

Ancient Monuments Laboratory
Report 67/88

HARDENDALE QUARRY, CUMBRIA- THE
HUMAN BONES.

Janet D Henderson MA Hons (Cantab)

AML reports are interim reports which make available the results of specialist investigations in advance of full publication. They are not subject to external refereeing and their conclusions may sometimes have to be modified in the light of archaeological information that was not available at the time of the investigation. Readers are therefore asked to consult the author before citing the report in any publication and to consult the final excavation report when available.

Opinions expressed in AML reports are those of the author and are not necessarily those of the Historic Buildings and Monuments Commission for England.

Ancient Monuments Laboratory Report 67/88

HARDENDALE QUARRY, CUMBRIA- THE
HUMAN BONES.

Janet D Henderson MA Hons (Cantab)

Summary

A large number of samples of inhumed and cremated bone of prehistoric date were assessed. The minimum number of individuals was five inhumed and eleven cremated respectively. Very few observations could be made owing to poor preservation.

Author's address :-

7d Compton Road
ISLINGTON
London N1 2PA

01 359 7777

Hardendale Quarry - The Human Bones

A large number of samples of inhumed and cremated human bone from this site were examined. Both types of material were examined for details of minimum number of individuals, age, sex, stature, metrics, morphology and pathology. In addition the cremated samples were assessed for evidence of cremation practice (eg. degree of burning). A catalogue of the methods used and the results for each sample is attached. In general standard observation techniques (eg. for sex and age) were used throughout (see for example Brothwell (1981) or Stewart (1979)).

The Inhumed Bone

Poor preservation severely restricted analysis of this material and it cannot be too strongly emphasized that any results (eg. for attribution of sex) were tentative. In a few cases it was possible to examine the relationship between bone scatters. The details of this are given below. Those finds numbers which could not be used for this (either because the bone was too fragmentary or was animal) were:

Context 30, Finds No. 352N

Context 23 or 30, Finds Nos. 352E, 352I, 352J

Context 7, Finds Nos. 36 A-K

The bone from these samples very clearly came from one individual only. Even though the bone was all in poor condition it was clear that all parts of the skeleton were represented. Various fragments of infant bone, aged at around birth (40 weeks) were found in 36D and 36J. It was not possible to determine whether or not these represented the remains of a separate individual.

Context 23, Finds Nos. 352 A-C

It was possible to match bones from each of 352 A, B and C. On this evidence it was suggested that this material all came from one individual, for which it could be generally stated that the head was in A, the right arm in B and the left in C. Parts of the axial skeleton were to be found in all three samples.

Context 30, Finds Nos. 352D, F, G, K, L, M

Bones could be cross-matched from all of these numbers and it was therefore suggested that one individual was represented here. Generally speaking the head was in D and K and the rest of the skeleton in F, G, L and M. As there were repeats of certain bones it was possible to say that the bones in 352J were definitely not part of this skeleton.

Context 57, Finds No. 463 and Context 63, Finds No. 489

The partial remains of two juvenile skeletons in poor condition.

Results - Inhumed Bone

The results for sex and age are given in Table 1 (below). Estimates of stature were not feasible owing to poor preservation. Attributions of sex were not attempted for the juveniles.

Table 1. Results for Sex and Age

<u>Context</u>	<u>Finds Nos.</u>	<u>Sex</u>	<u>Age (in years)</u>
7	36 A-K	-	12-15
23	352 A-C	?Female	45+
30	352 D,F,G, K,L,M,	Male	45+
57	463	-	3-6
63	489	-	6-8

No observations either of metrical or morphological features or of pathology could be made owing to the condition of the bones. However on the teeth from Context 23, 352 A it was noted that there were an impacted third molar, two congenitally absent third molars and a rotated canine tooth present.

The Cremated Bone

A total of 14 samples were seen. Two of these contained animal bone alone (Context 16, Finds No. 307 and Context 62, Finds No. 485). Estimation of the minimum number of individuals was difficult owing to the amount of extraneous material. It was thought that the bones from Context 14, Finds No. 309 were probably from the same individual as Context 14, Finds No. 260 and 261. However there was insufficient evidence for it to be stated conclusively that the extra bones in Context 25, Finds Nos. 317, 318 and 319, Context 26, Finds No. 337 and Context 35, Finds No. 355 all represented separate individuals. The minimum number excluding the extra bones was estimated at eleven.

