

Figure 1. Location maps showing: 1a. Whitby in North Yorkshire; 1b. Whitby Town; 1c. Horse burial

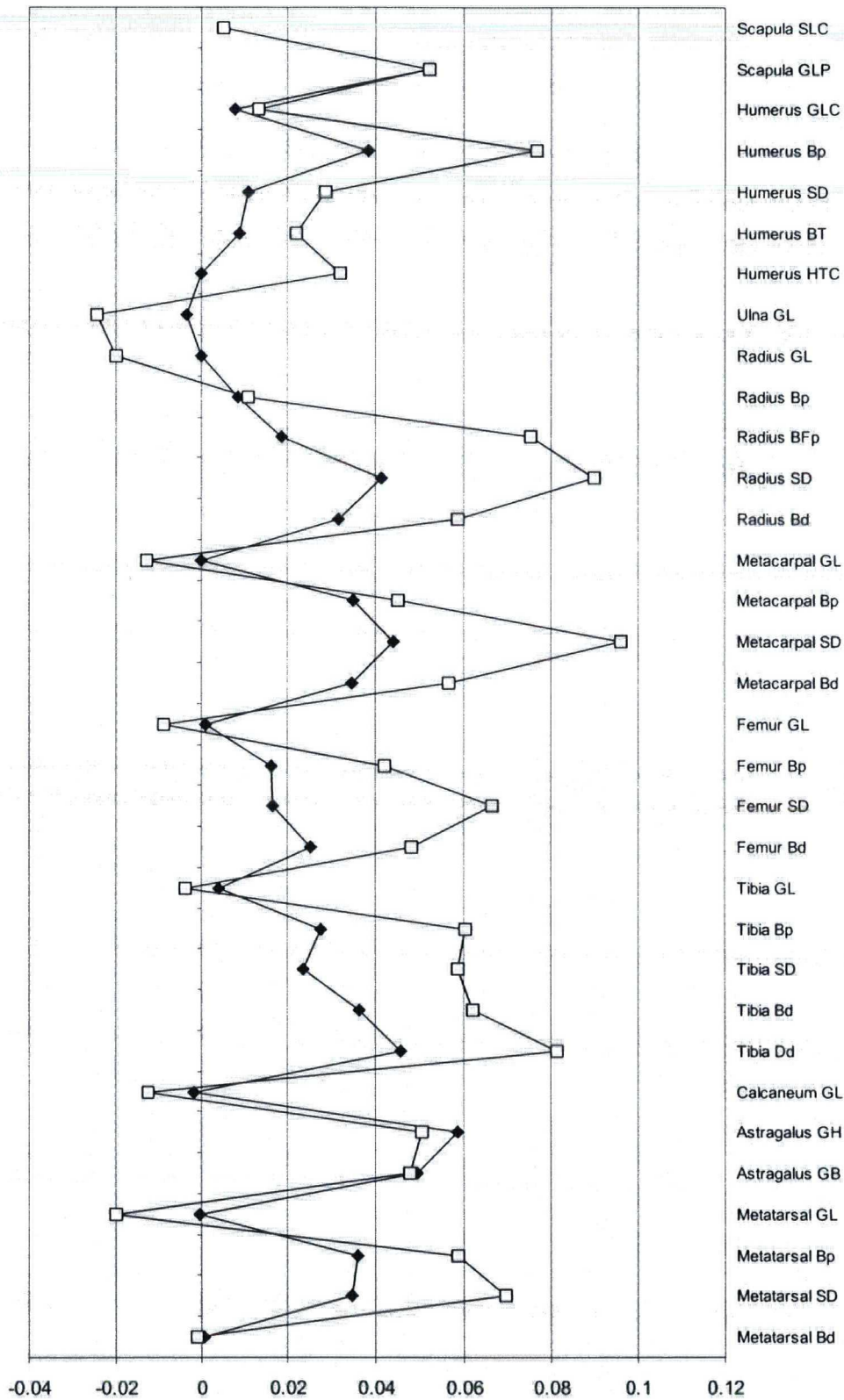


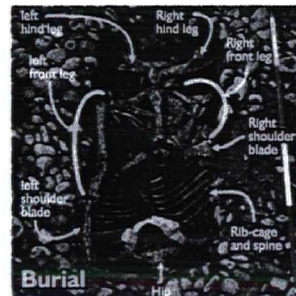
Figure 2. Log-ratio diagram comparing the measurements of the Shire stallions, Blaisdon Conqueror and Prince William, to the Whitby skeleton. Measurements of the Whitby skeleton are used as the standard and are represented by the 0 value. The data are presented in Appendices 1b and 2. NB. The following values were not recorded and appear as 0 on the graph: Blaisdon Conqueror: radius GL, humerus HTC, metacarpal GL; Prince William: scapula GLP and SLC

National Archaeology Days

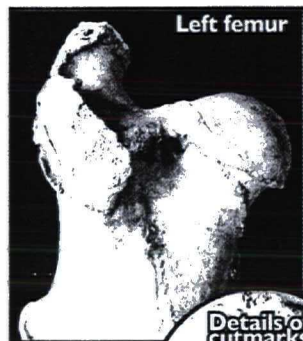
Horse skeleton

During excavations at Whitby Abbey 2000 a large horse was found in the courtyard, near the Banqueting House. Finds in the pit date it to the late nineteenth to early twentieth century. Measurements of the bones suggest that it stood at seventeen hands (1.7m at shoulder/wither height), very similar to a workhorse like a Shire or Clydesdale. It has no canines so must be female. The incisors (front teeth) were very worn indicating it lived to an old age.

