Ancient Monuments Laboratory
Report 117/87

THE HUMAN BONES FROM BRIGHTON HILL SOUTH.

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Summary

Fifty-two skeletons were recovered from this site, 21 infants, 10 juveniles and 21 adults. Of the adults, 13 were male and 7 female; sex could not be determined in one case. The majority of the adults were 35 or more years of age.

Seven of the infants were probably a year or less of age at their time of death and one of these seven might have been still born.

Diseases of the joints were common amongst the adults as was dental disease. There were four cases of fractured bones and one infant had generalised periostitis which may have been due to cortical hyperostosis.

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Introduction

The human bones from Brighton Hill South comprised a group of 52 discrete inhumations and a considerable amount of disarticulated material. In general the bones had been reasonably well preserved but there was evidence for considerable post-mortem disturbance, many of the skeletons had suffered some damage and several of the bones had post-mortem breaks. The degree of disturbance can be guaged by the frequency with which intrusive human or animal bones were found with the primary burials. In 17 cases (32.7%) this was the case; in 12 of the 17 the intrusive bones were human, in 4, they were animal bones and in 1, there was an admixture of both human and animal bone.

Of the 52 burials, 5 had been recovered from within the church and their state of preservation was probably somewhat better overall than the burials outside the church. Inhumation 97, the priest, was recovered virtually completely and there was an infant burial (inh 399) which was also virtually intact. Two of the burials (100 and 399), however, contained instrusive human bones indicating that they had been disturbed at some time.

Methods of examination

Sex and age: Each of the skeletons was examined to determine sex and age using standard methods (see, for example, Workshop of European Anthropologists, 1980). Wherever possible, the sex of the skeleton was assigned on the basis of the morphology of the pelvis, or this was not present or sufficiently intact, then from the skull. When neither pelvis nor skull were suitable, then a 'probable' sex was assigned from the size and shape of the bones

and from measurements such as the diameter of the femoral or humoral heads. In Appendix 1, which is the catalogue of the material, the method used for sexing is indicated in each case.

Age was estimated either from tooth wear using Miles's (1963) charts, from the morphology of the pubic symphysis (Meindl et al, 1985) or from the state of fusion of the cranial sutures. None of these methods is very reliable and I have given ages in ten year age bands; even so, there is certain to be a considerable error in the estimates. When dealing with immature individuals in whom the epiphyses of the long bones have not fused or in whom the dentition is still in a state of eruption it is possible to be more certain of the age of death (assuming always that the ages at which the teeth erupt and the long bones fuse has not changed markedly over time).

Height: The estimation of height was made with the use of Trotter's (1970) formulae which allow the calculation to be made from the length of individual long bones. There is an error in the estimate which varies depending on which bone measurement is used; in each case I have used whichever measurement gave the smallest error (see Appendix 1).

Other anthropological data: In a relatively small number of cases it was possible to determine the cranial index and the degree of platymeria and platycnemia. The methods used were those described by Brothwell (1981).

Non-metric traits: The presence or absence of a number of non-metric characteristics was determined in the skull and in the

post-cranial bones based on the descriptions of Berry and Berry (1967) and Finnegan (1978) respectively.

The characteristics of the population

Sex and age: One of the interesting features of this group of skeletons was the high proportion of infants and juveniles which together accounted for 59.6% of the total (see Table 1). Ten of the skeletons were considered to be definitely male, 3 probably male, 5 definitely female and 2 probably female; there was a single adult burial in which the sex could not be determined. Twenty-one of the skeletons were infants (aged less than five years) and 10 were juvenile (5 - 15 years of age). No attempt was made to determine the sex of the juveniles but in a few cases it was possible to assign a probable sex to the infants (see below).

Of the 21 adults, the majority (9) were aged between 35 and 45; 5 were over 45 at death and only 2 under 35. In five case it was not possible to make any estimate of age beyond the fact that the skeletons were adult. The numbers are too small to be able to draw any useful conclusions from either the distribution of ages or of the sexes.

Height: An estimate of height was made on 11 male and 4 female skeletons and the results are shown in Table 2. The male heights ranged from 1.63 - 1.75 metres (5′ 4" to 5′ 9") and that of the females from 1.50 to 1.62 metres (4′ 11" to 5′ 3") inches). These heights are somewhat less than would be expected in the present day population but, again, the small numbers preclude any valid statistical inferences.

Cranial index: This was derived on 7 skeletons only, 5 male and 2 female. Three of the male skulls were in the dolichocephalic range and two in the mesocephalic range; one female was in each range.

