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HUMAN SKELETAL REMAINS FROM SITE OF THE WRECK OF THE BIRKENHEAD

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Three sets of human skeletal remains were presented to the Department of Human Biology for analysis. These were in boxes labeled as Birkenhead 1, 2, 3 and 4. The remains were recovered over a period of time during the development of the factory situated near the I & J Abalone farm at Danger Bay.

Birkenhead 1 and 2 were recovered in September 1994. Although these remains were presented as different individuals it appears from the analysis and from photographs of the excavation that they are in fact the same individual. These bones were recovered by a mechanical scoop in the course of digging a pipeline to supply water to the I & J facility and housing. The burial was "about 10 to 15 cms below the surface, in the first soft sand just above the stones. This site is at the East end of the bay. The first site was at the West end --- about 400m apart" Gordon (1994). Janette Deacon sieved and excavated the dump and trench where the remains were found but no further bones or cultural material were recovered.

Birkenhead 3 was recovered in November 1996. There appears to be some confusion about the recovery of this skeleton. A National Monuments Council report (9/2/701/8: 9/2/040/2) stated that these bones had been uncovered during the course of construction work and then reburied by the Loss Control Manager of the building project. A worker reported seeing a human skeleton buried in association with bones which he believed to be of a horse. These bones were collected and are probably the contents of Birkenhead H. This skeleton is mentioned again in the Archaeological Impact Study: I & J Abalone Farm, Danger Point, Gansbaai October 1996 prepared by The Agency for Cultural Resource Management. Here it is referred to as "a human skeleton disturbed during excavation of a service trench behind the Blower Generator Room." Jonathan Kaplan stated (pers. Com.) that these bones were not formally re-excavated. The faunal remains (Birkenhead H) were analysed by D. Stynder (see appendix). They are composed mostly of seal remains with some evidence of cattle, sheep small mammals and birds. Included in this sample was a human thoracic vertebrae and 4 human rib fragments. As Birkenhead 3 contains 3 individuals none of whom have thoracic vertebrae it is not possible to identify the individual to whom these bones belong if they do not in fact represent an additional individual. Other workers mentioned the presence of 4 other graves, which have not been confirmed.

Birkenhead 4 was also unintentionally uncovered during I & J construction. The skeleton was "exposed from a vegetated dune about 25 meters northeast of the research and development building". I & J personnel recovered approximately one third of skeleton; the rest was recovered 9-11 February 2000 by the Agency for Cultural Resource

Management. The site was recorded giving a GPS location (S34°37.641 E19°17.726) Kaplan (2000).

A box of artifacts (Birkenhead X) were also presented for analysis. The artifacts were recovered from the same site on 22 of December 1991. These were associated with an earlier excavation conducted by Dr J. Deacon in the course of which 3 other sets of human skeletal remains were recovered. See National Monuments Council Memorandum 9/2/040/2 from J. Deacon and 9/2/701/8. The artifacts have been recorded by Harriet Clift and include several buttons of various materials i.e. leather, metal and glass. Other objects include an iron buckle and the wooden handle of a knife with fragments of the blade.

Owing to the location of these burials it has been assumed that they are victims of the wreck of the Birkenhead. The Birkenhead was a troopship wrecked on the 26 February in 1852 on rocks (now named for the Birkenhead) just off Danger Point. There were 643 people on board the Birkenhead at the time of the disaster, only 207 of those survived. All 7 women and 13 children on board were saved in an act of supreme sacrifice by the soldiers and crew who remained on deck so as not to swamp the boats that managed to get away. Of the 436 who died 64 were ships officers and crew and the remainder Royal marines, army personnel and 1 civil servant. The Birkenhead was an iron steam frigate, one of the first to be used by the Royal Navy at a time when the use of iron ships was still very controversial owing partly to problems with compass readings - a problem which may have lead to the demise of the Birkenhead. The soldiers on board were young men ranging from 14-26 from all parts of the U.K, though a large percentage came from Ireland (Bevan 1998). According to Allan Kayle in his book "Salvage of the Birkenhead" 91 of the victims had been buried along the coast near Danger Point after the Birkenhead had sunk (Deacon 1991)

Birkenhead 1 & 2

These are the remains of a single individual of which the cranium and mandible are labeled Birkenhead 2 and the post-cranials are Birkenhead 1. The skeleton is not complete and none of the bones below the knees or from the right arm were enclosed in the box.

