern England, and Wales and Western England. These regions are unequal in size but reflect the relative densities of log coffin burial findspots, either through low numbers leading to a large area (Wales and Western England) or concentrations forming a smaller one (Northern England). There are obvious ambiguities as to their extent (for example, the Midlands includes Lincolnshire) and the divisions here do not represent prehistoric concepts of space and identity which will have been much more localised and nested than is possible to consider here (Giles 2012; Brück 2019). Borders are, in any case, ambiguous and shifting (Mullin 2011) and communities in areas, such as eastern Scotland and North-east England may, in certain periods, have had more affinities with each

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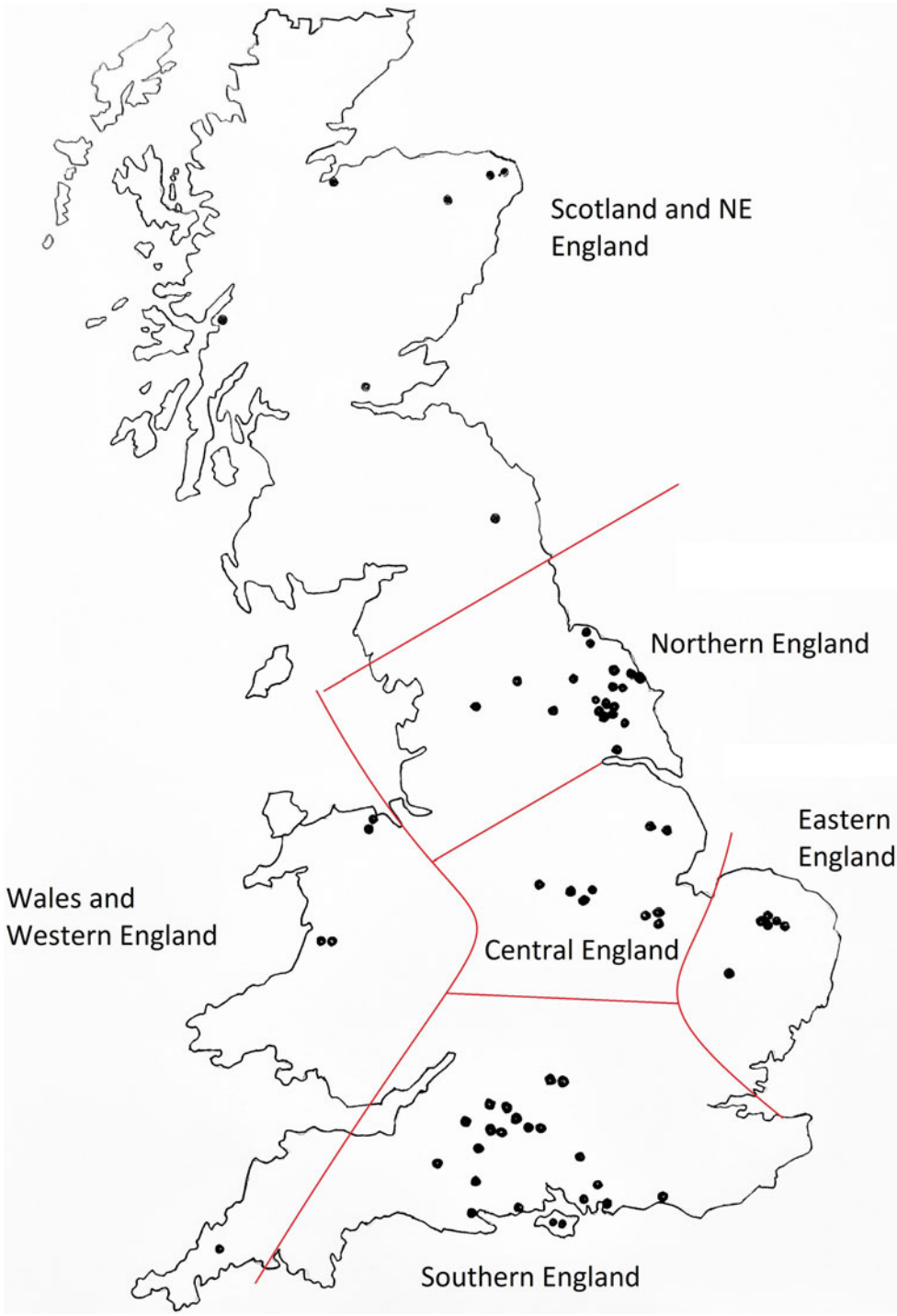

Fig. 2.
Map showing location of log coffin burials in the UK

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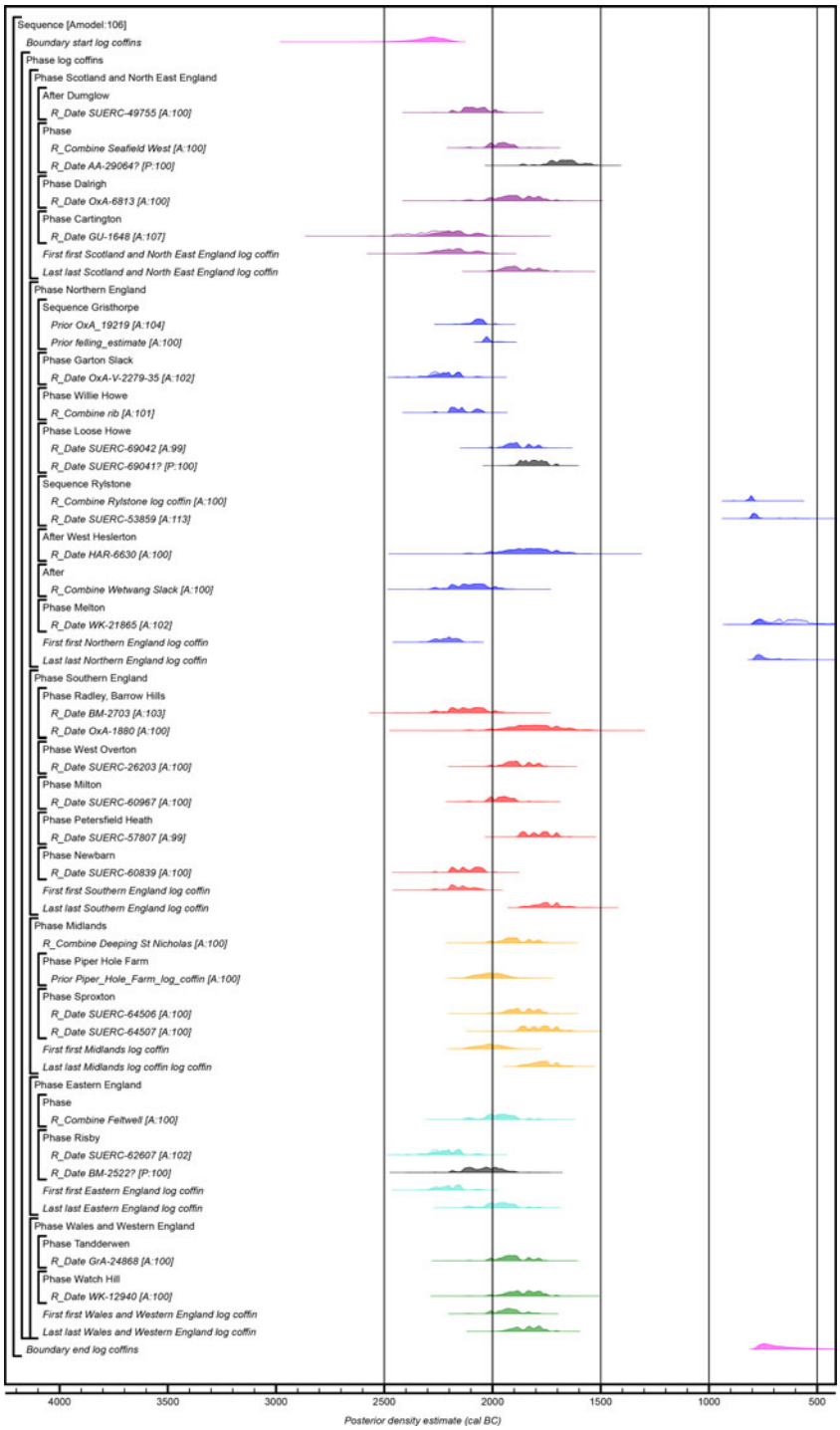

Fig. 3.
A currency model for the use of pre-Roman log coffin burial practices across the study region. Details of parameters included in the model are given in Tables S1–S2, with parameters also taken from the calculations given in the Supplementary Material for Gristhorpe log coffin and Piper Hole Farm. The large square bracket down the left-hand side and the OxCal CQL2 keywords define the overall model. Results from North-east England and Scotland are shown in purple, results from Northern England are shown in blue, results from Southern England shown in red, results from the Midlands are shown in orange, results from Eastern England are shown in turquoise, results from Wales and the West of England shown in green. Results not included in the model for reasons discussed in Table 2 and in the text are shown in grey. Estimates for the overall currency of log coffin burial practices are shown in magenta