Platymeria and platycnemia: These indices were derived from 13 and 14 skeletons respectively and whereas the majority of males fell into the eurymeric and mesocnemic ranges, all the females were in the platymeric and platycnemic range (see Table 3). The significance of this result (if any) is obscured by the very small number of observations in each of the cells of Table 3.

Non-metric characteristics

The summary of non-metric characteristics in the adults is shown in Table 4. As may be seen, many of the skeletons were too incomplete or damaged to allow for observations to be made. Of the cranial non-metrics, the most common finding (in 12 of the 14 in which observations could be made) was open supra-orbital foramina. Amongst the post-cranial, the most common were a double inferior talar facet, with the corresponding articulation on the calcaneum also double, and plaque on the femoral neck.

Dental health

Because of the damage which the skeletons had sustained after burial, a good many of the teeth had been lost. In 21 adults a total of 672 teeth would be expected (21 x 32) but only 312 were actually present. There were a further 62 empty sockets from which the teeth had been lost after death and 49 teeth had been

lost ante-mortem; 10 teeth had not erupted. Thus the grand total of teeth, sockets and unerupted teeth was 433 or 64.4% of that expected.

Ten individuals had lost teeth during life, presumably as the result of dental or gum disease (although the possibility that some were lost as the result of trauma cannot be discounted). Only five carious teeth were found (in three individuals) and there was only one dental abscess (see Table 5). These observations tend to suggest that the ante-mortem loss of teeth was caused predominantly by gum disease which was the result of the poor dental hygiene which would almost certainly have prevailed at the time.

The infants

Of the 21 infants in the group, 9 were eighteen months of age of less at the time of their death. The ages of these 9 were estimated from the measurements of the long bones using the tables of Fazekas and Kosa (1978). The same authors give methods for sexing fetuses and slightly older infants using measurements of the ilium. Sexing could only be attempted in 3 cases, and of these, 2 were considered female and 1 male (see Table 6).

In one case (inh 81) it seems likely that the child was still-born, or died very soon after birth, as the estimate of age is 8 months. Three of the other children died in the neonatal period (that is within the first month of life) and two others were less than a year old at death. The three remaining children probably died between twelve and eighteen months of age.

The disarticulated bone

There were 54 contexts from which disarticulated human bone was recovered and 324 bones were identified (see Appendix 1). Seven (13.0%) of the contexts also included animal bone. Of the 324 identified bones, 51 were from infants, 60 from juveniles and the remaining 213 from adults. From the summary table (Table 7) it can be determined that there must be at least three infants, four juveniles and two adults represented. One of the contexts contained only infant bones (204) and almost certainly is a disturbed infant burial, probably a male judging from the ilium. One other context (225) contained many infant bones, including another male ilium. Of the adult bones, it was possible to state that two individuals of 35 - 45 were present according to dental wear (116) and morphology of the pubic symphysis (313).

Pathological findings

For such a small group of skeletons there was a good deal of pathology; no less than 16 of the adults had some evidence of disease and so did two of the infants. The most common diseases were those which fall into the degenerative category (see Table 8) and dental disease was also common as been discussed above.

Amongst the disarticulated material the only evidence of disease was in a mandible from context 116 from which two teeth had been lost prior to death probably as the result of dental disease.

Degenerative disease: Amongst this group there was one case (inh 97) of diffuse idiopathic skeletal hyperostosis (DISH) which is a

relatively common finding in archaeological material from all periods (Rogers et al, 1985) and one case of generalised osteoarthritis in which the hands, wrists, elbows, shoulders and spine were all affected.

Trauma: Four instances of trauma were noted. In one case (28) there were five well healed fractures of the right ribs and ribs were also fractured in another case, this time in association with a fractured left clavicle (inh 27). The clavicle had healed well with some displacement and four of the five ribs had healed but in the fifth, healing had failed to take place and a pseudarthrosis (false joint) had developed between the ununited ends of the bone. It is doubtful that this would had been troublesome to the individual during life.

The two other fractures affected the bones near the wrist and were such as are seen commonly after a fall in which the victim has put out his hand to try to save himself. Both had healed well but with some shortening. In one case (inh 19) the right ulna had been broken and healed with about 4 mm of shortening whereas in the other (inh 38) the right radius had been affected and had healed with 12 mm of shortening.