The results for sex, age and sample weight, including the 'extra' bones are given in Table 2 (below).

Table 2. Cremated Bone: Results for Sex, Age and Sample Weight

<u>Sample No.</u>	<u>Sex</u>	<u>Age</u> <u>(in years)</u>	<u>Sample Weight</u> <u>(in grams)</u>
-------------------	------------	---------------------------------	---

Note: Sample numbers are given by context and finds number, eg. Context 12, Finds No. 232 is listed as 12/232.

12/232	-	Adult	1880
14/260,261,309	??Female	Adult	1100
22/322,324,325	-	Adult	400
25/317,318,319	-	Adult	100
	-	Juvenile	-
26/337	-	Adult	1330
	-	Infant	"
28/345	-	-	10
28/388	-	Adult	70
35/355	-	Adult	640
	-	8-9	"
36/356	-	Adult	120
39/385	-	Adult	980
	-	Infant	"
60/488	?Female	Adult	1650

Details of weight, the bones present and the colour and size of the bone fragments may yield information concerning cremation practice. With this group the only samples that might be used for this were Contexts 12, 14, 26, 35, 39 and 60. This is a small sample and it should be noted

that any comments apply to them alone, not to the whole series.

The weight of a cremation sample, if it is very large, may be significant with respect to the minimum number of individuals. Thus the average, dry, fat-free skeleton weighs from 2-4 kg. (Krogman 1962) and the average, cremated sample weighs c.1.6 kg (Evans 1963). Samples much larger than 2 kg should be inspected particularly carefully for duplicate bone. With this series none of the samples were so large that this was the case and identification of additional individuals rested on age and duplication alone. Samples much smaller are usually taken to be under-representative.

Elements of all parts of the skeleton were found in all these contexts which indicated that, for these samples at least, there was no discrimination made (in favour of the skull for example). Colour of the fragments varied from black to blue-grey to white and in general were of very small size. The colour would tend to indicate fairly complete cremation although it does not show whether this was because the technique had been very efficient (and therefore quick) or simply that the pyre had been allowed to burn for a long time. The size of the fragments is indicative of crushing or breaking of the bones after cremation, possibly for inclusion in a funerary receptacle. The exception to this was Context 14, where the bone from Finds No. 309 showed no sign of burning; something which was also true of a fifth metatarsal and proximal foot phalanx in Finds Nos. 260 and 261. Further, much of the remainder seemed poorly burnt, for example there was a scapula present with a lateral border which also showed no signs of burning. The most likely explanation of this is not that there are several individuals represented by these bones but that these are indicators of the position of the body on the pyre. Thus the bones showing no burning (the scapula border and the feet) are all on the 'edge' of the body and possibly suggest a rather small pyre. Alternatively the explanation of Wells (1960) might apply. In this Wells proposed that absence of burning on a scapula might be interpreted as a body laid on the ground with the pyre heaped over it, rather than the body laid on top of the pyre. In this particular case a small pyre or a body under a pyre might explain the lack of burning of the foot bones. Unfortunately with only one example from this site it is not feasible to take this argument further.

Hardendale Quarry - Human Bone Catalogue

Note: There are four parts to this catalogue. Inhumed bone, cremated bone, ?context and miscellaneous. The list '?context' is separated from the rest of the inhumed bone as it includes material where there were differences between either the marking on the bag and/or the number on the lists. The 'miscellaneous' bone is a list of the bones which had been extracted from the animal bone. Neither the '?context' nor the 'miscellaneous' bone is included in the main report. All samples are listed initially by context and then by Finds No.

Inhumed Bone

Context 7, Finds No. 36A

Humerus: Distal two-thirds shaft R

Age: Sub-adult, based on absence of epiphyseal union

Context 7, Finds No. 36B

Femur: 1 mid-shaft fragment L, matches the proximal in 36I.

