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FULL ANALYSIS OF HUMAN REMAINS FROM FIELD 163S OF THE A1 WIDENING SCHEME

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Introduction

During excavations in September 2014 eight deposits were identified as potentially containing human remains during excavations in Field 163S, Bainesse, North Yorkshire. This document presents the objectives, methods and results of the analysis of these remains. Upon analysis none of the contexts could be positively identified as human. The burnt bone from Context 5741 (a layer within an oven) had the greatest potential of containing human elements and as such was treated as a cremation burial. The remaining contexts are listed in Table 2 of the Appendix.

Aims and objectives

The skeletal assessment aimed to determine age and sex, as well as any manifestations of disease from which the individuals may have suffered. Additionally, information was sought regarding the cremation techniques.

Methodology

The cremated bone was sieved through a stack of sieves, with 10mm, 5mm and 2mm mesh sizes. The bone recovered from each sieve was weighed and sorted into identifiable and non-identifiable bone. The identifiable bone was divided into five categories: skull, axial (excluding the skull), upper limb, lower limb and long bone (unidentifiable as to the limb). All identifiable groups of bone were weighed and described in detail.

Osteological Analysis

Osteological analysis is concerned with the determination of the demographic profile of the assemblage based on the assessment of sex, age and non-metric traits. This information is essential in order to determine the prevalence of disease types and age-related changes. It is also crucial for identifying gender dimorphism in occupation, lifestyle and diet, as well as the role of different age groups in society.

Skeletal preservation depends upon a number of factors, including the age and sex of the individual as well as the size, shape and robusticity of the bone. Burial environment, post-depositional disturbance and treatment following excavation can also have a considerable impact on bone condition. Preservation of human remains is assessed subjectively, depending on the severity of bone surface erosion and post-mortem breaks, but disregarding completeness.

Preservation was assessed using a grading system of five categories: very poor, poor, moderate, good and excellent. Excellent preservation implied no bone erosion and very few or no post-depositional breaks, whereas very poor preservation indicated complete or almost complete loss of the bone surface due to erosion and severe fragmentation. The bone from Context (5741) was moderately well preserved, with some erosion of surface detail and a smooth appearance to the edges of the fragments.

No sign of warping or bone cracking, which occurs commonly during the cremation process, was evident amongst the bone from Context (5741), however, this may have been the result of the small fragment size of the remains, suggesting that the bone fragments may have broken along the cracks. The fragment size of cremated bone is frequently attributed to post-cremation processes. This is because skeletal elements retrieved from modern crematoria tend to be comparatively large before being ground down for scattering or deposition in the urn. Bone is also prone to fragmentation if it is moved while still hot (McKinley 1994, 340). The majority of bone from Context (5741) derived from the 2mm sieve, and would suggest that the bone was subject to disturbance while still hot, or post-depositional factors also had an impact on bone fragment size.

The cremated bone from Context (5741) weighed 4.0g, which is considerably less than the average weight produced by modern crematoria, which tends to range from 1,000.5g to 2,422.5g with a mean of 1,625.9g (McKinley 1993). Wahl (1982, 25) found that archaeologically recovered remains of cremated adults tend to weigh less (between 250g and 2,500g) as a result of the commonly practised custom of selecting only some of the cremated bone from the pyre for inclusion in the burial, thereby representing a symbolic, or token, interment. It is possible that the bone from Context (5741), represents a symbolic, or token, interment.

The bone from Context (5741) was completely calcined. According to McKinley (1989), the body requires a minimum temperature of 500° Celsius over seven to eight hours to achieve complete calcination of the bone. The complete mineralisation of the bone from Context (5741) that the bone had reached sufficient temperatures, and had been allowed to burn for an adequate length of time.

It was possible to identify very little (17.5%) of the bone from Context (5741); indeed, fragments of long bone (10.0%), cranial vault (2.5%), and axial skeleton (5.0%), which were present among the remains could not be positively identified as human.

A count of the 'minimum number of individuals' (MNI) recovered from a cemetery is carried out as standard procedure during osteological assessments of inhumations in order to establish how many individuals were represented by the articulated and disarticulated human bones (without taking the archaeologically defined graves into account). It is not possible to calculate

the MNI for cremation burials, because only a token selection of bone from the pyre tends to be buried. Double burials can be identified only if skeletal elements are duplicated, or if skeletons of different ages are represented in one burial. No duplicated elements were identified in the cremated assemblage from Context (5741).

Age was determined using standard ageing techniques, as specified in Scheuer and Black (2000a; 2000b) and Cox (2000). Age estimation relies on the presence of the pelvis and uses different stages of bone development and degeneration in order to calculate the age of an individual. Age is split into a number of categories, from foetus (up to 40 weeks in *utero*), neonate (around the time of birth), infant (newborn to one year), juvenile (1-12 years), adolescent (13-17 years), young adult (ya; 18-25 years), young middle adult (yma; 26-35 years), old middle adult (oma; 36-45 years), mature adult (ma; 46+) to adult (an individual whose age could not be determined more accurately as over the age of seventeen). The paucity of identifiable elements in the remains from Context (5741) made assessing age almost impossible, if indeed the remains were human. Based on bone robusticity alone, the remains could have belonged to an individual aged between an older juvenile to adult.

Sex determination is usually carried out using standard osteological techniques, such as those described by Mays and Cox (2000). Assessment of sex in both males and females relies on the preservation of the skull and the pelvis and can only be carried out once sexual characteristics have developed, during late puberty and early adulthood. Due to the shrinkage and warping of skeletal elements during the cremation process, assessing the sex of any remains must be considered as tentative at best, however, the bone from Context (5741) did not contain any diagnostic skeletal elements.

Pathological Analysis

Pathological conditions (disease) can manifest themselves on the skeleton, especially when these are chronic conditions or the result of trauma to the bone. The bone elements to which muscles attach can also provide information on muscle trauma and excessive use of muscles. All bones were examined macroscopically for evidence of pathological changes. No pathological alterations were observed in the bone from Context (5741).

References

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Appendix

Table 1 Summary of cremated bone assemblages

Field No	Fill No	Feature Type	Period	Artefacts and Inclusions	Bone Colour	Preservation	Weight (g)	Percentage of Expected Quantity of Bone
163S	5741	Layer within an oven	-	-	White	Moderate	4.0	0.25%

Table 2 Summary of cremated bone fragment size

Cremation No.	10mm (g)	10mm (%)	5mm (g)	5mm (%)	2mm (g)	2mm (%)	Residue (g)	Weight (g)
5741	0	-	0	-	3.0	66.7	1.0	4.0

Table 3 Summary of identifiable elements in the cremation burials

Burial No	Skull (g)	Skull (%)	Axial (g)	Axial (%)	UL (g)	UL (%)	LL (g)	LL (%)	UIL (g)	UIL (%)	Total ID (g)	Total ID (%)	Total UID (g)	Total UID (%)
5741	1.0	2.5	0.2	5.0	0	-	0	-	0.4	10.0	0.7	17.5	3.3	82.5