Metabolic disorders: One juvenile skeleton (inh 100) had signs of a slight degree (grade 1) of cribra orbitalia which is often taken to mean that the individual had suffered from iron deficiency during life either dietary or because of the presence of a great burden of intestinal parasites (Stuart-Macadam,1985, Kent, 1986). It would certainly not be surprising to find that iron deficiency was common in medieval times but it would be premature necessarily to ascribe it to this case on the basis of

this rather insignificant finding alone.

Other conditions: The bones of one infant (inh 53) showed a generalised periosteal reaction with thickening of the cortices, especially of the ribs. The periostitis was present on the shafts of most of the extant long bones, on the scapula and on the mandible. Radiography of the bones showed that the distribution was not symetrical and that there was no transluscent zone between the new bone and the cortex. This findings suggest that this may have been a relatively mild case of infantile cortical hyperostosis.

Comment

The most interesting feature of this rather small collection of skeletons is the high number of infant burials. They were equal in number to those of the adults whereas it is often the case that infant burials are under-represented in achaeological material. Amongst the inhumations there were 21 infants and there were at least three more represented in the disarticulated material. As may be seen from Table 6, at least one of the inhumations was likely to have been a still birth and several of the others were within the first year of life.

Still-birth was probably common in the medieval period and a 15th century leech-book gives a method for easing the delivery of a still-born child (Dawson, 1934, p96):

> Take leek blades and scale them, and bind them to the womb about the navel; and it shall cast out the dead

child; and when she is delivered take away the blade or she shall cast out all that is in her.

Neonatal and infant mortality rates would also have been high in the medieval period probably of the order which they are now are in developing countries. The infant mortality rate (that is, the number of deaths under one year of age per 1,000 live births) in some of the developing countries is approximately 100 or more, some ten times the rate in the western European countries (Bayliss et al, 1987); such rates could be expected at the time we are considering here.

There is thus good reason to expect a high proportion of infant deths in a medieval group of skeletons but whether the number of infant deaths in the present series truly reflects the death rate in the population from which the skeletons derive is impossible to say, however, given the small size of the sample. It may be, for example, that the infants were preferentially buried within one part of the cemetery and that this area has - by chance - been excavated. This supposition is not open to verification, however, unless and untill the rest of the cemetery is excavated.

Amongst the pathological findings, the most interesting was that of a generalised periostitis in one of the infants (inh 53). There are relatively few causes of generalised periostitis in infants but they include chronic infections, sub-periosteal haemorrhage (resulting most commonly from scurvy or from 'battering'), hypervitaminosis A and infantile cortical hyperostosis. Periostitis may also be seen in up to a third of very young infants as part of normal bone growth; this physiological periostitis may persist for several months.

In the present case it is not possible to rule out the possibility that the infant may have succumbed to a chronic infection of some sort but there were no signs of osteomyelitis. Hypervitaminosis A is a modern disease in this country and can be eliminated as a cause and it is also extremely unlikely that this is a case of baby battering since there were no broken bones. Radiology of the bones showed that the there was no 'double-contour' effect typical of physiological periostitis (Shanks and Kerley, 1971) and there was no area of transluscence between the normal cortex and the new bone which is characteristic of scurvy and osteomyelitis. It is probable, then, that this is a relatively mild case of infantile cortical hyperostosis.

Cortical hyperostosis was first described by Caffey and Silverman in 1945. It is a condition which makes its appearance in the first few months of life, invariably before the fifth month. The affected infant presents with a fever and irritability and on clinical examination, hard swellings are found in the soft tissues which subside before there is radiological evidence of periostitis. The new bone is generally confined to the shafts of the bone and the epiphyses are rarely if ever involved. The growth of new bone is not usually symetrical but may be so massive as to mimic an osteogenic tumour. Any bone may be affected and the condition generally remits with no serious sequelae.

The aetiology of the disorder is not known but infection, allergy, intra-uterine damage to the fetus and genetic factors have all been proposed at one time or another.

Table 1

Age and sex of inhumations from Brighton Hill South

	Male	Female	Unknown	Total
Infants				21
Juveniles				10
25 -	1	1		2
35 -	6	3		9
45+	4	1		5
Unknown	2	2	1	5
TOTAL	13	7	1	52

Table 2

Heights (in metres) of adult skeletons from Brighton Hill South

Male	Female
	1.50
	1.51
1.61	1.61
	1.62
1.63	
1.65	
1.67	
1.68	
1.68	
1.71	
1.73	
1.74	
1.74	
1.75	