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TABLE 2: EXISTING RADIOCARBON RESULTS ASSOCIATED WITH THE LOG COFFIN BURIAL PRACTICE. DETAILS OF HOW THESE RESULTS HAVE BEEN INCLUDED IN ANALYSIS WORK UNDERTAKEN HERE AVER GIVEN IN THE LAST COLUMN

Site	Sample	Lab code δ^{13C}	Date BP	Date cal BC 95.4% unless otherwise stated	Reference	Notes
Scotland and North-east England						
Dumglow, Dunfirmline	Oak wood from log coffin	SUERC-49755 -26.5	3688±33	2200–1955	Sheridan *et al.* 2013	*Terminus post quem* for felling date and burial.
Seafield West, Inverness	Animal skin on wooden scabbard of bronze dagger beside inhumation	GrA-27037 -25.6	3640±40	Weighted mean 3603±29 T'=1.9; T'(5%)= 3.8; ν=1; 5% significance level; Ward & Wilson 1978) 2035–1885	Cressey & Sheridan 2003; Sheridan 2004a	Crouched inhumation in log coffin. Bronze Butterwick-type dagger with burial.
	Cow skin on wooden scabbard of bronze dagger beside inhumation	GrA-27039 -25.6	3565±40			Dates death of cow & production of scabbard. Presumably slightly pre-dates date of deposition in the burial.
						Log coffin burial had been placed beside another burial in a plank coffin, which contained a Food Vessel.
	Cow leather, alkaline fraction	AA-29064 –	3385±45	–		Anomalously young results. Led to redating GrA-27037 & GrA-27039. Not included in model.
Dalrigh, Oban, Argyll & Bute	Birch bark cover for log coffin or wrapping for body	OxA-6813 -27.046	3555±60	2115–1700	Sheridan 2002; Cressey & Sheridan 2003	Felling date for the birch, & closely associated with the date of burial.
Cartington, Rothbury, Northumberland	Oak coffin outer rings	GU-1648	3790±65	2465–2025	Dixon 1913; Parker Pearson *et al.* 2013	No human remains survived, although enamel from 3 teeth were reported. Beaker sherds, & traces of animal skin wrapping. Bracken reported in the base of the coffin &, by comparison, rushes were reported in a cist at Allerwash in the same region (the dates also overlap: see Fowler 2013, 111; & that cist also contained a dagger blade, like Seafield West). This raises the question about seeing early northern log coffins as particularly distinct from other local burial practices. Very close to a felling date for the tree (Jobey 1984) and closely associated with the burial.

(Continued)

TABLE 2: (CONTINUED)

Site	Sample	Lab code δ^{13C}	Date BP	Date cal BC 95.4% unless otherwise stated	Reference	Notes
Northern England						
Gristhorpe, N. Yorkshire	Oak branch on top of coffin	HAR-4424 –	3590±100	2270–1685	Williamson 1872; Melton *et al.* 2013	Accompanied by a Merthyr Mawr-type dagger in a scabbard, flint knife, bone point, & organic remains comprising a cattle hide, paws/pelts of pine martens & foxes, & a bark & wood container. May have some old wood effect, probably provides *terminus ante quem* for the burial.
	Oak branch on top of coffin	OxA-16812 -25.291	3375±31	1745–1540		See notes above. May have some old wood effect, probably provides *terminus ante quem* for the burial.
	Human tooth dentine	OxA-16844 -19.595	3671±32	2195–1945		See notes above. Dates formation of the dentine.
	Block of oak coffin timber with 10 annual growth rings: rings -39 to -30. Sample Gris 3	OxA-17449 -23.954	3806±30	2345–2140		See notes above. Dates formation of the annual growth rings.
	Block of oak coffin timber with 10 annual growth rings: rings -9 to -0. Sample Gris 4	OxA-17450 -22.885	3697±28	2200–1975		See notes above. Dates formation of the annual growth rings.
	Block of oak coffin timber with 10 annual growth rings: rings 21–30. Sample Gris 5	OxA-17451 -23.452	3759±29	2290–2040		See notes above. Dates formation of the annual growth rings.
	Block of oak coffin timber with 10 annual growth rings: rings 51–60. Sample Gris 6	OxA-17452 -22.831	3674±30	2195–1945		See notes above. Dates formation of the annual growth rings.
	Block of oak coffin timber with 10 annual growth rings: rings 81–90. Sample Gris 7	OxA-17453 -24.654	3704±31	2200–1980		See notes above. Dates formation of the annual growth rings.
	Block of oak coffin timber with 10 annual growth rings: rings 111–20. Sample Gris 8	OxA-17454 -25.494	3669±30	2145–1945		See notes above. Dates formation of the annual growth rings.
	Human femur	OxA-19219 -20.943	3743±32	2280–2030		See notes above. Dates formation of bone collagen & its remodelling over lifespan.

(Continued)

TABLE 2: (CONTINUED)

Site	Sample	Lab code δ^{13C}	Date BP	Date cal BC 95.4% unless otherwise stated	Reference	Notes
Garton Slack, E. Yorkshire	Area 29, Bronze Age grave 3, coffin burial 2 SK 319 Beaker People Project	OxA-V-2279-35	3795±33	2345–2135	Parker Pearson *et al.* 2019	Artefacts include flint & a Beaker. Dates formation of skeletal element.
Willie Howe, E. Yorkshire	Rib from inhumation in log coffin	SUERC-59187 -20.7	3746±32	Weighted mean 3741±23 T'=0.0; T'(5%)= 3.8; ν =1; 5% significance level; Ward & Wilson 1978) 2275–2035	Jones *et al.* 2017a	Artefacts comprised 3 flints; 1 laurel–leaf blade, 1 irregular blade, & 1 flake. Dates formation of the rib.
	Rib from inhumation in log coffin	SUERC-59188 -20.7	3736±32			See above
	Skeletal element	HAR-4995 –	3358±70	–		Dates formation of skeletal element. Appears too late in contrast to other results on the rib from the individual. Not included in the model.
Loose Howe, N. Yorkshire	Hazelnut shell in log coffin	SUERC-69042 -23.1	3550±29	2010–1770	Elgee & Elgee 1949; Jones *et al.* 2019	Date associated with log coffin. Burial did not survive but was accompanied by a Merthyr Mawr-type dagger, flints, & hazelnuts. Dates formation of tissue, could be associated with burial.
	Cremated bone in upper part of barrow mound	SUERC-69041 -23.1	3487±29	1895—1695		Post-dates log coffin. Stratigraphic *terminus ante quem* for the burial, but not included in the model as provides no constraint for the result (SUERC-69042) from the coffin.
Rylstone, N. Yorkshire	Log coffin	SUERC-50211	2627±42	Weighted mean 2641±25 T'=0.2; T'(5%)= 3.8; ν =1; 5% significance level; Ward & Wilson 1978) 825–790	Melton *et al.* 2016	Body did not survive but woollen shroud does. Dates formation of the wood tissue, may provide a *terminus post quem* for the date of burial.
	Log coffin	SUERC-47687	2648±30		Melton *et al.* 2016	See above. Dates formation of the wood tissue, may provide a *terminus post quem* for the date of burial.
	Woollen shroud	SUERC-53859	2597±35	815–765	Melton *et al.* 2016	See above. Dates formation of the wool, presumably more closely associated with the date of death of the individual than the results on the coffin timber (SUERC-50211 timber SUERC-47687).

(Continued)

TABLE 2: (CONTINUED)

Site	Sample	Lab code δ^{13C}	Date BP	Date cal BC 95.4% unless otherwise stated	Reference	Notes
West Heslerton, N. Yorkshire, Barrow 1R, Grave 270	Bones of dated individual stacked disarticulated at W. end; articulated skeleton of 12–14 yr old in E & centre, with Beaker	HAR-6630	3510±80	2110–1620	Powesland *et al.* 1986; Healy 2012	Central primary burial. Pre-dates log coffin burial, Grave 157, which was associated with a plain Food Vessel. Dates formation of the bone.
Wetwang Slack (area 16, WK8), E. Yorkshire	Charcoal assumed to be collapsed lid of coffin	HAR-9244 -26.7	3690±80	Weighted mean 3710±50 T'=0.4; T'(5%)=6; ν =2; 5% significance level; Ward & Wilson 1978) 2285–1950	Cited in Parker Pearson *et al.* 2013	Beaker associated burial. Dates the formation of the timber, probably provides *terminus post quem* for date of deposition of both burials.
	Charcoal from upper sides of charred inner surface of coffin	HAR-9245 -26.8	3680±100			Dates formation of the timber, probably provides *terminus post quem* for date of deposition of both burials.
	Charcoal within the coffin, underlying the burials	HAR-9247 -26.9	3750±80			Dates formation of the timber, probably provides *terminus post quem* for date of deposition of both burials
Melton, E. Yorkshire	2 possible log coffin burials each containing adult males. Skeletal material from SK2722, the later burial	WK-21865	2522±47	800–480	Fenton-Thomas 2011; Parker Pearson *et al.* 2013	Beaker pottery recovered but relationship to burial uncertain. Dates formation of skeletal element sampled.
Southern England						
Radley, Barrow Hills, Oxfordshire, flat grave 950 -1.2551 51.6811	Human bone from inhumation	BM-2703	3720±50	2290–1955	Barclay & Halpin 1999	Beaker associated burial with barbed & tanged arrowhead & animal bone. Dates formation of the skeletal element sampled. Beaker association is of interest as other contemporary forms of wooden container (coffins & chambers) are also found in this region, including the wooden structure associated with the Amesbury Archer (Fitzpatrick 2011) & burial 4013, at Gravelly Guy (Lambrick & Allen 2004, 54), which was dated to 2205–1975 cal BC (95% confidence; UB-3122 3709±35 BP).
Radley, Barrow Hills, Oxfordshire, grave 4969, pond barrow 4866 -1.2551 51.6811	Deer antler associated with inhumation burial of 9–10 yr old youth	OxA-1880	3490±80	2030–1610	Barclay & Halpin 1999	Possibly a plank-built coffin. Accompanied by deer antlers, cattle skull, & flint piercer. Dates formation of the antler, presumably closely associated with deposition in the burial.