Context 7, Finds No. 36C

Ulna: Proximal two-thirds shaft R

Context 7, Finds No. 36D

Skull: 2 fragments cranium (infant)

Tooth: 1 maxillary tooth: 2,1

Scapula: 5 fragments

Rib: 6 fragments

Vertebra: 7 arch, 4 body fragments (includes L5)

Pelvis: 12 fragments

Femur: 2 fragments R

48 unidentified fragments (mostly very small)

Age: Skull fragments from an infant, rest sub-adult (epiphyseal union absent).

Context 7, Finds No. 36E

Femur: Mid-shaft R, matches distal fragment in 36K

Context 7, Finds No. 36F

Tibia: Distal half shaft R, matches fragment in 36K

Age: Sub-adult

Context 7, Finds No. 36G

Mandible: Parts of ramus and body, three molars present

Age: Sub-adult/young adult, based on completely unworn teeth

Context 7, Finds No. 36H

Pelvis: L ischium, matches the R in 36D
Femur: Epiphyses: L head and greater trochanter
Tibia: L distal epiphysis
Foot: L calcaneus and talus

Age: Sub-adult, based on absence of epiphyseal union

Context 7, Finds No. 36I

Humerus: Distal two-thirds L, matches R in 36A
Radius: Proximal epiphysis, distal shaft fragment
Femur: Proximal L, matches parts in 36B and H
Tibia: Distal epiphysis R, matches L in 36H
Foot: Calcaneus and talus R, match L in 36H

Age: Sub-adult, based on absence of epiphyseal union

Context 7, Finds No. 36J

Mandible: 1 fragment R ramus, matches 36G
Teeth: 4 loose, maxillary teeth: 1,1-3; 1,7
Scapula: R + L coracoid epiphyses
Rib: 10 fragments
Vertebra: 7 fragments, includes L4 matches L5 in 36D
Pelvis: 1 fragment L pubis
Hand: 8 phalanges
Tibia: Part of L proximal epiphysis, 2 fragments mid-shaft L
Fibula: R + L distal epiphyses, 4 shaft fragments
Foot: Cuboid L, intermediate cuneiform L
Metatarsals: MT1 shaft and epiphyseal fragments, MT2,3,5 L, MT4,5 R,
3 unidentified shaft fragments
c.90 unidentified fragments

Age: Sub-adult, based on absence of epiphyseal union and non-closure of root apex of 1,7 tooth

Infant Bone

Skull: 6 fragments
Femur: Proximal fragments R + L
Tibia: Proximal fragment R

Age: Birth +/-, based on the bone size charts in Stewart (1979)

Context 7, Finds No. 36K

Skull: 2 fragments R temporal
Pelvis: 1 iliac fragment
Femur: 2 distal shaft fragments (R + L), 1 distal epiphysis (R)
Tibia: 2 shaft fragments
Fibula: 1 shaft fragment
13 unidentified fragments

Age: Sub-adult, based on the absence of epiphyseal union

Context 23, Finds No. 352A, 113.68/216.66

Various bones in very poor condition:-

Skull: Frontal, R + L parietals, L temporal and maxilla.

Mandible: 1 present, part of the same individual as the skull.

Clavicle: R lateral half.

Rib: 4 fragments

Humerus: 1 fragment humeral head R, matches shaft fragment in 352B.

Sex: ? Female, attribution based on the size of the bones (small and gracile) and the morphology of the skull.

Age: Adult, occlusal wear of the teeth, which was severe, suggests an age of 45+ years (Brothwell 1981).

Stature: -

Dental Pathology

Rotation: 1,3 tooth rotated through 180 degrees in its socket.

Impaction: 3,8 horizontally impacted. Eruption of this tooth would not have been possible.

Absence: 1,8 and 2,8: Teeth congenitally absent

Although there was no conclusive evidence it was suggested that, from their size and appearance, the bones in this sample all came from the same individual.

Context 23, Finds No. 352B, 113.90/216.66

Various bones in very poor condition:-

Tooth: 1 very broken fragment

Scapula: 1 R fragment with acromion, coracoid and glenoid fossa.

Rib: 6 shaft fragments

Vertebra: 3 thoracic and some fragments

Humerus: Proximal shaft fragment R, matches head in 352A. Proximal half L, matches shaft fragment in 352C.