Table 3

Platymeria and platycnemia in adult skeletons from Brighton Hill South

Platymeria

	Platymeric	Eurymeric
Males	3	6
Females	4	0

Platycnemia

	Platycnemic	Mesocnemic
Males	2	8
Females	4	0

Platymeric: index < 85

Eurymeric: index 85 - 99.9

Platycnemic: index < 63

Mesocnemic: index 63 - 69.9

Table 4

Number of non-metric characteristics found in adult skeletons from Brighton Hill South

	Present	Absent	Not known
Cranial			
Ossicle at lambda	2	11	8
Ossicles in lambdoid suture	2	11	8
Parietal foramen present	2	9	10
Supra-orbital foramen open	12	2	7
Post-cranial			
Plaque	6	8	7
External	1	12	8
Medial squatting facet	4	9	8
Lateral squatting facet	1	11	8
Acromial facet	7	2	12
Inferior talar facet double	8	6	7
Anterior calcaneal facet double	6	8	7
Anterior calcaneal facet absent	2	12	5
Transverse foramen bipartite	1	8	12
Manubrio-corpal synostosis fused	1	7	13
Sternal aperture present	1	8	12

For further details see Berry & Berry (1967) & Finnegan (1978)

Table 5

Summary of dental disease in adult skeletons from Brighton Hill South

Context	Sex	Ante-mortem loss	Caries	Abscess
15	F	6		
19	M	4	1	
22	M	7	2	
27	M	2		
28	M	7		
50	M	6		
59	F	1		
87	M	10		1
97	M	2	2	
400	M	4		

Numbers in columns indicate number of teeth involved in each case.

F = female

M = male

Table 6

Ages and sexes of infant inhumations from Brighton Hill South

Context	Age (months)	Sex
17	9.5-10	Male
18	9.5	
30	9.5-10	
39	12	
40	12	
53	10-18	Female
55	12-18	
81	8	Female
86	12	

Table 7

Number of identified disarticulated bones from Brighton Hill South

Bone	Infant			Juvenile			Adult		
	l	r	ns	l	r	ns	l	r	ns
acetabulum							1	1	
calcaneum				1			1		1
clavicle		2		1	1		1	1	
dist							1		
cuneiform							1	1	
femur	1							1	
prox				4		1	1		1
ms					2	1		2	5
fibula									
ms									2
humerus	3								
prox		1						1	
dist					1			1	
ms					2		2		2
ilium	1	2		1			1	2	2
ischium					2		1		
mandible	1					1	1		2
metacarpals						1	1	3	12
metatarsals					1		2	8	2
navicular							2	2	
patella				1					
pelvis									1

Table 7 (contd)

phalanges									
hands									
prox						1			5
mid									1
feet									7
pubis						1	1	1	
radius									
prox		1		1			1	2	
dist				1			1	2	
ms						1			5
rib			22			15			68
sacrum									2
scapula							1	1	3
skull									
frags			7			2			14
frontal									1
petrous							1		
zygoma						1			
sternum									1
trapezium								2	
tibia									
prox					1		1		
ms					2		1	1	1
ulna	1	1		1					
prox	1						2	1	
dist							1	1	
ms					1				

Table 7 (contd)

vertebrae			7			10			5
cervical						1			
thoracic									7
lumbar									3
TOTALS	8	7	36	11	13	36	26	34	153

l = left

r = right

ns = no side assigned

frags = fragments

prox = proximal end only

dist = distal end only

ms = mid-shaft only

mid = middle

Table 8

Number of pathological changes by aetiological category

Degenerative	Trauma	Metabolic
13	4	1
Dental	Other	
10	1	
Unknown	None	
21	13	

Note that the total number in the table exceeds the total number of inhumations because there was more than one pathological condition in some skeletons.

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Appendix 1

Catalogue of human remains from Brighton Hill South

In this catalogue an estimate of the amount of the skeleton present is given, expressed as a proportion of the whole. The methods used to age and sex the skeletons are given in brackets. The heights are shown in metres with the standard errors and the bones which were used in the calculation. Infants are less than five years of age and juveniles less than fifteen but more than five years of age.

Inhumations

15. Well preserved skeleton with some post-mortem damage to the skull; ca 95%.
Female (pelvis, skull).
35 - 45 (pubic symphysis, dental wear).
1.50 +/- 0.0355 (left and right femur + tibia)
17. Virtually intact infant burial; ca 90%.
Probably male (ilium).
9 - 10 months (long bone measurements).
18. Very badly damaged infant burial represented by many skull fragments including both frontals, petrous temporal bones, maxillae, basiocciput, both hemi-mandibles; both clavicles; fragment of left humerus; proximal fragment right ulna; fragment of ilium; fragments of both femora; rib and vertebral fragments; unidentified long bone fragments.
9 - 10 months (clavicular length).
19. Partial skeleton lacking vertebral column and sacrum, most of

right pelvis, left scapula, right clavicle and many small bones of hands and feet; ca 66%. Intrusive infant left humerus.

