Chapter 4

Human remains

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INTRODUCTION

This report presents the results of analysis of three inhumation burials (425, 438 and 3004), three deposits of unburnt disarticulated bone (2623, 3073 and 3340) and two discrete cremation burials (455 and 2999). Six further features contained small quantities of cremated bone (3337, 3339, 3344, 3346, 3348 and 3367), but each contained less than 3g of bone and it was not possible to determine whether the burnt fragments were human or animal in origin. These fragments are not discussed in any further detail in this report. All the burials are Roman in date.

METHODOLOGY

Unburnt bone

Recording of the unburnt articulated skeletons was undertaken with reference to Brickley and McKinley (2004). Skeletons were assessed for their condition (Grade 0-5+, after McKinley 2004, 16), completeness (0-25%, 26-50%, 51-75%, 76-100%) and fragmentation ('low', <25% of the skeleton fragmented; 'medium', 25-75% of the skeleton fragmented; or 'high', >75% fragmented). Their overall preservation was judged to be good, fair or poor, based on their condition, fragmentation and completeness scores. The age and sex of each skeleton was estimated, where possible, using relevant standards (Brooks and Suchey 1990; Brothwell 1981; Miles 1962; 2001; Buikstra and Ubelaker 1994; Scheuer and Black 2000; Krogman and Iscan 1986). Stature and cranial/post-cranial indices were not calculated as the remains were too fragmentary, though other metrical analysis for use in sex estimation (Bass 1987; Chamberlain 1994) was undertaken where possible and the results of this recorded in the archive. Non-metric traits were systematically recorded for adults following the guidelines set out by Berry and Berry (1967) and Finnegan (1978) and any pathologies were recorded with reference to standard texts (eg Aufderheide and Rodríguez-Martín 1998; Ortner 2003). Prevalence of dental pathology was calculated with reference to true prevalence (TPR: proportion of teeth or tooth sockets affected) as appropriate.

Disarticulated human remains were also examined in accordance with the recommendations set out by CIfA and BABAO (Brickley and McKinley 2004). This included estimating the minimum number of individuals present (MNI) based on the repetition of bones, while factoring in age and sex (Buikstra and Ubelaker 1994). Biological parameters (age and sex) and pathology were explored using the methods described above.

Cremated bone

All contexts containing cremated bone were subject to whole earth recovery, then processed by flotation and wet sieving which sorted them into >10mm, 10-4mm, 4-2mm and 2-0.5mm fractions. Floated residues were retained in a 250μm mesh. Once dried, the extraneous material (eg stones) from the >10mm and 10-4mm fractions was separated from the cremated bone and discarded. All cremated bone was examined in accordance with national guidelines (Brickley and McKinley 2004; McKinley 2004).

For the 4-2mm fractions, a 20g sample was sorted. An estimation of the total bone weight was calculated for the entire fraction, based on the proportion of cremated bone present in the 20g sample. The estimated weights are included in the total weights presented below. The smallest fraction sizes (2-0.5mm) were not sorted but were rapidly scanned for identifiable skeletal remains and artefacts. Estimations of the proportions of bone present within the 2-0.5mm fractions were made and recorded in the archive. These are presented below, but are not included in the total bone weights.

Where possible, age and sex were estimated and pathology described and diagnosed, by employing the methods described above for the articulated skeletons.

RESULTS

Inhumation burials

Skeleton 425

Skeleton 425 was represented by less than 25% of the whole skeleton. The surface preservation of the bones was fair to good, consistent with Grade 3 (cf.

McKinley 2004, 16). This means that the general morphology of the bones had survived, but erosion (probably caused by root action) affected most surfaces and obscured detail in some areas. Both this and skeleton 438 were extremely fragmentary, consistent with the burials having been heavily disturbed by ploughing. Skeleton 425 could not be aged more precisely than adult (over 18 years), but given the minimal cranial suture closure and absence of any joint changes associated with increasing age, it may be suggested that this individual was probably below the age of about 40 years at death. Few sexually dimorphic skeletal features were present, but the skeleton was tentatively estimated to be a possible female based on the small occipital protuberance and overall gracile nature of the skeleton. Owing to the incompleteness and extremely fragmentary nature of the skeleton, the presence or absence of most of non-metric traits could not be scored.