Phalanges: 1 hand proximal, 1 foot proximal

Sex: ? Female, attribution based on maximum diameter of humeral head (43 mm) and length of glenoid fossa of scapula (36 mm).

Age: Adult

Stature: -

Although there was no conclusive evidence it was suggested that, from their size and appearance, the bones in this sample all came from the same individual.

Context 23, Finds No. 352C, 114.0/216.40

Various bones in very poor condition:-

Skull: 3 cranial fragments (not possible to match these with 352A)

Rib: 5 shaft fragments

Vertebra: 1 fragment lumbar arch

Pelvis: 1 ilium L (broken)

Humerus: Shaft fragment matches proximal half L in 352B, distal L fragment matches ulna and radius.

Radius: Proximal fragment L

Ulna: Proximal fragment L

Hand: 1 proximal phalanx

Sex: ? Female, attribution based on epicondylar width of humerus (64 mm) and bone size.

Age: Adult

Although there was no conclusive evidence it was suggested that, from their size and appearance, the bones in this sample all came from the same individual.

Context 30, Finds No. 352D, 114.30/215.70

Various bones in very poor condition:-

Skull: Frontal, parietal, temporal and maxillary fragments, some of which match with those in 352L.

Mandible: 1 condylar fragment

Teeth: 5 maxillary teeth, 1 second molar found in 352K

Scapula: 2 fragments (R + L), R matches R fragment in 352K

Clavicle: 2 shaft fragments (1R)

Rib: 3 fragments

Vertebra: 6 fragments

Humerus: 1 head fragment

Sex: ? Male, attribution based on the morphology of the frontal bone (skull) which had a moderately pronounced torus.

Age: Adult, occlusal wear of the teeth, which was severe, suggests an age of 45+ years (Brothwell 1981).

Stature: -

Although there was no conclusive evidence it was suggested that, from their size and appearance, the bones in this sample all came from the same individual.

Context 30, Finds No. 352F, 114.40/215.00

Various bones in very poor condition:-

Femur: 1 head L

Foot: 1 talus L, 1 calcaneus L; the talus matched that in 352M

Sex: ? Male, attribution based on the size of the femoral head

Age: Adult

Although there was no conclusive evidence it was suggested that, from their size and appearance, the bones in this sample all came from the same individual.

Context 30, Finds No. 352G, 114.60/215.00

12 fragments of bone, all of which were animal except:-
Foot: 1 cuboid L, matched foot bones in 352F and 352M. Not the same individual as 352J.

Context 30, Finds No. 352K, 114.36/215.74

Various bones in very poor condition:-
Skull: 10 fragments (1 of temporal L matches R in 352L)
Mandible: 1 body with partial rami
Teeth: 12 mandibular teeth present, in situ.
Scapula: 2 fragments, 1R which matches a fragment in 352D
Clavicle: 1L, lateral half
Vertebra: 2 fragments of vertebral arch

Sex: ? Male, attribution based on mandibular morphology
Age: Adult, occlusal wear of the teeth, which was severe, suggests an age of 45+ years (Brothwell 1981).

Dental Pathology

Absence: 3,8 congenitally absent; 4,8 present

Although there was no conclusive evidence it was suggested that, from their size and appearance, the bones in this sample all came from the same individual.

Context 30, Finds No. 352L

Various bones in very poor condition:-
Skull: 1 temporal R, matches L in 352K, various cranial fragments (frontal and parietal), match with those in 352D.
Sternum: 2 manubrial fragments
Rib: 33 fragments
Vertebra: 25 fragments (cervical, thoracic, lumbar, sacral)
Humerus: Various shaft fragments, match with those in 352M
Radius: L shaft matches R in 352M
Ulna: Proximal fragment L, matches R ulna and L distal humerus in 352M
Hand: 2 metacarpals (R + L), 1 proximal, 1 mesial phalanx
Fibula: 1 distal shaft fragment, matches the bones in 352M

Sex: ? Male, attribution based on bone size
Age: Adult

Although there was no conclusive evidence it was suggested that, from their size and appearance, the bones in this sample all came from the same individual.