Male (pelvis, skull).

35 - 45 (dental wear).

1.73 +/- 0.0299 (left femur + tibia).

20. Well preserved juvenile with some post-mortem damage; ca 95%.

4 - 6 (dental eruption).

21. Virtually intact infant but with both clavicles and many small bones of the hands and feet missing; ca 85%.

3 - 4 (dental eruption).

22. Almost complete skeleton with some post-mortem breaks; ca 95%.

Male (pelvis, skull).

45+ (dental wear).

1.67 +/- 0.0299 (left femur + tibia).

23. Fragmentary juvenile with considerable post-mortem damage. Represented by skull fragments including both petrous temporals and mastoids, right zygoma, both occipital condyles, right orbit, sphenoid, both hemi-mandibles; right scapula; left glenoid; right humerus; proximal fragment left humerus; both clavicles, left and right ribs; first and second cervical vertebrae and two other cervical bodies; six thoracic vertebral bodies. Intrusive adult distal phalange of hand.

8 - 10 (dental eruption).

24. Partial infant skeleton represented by skull fragments including both petrous temporals, occiput, right zygoma, right occipital condyle; mid shaft fragment of left femur; both tibiae; fragments of both fibulae; both calcanea, left talus; seven metatarsals, four metacarpals; four thoracic vertebrae and fragment of one cervical vertebra; rib fragments.

25. Incomplete juvenile skeleton represented by skull fragments including left frontal, right petrous temporal, left occipital condyle, basiocciput, maxilla and mandible; distal ends both humeri; proximal ends both ulnae; left radius, proximal end right radius; distal end left femur. Intrusive infant bones including two right orbits; maxilla and mandible; fragments of left and right femur and tibia; fragment of humerus; left scapula; left ilium (probably male); many vertebral fragments.

4 - 6 (dental eruption).

27. Virtually complete skeleton but with many post-mortem breaks; ca 95%. Intrusive adult proximal left ulna.

Male (pelvis).

35 - 45 (dental wear).

1.75 +/- 0.0299 (left and right femur + tibia).

28. Well preserved skeleton with post-mortem damage. Lacks virtually the whole of the vertebral column, mandible and both clavicles and left ulna (probably in 27).

Male (pelvis).

35 - 45 (pubic symphysis; dental wear).

1.74 +/- 0.0299 (right femur + tibia).

29. Badly damaged and incomplete skeleton lacking most of the vertebral column, both humeri and many small bones of hands and feet; ca 66%. Intrusive pig phalange.

Female (pelvis).

35 - 45 (dental wear).

30. Extremely fragmentary infant represented by skull fragments including both petrous temporals, left temporal, left mandible; left radius; right clavicle; many rib and vertebral fragments.

9 - 10 months (radial length).

36. Well preserved and virtually intact juvenile; ca 95%.

4 - 6 (dental eruption).

37. Incomplete infant skeleton lacking left scapula, humerus, radius and ulna; left pelvis and many small bones of the hands and feet; ca 66%. Intrusive adult phalange of foot.

ca 18 months (dental eruption).

38. Virtually intact skeleton with some post-mortem damage; ca 95%. Intrusive infant left mandible aged between 6 and 12 months (dental eruption).

Male (pelvis, skull).

25-35 (pubic symphysis, dental wear).

1.74 +/- 0.0299 (left and right femur + tibia).

39. Fragmentary infant skeleton represented by right frontal, left petrous temporal, both occipital condyles, basiocciput, right hemimandible and fragment of left; fragment of left humerus; proximal fragment of left tibia; fragments of upper cervical vertebrae.

6 - 12 months (dental eruption).

40. Very incomplete infant skeleton represented by fragments of skull, cervical vertebrae, ribs, proximal left ulna, left humerus and both femora.

<1 year (bone size).

41. Virtually complete skeleton with post-mortem breaks; ca 95%.

Female (pelvis, skull).

25 - 35 (pubic symphysis, dental wear).

1.51 +/- 0.0355 (left and right femur + tibia).

46. Subtantially intact infant with much post-mortem damage especially to skull.

18 - 36 months (dental eruption).

50. Much damaged skeleton lacking most cervical, all thoracic and all lumbar vertebrae, sacrum and sternum; ca 66%.

Male (pelvis, skull).

