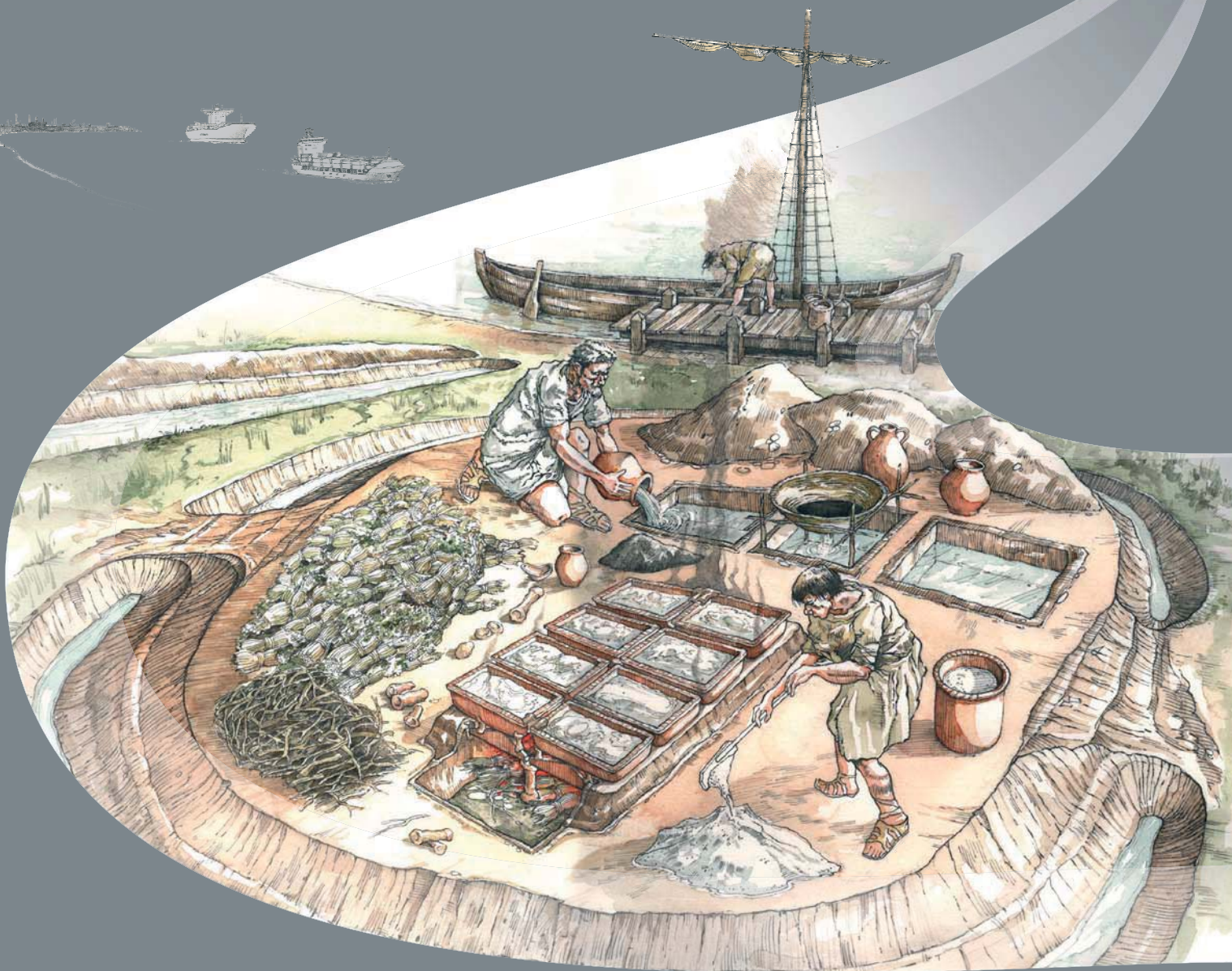


LONDON GATEWAY

IRON AGE AND ROMAN SALT MAKING IN THE THAMES ESTUARY

EXCAVATION AT STANFORD WHARF
NATURE RESERVE, ESSEX



SPECIALIST REPORT 12

CREMATED HUMAN REMAINS

BY HELEN WEBB

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Introduction

A single deposit of cremated human bone was recovered during the excavation of Area C. The deposit was recovered from the sole fill (3053) of grave 3052. The cremation deposit was unurned, although a ceramic vessel (SF 3001, 3054) was closely associated with the remains. Dating of this vessel suggests that the cremation deposit dates to the late Iron Age or early Roman period. The cremated human bone was osteologically analysed and the results are presented below.

Provenance

The cremation deposit was recovered from grave 3052. The grave was located in the north-eastern part of Area C, close to the eastern limit of the Area C excavation. The pit lay approximately 7m to the north of ditch 3034, dated to the early Roman period.