The sex of this individual is clearly male with strong supra-orbital development, strong musculature and masculine pelvic region. The age at death was between 22 and 25 years. The medial epiphysis of the clavicles had not yet fully formed and the third molar was not yet in full occlusion. The sacral bodies are unfused at their centra.

The cranial features are strongly indicative of a European biological origin. The nasal bones are strongly projecting, as is the inferior nasal spine. The palate is narrow and long.

There few distinctive dental features. One tooth (the upper left first molar has a slight occlusal carious lesion, and the upper central incisors are shovel shaped. Calculus is present on the buccal surface of the lower central incisors and adjacent left lateral incisor and canine.

No obvious pathologies are noted on the skeleton, but the left humerus demonstrates a distinct curvature that is suggestive of a healed fracture of the bone. The length of the bone appears normal, so if the fracture was significantly earlier in life, it did not appear to affect the long-term growth of the bone.

The stature of this person is 185.24 cm based on the maximum length of the femur according the formula of Trotter & Glesser (1952, 1958).

Birkenhead 3

This is a series of bones, which appear to be from more than one grave. Three individuals are identifiable as listed below:

Birkenhead 3a

These remains represent much of the head, neck and upper thorax of a single individual. The preservation is excellent but not all of the bones are present. The mandible is missing, as is the right arm below the elbow and the whole of the left arm. Both clavicles are present, as are most of the ribs. C1, C2 and C4 are present, but no other vertebra. All the bones show marked muscularity.

The cranial morphology is again strongly European. The features of the skull are indicative of a male and the medial epiphyses of the clavicles are newly fused suggesting an age at death between 25 and 30 years. The left clavicle is more robust than the right and therefore the individual may have been left handed.

The teeth are in excellent condition with no caries. There is slight winging of the central incisors. Dental calculus is present at the gum line on the lingual and buccal sides of the incisors and canines and again on the lingual side of the molars. The occlusal surfaces of the left canine and first premolar show signs of pipe-smoker's wear.

Birkenhead 3b

This is an adult male identified as a separate individual by the duplicated right humerus and scapula but also by a grey preservation and large size than individual 3a. The bones consist of the right humerus and scapula, the left hip bone minus its pubis, the distal end of the left femur, the complete left tibia, the proximal end of the left fibula, and both 1st metatarsals.

The stature of this person is 191.31 cm based on the maximum length of the tibia according the formula of Trotter & Glesser (1952, 1958), and the assumption that he was a male of European origin.

Birkenhead 3c

Two metacarpals from the Birkenhead 3 series are of a much younger individual than either 3a or 3b. Both bones have unfused epiphyses on their proximal ends and are developmentally between 14 and 16 years at death.

Birkenhead 4

Birkenhead 4 is the more or less complete skeleton of a single individual. Most of the hand bones are missing along with some of the foot bones, but the larger elements of the skeleton are present. The posterior and superior aspects of the cranium are broken and few measurements of the vault can be recorded. Despite this, the face is more or less complete as is the mandible. The face demonstrates many distinctly European Caucasoid features, the most notable of which is the strongly projecting nasal bones.

The hip bones indicate a male sex and this is confirmed by the rugged muscle markings throughout the skeleton. This is the youngest of the individuals except for the hand bones of Birkenhead 3c. None of the epiphyses of the proximal humerus, the distal radius and ulna, and the iliac crest are united to the shaft, while the epiphyses of the knee joint had recently united. The third molars had just come into occlusion. The best age estimate for this individual is between 17 and 18 years at death.

There are no cranial pathologies, but the broken fragments of the vault show multiple ossicles along the path of the lambdoid suture with a central bone at Lambda and an adjacent interparietal bone.

Despite the young age of this individual, there is significant dental disease. Eight of the 20 teeth are carious and the right maxillary first molar has been lost ante-mortem. A dual linear hypoplastic line is present on the left maxillary canine.

The left humerus is significantly foreshortened in comparison to the right side. The distal half of the shaft appears normal, but the proximal shaft is very short. The deltoid tuberosity is displaced proximally because of this and the associated pectoralis insertions are deep and demonstrate osteoclastic activity in the period before death.

The stature of this person is 174.1 cm based on the maximum length of the femur according to the formula of Trotter & Glesser (1952, 1958).

Some animal bone was found in the box with this specimen. Although no attempt has been made to do a formal list of the faunal remains, the bones include the remains of at least three dune mole rats, sea birds, a small insectivore, tortoise and fish.