Context 30, Finds No. 352M, 114.20/113.14

Tooth: 1 maxillary tooth: 1,3 fits in the maxilla from 352D.
Sternum: 1 small fragment
Rib: 46 fragments
Vertebra: 25 fragments arch (thoracic/lumbar)
8 fragments body (thoracic/lumbar)
Sacrum: 4 fragments including 1 coccygeal
Pelvis: 7 fragments
Humerus: 2 distal fragments (R + L)
Radius: 1 proximal R, matches parts in 352L (R).
Ulna: 1 proximal R, 1 shaft fragment L matches proximal in 352L.
Hand: Carpals: capitate R, scaphoid L, hamate L
Metacarpals: MC1 L, MC2 (R + L), MC4 L

Phalanges: 7 proximal, 2 medial
Femur: 9 fragments
Tibia: 8 fragments
Fibula: 6 fragments
Foot: Tarsals: Calcaneus R, talus R, navicular L, medial cuneiform L, 1
accessory ossicle, these bones matched those in 352F and G.
Metatarsals: MT3 L, MT5 R, 2 unidentified shaft fragments
300+ unidentified fragments (mostly very small)

Sex: ? Male, attribution based on bone size, in particular the epicondylar
width of the humeri (Stewart 1979)
Age: Adult

It was noted that the bones in this sample all came from the same individual.

Context 30, Finds No. 352N

1 fragment of animal bone

Context 57, Finds No. 463

Skull/Mandible: 8 fragments, including basi-occipital, temporal
Scapula: 1 fragment R
Rib: 24 small fragments
Vertebra: 4 arch fragments
Humerus: 1 distal shaft R
Ulna: 2 proximal shafts (R + L)
Femur: 2 proximal shafts (R + L)
29 unidentified small fragments

Age: 3-6 years, based on bone size alone, smaller than context 63

Context 63, Finds No. 489

Skull: Various fragments, mainly vault
Teeth: 8 maxillary, 7 mandibular
Sternum: 1 corpal fragment
Clavicle: 1 shaft fragment
Rib: 64 small fragments
Vertebra: 10 body, 36 arch fragments
Humerus: 3 shaft fragments (R + L)
Radius: 1 shaft fragment (not sided)
Ulna: 2 shaft fragments (R + L)
Hand: 2 MC1 fragments (R + L), 3 phalanges
Tibia: 2 shaft fragments (R + L)
c.60 unidentified fragments

Age: 6-8 years, based on Schour and Massler (1941) and ossification of the occipital and atlas (Stewart 1979).

Cremated Bone

Context 12, Finds No. 232

One large cremation sample. All parts of the skeleton were represented. No evidence for more than one individual. Some animal bone present.

Fragments identified: Skull, mandible, teeth roots, rib, scapula, clavicle, vertebra, innominate, humerus, radius, ulna, femur, fibula, talus, navicular, metacarpal and metatarsal, hand and foot phalanges.

Age: Adult, based on skull and tooth fragments

Degree of Burning: Most of the fragments were white although there were some elements of blue-grey present. This was thought to indicate efficient cremation. Most of the pieces were fairly small suggesting that after cremation they had been deliberately broken up.

Weight: 1880 g

Context 14, Finds Nos. 260 and 261

Two large cremation samples. All parts of the skeleton were represented. No evidence for more than one individual. Some animal bone present.

Fragments identified: Skull, mandible, tooth, rib, vertebra, clavicle, scapula, pelvis (ilium), humerus, radius, ulna, fibula, MT5 (R), phalanges (hands and feet), long bones (miscellaneous).

Sex: ?? Female, a very tentative identification based on the small size of a distal humeral fragment. No other diagnostic pieces available.

Age: Adult, based on sutural fusion of a skull fragment.

Degree of Burning: Colour of fragments varied from black to blue-grey to white, with most being black or blue-grey. The largest pieces were about 6 cm long and there was little evidence for breakage, eg. splitting off of inner and outer tables of skull. All of this indicates a low degree of burning. The fifth metatarsal and proximal foot phalanx showed no sign of burning at all. Their appearance suggested that they might well have come from the same individual as 309, although this could not be proven. There are two possibilities which require consideration: that these foot bones were from an inhumation and not part of this cremation sample (i.e. they represent another individual) or that the position of the body at cremation was such that the feet had not been burnt. This latter argument is supported by the poor degree of burning noted elsewhere on the skeleton and in particular on the lateral border of two scapula fragments where the bones were brown and showed hardly any evidence for burning at all.