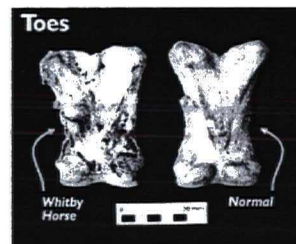
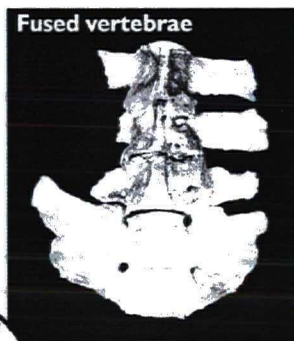
To bury the horse the legs were removed by cutting around the joints and arranged in the pit.



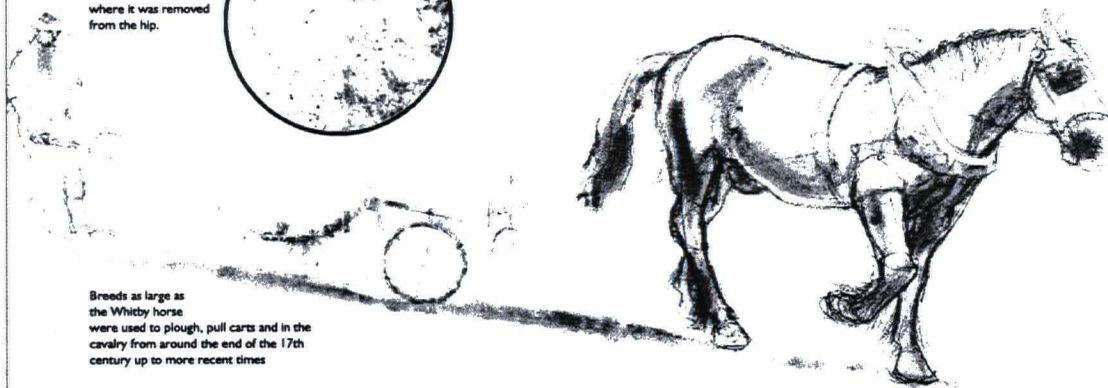
The legs of the horse were removed and reorganised allowing the whole animal to fit into the pit



The upper leg (femur) shows cut marks, where it was removed from the hip.



Part of the spine (left) was fused together, and a lot of extra bone was present on the toes (above) possibly because of its age, use or genetic characteristics.



Breeds as large as the Whitby horse were used to plough, pull carts and in the cavalry from around the end of the 17th century up to more recent times

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Figure 3. Poster exhibited with the Whitby skeleton at the National Archaeology Days 2002

Table 1: Withers height calculated from different bones, using multiplication factors of Kiesewalter 1888*, in Boessneck and von den Driesch 1974. Measurements and withers heights are in mm. BC: Blaisdon Conqueror; PW: Prince William; Wh: Withers height; a: approximate measurement; nr: not recorded.

