

A *BOS PRIMIGENIUS* from  
CHARTERHOUSE WARREN FARM, BLAGDON, MENDIP

(ST 4935 5445)

by

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ABSTRACT

A description is given of bones of *Bos primigenius* found in a cave dig on Mendip. Comparisons are made of the measurements of the bones with those of other *Bos primigenius* from post-glacial sites in Great Britain. The production of incised cuts in the horn core is discussed.

INTRODUCTION AND ACKNOWLEDGEMENTS

In 1971, a cave dig was commenced on Charterhouse Warren Farm, (Fig. 25) in an elongated east-west depression, (swallet) known to have taken water in times of heavy rainfall. Quite early in the dig, human and animal bones were found and in the eastern end of the rift, a Romano-British burial was located in the western extremity of the rift. Deeper in the main rift, considerable amounts of fragmentary animal and human bones were recovered but, due to the unstable nature and irregularity of the infill, no reliable stratigraphical evidence was forthcoming.

Bones and fragments, from about thirty human individuals of both sexes and ranging in age from foetal to adult, were collected. Few, if any were in anatomical juxtaposition and all were mixed with a greater quantity of animal bones. Ox, horse, sheep, pig, dog, red deer, roe deer, hare and rabbit were identified.

In February 1974, a segment of about one sixth of the circumference of the basal part of the horn-core of a large bovid, was found, at a depth of about 11 m, associated with a fragmentary, large bovid skull. On an earlier occasion, the diggers had found some very large bones at a similar depth. There was a number of vertebrae, a sacrum, a pelvis and a right femur, together with parts of a scapula, humerus and numerous bones of the extremities. The vertebrae, pelvis, sacrum and femur were found inverted but

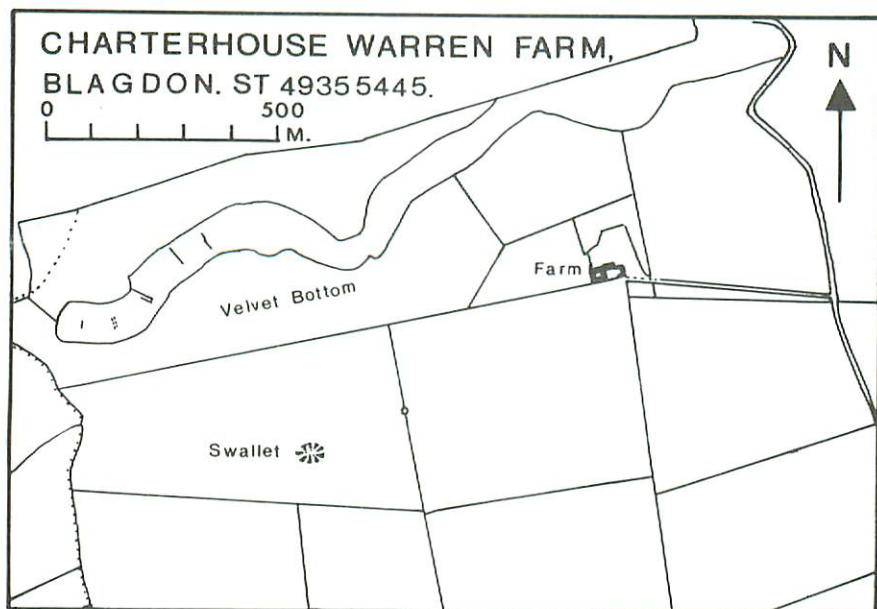


Fig. 25. Based on Ordnance Survey. Crown Copyright Reserved.

still in anatomical juxtaposition. Examination of these bones showed that they were derived from *Bos primigenius*. At a similar depth but not directly associated with this assemblage, fragmentary skulls of a small *Bos primigenius* and a *Bos longifrons* were found.

I would like to thank Messrs. W. and B. Small, on whose land the dig is located, for their permission to remove the bones for study and to acknowledge the care and restraint shown by the diggers led by Tony Audsley.

## DESCRIPTION

### *Horn-core*

There were numerous fragments of horn-core. One fragment, derived from the basal part of the core, measured 110 x 135 mm, and by comparing the curvature of this fragment with circles of known diameter, it was possible to estimate the diameter of the complete core. From this diameter, the circumference can be calculated. This is not an accurate estimate, based as it is upon an hypothetical circular section and not an oval one. During cleaning, five transverse, sharply incised cuts were revealed on the external surface. (Plate 3.). Cuts 1 and 2, the most distal, were almost contiguous and the remainder were roughly parallel.

*Lengths of cuts*

1. 28 mm.
2. 41 mm.
3. 34 mm.
4. 46 mm.
5. 41 mm.

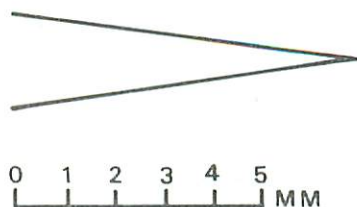


Fig. 26. Profile of cut 2. (See Plate 3).

The maximum depths of the cuts varied between six and nine mm, with an average of seven. Cut 1 was the deepest and was widest at the surface, measuring two mm. A profile, (Fig. 26), showed that the instrument responsible had a thin, sharp cutting edge. A pressure cast in plasticine, also demonstrated that the cutting edge was straight. Another, triangular fragment of core had a cut near to the apex. This piece measured 180 mm longitudinally and 120 mm across the irregular base, which was made up by part of the frontal bone. There was no way in which to directly associate these two fragments, although the presence of similar incised cuts would make it highly probable.