Weight: 1100 g

Context 14, Finds No. 309

A single bone with no sign of burning.

Foot: Medial cuneiform (L).

Age: Adult

Context 16, Finds No. 307

This was a sample of animal bone.

Context 22, Finds Nos. 322, 324, 325

Three small samples. Some animal bone present. No evidence for more than one individual.

Fragments identified: Skull, tooth, vertebra, long bone, terminal foot phalanx.

Age: Adult, based on the teeth and skull sutural fragments

Degree of Burning: Very little evidence. Colour varied from black through blue-grey to white. Most of the fragments were small (less than 2 cm) but the sample was insufficient for this to be significant. Not possible to conclude whether or no there had been a high degree of burning.

Weight: 400 g

Context 25, Finds Nos. 317, 318, 319

Three very small samples. Some animal bone present. Evidence in 317 for more than one individual (a juvenile long bone fragment and hand phalanx from an adult).

Fragments identified: Skull, pelvis, phalanges, long bones.

Age: Juvenile and adult, both based on skeletal growth and development

Degree of Burning: Noted that most fragments white and some of fair size but sample too small for overall comment.

Weight: 100 g

Context 26, Finds No. 337

One large cremation sample. All parts of the skeleton were represented. Evidence for a minimum of two individuals came from the fact that most of the fragments were adult but there was an infant proximal phalanx (hand) present. Some animal bone present. This last included some fairly large fragments (sheep-sized); the possibility that some of the unidentified fragments were animal rather than human could not be excluded but it was not feasible to sort all of the bone. The only significant effect of this is that the weight is possibly on the high side.

Fragments identified: Skull, teeth (roots and a mandibular first molar crown), long bones, phalanges (terminal - hands), femur (proximal and distal), talus, navicular, long bones (miscellaneous).

Age: Adult, based on the terminal phalanges and tooth fragments

Infant, based on the size of the proximal phalanx

Degree of Burning: Colour of fragments varied from blue-grey to white, with most being white. Notably those fragments which were not came from the ends of bones. The largest pieces were about 7 cm long but most were very small. It was suggested that the material had been well burnt and that the bones had been well broken up after cremation.

Weight: 1330 g

Context 28, Finds No. 345

A very few fragments of cremated human bone.

Weight: 10 g

No further observations possible.

Context 28, Finds No. 388

A very small cremation sample. No evidence for more than one individual.
Fragments identified: Skull, long bone (miscellaneous).
Age: Adult, based on bone size and development
Degree of Burning: Very little evidence. All of the fragments were white but in such a small sample this cannot be taken as significant.

Weight: 70 g

Context 35, Finds No. 355

A small cremation sample. There was one maxillary second molar which had only about one quarter of the root developed. This could not have belonged to the rest of the material as that came from an adult but whether or no it should be included as a separate individual was not clear.

Fragments identified: Skull, teeth, vertebra, hand phalanges, long bones (miscellaneous).

Age: Adult, based on bone size, the teeth and phalanges
Juvenile, c.8-9 years, based on the maxillary second molar (Schour and Massler 1941)

Degree of Burning: Very little evidence available but it was noted that most of the fragments were small and white.

Weight: 640 g

Context 36, Finds No. 356

A very small cremation sample. No evidence for more than one individual.
Fragments identified: Skull, teeth, phalanges (hand), long bones (miscellaneous).

Age: Adult, based on the teeth fragments and phalanges

Degree of Burning: Very little evidence. All of the fragments were white but in such a small sample this could not be taken as significant.

Weight: 120 g

Context 39, Finds No. 385

A fair-sized cremation sample. Some animal bone present. Amongst the cremated bone there was no evidence for more than one individual but there was an unburnt infant rib present. Whether or no this should have been included as a separate individual was unclear.

Fragments identified: Very little identifiable: fragments of skull, teeth, phalanges (hands and feet), scaphoid.

Age: Adult, based on the tooth fragments
Infant, based on bone size

Degree of Burning: Nearly all of the fragments were very small and white in colour. This suggested that the cremation had been efficient being both well-burnt and well broken up afterwards.