Element	Meas.	Factor*	Whitby	Whitby Wh	BC	BC-Wh	PW	PW-Wh
L Humerus	GLI	4.87	365.3	1779	368.1	1793	376.0	1831
L Ulna	GLI	3.4	499.0	1697	a 496.0	1686	488.0	1659
L Radius	LI	4.34	388.4	1686	377.0	1636	nr	
L Femur	LI	3.51	499.0	1751	a 500.0	1755	488.0	1713
R Femur	LI	3.51	497.0	1744	nr		nr	
L Tibia	LI	4.36	401.1	1749	403.7	1760	401.8	1752
R Tibia	LI	4.36	399.9	1744	nr		nr	
R Metacarpal	LI	6.41	264.3	1694	nr		nr	
L Metacarpal	LI	6.41	264.8	1697	a 268.7	1722	254.7	1633
R Metatarsal	LI	5.33	308.1	1642	nr		nr	
L Metatarsal	LI	5.33	308.4	1644	a 315.9	1684	291.0	1551

Table 2: Pathological changes and other alterations (including notes on preservation).

Bone	Side/position	Pathology
Fore legs		
Scapula	Left	Muscle attachment lines well pronounced; Extensive exostoses around the the <i>facies serrata</i> ; Vascular groove pronounced.
Scapula	Right	Exostoses along the edge of the blade and along lateral surface; Muscle lines well pronounced; Extensive exostoses around the <i>facies serrata</i> ; Possible ossification of cartilage along dorsal border, irregular and pitted bone; Vascular groove pronounced.
Humerus	Left	Synovial fossa well developed; Extra bone growth along the lateral epicondyloid crest; Exostoses in muscle attachment areas; Slight marginal lipping of bone of proximal and distal articulations.
Humerus	Right	Synovial fossa well developed; Extra bone growth in muscle attachment areas and on deltoid tuberosity; Slight marginal lipping of proximal and distal articulations; Weathering of bone surface.
Ulna	Left	Some exostoses at proximal and distal shaft ends; Marginal lipping of articulations; Slight remodelling of bone edges; Ossification of ligaments at proximal end that link the ulna and radius.
Ulna	Right	Marginal lipping of articulations; Some exostoses at proximal and distal shaft ends; Slight pitting on articular surface on medial side.
Metacarpal	Left	Fusion of accessory metacarpals; Slight marginal lipping of proximal and distal articulations.
	Right	Fusion of accessory metacarpals; Slight marginal lipping at distal articulations.
Phalanges	Left 1st phalanx	Exostoses on the posterior surface and around distal articular edges; Slight marginal lipping of proximal articulation; Extensive post-depositional erosion, especially in distal half.
	Right 1st phalanx	Slight marginal lipping of proximal and distal articulations; Extensive exostoses on anterior and posterior surfaces; Slight marginal lipping of and bone growth around articulations; Small areas of light polishing on distal articular surface.
	Left 2nd phalanx	Exostoses on posterior surface; Slight marginal lipping of distal articulation; Small areas of polishing on the anterior surface of the distal articulation; Pronounced post-depositional erosion.
	Right 2nd phalanx	Slight marginal lipping of articulations; Post-depositional weathering of most of the surface.
Distal phalanx	General Left and right	Post-depositional erosion.
Hind legs		
Pelvis	Left	Exostoses at all muscle attachment areas; Pronounced muscle attachment lines; Marginal lipping and extra bone growth at edge of the acetabulum; Stain due to copper or other metal at distal and external side of acetabulum.
	Right	Exostoses at all muscle attachment areas; Marginal lipping and extra bone growth at the edge of the acetabulum.
Femur	Left and right	Extra bone growth at all muscle attachment areas; Slight marginal lipping of distal and proximal articulations.
Tibia	Left	Pronounced muscle lines on posterior proximal half; Marginal lipping of proximal and distal articulations and at the intercondylar eminence.
	Right	Pronounced muscle lines on posterior proximal half; Marginal lipping of proximal and distal articulations.
Metatarsal	Left	Exostoses very pronounced on distal posterior shaft and articulation edges; Some marginal lipping of proximal and distal articulations; Fusion of 2 nd accessory metatarsal to main metatarsal; Asymmetry of length and width between medial and lateral condyles.
	Right	Marginal lipping of of proximal and distal articulations; Exostoses around edges of distal articulation and distal posterior shft; Fusion of 2 nd accessory metatarsal; Assymetry of length and width of medial and lateral condyles;