(Continued)

TABLE 2: (CONTINUED)

Site	Sample	Lab code δ^{13C}	Date BP	Date cal BC 95.4% unless otherwise stated	Reference	Notes
West Overton, Wiltshire, (barrow G1)	Human bone from inhumation	SUERC-26203	3550±35	2020–1765	Hoare 1821; Needham *et al.* 2010b	'Wessex 1' burial associated with flat axe, crutch-headed pin, & tanged dagger. Dates formation of skeletal element sampled.
Barrow 4, Milton Lilbourne, Wiltshire	Cremation in log coffin	SUERC-60967 -23.0	3600±30	2035–1880	Jones *et al.* 2017b	Accompanied by Accessory Vessel. Dates cremation event.
Barrow 11, 30/29, Petersfield Heath, Hampshire	Non-oak charcoal thought to be from coffin lid	SUERC-57807	3461±30	1885–1685	Needham & Anelay 2021	Dates formation of the timber, probably provides *terminus post quem* for date of deposition of both burials.
Newbarn Down, Isle of Wight 50.667628 -1.366736	Charcoal from log coffin, 427:7:3	SUERC-60839 -25.3	3724±29	2205–2025	Jones & Brunning 2022	Dates formation of the timber, probably provides *terminus post quem* for date of deposition of both burials.
Midlands						
Deeping St Nicholas, Lincolnshire	Human bone from child inhumation in pre barrow	GU-5355	3540±60	Weighted mean 3558±39 T'=0.1; T'(5%)= 3.8; ν =1; 5% significance level; Ward & Wilson 1978)	French 1994	Plano-convex flint knife & possibly a dark pebble were found with burial, which is likely to have been wrapped in a shroud. Dates formation of skeletal element sampled.
		GU-5358	3570±50	2025–1770	French 1994	See above.
Piper Hole Farm, Eaton, Leicestershire 52.831544 -0.870410	Cremation F11	SUERC-64505 -22.0	3599±37	2115–1825	Brunning *et al.* 2018	Later than log coffin. Dates cremation event, provides *terminus ante quem* for coffin.
Piper Hole Farm, Eaton, Leicestershire 52.831544 -0.870410	Cremation F19 in box	SUERC-61577 -23.3	3669±29	2145–1945	Brunning *et al.* 2018	Pre-dates log coffin. Dates cremation event, provides *terminus post quos* for coffin.
Sproxton, Leicestershire	Cremation F51	SUERC-64506 -25.2	3537±37	2010–1745	Brunning *et al.* 2018	Dates cremation event
	Cremation F46	SUERC-64507 -21.0	3461±37	1890–1640	Brunning *et al.* 2018	Dates cremation event

(Continued)

TABLE 2: (CONTINUED)

Site	Sample	Lab code δ^{13C}	Date BP	Date cal BC 95.4% unless otherwise stated	Reference	Notes
Eastern England						
Feltwell Anchor, Norfolk	Inhumation	GU-5571	3540±60	Weighted mean 3606±43 T'=2.3; T'(5%)= 3.8; ν =1; 5% significance level; Ward & Wilson 1978) 2130–1825	Bates & Wiltshire 2000	Body of young woman in log coffin in burnt mound. Dates formation of skeletal element, & closely associated with burial in the log coffin.
		GU-5572	3670±60			Body of young woman in log coffin in burnt mound. Dates formation of skeletal element, & closely associated with burial in the log coffin. Body not accompanied by any artefacts & its burial in a burnt mound, rather than a barrow, raises questions concerning memory of place & its interpretation by the people who buried the coffin inside it. Burial within natural mounds is known elsewhere in Norfolk. At Longham, 1 complete & 2 partial Beakers were recovered from a 'barrow' which was revealed to be a periglacial mound (Wymer & Healy 1996), but at Feltwell Anchor the digging of the grave must have exposed burnt material. One explanation is that, when encountered, the mound may have been thought of as an ancestral place or the work of supernatural beings, & it could represent the appropriation of a perceived ancient pyre for burial of a significant community member.
Risby, Suffolk	Inhumation No. 3. Left tibia from a mature male in log coffin	SUERC-62607 -20.9	3791±34	2340–2065	Brunning *et al.* 2021	Dates formation of the tibia, & closely associated with burial in the log coffin.
	Burial 2. Femur from articulated skeleton of 'elderly' male	BM-2522	3660±50	2200–1890	Vatcher & Vatcher 1976	See above. Probably post-dates log coffin burial (see new date above). Burial associated with a Beaker. Dates formation of the femur, may not be associated with use of log coffins. Not included in the modelling presented here.

(Continued)

TABLE 2: (CONTINUED)

Site	Sample	Lab code δ^{13C}	Date BP	Date cal BC 95.4% unless otherwise stated	Reference	Notes
Wales and Western England						
Tandderwen, Clwyd 53.184308 -3.375954	Cremated bone from log coffin	GrA-24868	3565±40	2030–1770	Brassil *et al.* 1991	Adult inhumation with Beaker & flint in possible wooden coffin cut by later grave containing lidded tree trunk coffin containing cremated remains of 2 adult males, 1 adult female, & 2 children. Excavators suggested the coffin could also have held an inhumation that had not survived. Dates cremation event, closely associated with deposition in the tree trunk coffin. Log coffin had been inserted into a central pit inside a ring-ditch which contained an earlier inhumation burial, associated with a Beaker & flint knife, which may itself have been in a log coffin
Watch Hill, Cornwall 50.353082 -4.851186	Bracken from upper coffin	WK-12940	3532±48	2020–1700	Miles 1975; Jones & Quinnell 2006	2 successive lidded tree-trunk coffins. Dates formation of bracken fronds, closely associated with deposition in the tree trunk coffin. Log coffins were placed within a ring-cairn which was subsequently covered by a large mound. The sequence is typical of the region's barrows (eg, Jones 2005; 2013).

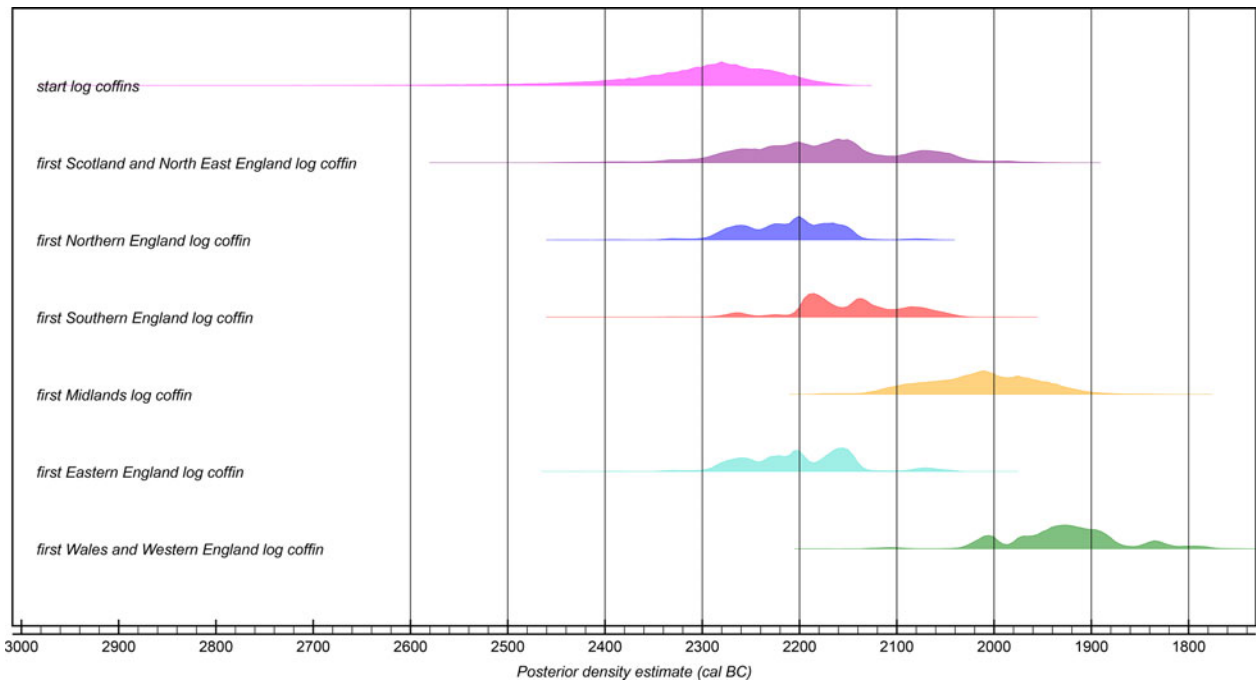

Fig. 4.
Estimates for the start of log coffin burial practices calculated as shown in Fig. 3

other than with those to the west and south respectively (Crellin *et al.* 2016).