Weight: 980 g

Context 60, Finds No. 488

One large cremation sample. All parts of the skeleton were represented. No evidence for more than one individual. Some animal bone present.

Fragments identified: Skull, mandible, teeth, rib, scapula, clavicle, humerus, radius, ulna, vertebra, sacrum, innominate, femur, patella, tibia, fibula, navicular, metacarpal and metatarsal, foot phalanges.

Sex: ? Female, based on a fragment of frontal bone (skull) which lacked a supra-orbital torus and had sharp orbital edges.

Age: Adult, based on skull fragments with sutures present.

Degree of Burning: Most of the fragments were white although there were some elements of blue-grey present. This was thought to indicate efficient cremation. With a few exceptions the pieces were very small suggesting that after cremation they had been deliberately broken up.

Weight: 1650 g

Context 62, Finds No. 485

This was a sample of animal bone.

?Context - Inhumed Bone

Context 23 or 30, Finds No. 352E, 113.90/215.40

- This was listed as context 30 but bagged as context 23

2 bone fragments, both animal

Context 23 or 30, Finds No. 352H, 115.10/215.26

- This was listed as context 23 or 30 but bagged as context 23

Skull: 1 fragment basi-occipital

Mandible: 3 fragments

Teeth: 5 present (4 loose)

Vertebra: 1 fragment

Sex: -

Age: 3-5 years, estimate based on Schour and Massler's chart (1941).

Context 23 or 30, Finds No. 352I

Various bone fragments in very poor condition, all human. No further observations possible.

Context 23 or 30, Finds No. 352J

Various fragments all in very poor condition, identified:-

Tibia: 1 distal shaft fragment

Fibula: 1 shaft, 1 distal fragment

Foot: 1 navicular L, 1 cuboid L, 1 intermediate cuneiform L, 1 lateral cuneiform L

1 metatarsal (1st) L

Although there was no conclusive evidence it was suggested that, from their size and appearance, the bones in this sample all came from the same foot.

Miscellaneous Bone

Note: In the list below where it was not possible to discern whether or no material was human or animal the designation ?H/?A/B is used.

Context 5, Finds No. 33

Various small bone fragments.

Context 5, Finds No. 34

2 fragments, infant, 1 rib, 1 vertebral arch.

Context 5, Finds No. 84

Infant left ulna

Context 5, Finds No. 86

Various fragments infant bone includes rib, vertebral arch, metacarpal

Context 6, Finds No. 99

Bone fragment, infant shaft

Context 7, Finds No. 59

Infant vertebral arch fragment

Context 9, Finds No. 47

Rib fragment, infant.

Context 9, Finds No. 50

Small bone fragment. ?H/?A/B.

Context 10, Finds No. 90

Infant bone, 3 vertebral arches, metatarsal shaft
Infant bone, skull, right clavicle, rib, long bone, hand phalanx

Context 10, Finds No. 94

3 small fragments, includes infant vertebral arch.

Context 10, Finds No. 102

Infant rib fragment

Context 10, Finds No. 106

2 infant rib fragments

Context 10, Finds No. 107

1 infant metacarpal shaft

Context 10, Finds No. 109

Infant rib fragment
Infant rib fragment

Context 10, Finds No. 110

1 bone fragment. ?H/?A/B.

Context 10, Finds No. 115

3 infant vertebral arch fragments

Context 10, Finds No. 119

13 rib fragments, juvenile
Various fragments infant bone, includes maxillary second right molar crown,
mandible, pelvis, humerus, rib

Context 10, Finds No. 130

Fragment infant bone

Context 10, Finds No. 131

2 small fragments infant bone
Various fragments infant bone includes: skull, mandible, rib, pelvis,
vertebrae, femur, tibia, humerus, radius, ulna

Context 10, Finds No. 132

Various fragments infant bone, includes left scapula, proximal right femur

Context 10, Finds No. 133

Infant shaft fragment.

Context 10, Finds No. 134

1 infant vertebral body (sacral)

Context 10, Finds No. 147

2 fragments infant bone, includes proximal right ulna

Context 10, Finds No. 147?247

2 bone fragments. ?H/?A/B

Context 10, Finds No. 149

2 fragments infant bone

Context 10, Finds No. 158A

Bone fragment. ?H/?A/B.