Only one area of pathological change was noted in skeleton 425. An oval lytic lesion, 4.5mm by 6.5mm, was observed on the proximal ulna on the lateral aspect of the trochlear notch (elbow joint). This lesion is characteristic of osteochondritis dissecans, a defect in subchondral bone, most often (but not exclusively) on convex diarthrodial joint surfaces (Aufderheide and Rodríguez-Martín 1998, 81). In this condition, necrosis, or death, of skeletal tissue occurs as a result of a deficiency in the blood supply, often as a result of trauma (Roberts and Manchester 2005, 121). Physically active young males (such as athletes) are most often affected in the first two decades of life (Roberts and Manchester 2005, 121; Aufderheide and Rodríguez-Martín 1998, 81; Rogers and Waldron 1995, 28). The elbow is the third most common site for this lesion, after the femoral condyle (knee) and talus (ankle) (Aufderheide and Rodríguez-Martín 1998, 82-3). In the Roman period, this condition is seen in increasing frequency in the knee joint, possibly as a result of occupational trauma (Roberts and Cox 2003, 151).

Skeleton 438

Skeleton 438 was between 25% and 50% complete, and surface preservation was again at Grade 3. Dental attrition of the maxillary molars was analysed in skeleton 438 but was deemed unreliable as an indicator of age, because a number of the mandibular molars had been lost ante-mortem. Ante-mortem loss of the molar teeth biases patterns of attrition, making the correlation between rates of wear and age less clear. Both pubic symphyses in this individual were incomplete, although gross degenerative changes were observed on the parts present and suggest that this was an older adult. The individual was estimated as a probable female, based on three of four cranial and two (incomplete) pelvic features. Owing to the incompleteness and extremely fragmentary nature of the skeleton, the presence or absence of most non-metric traits could not be scored. However, one trait, metopism, was observed. Metopism refers to retention of the metopic suture which divides the frontal bone in the vertical plane and usually fuses in childhood. Metopism is a highly heritable trait (Hauser and De Stefano 1989).

Skeleton 438 displayed more evidence of pathological change than skeleton 425. A total of 20 teeth were present in this individual, 15 of which had dental calculus. This was graded as slight, because it was present as flecks on most teeth. Calculus is a significant cause of periodontal disease and subsequent tooth loss (Levin 2003), but owing to post-mortem damage it was not possible to say whether this skeleton had periodontal disease because no alveoli could be examined. One tooth, the right maxillary first molar, had a carious lesion. Dental caries involves the destruction of the enamel surface, the dentine (internal part of the tooth) and the cement (outer layer of the roots). This is caused by the acid produced by bacteria present in dental plaque (Hillson 1996, 269). The cavity on the first molar was of medium size, was located on the mesial surface of the crown, and had penetrated through the crown into the pulp cavity. Infection of the pulp cavity may lead to the formation of an abscess, a collection of pus, which often leads to the loss of a tooth, after which the infection usually resolves, but in the present example the right maxilla was not present for observation. At least three teeth, the left maxillary first premolar and the left mandibular first and second molars, had been lost ante-mortem, identified by the regeneration of the tooth sockets. Ante-mortem tooth loss may result from abscess development secondary to caries, periodontal disease secondary to gum disease or calculus formation, pulp exposure and abscess formation secondary to severe attrition, deliberate extraction, accidental trauma or fighting (Waldron and Rodwell 2007, 117).

In addition to the dental pathology, skeleton 438 had osteoarthritis involving several joints around the skeleton: the right shoulder (acromio-clavicular joint), both hands (inter-carpal, carpo-metacarpal, metacarpo-phalangeal and inter-phalangeal joints), the spine (thoracic and lumbar) and both hips (acetabulae). Eburnation was observed on all these joints with the exception of the acetabulae, which had marginal osteophytes and altered bony contours. Also, small rounded lytic lesions were observed around the margins of the acetabulae, indicative of joint cysts. Joint cysts (often termed synovial, or subchondral cysts) are a prominent finding in osteoarthritis, as well as in other articular disorders (Aufderheide and Rodríguez-Martín 1998, 94; Resnick 1995, 1271). Osteoarthritis is a multi-factorial condition in which the advancement of age increasingly becomes a predisposing factor.