35 - 45 (dental wear).

1.68 +/- 0.0299 (left femur + tibia).

52. Extremely friable adult skeleton with severe post-mortem damage. Lacks most cervical and thoracic vertebrae, left clavicle and scapula, sternum and substantial parts of left leg bones; ca 50%. Intrusive adult left petrous temporal bone and mastoid.

Female (pelvis).

1.61 +/- 0.0424 (left radius).

53. Substantially intact infant with left lower arm, part of pelvis, right femur many small bones of hands and feet missing; ca 75%.

Female (ilium).

10 - 18 months (bone measurements).

55. Fragmentary infant represented by skull fragments including left petrous temporal and right zygoma; left scapula, left clavicle, left humerus and radius and four left ribs. Intrusive adult lateral cuneiform.

12 - 18 months (bone measurements).

56. Fragment of infant skull comprising left frontal and other small fragments of the vault.

57. Part of juvenile skull including both occipital condyles, fragment of occiput and other fragments of the vault.

58. Very incomplete juvenile including both frontals, left maxilla and fragments of parietals; fragment of left ulna.

59. Virtually complete adult with many post-mortem breaks; ca 95%.

Female (pelvis).

45+ (pubic symphysis, dental wear).

1.62 +/- 0.0355 (right femur + tibia).

60. Incomplete infant represented by fragments of skull including right maxilla and mandible; right ilium; fragment of right femur

and tibia; one rib,

3 - 4 (tooth eruption).

81. Substantially intact infant lacking vertebrae, right humerus and hands and feet; ca 66%.

Female (ilium).

8 months (bone measurements).

82. Fragmentary infant skull including left petrous temporal, right zygoma and both maxillae.

4 (dental eruption).

83. Incomplete juvenile skull including occiput, left zygoma and fragments of vault. Intrusive adult premolar.

84. Substantially intact infant with much post-mortem damage; ca 90%.

3 - 4 (dental eruption).

85. Very incomplete skeleton lacking most of vertebral column, pelvis, right lower arm, left arm and most of shoulder girdles; ca 50%. Instrusive fragment of sheep calcaneum.

Probably male (skull).

45+ (dental wear).

1.63 +/- 0.0432 (left radius).

86. Incomplete infant lacking both lower legs, left humerus and many small bones; ca 75%.

12 months (dental eruption).

87. Adult skeleton lacking vertebral column, much of pelvis and many small bones of the hands and feet; ca 75%.

Male (pelvis).

45+ (dental wear).

1.71 +/- 0.0299 (left and right femur + tibia).

88. Virtually intact juvenile; ca 95%.

6 - 8 (dental eruption).

89. Badly damaged infant skull comprising fragments of both frontals, left petrous temporal and other fragments of vault and facial skeleton.

96. Fragmentary adult represented by right femur, fragments of right ulna, one right rib fragment and four vertebral bodies. Probably male (size and shape of bones).

97. Well preserved skeleton lacking many small bones of the hands and feet; ca 90%. Intrusive adult right patella and juvenile metatarsal.

Male (pelvis).

35 - 45 (pubic symphysis, dental wear).

1.68 +/- 0.0299 (left and right femur + tibia).

100. Incomplete and badly damaged juvenile. Lacks most of axial skeleton and pelvis, left clavicle and scapula and most small bones of the hands and feet; ca 66%. Intrusive adult right acetabulum, right humerus and radius, left patella, right talus and one proximal phalange of the hand. (Probably male judging from measurement of talus.)

10 - 12 (dental eruption).

169. Badly damaged adult skull lacking base and mandible. Intrusive cattle ribs and sheep molars.

Probably male.

250. Incomplete mandible. Intrusive fragment of juvenile right tibia and fragment of cattle mandible.

Probably female.

35 - 45 (dental wear).

254. Adult occipital bone.

308. Fragmentary infant skeleton represented by skull fragments, both femora and tibiae and fragments of right radius and ulna.

364. Incomplete infant represented by skull fragments including both petrous temporals, occiput and right frontal; right scapula

and a fragment of the left; right humerus; left ulna; fragment of left radius; fragments of atlas and ten rib fragments.

383. Incomplete and greatly damaged adult lacking much of both legs and all small bones of hands and feet; ca 66%.
Male (pelvis, skull).
35 - 45 (dental wear).
1.61 +/- 0.0405 (left humerus).

399. Virtually complete infant. Intrusive right hand bones of adult.

2 - 3 (dental eruption).