Grave 3052 was sub-circular in plan, with a concave base and moderately sloping sides. It measured 0.85m in width and its maximum depth was 0.13m. The pit contained one fill (3053). This was a firm silty clay in a mixed grey-brown and red-brown colour. The deposit of cremated bone, comprising a total weight of 148.1g, was predominantly restricted to the lower third of this fill, although the excavator noted some small fragments towards the top of the deposit. Large fragments of charcoal were also noted as present, and were restricted to the south-east side of the pit. There was no evidence for in situ burning. A fragmented ceramic vessel (SF 3001, 3054) was also present within fill 3053, apparently overlying the cremation deposit.

Apart from the vessel, no finds were associated with the cremated bone. A single fragment of cremated animal bone (a frog urostyle), identified by Lena Strid, was present among the cremated human bone.

Disturbance and truncation

The grave had not been disturbed or truncated by later archaeological features or animal/plant action. Truncation by machine stripping was minimal and given that the majority of the cremated bone deposit was situated in the lower part of the fill, the machining damage is unlikely to have had a significant effect on the quantity of bone present. Vessel 3054 was slightly disturbed during the machining, although it had already been broken in antiquity.

Osteological methodology

In accordance with recommended practice (McKinley and Roberts 1993), a 100% bulk sample of the cremated bone and surrounding soil was recovered. The sample was then wet sieved and sorted into fractions of >10 mm, 4-10 mm, 4-2 mm and <2 mm. Bone was then sorted from the residues and osteologically analysed.

The bone was assessed for colour, weight and maximum fragment size. Each fraction was examined for identifiable bone elements and the presence of pyre and grave goods. The minimum number of individuals present, and estimation of age and sex was attempted, but was generally unsuccessful. A summary of the skeletal elements represented and the weight of bone present per fraction size is given in Table 12.1.

Results

Condition and fragmentation of the bone

The bone principally comprised longbone shaft and skull fragments, although other skeletal elements, including ribs, a fragment of proximal radius and hand/foot phalanges were occasionally identified. There was no evidence for deliberate selection of certain bones for burial. Very little trabecular bone had survived.

In general, the cremated bone was very fragmented, with a maximum fragment size of 45mm (a longbone fragment). This fragment size falls well below the range of maximum fragment sizes recorded from modern crematorium where longbone fragments averaged between 68mm and 195mm in length (prior to cremulation) (Gibson 2007). Of the total deposit of bone, the vast majority (76.5%, by weight) was from the 4-10 mm fraction. Far fewer fragments (34.3% of the total weight) were over 10mm in size. That said, only a very small proportion (c 0.35%) of the total bone

weight was less than 2mm.

Weight of the deposit

Investigations in modern crematoria have found that the bone weight of cremated adult individuals ranges between 1,000g – 2,400 g, with an average of 1,650g (McKinley 2000a, 269). In archaeological cremation burials, the thoroughness with which bone is collected from the pyre site following a cremation is a very significant determinant of the final weight of the cremation deposit (McKinley 1997, 139). How assiduous the mourners were in collecting bone from the pyre site was probably highly coloured by their beliefs in the afterlife and their perceptions of the relationship between the body and spirit after death, as well as the status of the deceased (McKinley 2000a, 270). Thus, all cremation burials are essentially ‘token’ as the entire skeleton is never truly represented (McKinley 2000c, 42). Taphonomic changes, such as leaching of inorganic minerals from bone (most evident in trabecular bone) and mechanical disturbance and truncation also influence the final weight of the deposit. Archaeological machine stripping is a significant factor, as is sampling of the deposit and the subsequent processing. In the case of the cremated bone deposit from grave 3052, the total weight of the was very low, at 148.1g.

Colour of the cremated bone

Cremated bone may range in colour from brownish-black (slightly charred), through hues of blue and grey, to white, or fully calcined bone (McKinley 2000b, 405). These colour changes depend on the temperature of the firing, the oxygen supply and the duration of exposure of the body to the flames (McKinley 2000d, 66). In modern crematoria where temperature, fuel availability and air circulation are optimised, full cremation of an adult corpse generally takes between 1-1.5 hours to complete when the temperature is maintained between 700-1,000°C (McKinley 2000b, 404). Here, the speed of full combustion depends on the size and body mass of each individual as well as the proportion of fatty tissue present on the body. In pyre cremations, maintenance of an optimal temperature and sufficient fuel and oxygen supply throughout the pyre is more problematic, often leading to less uniform combustion of the corpse (conspicuous in colour variation of different skeletal elements). Both the length of time that the pyre will burn and the temperature attained are largely dependent on the quantity of fuel used in construction (McKinley 2000a, 269). Pyre

technology, such as pyre construction or the use of flues to facilitate oxygen circulation throughout the pyre, also influences the efficiency of cremation (ibid., 269).