Bone	Side/position	Pathology
Phalanges	Left 1 st phalanx	Slight marginal lipping of proximal and distal articulations; Extensive exostoses on the posterior surface; Slight amount of exostoses on the anterior surface; Depression with remodelling of bone at the posterial distal edge.
	Right 1 st phalanx	Slight marginal lipping of the proximal and distal articulations; Extensive exostoses on the anterior and posterior edges; Small areas of polishing on distal articular surface.
	Left 2 nd phalanx	Extensive exostoses on the posterior surface; Parts of surface weathered/eroded; Slight polishing on the lateral edge of the proximal articulation and on the anterior surface of the distal articulation; Possible polishing near the medial edge of the proximal articulation.
	Right 2 nd phalanx	Extensive exostoses on the anterior surface; Marginal lipping of both the proximal and distal articulations.
	Distal phalanx Left and right	Extremely eroded probably during burial.
Skull and teeth		
Occipital bone	Left and right	Exostoses.
Articular condyles	Left and right	Exostoses.
Diastema	Left, lower	Exostoses along the dorsal edge.
Mandible	Left	On the buccal surface in the area of M3 the bone has become porous possibly due to an infection
M1 and M2	Left and right Upper and lower	Uneven wear.
M2 and M3	Right, lower	Wear very uneven. M3 extreme wear on a sharp diagonal from oral to aboral; worn to below the cingulum; broken between the roots of the first and second cusps
P4	Right, upper	Possible caries.
Vertebrae		
Atlas		Extensive exostoses on the anterior dorsal surface; Slight marginal lipping of articulations.
Axis		Marginal lipping of bone at articular surfaces of centrum and lateral processes; Post-depositional erosion of the ventral surface.
Cervical	General	Marginal lipping of centra articulations; Exostoses around edges.
	5 and 6	Spur of bone that overlaps on ventral surface of the centra.
Thoracic	General	Articulation process has extra bone growth along entire length of column; Slight marginal lipping of centra articulations; Exostoses around the edges of articular surfaces.
	T1 - 8 and T15-18	Some marginal lipping and extra bone growth around rib articulations.
	T3 and T4	Exostoses on edges of centra articulations.
	T7 and T8	Possible ossification of ligaments joining the centra; Extensive exostoses around articular edges.
Lumbar	T16 - T18	Extensive extra bone growth around articular processes, almost linking bones.
	2 to 4	Lateral and articular processes completely fused; Osteophytes joining centra; Amount of extra bone growth and the state of fusion on the left side of L3 and L4 much more pronounced than on the right.
	5 and 6	Fusion of the dorsal edge and of the right and left lateral ventral edges of the centra; Fusion of dorsal, lateral and articular processes and neural spines.
Sacrum		Marginal lipping of articular surface of the wing; Much extra bone growth on dorsal surface of wing.

Table 3 : Evidence of disarticulation

Bone	Side	Position	No. of cuts	Angle of cut
Innominate	Left	Inside lateral wall of the acetabulum	1	Transverse
Principal metacarpal	Left	Anterior, centre	1	Transverse
2nd carpal	Left	Proximal lateral	1	Diagonal
2nd carpal	Right	Anterior	1	Diagonal
Third carpal	Left	Proximal posterior around articulating surface	7	Transverse
Third carpal	Right	Proximal posterior around articulating surface	1	Transverse
Ulnare carpal	Right	Distal lateral posterior	2	Transverse
4th carpal	Left	Posterior	2	Transverse
4th carpal	Right	Proximal anterior lateral side	1	Transverse
Femur, fovea	Left	Edge of proximal surface.	2	Transverse
Femur, greater trochanter	Left	Posterior	22	Transverse
Femur, minor trochanter	Left	Posterior	19	Transverse
Femur, neck	Left	Posterior	1	Transverse