400. Adult skeleton with extensive post-mortem damage. Lacks axial skeleton and much of pelvis and most of the small bones of the hands and feet; ca 66%.

Male (pelvis, skull).

45+ (pubic symphysis, dental wear).

1.65 +/- 0.0299 (left and right femur + tibia).

402. Badly damaged and incomplete adult represented by many skull fragments including both petrous temporals and mastoids, left zygoma, right occipital condyle, right frontal and both mandibular heads; five vertebral fragments; mid-shaft fragment of left femur; right femoral head; mid-shaft fragment of tibia; two fragments of ilium. Intrusive rabbit bones.

Probably female (femoral head diameter).

Disarticulated bone

All bones in this part of the catalogue are from adults unless specified otherwise. Unidentified fragments have not been included.

1. Right navicular.

63. Lumbar vertebra

72. Proximal phalange of hand.

73. Right metacarpal.

92. Rib and vertebral fragments.

102. Rib fragment.

103. Juvenile rib fragment.

105. Metacarpal fragment.

108. Fragment of frontal bone.

111. Left rib fragment.

113. Mid-shaft left humerus.

115. Rib fragment.

116. Mandible with twelve teeth (four incisors, two canines, four premolars, two molars; two teeth missing ante-mortem). Age 35 - 45 (dental wear).

117. Fragment of right scapula.

118. Rib fragment.

121. One premolar; infant right clavicle; intermediate left cuneiform; five proximal phalanges of foot; infant left femur; left metatarsal; five right metatarsals; left navicular; rib fragment. Sheep incisor.

124. Right femur.

125. Distal right juvenile humerus.

126. Mid-shaft juvenile right femur; distal left radius; skull fragment; mid-shaft juvenile right tibia.

127. Mid-shaft right femur; proximal left juvenile femur; two proximal phalanges of hand; rib and skull fragments.

128. Right cuneiform; proximal phalange of foot; mid-shaft femur; right metatarsal; skull fragment.

130. Mid-shaft right juvenile tibia.

132. Left clavicle. Left mandible with four teeth (one premolar;

three molars). Age = 45+ (dental wear). Right pubis (age 35 - 45 from pubic symphysis). Rib and sacral fragments; right trapezium; distal right ulna.

133. Mid-shaft right juvenile femur.

169. Skull fragment.

191. Infant left humerus; metacarpal fragments; proximal infant right radius; rib fragment; left juvenile ulna; infant vertebral body. Distal end of chicken humerus.

192. Three infant ribs.

193. Infant rib and skull fragments.

194. Proximal phalange of hand.

204. Infant bones: right clavicle; left and right ilium (probably male); left mandibular fragment; six ribs; right ulna; proximal left ulna; six vertebral bodies.

205. Juvenile bones: metacarpal; two phalanges; skull fragment. Mid-shaft sheep radius.

225. Infant bones: two left humeri, proximal right humerus, right ilium (probably male), ribs, skull fragment; mid-shaft radius; vertebral fragment.

235. Distal right radius; skull fragment; distal left ulna.

262. Infant rib and skull fragments.

272. Juvenile skull fragment.

282. Juvenile left clavicle, cervical vertebra, pubis, zygoma, rib and vertebral fragments; infant left ulna, rib and skull fragments; left petrous temporal bone; Pig canine.

289. Rib and sternal fragments.

296. Proximal phalange of foot; left and right metatarsals.

298. Distal right humerus; proximal right humerus; two right metacarpals; right navicular; proximal phalange of hand; rib, scapular, vertebral and skull fragments; thoracic vertebra.

301. Metatarsal, rib and vertebral fragments.

313. Juvenile left calcaneum; mid-shaft fibula; right metatarsal; left navicular; left pubis (age 35 - 45 from pubic symphysis).

340. Skull fragment.

392. Molar; distal left clavicle; left metacarpal; mid-shaft juvenile right radius; skull fragment.

395. Juvenile right ischium, right metatarsal, left patella and rib fragments; rib fragments.

398. Proximal right radius.

740. Juvenile proximal femur and proximal left femur; fragments of metarsal, radius and rib; fragments of infant and adult skull.

892. Mid-shaft femur; two proximal femurs (one right); right ilium and ilial fragment; fragments of rib, scapula and skull; proximal left ulna. Three sheep molars; distal end sheep tibia; cattle mandible.

1001. Rib fragment.

1002. Calcaneum; mid-shaft femur and humerus; fragment of mandible and pelvis; middle phalange of hand; two mid-shaft radius; fragments of rib and scapula; mid-shaft tibia. Rabbit tibia, lumbar and thoracic vertebrae; cow-size long bone fragment; fragment of cattle axis; sheep molar.