Scotland and North-east England

This is the largest area but comprises just seven log coffins. All but one occurs in Scotland and, apart from one on the western coast, the rest are found near to the eastern seaboard (Fig. 2).

The number of radiocarbon determinations is relatively good, with four reliably dated sites. The earliest may be that from Cartington, Northumberland (*2340–2025 cal BC; 95% probability; GU-1648;* Fig. 3) although this estimate is relatively imprecise. The oak coffin was found within a cairn (Dixon 1913). The burial was taken to be an inhumation that had been wrapped in an animal hide which was accompanied by Beaker sherds and a flint (Table 2). The contents of the log coffin do not differ from other Beaker period/Early Bronze Age burials in the region where 'high status' objects are rare and sherds of pottery common finds (Crawford 1980; Fowler 2013, chap. 4). Instead, the burial stands out from others in the region in terms of the materiality of the coffin and the containment of the body which, as Fowler (2013, 121) points out, had been successively wrapped, first within an animal skin shroud and then by the coffin.

Dumglow, Dunfirmline, in southern Scotland (Sheridan *et al.* 2013) is the closest in the group to Cartington. The radiocarbon determination (*2150–1970 cal BC 90% probability* or *2200–2170 cal BC 6% probability; SUERC-49755*; Fig. 3) from the coffin places it later than Cartington. There are no human remains at Dumglow although an inhumation is probable. The third log coffin site, at Seafield West, Inverness, is the northernmost example in Britain. Two radiocarbon determinations were produced on the wooden dagger scabbard suggesting its use in *2035–1880 cal BC (95% probability; Seafield West*; Fig. 3; Cressey & Sheridan 2003; Sheridan 2004a). The site is rather different from those discussed so far in that it contained a crouched inhumation in log coffin accompanied by a Butterworth-type dagger (Gerloff 1975; Needham 2015).

The fourth dated burial is an isolated example from the west coast of Scotland at Dalrigh, Argyll & Bute (Sheridan 2002). No burial survived but a

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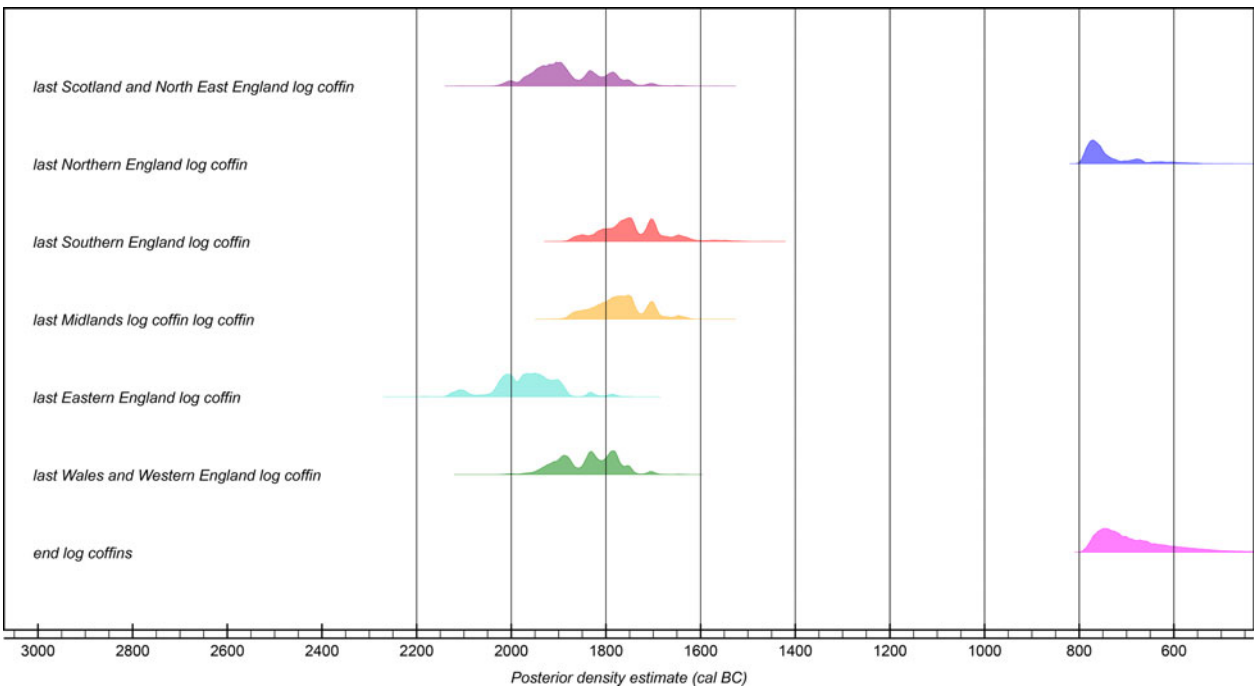

Fig. 5.
Estimates for the end of log coffin burial practices calculated as shown in Fig. 3. The end for this tradition as a whole is disproportionally affected by the late estimates associated with only two sites from Northern England (see discussion in the text)

radiocarbon determination obtained on birch bark may have been a cover or a wrapping for the body and suggests that burial occurred in *2040–1740 cal* BC (*93% probability* or *2120–2095 cal* BC *2% probability* or *1715–1695 cal* BC *1% probability*; *OxA-6813*; Fig 3). Again, there were no artefacts.

The sites with radiocarbon determinations match well with three undated sites from the region (Parker Pearson *et al.* 2013), only one of which produced a ceramic vessel. None of the log coffins has produced evidence for the gender of the interred person. With the exception of the Butterworth-type dagger from Seafield West, none of the artefacts can be seen as being associated with the marking of 'high status' personas.

Northern England

The Ridings of Yorkshire constitute one of the smaller regions, however, there are 22 log coffin burials, the majority of which are found in a remarkable concentration in east Yorkshire. The area also has the largest number of well dated sites.

The earliest dated log coffin, at Garton Slack, contained a young male who was accompanied with a Beaker and a flint (Parker Pearson *et al.* 2019, 154, 158). The burial here occurred in *2300–2130 cal* BC (*93% probability* or *2085–2055 cal* BC *2% probability*; *OxA-V-2279-35*; Fig. 3). At Wetwang Slack two log coffins were uncovered; the first is undated but contained the body of an adult male accompanied by a Food Vessel. Three measurements were produced on the timber of the second coffin under another barrow. These results may be subject to an old wood offset, but they are statistically consistent (Table 2), and suggest burial occurred after *2210–1950 cal* BC (*91% probability* or *2285–2250 cal* BC *4% probability* or *2230–2220 cal* BC *1% probability; Wetwang Slack*; Fig. 3). The coffin contained the bodies of two adults who were associated with a Beaker (Parker Pearson *et al.* 2013). The sex of these burials is unpublished but it is interesting as although double and multiple Beaker burials are known elsewhere in Britain (Thomas 1967; Fitzpatrick 2011) it is the only Beaker associated example from a log coffin from northern England.

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TABLE 3: ESTIMATES FOR KEY EVENTS IN THE CHRONOLOGY OF LOG COFFIN BURIAL CALCULATED IN FIG. 3 & SHOWN IN FIGS 4 & 5

Parameter name	*Highest Posterior Density interval (cal BC; 95% unless otherwise indicated)*	*Sites dated*
first Scotland & North-east England log coffin	*2340–2020*	4
last Scotland & North-east England log coffin	*2015–1740*	
first Northern England log coffin	*2300–2135*	7
last Northern England log coffin	*800–595*	
first Southern England log coffin	*2230–2040 (91% probability*, or *2280–2250 4% probability*, or *2230–2040 1% probability)*	6
last Southern England log coffin	*1875–1625*	
first Midlands log coffin	*2125–1910*	3
last Midlands log coffin	*1880–1680 (94% probability*, or *1655–1640 1% probability)*	
first Eastern England log coffin	*2300–2130 (92% probability*, or *2090–2050 4% probability)*	2
last Eastern England log coffin	*2055–1875 (86% probability*, or *2135–2080 7% probability*, or *1845–1820 2% probability*, or *1795–1780 1% probability)*	
first Wales & Western England log coffin	*2035–1785*	2
last Wales & Western England log coffin	*1955–1740*	

Fig. 6.
Estimate for log coffin activity calculated as shown in Fig. 3 plotted against site location over time. The time slices here are shown in centuries

A Beaker burial was also found below the barrow at Willie Howe but the interment was not within a coffin (Armstrong 1984; Brewster 1985). The second, log coffin burial was only accompanied by a few flints (Table 2) including a laurel-leaf blade. The mature male skeleton bore evidence of a blunt force trauma injury to his skull (Fig. 7). Two statistically consistent radiocarbon determinations (Table 2) suggest that the

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Fig. 7.
Blunt force injury to the left parietal of the male old middle adult from Willie Howe

individual may have died in *2210–2115 cal BC* (*64% probability,* or *2270–2260 cal BC*, or *2100–2035 cal BC 30% probability*; *rib*; Fig. 3).