Plate 1. Horse skeleton in burial pit showing rearrangement of limbs

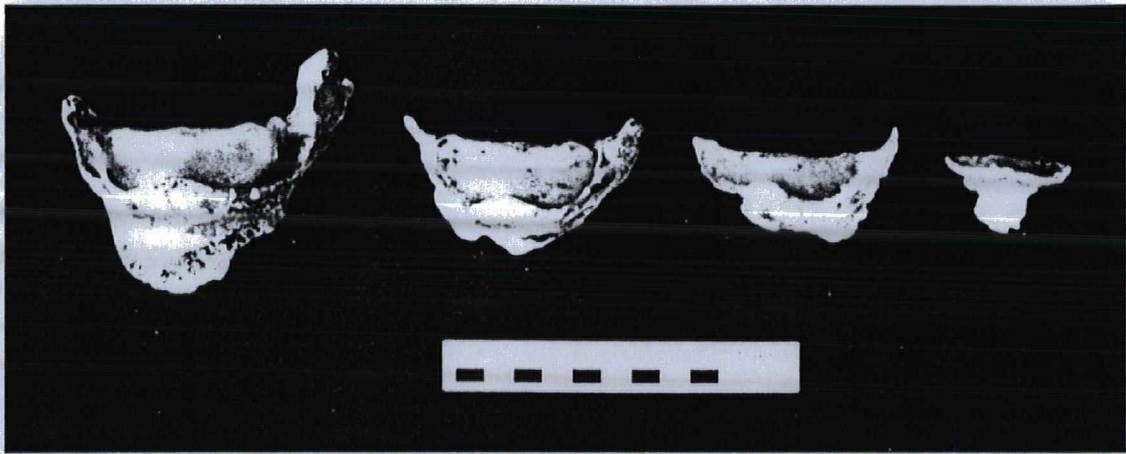


Plate 2. Third phalanges of the fore and hind limbs showing varying states of preservation



Plates 3a (top) & 3b (bottom): Fore and hindlimb proximal phalanges with exostoses. 3a lateral/medial view, 3b posterior view.