Skeleton 3004

The condition of skeleton 3004 was fair, being between 51% and 75% complete with all major

elements represented. The skeleton was highly fragmented and many elements were incomplete. Despite this, the surface condition of the bone was good, having only moderate, patchy surface erosion (Grade 2; McKinley 2004, 16). The skeleton was aged as prime adult (26-35 years) based on one partial auricular surface of the pelvis and attritional wear of the mandibular molars. The auricular surface gave a probable age range of 25-44 years at death (prime to middle adult), exhibiting a coarse granular surface but an absence of dense bone (Lovejoy *et al.* 1985). However, the attritional wear on the mandibular molars was less than would be expected of a middle adult, reducing the overall age estimation to prime adult. It should be noted that attritional wear is also influenced by diet. The sex of the skeleton was indeterminate. Due to the high level of fragmentation and missing landmarks it was not possible to estimate the stature, platymeric, platycnemic or cranial indices. No non-metric traits were observed on the surviving elements.

A total of 23 permanent teeth and 20 tooth positions were present. One tooth was lost post-mortem. Dental disease was observed in the form of calculus, caries, ante mortem tooth loss, and dental enamel hypoplasia (DEH). Slight deposits of calculus were observed on 19 of the 23 observable tooth crowns, giving a proportion of teeth or tooth sockets affected (TPR) of 86.36%. One carious lesion was present (1/23 teeth, 4.35% TPR). Three teeth were lost ante-mortem (3/20 tooth positions, 15.0% TPR), the precise cause of which is unclear. Six teeth exhibited pits, lines or grooves on the labial surface of the tooth crown characterised as DEH, the location of which indicated that disruption of the growth of the tooth occurred between 2 and 4.9 years of age (Primeau *et al.* 2015).

A single congenital pathology, symphalangism, was observed. Symphalangism is an inherited condition where one or more of the interphalangeal joints is fused without trauma to, infection of or degeneration of the joint (Austin 1951). In the case of skeleton 3004, one of the intermediate phalanges of the left foot was fused to a distal, probably those of the fifth digit given their size. The only other pathology observed on this individual was a slight osteophyte, which was present on the margin of the left glenoid fossa of the scapula.

Disarticulated bone

A minimum number of three individuals is represented, based on the presence of fragments from three discrete contexts (Table 4.1). All disarticulated bones were identified as adult. As further consideration of bones from contexts 2623 and 3073 is of limited value, these bones will not be discussed further in this section.

The bone fragments from skeleton 3340 are likely to represent the disturbed remains of a single individual, either heavily disturbed (and possibly truncated) in its original burial location or removed from the primary burial location and reinterred elsewhere (secondary burial). As the bones were discovered in a small discrete pile, the latter option could be considered more likely; a heavily disturbed skeleton in its primary burial location could be expected to be dispersed over a wider area rather than having the appearance of being placed in a neat pile. In view of this, further osteological information pertaining to this skeleton is presented below. The skeleton was aged as a prime adult (26-35 years), based on eruption of the third molar and rates of dental attrition (Miles 1962; 2001; Brothwell 1981). The remains were tentatively sexed as possible female, based on the anterior mandible and two fragments of sciatic notch of the pelvis (Krogman and Işcan 1986). One non-metric trait was observed: an accessory supra-orbital foramen was present on a fragment of the right frontal bone. The presence of this trait is likely to relate to genetic factors (Veldmann 2013, 75).

Fifteen teeth and nine tooth positions were present, all pertaining to the mandible. Six teeth (40.0% TPR) had dental calculus and three (20.0% TPR) had lines and grooves indicative of DEH. The location of these defects indicated that periods of physical stress occurred between 2 and 4.9 years of age (Primeau *et al.* 2015). Ante-mortem chipping was observed, affecting the occlusal edges of three teeth (20.0% TPR). No evidence of skeletal pathology was observed.

Table 4.1 Disarticulated human bone

Context	*Skeletal elements*	*Surface condition (McKinley 2004, 16)*	*Age*	*Sex*
2623	x6 fragments of a single frontal bone	2	Adult >18 years	?
3073	Left mandibular body and ramus including M1, M2 and M3 (all with slight calculus)	1	Young adult (18-25 years)	F??
3340	Left and right femoral shafts, x1 partial femoral head (right?), x1 partial acetabulum (right?), x1 humerus shaft fragment, x1 ulna shaft fragment, x1 radius shaft fragments, 2x tibial shaft fragments, 1x fibula shaft fragment, multiple long bone shaft fragments, x6 skull vault fragments, right mandibular body, 1x fragment anterior mandible, 15x mandibular teeth (all excluding right mandibular M3)	2	Prime adult (26-35 years)	F??