Summary

The human remains associated with the wreck of the Birkenhead include a minimum of five individuals. Of the four that can be sexed, all are male, and of the four that can be aged, they are all between 14 and 30 years old at death.

Based on cranial features, all of these individuals appear to have a European Caucasoid genetic origin. All individuals were muscular and one young man has a growth problem with his left arm leaving it visibly shorter than the right. The three individuals with measurable long bones were all tall, ranging from 174 to 191 cm. All individuals were muscular.

Although two of the crania do not have severe dental disease, the third individual does. Overall, the incidence of carious teeth is 17.3% which is high and indicates a cariogenic diet. The two individuals with

relatively few caries had significant deposits of calculus, often linked to a relatively high pH of saliva and the habit of smoking (van Reenen 1954, Morris 1988). The presence of pipe-smoker's wear on Birkenhead 3a confirms this.

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Table 1

SUMMARY OF SPECIMENS

<u>Specimen</u>	<u>Sex</u>	<u>Age</u>	<u>Preservation</u>
Birkenhead 1&2	male	22-25 yrs	most of skeleton
Birkenhead 3a	male	25-30 yrs	cranium, cervical vertebrae & upper thorax
Birkenhead 3b	male	adult	right arm and left leg
Birkenhead 3c	?	14-16 yrs	2 metacarpals
Birkenhead 4	male	17-18 yrs	most of skeleton

Table 2

DENTAL HEALTH DATA

Specimen	No. Teeth	No. Sockets	Antemortem	Caries	Age
			<u>Losses</u>		
Birkenhead 1&2	31	32	0	1	22-25
Birkenhead 3a	16	16	0	0	25-30
Birkenhead 4	20	32	1	8	17-18
Totals	52	80	1	9	
% carious	17.3%				
% lost antemortem	1.2%				

TABLE 3

BIRKENHEAD LONG BONE LENGTHS (in mm)

	Specimen No.					
	1&2		3b		4	
	L	R	L	R	L	R
Humerus	346				252	328
Femur	516					468
Tibia			452			384

TABLE 4

BIRKENHEAD CRANIAL MEASUREMENTS

Specimen Number	1&2	3a	4
Sex	♂	♂	♂
Maximum Cranial Length	191	192	
Maximum Cranial Breadth	143est	143	
Basibregmatic Height	132est	139.5	
Bistephanic Breadth	109	109	
Biasterionic Breadth	111	118	
Frontal Sagittal Arc	131	131	
Parietal Sagittal Arc	128	133	
Occipital Sagittal Arc	108	124	
Frontal Sagittal Chord	112	115	
Parietal Sagittal Chord	114	116.5	
Occipital Sagittal Chord	88	96	
Transverse Arc	300est	315	336
Foramen Magnum Length	41	34	
Foramen Magnum Breadth	37	29	
Mastoid Height		28	
Least Frontal Breadth	94	95	
Bifrontal Breadth	97	104	
Bizygomatic Breadth		130	
Bimaxillary Breadth	82	85	
Upper Facial Height	69	74	72
Nasion-basion Length	105	105	
Prosthion-basion Length	103	91	
Bimaxillary Subtense	33	26	
Interorbital Breadth (Dac)	18	24	20
Orbital Breadth	39	39.5	37
Orbital Height	37	33	32
Nasal Height	51	53	50
Nasal Breadth	23	22	20
Least Nasal Breadth	6	8	9
Maxillo-alveolar Length	54	51	50
Maxillo-alveolar Breadth	59	66	62
Palatal Length	48	48	42
Palatal Breadth	34	43	38
Palatal Height	16	13	