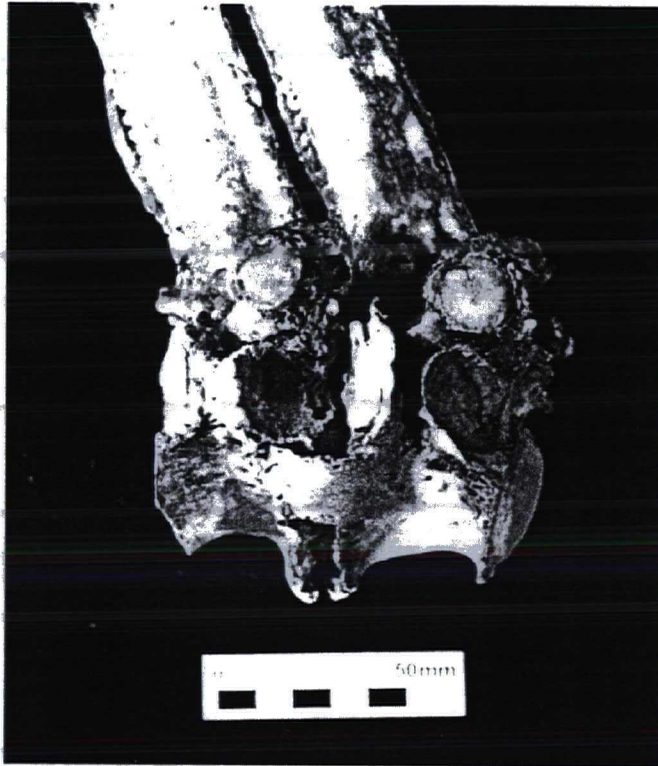


Plate 4. Thoracic vertebrae (T7-8) with osteophytes linking centra

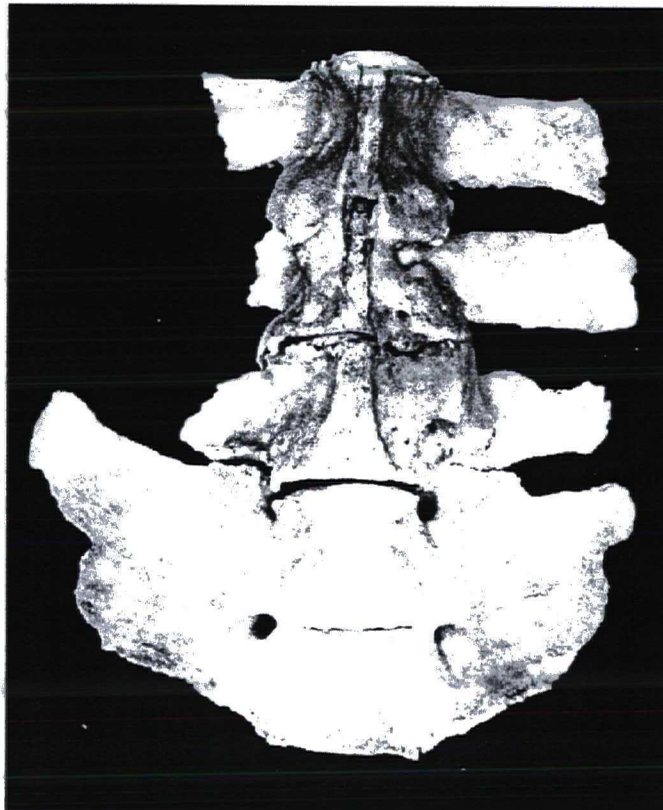


Plate 5. Fusion of lumbar vertebrae (L2-4 and L5-6) with slight misalignment of spine



Plate 6. Lower right M1-M3. M3 has broken at the roots due to extreme and abnormal wear on the tooth