Cremated bone

Cremation burial 455

The cremated bone (455) was recovered from a very fragmentary urn (456) within the fill of middle Roman ditch 660. The total weight of the cremated bone including the cleaning layer directly overlying the urn was 44.4 g (Table 4.2). The largest fragment, probably that of a humerus, measured 30 by 14 mm. The majority of fragments were 4-10 mm in size. High fragmentation hindered the identification of many of the fragments. Almost half of the total weight of bone was unidentified (20.5g/44.4g), 10.2g of which were unidentified long bone fragments. In general, all areas of the skeleton were present: skull (but no teeth), vertebrae, ribs, pelvis and upper and lower limbs.

Two fragments of bone had hues of a blue/grey colour, but all other fragments were buff white. Thus, the colour of the bone was fairly homogeneous throughout the skeleton. The fracture pattern, warping and transverse fissures observed on the bone fragments were typical of remains resulting from the cremation of a fleshed corpse rather than a defleshed corpse. The overall size and morphology of the remains indicate that the individual had probably attained adulthood when he or she died. Sex could not be estimated owing to the fact that relevant elements were missing or were too poorly preserved. No pathological abnormalities or non-metric traits were observed.

Cremation burial 2999

Cremation 2999 was interred within an urn (2998) with two ancillary vessels (2996 and 3000), in a shallow pit (3000). Cremated bone was also recovered from the backfill (2995) and is likely to originate from the same deposit. A fragment from a femur from deposit 2999 was radiocarbon dated to cal AD 80-250 (95.4% confidence; SUERC-75476; 1837±30BP).

The cremation weighed 994.8g (including the bone from both 2995 and 2999; Table 4.3). The feature was truncated horizontally by ploughing; the extent of this is unclear, but the high bone weight suggests that bone loss due to truncation was limited. Deposits 2995 and 2999 represent one adult, based on the non-repetition of observable, identifiable, skeletal elements (Buikstra and Ubelaker 1994). Osteological indicators of age were very limited. The size and morphology of the identified bone fragments in both contexts were in keeping with those of an adult, aged over 18 years (Scheuer and Black 2000). One cranial trait was observed, comprising a fragment of nuchal crest (possible male). As only one trait was available, these estimations are tentative.

The largest fragment, a fragment of tibial shaft, measured 45.8mm. Almost half of the bone fragments came from the >10mm fraction (472.2g, 47.47%). A large proportion of bone also came from the 10-4mm fraction. This is unsurprising considering the large weight of the deposit. Moderate proportions of cremated bone were also present in the 2-0.5mm residue from 2999, although the total bone weights could not be estimated. These have the potential to make a moderate contribution to the total bone weight.

Of the identified fragments, bone from the lower limbs was most frequently found (254.8g/25.61% of the total bone weight). This may in part be due to the lower levels of fragmentation; bones such as the femur and tibia are amongst the easiest post-cranial bones to identify. A small number of identifiable human fragments were found in the sorted 20g samples from the 4-2mm fraction, comprising skull vault and ribs, which are relatively easy to identify even when highly fragmented (McKinley

Table 4.2 Summary of cremation burial 455

Deposit	*Skeletal region*	*>10mm*	*10-4mm*	*4-2mm*	*Colour, MNI, age, sex, pathology*
455	Skull	0g	2.2g (cranial vault)	0.3g (cranial vault)	
	Axial	0g	0.6g (rib shaft fragments)	0g	*c* white >99%, blue <1%
	Upper limb	7.1g (humerus, ulna, and radius shaft fragments)	8.4g (humerus, ulna and radius shaft fragments)	0g	MNI = 1 Adult >18 yrs Unknown sex
	Lower limb	1.0g (pelvis fragments)	4.3g (femur and shaft fragments)	0g	
	Unid. long bone	0g	9.7g	0.5g	
	Unid. hand/foot	0g	0g	0g	
	Unid. joint surface	0g	0g	0g	
	Unid. other	0g	7.1g	3.2g	
	Unid. total	0g	16.8g	3.7g	
	Total	8.1g	32.3g	4.0g	44.4g