Beaker ceramics were also absent at Gristhorpe, where a range of radiocarbon determinations from the burial of another mature male and the oak log coffin have been very precisely estimated (Appx S1). This burial dates to *2050–1995 cal BC* (*92% probability,* or *1980–1960 cal BC 4% probability*; *felling estimate*; Fig. 3) based on the revised modelling of the chronology (Table 2; Parker Pearson *et al.* 2013), which is within the currency of Beaker use. By way of contrast with Willie Howe, the accompanying artefactual assemblage was substantial and included a Merthyr Mawr-type dagger in a scabbard, a flint knife, a bone pin, and organic remains (Table 2). This stands out from the other log coffin burials in the region.

The primary burial within the oak log coffin at Loose Howe was also accompanied by a Merthyr Mawr-type dagger and flints (Elgee & Elgee 1949; Table 2). The biological sex of the burial is not known, however, radiocarbon dating of the hazelnuts produced an estimate for the date of the burial in *1975–1865 cal BC* (*64% probability*, or *2015–2000 cal BC 2% probability*, or *1850–1770 cal BC 30% probability*; *SUERC-69042*; Fig. 3; Jones *et al.* 2019). A re-evaluation of the site archive suggests that the barrow

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made have been disturbed and there were in fact two log coffin burials in the mound, only one of which was associated with artefacts. A second radiocarbon determination produced on cremated remains which had been inserted into the top of the barrow mound provides a *terminus ante quem* for the log coffin phase of activity of *1890–1735 cal BC* (*93% probability* or *1715–1695 cal BC*; *SUERC-69041*; Fig. 3).

Log coffin burial grave 157 at West Heslerton was that of a child accompanied by a Food Vessel. The burial is not dated but an earlier Beaker associated grave, 270, was dated to *2040–1615 cal BC* (*95% probability; HAR-6630*; Fig. 3) and this provides *a terminus post quem* for the log coffin (Powesland *et al.* 1986). A Food Vessel was also found at West Tanfield (Parker Pearson *et al.* 2013) although the burial did not survive.

A child burial is recorded at Hutton Buscel (Brewster & Finney 1995) but sites such as Little Ouseburn and Pockley (Rahtz 1989; Smith 1994) have no surviving burials. Other sites are perhaps more open to interpretation than suggested by antiquarian study. The burial at Towthorpe 139 (Mortimer 1905) (Fig. 8) has been suggested to be an adult male; although recent osteological analysis of the human remains (Jones *et al.* 2017a) could not confirm the biological sex. The individual was, however, accompanied by artefacts which included an Armorico-British dagger, a stone macehead, and a plano-convex flint knife-dagger. Many of the identified burials in northern England, including those at less well dated sites at Irton Moor and Howe Hill (Brewster 1973; Smith 1994), appear to be male, and there is perhaps a more consistent association between log coffin burials and males, *c.* 2150–1950 cal BC in this region than elsewhere.

In most of Britain the log coffin burial tradition appears to have ceased by *c.* 1700 cal BC. However, our Northern England region appears to be different. At Rylstone the oak coffin was found below a mound surrounded by a ring-ditch. The coffin contained a woollen shroud which had been used to wrap the body, no trace of which remained. The burial was assumed to be of Early Bronze Age date (Parker Pearson *et al.* 2013). The radiocarbon measurements demonstrated the burial represented a later rite; a weighted mean of two measurements on the coffin provided an estimate for the timber formation in *835–785 cal BC* (*93% probability* or *895–880 cal BC 2% probability; Rylstone log coffin*; Fig. 3; Table 2), while the woollen shroud returned an estimate for the date range *815–755 cal BC* (*95% probability*; *SUERC-53859*; Fig. 3), thereby demonstrating a Late Bronze Age date for the interment. Similarly, at the Bronze Age flat grave cemetery at Melton, a log coffin burial containing an adult male was dated by WK-21865 to *810–660 cal BC* (*90% probability* or *655–600 cal BC; WK-21865*; Fig. 3; Fenton-Thomas 2011; Parker Pearson *et al.* 2013).

Eastern England

Eastern England (Norfolk and Suffolk) forms one of the smaller areas but it has produced six log coffins associated with three barrows. Only one of these, at Risby, is in Suffolk and it currently represents probably the earliest example in Britain. Dating by the current project (Brunning *et al.* 2021) obtained a radiocarbon estimate of *2300–2130 cal BC* (*91% probability* or *2085–2050 cal BC 4% probability; SUERC-62607*; Fig. 3). The internment, a mature adult male, was not accompanied by any artefacts and was an off-centre burial. The log coffin is thought to have followed a child burial which had been accompanied by Beaker pottery (Vatcher & Vatcher 1976). The child burial is undated but a second 'elderly' person, who was also buried with Beaker pottery, probably died in *2150–1895 cal BC* (*92% probability* or *2200–2170 cal BC 4% probability; BM-2522*; Fig. 3; Healy 2012). There was no stratigraphical relationship between the log coffin and the second Beaker burial, although the determination from the latter appears to be a little later than that from the log coffin. Beaker associated burials are known from the area, as are a diverse range of funerary practices (Martin 1976; 1981).

The two Norfolk sites contrast strongly with one another. At Feltwell Anchor, the body of a young woman was placed into an oak log coffin which was interred within a burnt mound (Bates & Wiltshire 2000). Radiocarbon dating places this burial later than Risby in *2055–1875 cal BC* (*85% probability*, or *2135–2080 cal BC 8% probability* or *1845–1820 cal BC 2% probability* or *1795–1780 cal BC 1% probability*; *Feltwell*; Fig. 3). The body was not accompanied by any artefacts and its burial in a burnt mound.

The final site is at Bowthorpe where no less than four log coffin burials were recovered from one barrow. These included the central primary burial and

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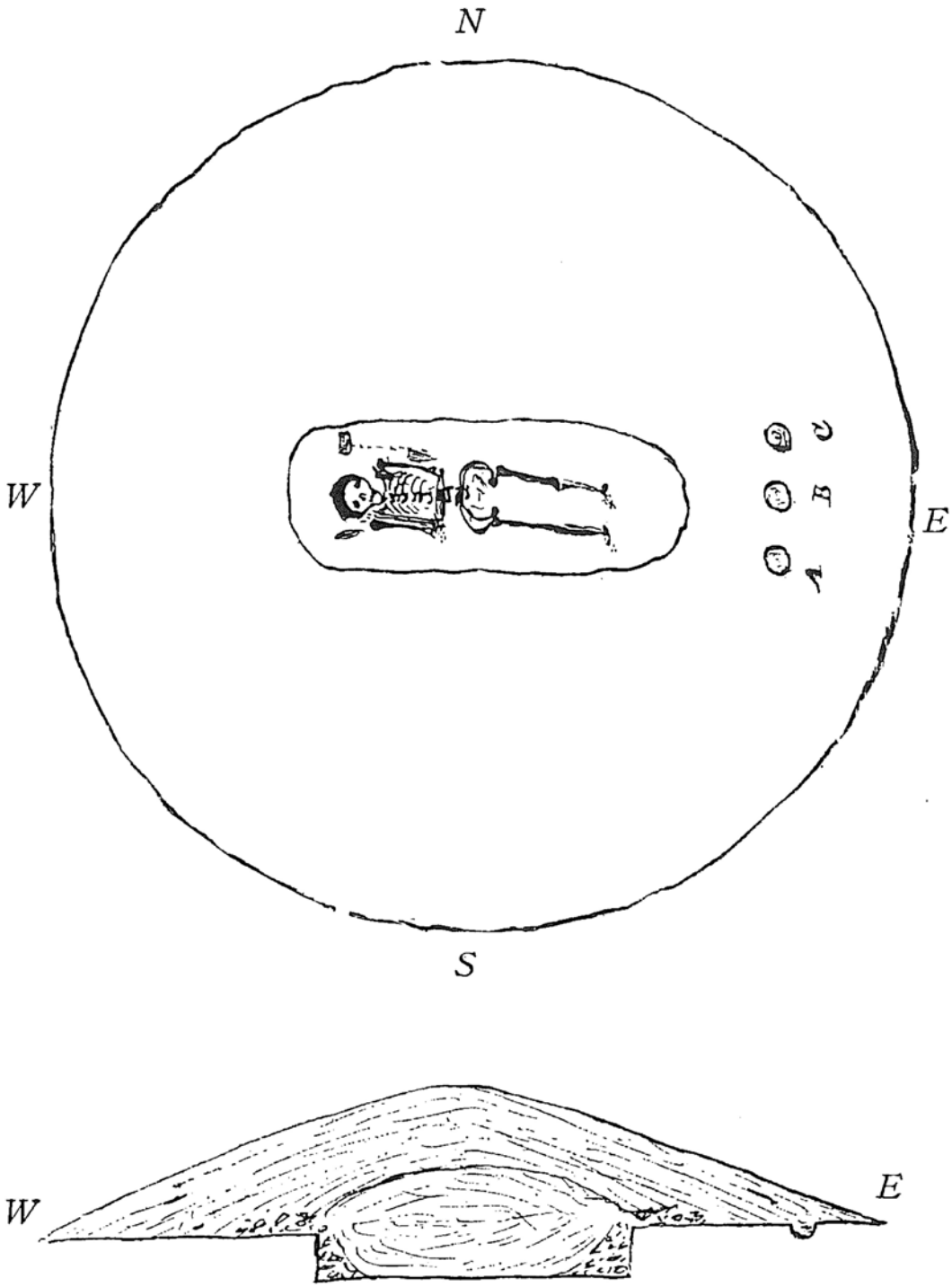