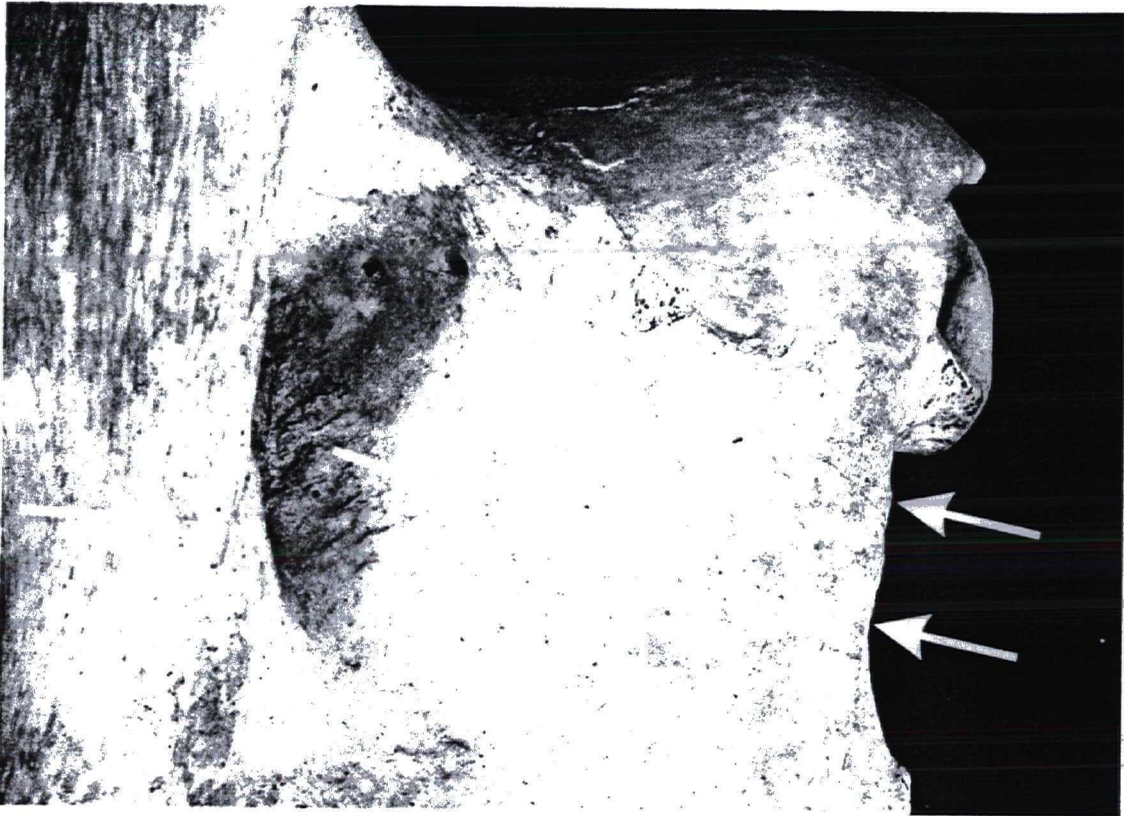


Plate 7a. Detail of left femur showing general location of cutmarks on proximal posterior surface

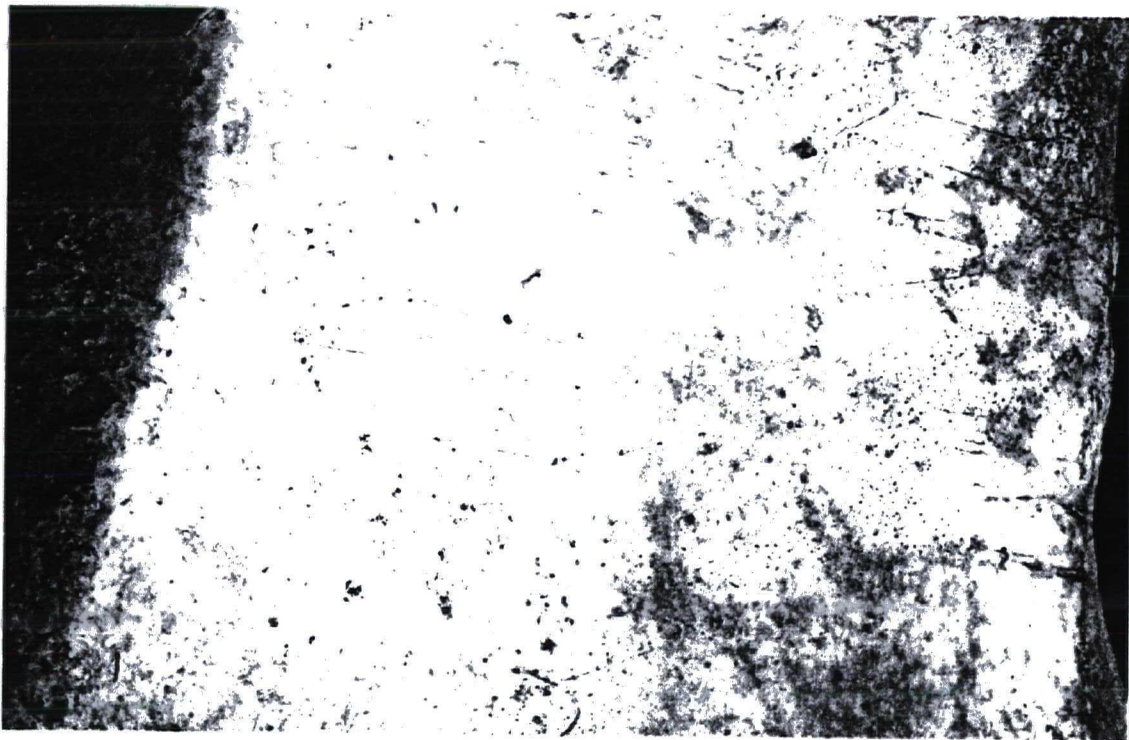


Plate 7b. Left femur close up of cutmarks on proximal posterior surface



Plate 7c: Detail of left femur showing location of cutmarks on posterior surface of greater trochanter



Plate 7d. Detail of right femur showing location of cutmarks on proximal surface of neck



Plate 8. Cutmarks on the posterior surface of the right third and fourth carpals