Table 4.3 Summary of cremation burial 2995/2999

Deposit	*Skeletal region*	*>10mm*	*10-4mm*	*4-2mm*	*Colour, MNI, age, sex, pathology*
2995/2999	Skull	71.8g (cranial vault, mandible)	51.6g (cranial vault, mandible)	0.2g (cranial vault)	
	Axial	19.2g (vertebral and rib shaft fragments)	45.8g (vertebral and rib shaft fragments)	0.5g (rib shaft fragments)	*c* white 65%, grey 20%, blue 10%, black 5%, orange/brown <1%
	Upper limb	25.6g (humerus, ulna, radius, scapula, and clavicle fragments)	2.5g (humerus, radius and scapula fragments)	0g	MNI = 1 Adult >18 yrs Possible male
	Lower limb	238.4g (femur, tibia and fibula shaft, pelvis, fragments of calcaneus, R. cuboid and R. navicular)	16.4g (tibia and fibula shaft, pelvis)	0g	Possible button osteoma or other pathology resulting in dense bone plaque
		Unid. long bone	60.4g	122.8g	0.1g
	Unid. hand/foot	1.2g	7.8g	0g	
	Unid. joint surface	40.3g	28.1g	0.4g	
	Unid. other	14.3g	114.9g	131.5g*	
	Unid. total	116.2g	273.6g	132.0g*	
	Total	471.2g	389.9g	133.2g*	994.3g*

* denotes inclusion of estimated bone weight, based on a sorted 20g sample

2004, 11). The majority of bone was unidentified (521.8g/52.42% of the total bone weight). Smaller proportions of unidentified bone were from the hands or feet, but most of the unidentified bone was either from the upper or lower limbs, or could not be identified to an anatomical region. Most of the unidentified bone was from the 10-4mm fraction, comprising long bone shaft fragments which could not specifically be assigned to the upper or lower limbs.

Most of the bone fragments were white in colour, with 65% of bone from 2999 coloured white, indicating that they were fully oxidised. However, smaller proportions of bones were grey/blue and black in colour (including fragments of mandible, endocranial surface of the skull, vertebrae, and femoral and tibial shaft), and two fragments exhibited orange/brown colouration (inside the medullary cavity of the femoral shaft), indicating that these areas were barely heat-affected at all. This shows that the burning process in this instance was somewhat uneven.

There was very little evidence for pathology. One fragment from 2999 (spit 2) exhibited a small sub-oval area of thickened, sharply demarcated dense bone measuring 18.0mm long, 5.8mm wide and 1.0mm thick. It was not possible to identify the affected bone fragment, although the appearance of the fragment suggests that that is unlikely to be from the skull. Possible diagnoses for this lesion include a button osteoma and periostitis. The limited evidence makes it impossible to provide a confirmed diagnosis, and either of the suggested diagnoses are possible. Ivory 'button' osteomas are benign bone tumours comprising dense lamellar bone, and present in archaeological skeletons as smooth deposits of sharp margined dense bone, usually not more than 20mm in diameter (Ortner 2003, 506). They are most commonly found on the ectocranial surface of the skull, particularly the parietal and frontal bones (Aufderheide and Rodríguez-Martín 1998, 375). Other bones such as the clavicle, humerus and femur may be affected, but less frequently (Aufderheide and Rodríguez-Martín 1998, 375). It is possible that this fragment exhibits an osteoma from one of these less commonly affected bones.

DISCUSSION

Inhumation burials and disarticulated bone

Data collection in general (and hence interpretation) was somewhat hindered by levels of fragmentation and incompleteness. Surface condition was generally good. The remains of at least two adult females (aged 18-25 and 26-35 years) and one adult of indeterminate sex (aged 26-35 years) were present. It was not possible to calculate living stature or cranial/post-cranial indices.