Fig. 8.
Towthorpe 139 barrow log coffin burial in plan (top) and section (bottom) (after Mortimer 1905)

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three satellite interments (Lawson 1986). Several other inhumations, including examples in coffins and cremation deposits, were also present in the barrow. The skeletons in the log coffins did not survive well although all seem to have been crouched inhumations. None of the log coffin burials was associated with grave goods and this was true of the other inhumations on the site. Only one of the satellite log coffin burials, grave 66, is associated with a radiocarbon determination (HAR-3687; 3370±80 BP; 1890–1455 cal BC 95% confidence). This date has quite a large standard deviation and it is not from the primary log coffin so it was not included in the model. It is, however, broadly consistent with much of the artefactual material from the barrow which included Collared Urn pottery. As at Risby, there appears to have been a variety of funerary rites practised at the same barrow, of which log coffin burial represented one strand.

The Midlands

The Midlands comprises a dispersed band of log coffin burials, spread across the eastern portion of central England between the major concentrations in Northern and Southern England and to the west of the eastern England groups. The group includes sites which might otherwise be included with northern or Eastern English counties, but which lie beyond the log coffin concentrations in those areas. Ten, and one probable, log coffin burials are recorded from eight barrows. Of these, four are associated with reliable determinations.

The earliest directly associated determination is from Deeping St Nicholas, Lincolnshire (French 1994), which suggests burial occurred in *2025–1765 cal BC* (*95% probability*; *Deeping St Nicholas*; Fig. 3). This log coffin burial was within a grave surrounded by concentric stake-rings. The log coffin pre-dated the construction of a barrow that, in turn, became the focus for subsequent burials which included inhumations and cremation deposits. The log coffin inhumation was a child of about 3–5 years old, who may have been wrapped in a shroud and who was accompanied by a plano-convex flint knife (Table 2). The site became a complex barrow associated with varied funerary rituals.

Two radiocarbon determinations from Pipers Hole Farm were obtained by this project (Brunning *et al.* 2018). Neither is directly associated with the log coffin but they do provide a *terminus post quem* and a *terminus ante quem* for the coffin. We have estimated (Appx S1) that the burial of the log coffin occurred in *2130–1890 cal BC* (*95% probability*; *Piper_Hole_Farm_log_coffin*; Fig. 3; Brunning *et al.* 2018). The interred individual was an adolescent. None of the four burials found within the central area of the barrow was strongly associated with artefactual remains although some sherds of Beaker were found with cremation F11 (Clay 1981) and, again, there is emphasis on diverse rites on the barrow, which itself was a complex monument.

Two determinations were obtained from a log coffin and a possible second log coffin at Sproxton, Leicestershire (Brunning *et al.* 2018). The primary burial, which was dated to *1890–1675 cal BC* (*94% probability* or *1655–1640 cal BC*; *SUERC-64507*), was found under the middle of the barrow and comprised the cremated remains of a probable adult male (Clay 1981) who had either been burnt inside an oak coffin or more probably placed within it. The burial was not accompanied any artefacts. The barrow was remodelled on several occasions with more burials being added over time (Clay 1981). One of these, F51 on the southern side of the site, was the cremated remains of a probable adult female accompanied by a Collared Urn, interred within a possible second log coffin. This burial probably occurred in *1970–1745 cal BC* (*95% probability*; *SUERC-64506*; Fig. 3), either slightly earlier or possibly contemporary with the 'primary' male burial.

The final dated log coffin burial at Tallington, Lincolnshire has a wide ranging standard deviation UB-450 (3410±165 BP) (Simpson 1976; Healy 2012), rendering it inaccurate as a chronological marker. The inhumation of a young male was, however, associated with a Food Vessel which dates it to *c.* 2200–1700 cal BC (Sheridan 2004b; Needham *et al.* 2010). As in Northern England, Food Vessels are relatively frequent and they are associated with three other log coffin sites in the region, including those at West Ashby, and Ponton Heath, Lincolnshire and Swarkeston, Derbyshire (Parker Pearson *et al.* 2013). The log coffin was succeeded by further burials and the barrow and remodelled on several occasions.

A broadly comparable sequence to the dated log coffin burials discussed above can also be seen at the undated barrow at West Ashby, Lincolnshire (Field 1985), where a series of burials including two in log coffins, one of which contained a Food Vessel, were inserted into barrow with a long history of

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remodelling. Taken together, the dated log coffin burials in the Midlands are found under multi-phased barrows associated with other forms of non-log coffin burial. Excavations in the east Midlands have revealed barrows with extended and complex patterns of burial and remodelling, as at Barnack and Raunds, which were re-used over several centuries (Donaldson 1977; Hughes 2000; Harding & Healy 2007; Thomas 2013).

Southern England

The majority of the 20 or so log coffin burials in Southern England fall within the 'Wessex' area (Piggott 1938), comprising the counties of Dorset, Wiltshire, Hampshire, and the Isle of Wight. For this study, we have expanded it to include a small number of outlying sites in Oxfordshire, Sussex, and Somerset which, although having sequences that are distinct from the Wessex chalkland (Hamilton 2003; Morigi *et al.* 2011; Lewis & Mullin 2012), are more easily dealt with here. The majority of burials, however, are found in Wiltshire and Hampshire and many were identified by antiquarians (Hoare 1821; Phillips 1857). Consequently, despite their concentration, only five definite and one possible site are associated with reliable radiocarbon dates.

The earliest dated site is at Radley Barrow Hills, Oxfordshire, flat grave 950, where an adult male was buried in a log coffin with a Beaker and other artefacts (Barclay & Halpin 1999; Table 2). The determination on human bone produced an estimate of *2235–1960 cal* BC (*92% probability* or *2280–2250 cal* BC *3% probability*; *BM-2703*; Fig. 3). A second probable log coffin at Radley within a pond barrow, produced a later date of *2035–1610 cal* BC (*95% probability*; *OxA-1880*; Fig. 3). Here an indeterminate youth was buried with a flint piercer, red deer antlers, and a cattle skull. The Radley pond barrow log coffin burial is the only example in Oxfordshire which post-dates the Beaker horizon.

Two or potentially three log coffins were found at Newbarn Down, Isle of Wight, (Tomalin 1979). The first was one of several burials made within a stake-circle. The log coffin burial was not dated and no body survived, however, it contained a Food Vessel and flints. Two urned cremations and a miniature log coffin were subsequently inserted into the barrow. The second log coffin, however, did not contain any artefacts or human remains and a date of *2205–2030 cal* BC (*95% probability; SUERC-60839*; Fig. 3) was obtained on charcoal from the coffin (Jones & Brunning 2022). The second log coffin burial is interesting as it was located close to the earlier coffin and its small size could indicate that it held a young person; as could a potential third example, also on the eastern edge of the site. It had been dug through the mound and contrasts with the other later burials which were urned cremations.

In Wiltshire there are two log coffin burials with radiocarbon determinations. The earliest, West Overton G1, is associated with an inhumation dated to *2220–1765 cal* BC *(95% probability; SUERC-26203*; (Needham *et al.* 2010). Here, a log coffin with an adult male was accompanied by an artefact assemblage including a tanged dagger (Table 2). The artefacts are comparable with those found in a handful of rich 'Wessex I' burials (Woodward & Hunter 2015), the majority of which are not associated with log coffins.

The burial at Milton Lilbourne barrow 4 is rather different. Here the barrow covered a pyre deposit within which was a small, unlidded coffin containing the cremated remains of an old male and an unburnt Accessory Vessel (Ashbee 1986). A radiocarbon determination of *2040–1880 cal* BC (*95% probability*; *SUERC-60967*; Fig. 3) was obtained on the cremated bone (Jones *et al.* 2017b). In contrast with West Overton there was no intention to display the body in the coffin which would have been too small to hold it.

The barrow group at Petersfield, Hampshire was associated with a variety of funerary practices, including inhumation and cremation with burial in urns, coffins, and log coffins (Needham & Anelay 2021). Barrow 19 was an enclosure barrow within the centre of which were two large pits, each containing a log coffin stain, which had held cremated remains dated to *1885–1730 cal* BC (*81% probability,* or *1725–1690 cal* BC *14% probability; SUERC-57807*; Fig. 3).