all measurements in mm. est = estimated

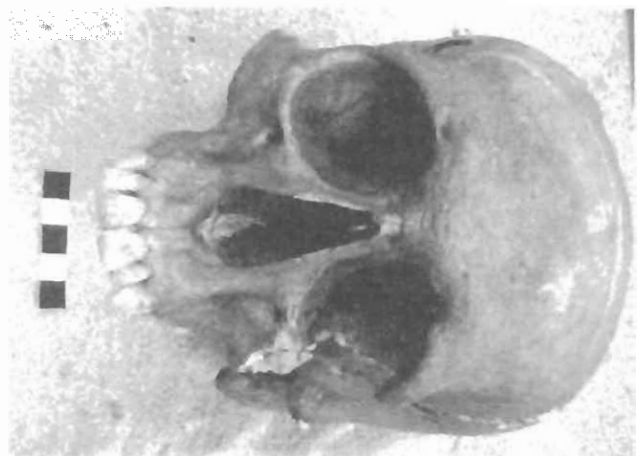
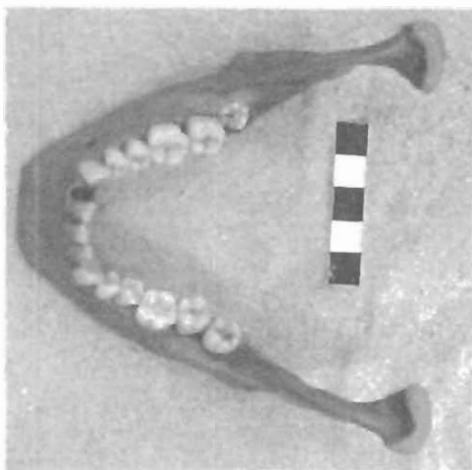
TABLE 5

BIRKENHEAD MANDIBULAR MEASUREMENTS

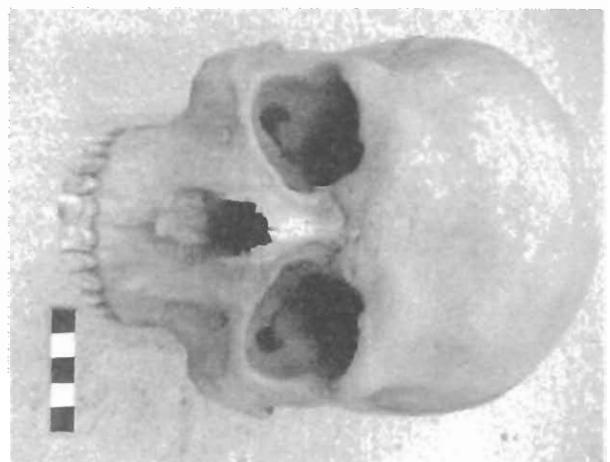
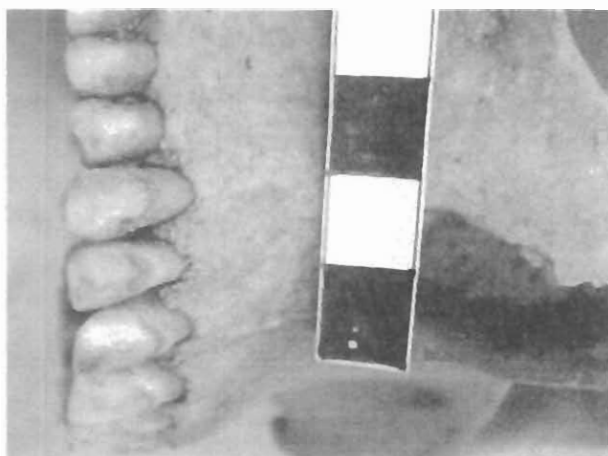
Specimen Number	1&2	3a	4
Sex	♂	♂	♂
Bicondylar Breadth	121		130
Bicoronoidal Breadth	91		90
Bigonial Breadth	102		101
Bimental Breadth	41		44.5
Proj. Height of Ramus	48		50
Proj. Height of Coronoid	62		65
Proj. Length of Corpus	78		68
Proj. Length of Mandible	118		109
Length of Condyle	20		18
Breadth of Condyle	8		8.5
Sigmoid Notch Subtense	18		13
Minimum Width of Ramus	29.5		34
Molar-premolar Chord	29		29
Symphyseal Height	32		36
Corpus Height at M2	23		24
Mandibular Angle (degrees)	139		132

all measurements in mm. est = estimated

Birkenhead 2



Birkenhead 3a



Birkenhead II (Animal Bone)

Bos taurus (cattle) L. scapula
L. radius
1 Lumbar vertebra
1 Cervical vert.
5 rib fragments

Seal 5 L. humerus
3 R. humerus
2 phalanges
2 ribs
1 atlas vert.
1 acetabulum
1 L. mandible frag
2 skull bases with zygomatic arches
2 l. ulna
3 R. ulna
1 R. scapula
1 L. scapula
1 Tibia

small mammal – 7 assorted rib fragments

Bird bones – 1 bag

1 sheep lumbar vert.

1 bag adiagnostic bone fragments