1005. Pre-molar; left calcaneum; right clavicle; proximal phalange of foot; mid-shaft juvenile femur; mid-shaft femur; right ilium; two lumbar vertebrae; nine metacarpals; rib and skull fragments; thoracic vertebra; right trapezium.

1011. Two incisors; juvenile right clavicle, proximal left femur, mid-shaft right humerus, right mandible with three teeth (incisor, premolar and molar), proximal and distal left radius, mid-shaft right ulna, six vertebrae; left ilium; rib fragments; left scapula; skull fragment. Proximal sheep femur; mid-shaft sheep tibia; chicken phalange.

1021. Juvenile proximal left femur, left ilium and right ischium; left and right acetabulum; mid-shaft femur; proximal left femur; mid-shaft fibula; mid-shaft left humerus; ilium; left ischium; distal right radius; mid-shaft radius; proximal left and right radius; fragments of rib, sacrum and skull; five thoracic vertebrae; mid-shaft left and right tibia; proximal left tibia; proximal left and right ulna.

Unstratified. Infant skull fragment; proximal juvenile right tibia.

Appendix 2

Catalogue of patholological changes in human remains from Brighton Hill South

15. Dental disease. Slight hyperostosis on proximal end of left fibula.

19. Dental disease. Fracture in distal quarter of right ulna. Well healed in good allignment but with shortening of ca 4 mm compared with the left.

22. Dental disease. Eburnation on heads of right metacarpals 1-3 and on radial surfaces of scaphoid and lunate; proliferative new bone on head of 2-3 right metacarpals, and around 3-5 proximal interphalangeal joints and 3-5 distal interphalangeal joints. Degenerative disc disease affecting 4th, 5th, 6th and 7th cervical vertebrae; proliferative changes around C3/4/5/6 facet joints (left hand side). Proliferative new bone around both elbow joints with eburnation on both radio-humeral joint surfaces; proliferative new bone around both distal radio-ulnar joints, right worse than left. Pitting on joint surfaces of both acromio-clavicular and claviculo-sternal joints. Osteophytes on first four lumbar vertebrae and proliferative new bone on linea aspera of both femora. These changes are consistent with generalised osteoarthritis.

27. Dental disease. Pitting on superior surfaces of distal joints of both first metarsals with prolifertive new bone on proximal end of both first phalanges. These changes are consistent with osteoarthritis. Fracture in middle of left clavicle; well healed but with some displacement. Fracture of five left ribs; four are well healed but the fifth is unhealed with a pseudarthrosis

between the ununited portions. Schmorl's nodes affecting two thoracic vertebrae.

28. Dental disease. Some proliferative new bone around insertion of rotator cuff tendons on head of right humerus. Well healed fractures of five right ribs.

29. Fusion of fourth and fifth cervical laminae.

38. Fracture of distal end of right radius. Well healed but with about 12 mm shortening compared with the left.

50. Dental disease. Proliferative new bone around pelvis and on left patella.

52. Pitting on surface of acromial joint on right scapula (clavicle is missing). Some new bone on neck of left femur on posterior surface outside the line of attachment of joint capsule. Periostitis around head of right fibula.

53. Generalised perisosteal reaction and thickening of cortices, especially of ribs. Periostitis affects principally the shafts of the long bones, the scapula and the mandible. Radiology shows that the distribution of the periostitis is asymetrical and is not separated from the cortex by a transluscent line. These findings are suggestive of a rather mild form of infantile cortical hyperostosis.

59. Dental disease. Proliferative new bone around insertion of both Achilles tendons.

85. Eburnation on distal joint surface of first right proximal phalange of the hand; few other bones extant.

87. Dental disease. Proliferative new bone on linea aspera and soleal lines of both femora and tibiae.

96. Slight degree of proliferation along linea aspera of right femur; extremely fragmentary skeleton.

97. Deantal disease. Pitting on surfaces of both acromio-

clavicular joints. Large osteophytes on right hand side of 5th to 10th thoracic vertebrae and on left hand side of 2nd to 3rd thoracic and 1st to 5th lumbar. Extra-spinal hyperostosis around hips, knees, ankles, elbows, carpal bones, costo-transverse joints, soleal lines and linea aspera and into ligamentum flavum. These changes are consistent with DISH.

100. Bilateral cribra orbitalia (grade 1).

383. Proliferation around facet joints between 4th and 5th cervical vertebrae on left hand side.

400. Dental disease.