The final log coffin burial with a radiocarbon determination is from Hove, East Sussex (Philips 1857). This was found under a barrow; the burial may have been a cremation deposit or an inhumation and the gender is unknown. The radiocarbon date is unreliable but the artefact assemblage, which included an amber cup, a battle axe, and a Camerton-Snowshill dagger, places the burial in the first half of the 2nd millennium BC (Needham *et al.* 2006; Jones & Quinnell 2013).

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The remaining log coffins mostly date to *c.* 2000–1600 cal BC (Parker Pearson *et al.* 2013, table 4.1) and contain a range of artefacts including daggers and pins, typical of their period. For example, the log coffin under Winterbourne Stoke barrow G5 contained an inhumation accompanied by artefacts which included Armorico-British daggers and, at Sigwells, Somerset, a Camerton-Snowshill dagger was found with a cremation burial. Winterbourne Stoke barrow G9 contained a cremation burial with artefacts including jet and amber beads (Woodward & Hunter 2015). A number of the log coffin burials are of cremated remains, as at Latch Farm, Hampshire (Piggott 1938) and it is reasonable to suggest that, given the variation in associated rites, they represent one small element within the region but otherwise follow local burial practice preferences.

Wales and Western England

Wales and Western England (Devon & Cornwall) constitutes the second largest area but, with just five log coffins from three sites, it contains the smallest number. In terms of radiocarbon determinations, however, the coverage is better, with two sites being associated with reliable dates. A third, Dysgwylfa Fawr, Dyfed, has associated radiocarbon determinations but these are not reliable. Tandderwen produced the earliest estimate of *2030–1865 cal BC* (*75% probability*, or *1850–1770 cal BC 21% probability*; *GrA-24868*; Fig. 3) for the date of the cremation event associated with a log coffin. Here the log coffin had been inserted into a central pit inside a ring-ditch which contained an earlier inhumation burial, which may itself have been in a log coffin (Brassil *et al.* 1991). The dated secondary log coffin burial, however, held a multiple cremation deposit comprising two adult males, one adult female, and two children. No artefacts were present except for a faience bead fragment and a sheep bone. It is certain that the log coffin interment was not associated with high status artefacts and the site is consistent with funerary traditions from Wales at this time, where multiple cremations are frequently found (Lynch 2000, 121–8; Tellier 2018, 114–15). Here, log coffin burials represent, along with artefacts such as Collared Urns, the adoption of a wider practice and it is interesting that this part of north-west Wales seems to have been linked with far-flung communities in the Early Bronze Age (Needham 2012a).

The burial at Watch Hill in Cornwall (Fig. 9) was probably a little later; the bracken packed over the log coffin dates to *1980–1740 cal BC* (*92% probability*, or *2020–1995 cal BC 3% probability; WK-12940*; Fig. 3). The burial comprised two lidded tree trunk coffins, placed one above the other (Miles 1975). No human remains or grave goods were present. The coffins had again been inserted into an older monument, in this case a ring cairn (Jones & Quinnell 2006), which was subsequently covered by a large mound.

At the third, undated site, Dysgwylfa Fawr, two log coffins were placed one above the other. In this case a cremation burial was found associated with a Food Vessel (Forde 1939).

DISCUSSION

The following discussion focuses on the overall chronology for log coffins and the evidence for regional variation between the areas. Finally, some emerging themes to do with modes of deposition and identities of the interred are briefly considered.

Chronology

Log coffin burials were never commonplace and must have been extraordinary events, however, the radiocarbon dating from the current project and reliable dates from other sites allows for an outline model to be produced.

Chalcolithic/Early Beaker: Nearly all the dated log coffin burials post-date the Chalcolithic (Parker Pearson *et al.* 2013); only two have determinations which could belong to this time. Cartington in North-east England was associated with a Beaker, however, the determination is less precise and the chronology of Beakers means this burial could have occurred in the later part of this range. The radiocarbon dating from Risby, however, suggests this activity occurred in the 23rd or 22nd century BC. The Risby burial is also post-dated by a Beaker associated burial which lends support to the measurement. Although the majority of log coffins are certainly later, in light of the dates from Risby, and possibly Cartington, their origin can be seen to be part of a range of practices associated with the introduction of rites usually involving the treatment of the individual body (but occasionally multiple burials) which included plank-built coffins, biers, and wooden chambers (Fitzpatrick 2011;

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Fig. 9.
The lower log coffin stain in central grave at the Watch Hill barrow

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Needham 2012b; Shepherd 2012; Needham *et al.* 2017). These traditions probably had their origins in Europe, as can be seen in Beaker burials in the Netherlands and non-Beaker burials found in other parts of Europe (Harding 2000, 103–5; Bourgeois 2013, 84; Wentink 2020, 202). This corresponds with the recent aDNA evidence for a demographic transformation in parts of Britain, exemplified by the presence of individuals with large amounts of Steppe-related ancestry after 2450 cal BC (Olalde *et al.* 2018). Log coffins (and other wooden containers) mark a departure from the cremation burials of the Late Neolithic (Parker Pearson *et al.* 2009; Noble & Brophy 2017; Tellier 2018, 63) but were also regionally diverse (eg, Fokkens 2012) and do not appear to have been adopted by all the communities.

Early Bronze Age (late Beaker and Food Vessels): Log coffin burials are found in five regions. Where the body survives, all are inhumations. Several were directly associated with Beaker pottery, as at Radley 950, or on sites where Beaker associated activity was also found, as at Willie Howe. In Scotland and North-east England, Northern England, and a few sites to the south, such as Newbarn Down, there is also an association between log coffin burials and Food Vessels, and very occasionally bronze daggers, as at Seafield West, Gristhorpe, and West Overton. Although burials of this time are found in all the regions, apart from Wales and Western England, the majority are in the northern half of Britain, especially Yorkshire, where there is a marked concentration of burials, including Garton Slack, Gristhorpe, Willie Howe, and Wetwang Slack. All these burials are of males, in three cases mature males. Only Gristhorpe, however, is associated with a rich artefactual assemblage.

Early Bronze Age (late Food Vessels and urns): The main period of log coffin burials occurs from *c.* the 21st/20th century until the 17th/16th centuries BC; although none is securely dated to this period in Scotland and North-east England. There could have been a decline in log coffin burials in Yorkshire, although many of the coffins are undated/lack diagnostic artefacts. In the Midlands, Eastern England, Wales and Western England, and especially Southern England there is a significant increase in the number of log coffin burials, which include adult males, females, and children. In no region, however, are they a common form of interment and they are associated with the predominant local burial rite for their period. For example, the Wessex I burial at West Overton is of an inhumation, whereas the later burial at Petersfield Heath held a cremation. The number and choice of artefacts reflect the wider pattern found in Wessex. However, very few of the bodies associated with log coffins in Southern England have been analysed and, in most cases, biological sex has been assigned on artefactual grounds, for example, Winterbourne Stoke G5 is assumed to be male because of the accompanying dagger while G9 is taken to be female because beads are frequently associated with females (Sciama & Eicher 1998). Given the lack of modern study, and the potential of gender fluidity in prehistory (Pape & Ialongo 2023), such assignments of sex or gender should be treated with caution.

Late Bronze Age: Log coffin burials have been taken to have ended by the middle centuries of the 2nd millennium BC (Parker Pearson *et al.* 2013), as both the diagnostic artefacts and the overwhelming majority of radiocarbon determinations fall before that time. Indeed, there was no evidence to suppose that log coffin burials continued in five of the six areas after *c.* 1600 cal BC. Two sites, however, have produced dates which stand out as being rather later. The first, a Late Bronze Age to Iron Age date from Melton, Yorkshire (Fenton-Thomas 2011) could perhaps be dismissed as being anomalous. However, this is made less certain by the dating undertaken of the log coffin from Rylstone (Melton *et al.* 2016). Both the coffin and the woollen shroud produced Late Bronze Age radiocarbon determinations of *c.* 900–600 cal BC. Given that, in the Early Bronze Age, this was one of the principal areas in which log coffin burials were made, there is the possibility that they represent either an older tradition which also included the raising of a mound that had been passed down through a social memory of how to bury certain individuals, or that a re-invention had occurred, perhaps though disturbance of an older log coffin burial. It is noteworthy that comparable activity is paralleled elsewhere by the building of monuments, such as 'hengiforms', which look like those of earlier periods (Fontijn *et al.* 2011; Bradley & Nimura 2016).

Alternatively, aDNA analysis suggests that there was an extended period of migration during the Middle–Late Bronze Age, most probably from northern France or the Rhineland, in the later Bronze Age

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(Patterson *et al.* 2022). Dutch examples of the burial rite are known to have persisted through the Bronze Age and into the 1st millennium BC, as at Angelslo-Emmerhout where there are examples of Middle Bronze Age and Iron Age date (Arnoldussen & Scheele 2012). It seems credible that the migration may have led to a re-introduction in Northern England, although it is of interest that other regions such as Eastern England, which also saw migration, did not (re)adopt log coffin burial.