The vast majority of bone fragments in the present cremation deposit were light greyish-white, indicating that the cremation process had been efficient in terms of temperature and even distribution of the heat. Only a very small proportion (<1 %) of fragments were darker grey in colour. A number of fragments (at least 17), predominantly unidentified longbone shaft fragments, displayed small patches of bright, turquoise blue colouring. These did not appear to relate to a colour change from the cremation process itself, but were, rather, a stain on the bone, probably from metal objects, such as a bracelet or armband, being worn around the arm of the deceased during cremation.

Palaeodemography

The cremated bone deposit appeared to comprise a single individual, although the small quantity of bone present and considerable fragmentation made identification of repeatable elements problematic. From the general thickness of the identifiable longbone fragments, and the sectional thickness of the skull fragments, the deposit appeared to comprise the remains of an adult. Unfortunately, no other ageing or sexually diagnostic skeletal markers were present.

Pathology

Osteophytes (new bone) were observed around the proximal margin of a distal hand phalanx. Osteophytes, or osteophytosis, is an extremely common condition in both modern and archaeological populations, and its presence increases markedly with age (Rogers and Waldron 1995). In the present case, the osteophytes were only very slight and probably of little or no consequence to the overall health of the individual during life.

Discussion

The cremated bone from pit 3052 probably represents a formal cremation burial, although it is clear from the low bone weight that only a small proportion of the deceased individual's cremated remains was deposited here. Machine truncation of the

pit will have had only a minimal effect on the amount of bone present, given that the bone deposit was concentrated at the bottom of the pit. While poor preservation of trabecular bone may account for some reduction in the final bone weight, the extent of this influence remains in question. The original nature of the deposit is probably the most significant factor. It is possible, given the presence of large charcoal fragments in the fill, that this deposit represents redeposited pyre debris – the material remaining at the end of cremation, including fragments of cremated bone not collected to form part of the formal 'burial' (McKinley 2000c, 41). However, the main component of redeposited pyre debris is fuel ash, possibly with burnt stone and burnt clay (*ibid.*, 41). These were not noted to be present by the excavator. It is possible therefore, that the deposit is a 'token' burial, with the rest of the bone perhaps having been buried elsewhere, or perhaps scattered, or distributed amongst the funeral attendants (*ibid.*, 42). Even in intact, well preserved burials, it is rare, if ever, that the skeletal remains of an entire individual are present (McKinley 1997, 137).

The cremated bone deposit was highly fragmented. The high fragmentation may be due to a range of factors relating both to funerary practices and taphonomy. It is possible that the human remains were deliberately broken up by mourners following cremation, as part of the funerary ritual, possibly to symbolise the end of corporeal existence and to emphasise the separation of the deceased from the world of the embodied living (McKinley 2000c, 42-3). Alternatively, fragmentation of the bone may have occurred at any or several of the stages between collection from the funerary pyre to archaeological excavation and post-excavation processing. The marked fragmentation of this assemblage made identification of skeletal elements, age and sex problematic. With regard to the overall colour of the bone, it appears as though a high efficiency of cremation had been achieved, with the vast majority of bone being a greyish-white colour.

The staining on a number of the bone fragments is likely to represent the proximity of a metal object (possibly copper alloy) to the bone. Such objects may include personal effects worn by the deceased on the pyre. Only a single fragment of animal bone was identified within the cremated remains. This was a cremated frog bone. While animals (typically sheep or goat, pig, ox and domestic fowl) were sometimes placed on the funeral pyre as food offerings during the Iron Age and Roman periods (Philpott 1991, 195), it is more likely, in this instance, that the animal had unwittingly added itself to the pyre.

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Cremated Human Remains Table

TABLE 12.1: SUMMARY OF SKELETAL ELEMENTS REPRESENTED AND WEIGHTS OF BONE PRESENT

Deposit	Skeletal region	> 10 mm frags	Weight	10-4 mm frags	Weight	4 - 2 mm frags	Weight	<2mm	Weight
3053	Skull	x2 probable occipital frags, x1 temporal frag, other vault frags.	7.1	Vault frags, possible temporal frag, tooth root (broken)	3.3 g	-	0 g	-	0 g
	Axial	Rib frag.	0.1 g	-	0 g	-	0 g	-	0 g
	Upper limb	Long bone shaft frags, MC shaft frag.	6.8 g	Partial radial head, MC/phal shaft frags, x4 prox. or intermed. phal. heads, x5 dist. phals	5.1 g	-	0 g	-	0 g
	Lower limb	Fem/tib shaft frags	9.3 g	Prox phal base/shaft frag, fem/tib shaft frags	3.7 g	-	0 g	-	0 g
	Unidentified long bone	-	2.9 g	-	8.2 g	-	0 g	-	0 g
	Unidentified	-	8.1 g	-	9.3 g	-	0.5g	-	<0.1 g
	Total weight		34.3 g		113.3 g		0.5 g		<0.1 g

Key: MC = metacarpal; Fem = femur; Tib = tibia; Frag = fragment; Phal = phalanx; prox = proximal

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