Context 10, Finds No. 158B

2 adult cranial fragments.

Context 10, Finds No. 164

2 fragments infant bone, includes proximal right femur

Context 10, Finds No. 165

Infant fragment, radial shaft.

Context 10, Finds No. 166

Infant right tibia

Context 10, Finds No. 168

Shaft fragment. ?H/?A/B

Context 10, Finds No. 176

2 fragments, 1 infant metacarpal shaft, 1 deciduous first molar crown.
3 fragments, infant vertebral arch.

Context 10, Finds No. 180

Fragment infant bone

Context 10, Finds No. 181

Partial infant femur, right side

Context 10, Finds No. 183

5 fragments, include 2 of infant mandible

Context 10, Finds No. 202

Mandibular third molar, adult.

Context 10, Finds No. 203

2 fragments infant bone

Context 10, Finds No. 212

1 infant skull fragment

Context 10, Finds No. 246

4 bone fragments. 2 hand phalanges, 1 medial from an adult.

Context 10, Finds No. 248

1 mandibular right, first molar; 1 medial hand phalanx. Both adult.

Context 10, Finds No. 249

Shaft fragment, adult

Context 10, Finds No. 250

4 fragments, includes proximal femur fragment, adult

Context 10, Finds No. 252

3 fragments infant bone, includes left humerus

Context 10, Finds No. 367

7 small bone fragments. ?H/?A/B.

Context 14, Finds No. 294

Infant shaft fragment.

Context 16, Finds No. 302

Infant rib fragment, 7 vertebral arch fragments
1 deciduous incisor crown.

Context 16, Finds No. 306

Various small bone fragments. Includes infant rib and deciduous tooth crown.

6 small fragments. ?H/?A/B

4 small fragments. ?H/?A/B

Various fragments infant bone: rib, vertebrae, pelvis, metacarpals, phalanges (hand)

Context 16, Finds No. 307

Various small bone fragments. Includes mandibular premolar crown.

Context 19, Finds No. 316

6 small fragments, includes 2 infant hand phalanges

Various small fragments from an infant

Various small fragments. ?H/?A/B

Context 24, Finds No. 320

Various small bone fragments.

Context 26, Finds No. 337

4 small bone fragments. ?H/?A/B

2 small fragments: 1 infant vertebral arch, 1 infant hand phalanx.

Context 29, Finds No. 384

First right metatarsal, adult

Context 29, Finds No. 422

1 infant humerus shaft

Context 32, Finds No. 388

3 shaft fragments, adult

Context 33, Finds No. 439

Bone fragment. ?H/?A/B

Context 33, Finds No. 442

1 bone fragment

Context 39, Finds No. 385

3 small fragments. ?H/?A/B

4 vertebral arch fragments, 2 rib, 2 metacarpal shafts, 1 terminal hand phalanx; all infant.

Context 41, Finds No. 8 (could be Context 8, Finds No. 41)

Small bone fragment. ?H/?A/B

Context 41, Finds No. 455

Various fragments juvenile bone, includes proximal right ulna, rib, vertebral arch

Context 43, Finds No. 411

3 small fragments infant bone

Context 43, Finds No. 412

4 fragments infant bone, includes complete right femur

Context 43, Finds No. 466

2 fragments infant bone

Context 48, Finds No. 446

5 small bone fragments. Includes partial infant mandible. Shaft fragment, juvenile

Context 52, Finds No. 460

Infant rib fragment

Bibliography

- Brothwell D.R.: Digging Up Bones. 3rd ed.
British Museum (Natural History). 1981.
- Evans W.E.D.: The Chemistry of Death.
Charles C. Thomas, Illinois. 1963.
- Krogman W.M.: The Human Skeleton in Forensic Medicine.
Charles C. Thomas, Illinois. 1962.
- Schour I. and M. Massler: The development of the human dentition.
Journal of the American Dental Association. 28:1153-60. 1941
- Stewart T.D.: Essentials of Forensic Anthropology.
Charles C. Thomas, Illinois. 1979.
- Wells C.: A Study of Cremation.
Antiquity. 34: 29-37. 1960.