Mode of deposition and changing identities: Log coffin burials can clearly be seen to be linked with new practices which were associated with the interment of the dead from the beginning of the Early Bronze Age. However, in contrast with other forms of contemporaneous burial rites, where objects were ordered around the body to create particular forms of identity or represent relationships between the mourners and the deceased (Thomas 1991; Barrett 1994, 126–7; Brück 2004), here the coffin was the focus. In common with other contemporary containers such as plank coffins, burial in a log coffin was a way of containing/wrapping the body (Cooper *et al.* 2019). The selection of a mature tree (usually oak) is likely to have carried its own history and symbolism (Rival 1998; Fahlander 2018) and its felling and shaping were probably socially significant events. The creation of a log coffin using Bronze Age tools would have been an arduous task and its making therefore represented a considerable effort. From the moment that the lid was put in place it was the log coffin which would have taken centre stage in the rites and it is interesting, as this study has shown, that throughout the Early Bronze Age many individuals inside log coffins were not directly accompanied by 'grave goods'; although other types of artefactual deposition outside the coffin context have not been considered (cf, Cooper *et al.* 2020). Even before the lid covered the individual it is notable that, where preservation has permitted (for example, Cartington and Gristhorpe), the bodies were wrapped in shrouds/garments. Susannah Harris (2014) has noted, in relation to Scandinavian log coffin burials, that this may have been part of the transformation process of the deceased from a living individual into a particular type of personhood which would have been completed by being encased within the tree.

Log coffin burials were, however, intermittent events which took place over several centuries across wide geographic zones. Even in Northern England, where there is a concentration from *c.* the 21st/20th century until the 17th/16th centuries BC, there would have been significant gaps between log coffin internments of this type and they therefore need to be understood against both the temporal changes as outlined above and regional traditions (Brück 2019, 87). The important point to note is that, apart from the log coffin container itself, they do not represent a single, unified tradition.

When the very long timespan is considered, there would have been the potential for increasing variance in rites associated with log coffins over time and between communities. There was the potential for rites to be misremembered (eg, Rowlands 1993) and/or re-interpreted to suit localised understandings of what was appropriate. Although log coffin burials had their origins in a much wider practice they were the subject of local decisions and attitudes towards the dead.

We can see this by contrasting the rites from the six regions *c.* 2000–1600 cal BC when the employment of log coffin burials was at its height. The concentration of log coffin burials in Yorkshire might be interpreted as 'elite' burials. Where identification is possible, there is a focus on mature males, which could be associated with the construction of personhood associated with a 'warrior identity' (Treherne 1995). This might be supported by the daggers found with the burials at Loose Howe and Gristhorpe. Beyond Northern England, however, this narrow construct breaks down. While log coffins may still have marked an individual(s), and males are found in other areas (cf, Melton *et al.* 2013), the rites and range of individuals represented indicate that other forms of localised identities were being marked, which included women, young people, and children. This can be seen in Southern England but is particularly evident in Eastern England (for example, Bowthorpe), and in Wales and Western England.

Divergence from inhumation burial is also found, with cremated reamins being placed in the coffins, as at Petersfield Heath and Tandderwen. The log coffin burials interred *c.* 2000–1600 cal BC contain a comparable range of people (adults and children) to those buried in other ways but they were never a common mode of interment. Log coffins burials may, therefore, have been an unusual, memorable event, used to define a particular type of social identity or 'personhood' (Fowler 2004, 73–6) but which was neither stable over time nor identical across the regions.

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Conclusions: an outline model for the log coffin tradition(s) in Britain

There are still too few radiocarbon dates and too many log coffin sites without either a surviving burial or diagnostic artefacts to provide a 'belt and braces' chronology of log coffins and there is also the probability that, where only coffin stains survived, they were missed by antiquarians in the past. That said, the determinations from this and more recent analysis of old and new burials enables an outline chronology to be put forward.

The earliest log coffins may have their origins in a range of practices associated with containing the individual dead during the Chalcolithic. Only two potential sites are known but, perhaps significantly, both are found on the eastern side of England and have direct or indirect associations with Beakers. As such, they could be seen to be a minor component of a new suite of items and practices marking a small number of individuals. Around either side of the start of the 2nd millennium BC there is an increase in their number, with the majority of the Yorkshire cluster of burials falling into this period. Where sex identification is possible the majority, especially in Northern England, are, as noted by Melton *et al*. (2013, 36), adult males. Elsewhere there is more diversity after 2000 cal BC and it is evident that log coffin burials were largely incorporated within the prevalent local funerary traditions. The period of the 20th–18th centuries BC may therefore represent a period when these traditions were more variable and subject to negotiation and is, perhaps, indicative of a time when there was more regionalised variation in group identity (eg, Garwood 2007; Garrow *et al* 2014; Fowler & Wilkin 2016, 122–4, 127–9). In common with other forms of funerary rite, there is an absence of log coffin burials after *c*. 1600 cal BC for around 800 years. The discovery of two apparently anachronistic Late Bronze Age log coffin burials in Yorkshire arguably represents a harking back or a manipulation of the burials rites of an ancient past or may be a product of migration from areas of the Continent, such as the Netherlands, where the burial rite had persisted.

In summary, log coffin burial occurred over several centuries and was used to mark the personhood of certain individuals. Those identities and associated rites were, however, interpretable by the local communities who decided to encase and transform their dead within the tree trunk.

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SUPPLEMENTARY MATERIAL

To view the supplementary material for this article please visit https://doi.org/10.1017/ppr.2023.5

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RÉSUMÉ

Les sépultures en cercueil monoxyle du début de l'âge du Bronze en Grande Bretagne: origines et développement d'un rite(s) funéraire, par Richard Brunning, Seren Griffiths et Andy M. Jones

Cet article présente les résultats d'un projet visant à dater par le radiocarbone des cercueils monoxyles du début de l'âge du Bronze. Les cercueils monoxyles ont été reconnus comme pratique funéraire dès la découverte des premiers exemplaires lors des fouilles par les Antiquaires. Toutefois, relativement peu d'entre eux ont été associés à des datations radiocarbones, et nombre de ces datations sont très imprécises. Pour remédier à cela, sept sépultures en cercueil monoxyle ont été identifiées en Angleterre, et onze échantillons issus de celles-ci ont été datés au radiocarbone. Les dates obtenues ont été examinées à la lumière de datations fiables précédentes afin de revoir les origines et le développement du cercueil monoxyle par région. Les résultats indiquent que les plus anciens cercueils étaient associés à des sépultures campaniformes, mais que des diversifications régionales impliquant différent rites se sont par la suite développés.

ZUSAMMENFASSUNG

Die frühbronzezeitlichen Bestattungen in Baumsärgen aus Großbritannien: Die Ursprünge und Entwicklung eines Bestattungsrituals, von Richard Brunning, Seren Griffiths und Andy M. Jones

Dieser Beitrag stellt die Ergebnisse eines Projekts zur Gewinnung von ^{14}C-Daten von Baumsärgen der Frühbronzezeit vor. Baumsärge sind seit den ersten, in antiquarischen Ausgrabungen entdeckten Exemplaren als Bestattungstradition bekannt. Jedoch liegen für vergleichsweise wenige Radiokarbondatierungen vor und viele der älteren Datierungen sind sehr ungenau. Um diesem Umstand zu begegnen, wurden sieben Baumsargbestattungen aus England ausgewählt, von denen insgesamt elf Proben für die ^{14}C-Datierungen gewonnen wurden. Die Daten aus diesem Projekt wurden mit zuvor gewonnenen verlässlichen Daten abgeglichen, um die Ursprünge und Entwicklung der Baumsargbestattung in verschiedenen Regionen zu überprüfen. Aus der Untersuchung geht hervor, dass die frühesten Baumsärge mit Becherbestattungen in Verbindung stehen, dass sich aber bald regionale Varianten mit unterschiedlichen Riten entwickelten.

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RESUMEN

Los enterramientos en ataúd de madera del Bronce Inicial en Gran Bretaña: orígenes y desarrollo de los ritos funerarios, por Richard Brunning, Seren Griffiths y Andy M. Jones

Este artículo describe los resultados de un proyecto orientado a la obtención de determinaciones de radiocarbono para los enterramientos en ataúd de madera del Bronce Inicial. Estos ataúdes de troncos se han reconocido como tradición funeraria desde que las excavaciones de los anticuarios descubrieran los primeros ejemplos. Sin embargo, comparativamente pocos están asociados a fechas de radiocarbono, y muchas de las viejas dataciones son muy imprecisas. Para afrontar este aspecto, se identificaron siete enterramientos en toda Inglaterra, y se enviaron once muestras para su datación por radiocarbono. Las dataciones obtenidas en este proyecto fueron revisadas en comparación con las determinaciones fiables previamente obtenidas para reconsiderar los orígenes y desarrollo de este tipo de enterramientos en la región. Los resultados obtenidos indican que los primeros ejemplos de ataúdes de troncos están asociados a los enterramientos campaniformes, pero que pronto se desarrollaron variaciones regionales.

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