Dental health was found to be relatively good. Although most teeth were affected by calculus, deposits were only slight, indicating that some attempt may have been made to keep the teeth free of calculus build-up. The presence of calculus on a high proportion of the dentition may also be an

indication of a diet that was high in protein and/or carbohydrates (Hillson 1996, 254). Interpretation of dental calculus prevalence rates in archaeological assemblages can be difficult, especially considering that calculus deposits may be lost during cleaning and handling post-excavation. In light of this, all calculus prevalence rates should be regarded as the minimum amount that may have been present in the living population. It is also interesting to note that in both skeletons 3004 and 3340, dental enamel hypoplasia defects indicated disruptions in health between the ages of 2 and 4.9 years. The precise cause of these hypoplastic defects is difficult to determine with certainty because the markings may form in response to multiple stressors, for example general nutritional stress and sickness (Mahoney and Johns nd, 6). It has also been suggested that weaning is likely to occur during this age range, so factors associated with this such as weaning food type (eg vitamin/nutrient deficiency) and exposure to new food-borne pathogens may also contribute to levels of physical stress and development of enamel hypoplasia (Cool 2006, 23; Fuller *et al.* 2006; Redfern *et al.* 2012, 1252).

Only minor skeletal pathological changes were present. This may be in part due to the high level of fragmentation and incompleteness of some of the skeletal elements. It is unlikely that the observed pathologies would have had a significant impact upon quality of life.

Disarticulated fragments of bone are sometimes found in non-funerary contexts dating to the Roman period. In view of this, the mandible from fill 3073 of pit 3067 and the frontal bone recovered from fill 2623 of ditch SG8009 are typical of the period. However, less attention has been given to the study of disarticulated human remains in non-funerary features in this period than in the preceding Iron Age, so it is difficult to further elucidate what these fragments may represent, outside the possibility that they have come from a nearby disturbed grave (Pearce 2013, 146).

Skeleton 3340 is likely to represent the secondary burial of a partial, disarticulated individual within roadside ditch SG8137. The remains do appear to have been afforded a degree of respect, placed in a small neat pile rather than being haphazardly strewn within the ditch fill. This type of burial is not widely documented in Roman Britain, where inhumation burials tend to remain in the primary burial location, whether in formal cemeteries or small isolated grave groups (Philpott 1991, 53-9). Where burials are found within non-funerary features, this still tends to be the primary burial location. In view of this, skeleton 3340 may simply represent remains that were disturbed accidentally at the original burial site (whether a grave in a funerary or non-funerary context), reinterred in a convenient nearby open feature or even tidied up and reinterred in the same feature. A second possibility is that skeleton 3340 has been treated in a manner reflective of a localised, atypical burial tradition (Pearce 2016, 343).

Cremated bone

The cremated assemblage comprises two individuals, representing a possible adult male aged over 18 years (2995/2999) and a probable adult of indeterminate sex (455). Pathological evidence was limited and where observed, is likely to have been of minimal impact during life.

Burial 455 was recovered from an urn within boundary ditch 660 and it is unclear whether this represents a deliberate funerary feature or the remains of a disturbed burial that had been incorporated into the ditch fill. This was reflected in its low bone weight. Bone weight for burial 2995/2999 was high, falling just below the range of modern adult cremations (1000-2400g; McKinley 2000, 26), and had a substantial quantity of large (>10mm) bone fragments. This burial is thus likely to contain most of the cremated individual, although small proportions of bone may have been lost via post-depositional truncation, and lesser proportions of the smaller, unidentifiable bone fragments may also have been left at the pyre site. The absence of charcoal or pyre goods in the deposit suggests that an attempt had been made exclude pyre debris from the material selected for burial; this and any remaining unidentifiable human bone may have been left *in situ* at the pyre site, or redeposited elsewhere (McKinley 2013, 153-4).

Most of the bone fragments in both burials were white in colour, but a moderate proportion were coloured grey/blue and black, indicating a slightly uneven burning process. Where conditions are perfect and the pyre has optimal fuel, heat and oxygen supply, the periphery of the pyre is still likely to be slightly cooler than the central area, which may result in the skeletal elements placed in these areas of the pyre being incompletely calcined or charred (McKinley 2013, 158-9). Where pyre conditions are not optimal (eg temperature consistency not maintained across the pyre or for the full period of burning, disruption of the burning process because of wind or rain), this may result in more uneven burning of the cadaver (ibid.). Furthermore, if the corpse is placed on the pyre in a position which inhibits factors such as oxygen availability to certain anatomical regions (eg to parts of the legs/trunk if the body is placed in a crouched position), this may also result in incomplete burning (ibid.). In view of this, the cremation of burials from Berryfields was moderately efficient, with uneven burning of some anatomical regions of the body. As the incompletely calcined skeletal elements are from a variety of anatomical locations, it is more likely that uneven burning was the result of variability in factors such as oxygen supply, fuel or weather conditions.