*Skulls*

The larger of the two *Bos primigenius* skulls, (Skull 1), consisted of the basal part of the occipital bone together with the occipital condyles, the sphenoid and both temporal bones. There were numerous fragments of frontal bone and some pieces of a maxillary bone with the first and second right upper molars loose. The speno-occipital suture was closed, indicating maturity.

Skull 2 was smaller than skull 1, and was less complete but the same anatomical parts were present. The smaller size might indicate its derivation from a female animal. The speno-occipital suture was closed indicating maturity.

Skull 3, *Bos longifrons*, consisted of the basal parts also, together with part of the frontal bone with the proximal one third of the core still attached.

*Mandible*

There was an almost complete left mandible, the most distal few cm of the horizontal ramus and part of the angle were missing. There was a complete row of six cheek teeth and one loose incisor. There were fragments of the right mandible but no associated teeth.

*Vertebrae*

There were five cervical vertebrae including a complete but slightly 'rolled' C2 (axis). The eight thoracic vertebrae were in a good state of preservation although all had lost the spinous processes. The third, fourth,

fifth and sixth lumbar vertebrae had survived in a good state of preservation. The sacrum was complete and there were five non-contiguous caudal vertebrae.

*Pelvis.* The right innominate bone was reconstructed and nearly complete apart from some erosion of the borders. The left bone was represented by fragments of the ilium and ischium.

*Femur.* The right femur was complete apart from damage to the medial condyle and the greater trochanter.

*Tibia.* The proximal end of the right tibia only had survived.

*Astragalus.* Both left and right astragali were complete.

*Calcaneum.* The right bone was entire but the left was damaged proximally.

*Lateral maleolus.* Left, complete.

*Meta-tarsal.* Both left and right bones were complete.

*Proximal phalanges.* Five phalanges, one of which was in direct association with a small assemblage of human bones.

*Middle phalanges.* Five phalanges, one of which was associated with the assemblage above.

*Terminal phalanges.* There were two entire bones and one longitudinal fragment.

*Scapula.* The neck and glenoid only of the right bone.

*Humerus.* Left bone, distal end and one third of the shaft.

*Radius.* An almost complete right radius with the distal end eroded. There was a fragment of the proximal end of the left radius.

*Ulna.* None.

*Meta-carpals.* Both meta-carpals were complete but the left one was split longitudinally. There were also a number of rib fragments together with pieces of sternum and calcified costal cartillages.

*Measurements.* Measurements were taken according to the technique of Duerst. (Duerst, 1926).

*Sex.* The sex of the animal was determined using Howard's formula, (Harcourt, 1971, p. 340), from the meta-carpal and meta-tarsal bones.

$\frac{\text{mid-shaft diameter}}{\text{max. length}} \times 100$ . In this case the results are 18.8% and 19.0%, indicative of male sex.

*Height at the withers.* Using Boessneck's formula, (Harcourt, 1971, p. 340), for meta-carpals and meta-tarsals:

$$\frac{\text{Mid-shaft diameter}}{\text{max. length}} \times 100 \begin{matrix} \times 6.7 \text{ for male meta-carpals} \\ \times 6.0 \text{ for male meta-tarsals} \end{matrix}$$

This gives a height of 176 cm (69") from the meta-carpals, and of 180 cm (71") from the meta-tarsals.

Some of the measurements of the C.H.W.F. (Charterhouse Warren Farm) aurochs were compared with the equivalent measurements from aurochs from prehistoric sites in Great Britain. Table 2.

The sites compared are:

*Mesolithic*. Star Carr. (Fraser and King, 1954). East Ham. (Grigson, 1969).  
*Neolithic*. Durrington Walls. (Harcourt, 1971). Maiden Castle. (Johnson, 1943). Woodhenge. (Grigson, 1969). Windmill Hill. (Grigson, 1965).  
*Bronze Age*. Lowes Farm, Littleport. (Shawcross and Higgs, 1961).

Further comparison showed that the aurochs from C.H.W.F. approached in size to that of the pleistocene animals (Reynolds, 1939), and is, on the whole, larger than any of those animals from the sites noted above. Comparison with these and other data, including continental aurochs, (Grigson, 1969, p. 340 *et seq.*), shows that, in size, the bones of the C.H.W.F. aurochs falls well within the limits for male *Bos primigenius*.

### *Discussion*

Many of the bones were blackened patchily and some had a thin 'botryoidal' coating of calcite, showing that they had lain exposed, subjected to intermittent flooding and in less wet periods, to drip and splash of percolating water.

It is not possible to determine how the animal entered the rift, either by accidental fall or by having been pushed in after death, although the presence of bones of the more choice parts of the animal would be more in favour of an accidental fall. Apart from the cuts on the horn-cores, there is no evidence of butchery or of ante-mortem injury. This massive animal, standing 180 cm at the withers, and having a correspondingly large spread of horns, would have presented a formidable appearance to any hunter. The animal may have died naturally or it might have fallen into the open rift where it was found by the hunter, who, wanting the horns as a trophy or for drinking vessels, proceeded to hack them off.

Dating of the bones is at present difficult and mainly circumstantial, depending as it does on unstratified material, including sherds of Romano-British and Iron Age pottery. The type of instrument producing the cuts on the horn-core, could provide further evidence.

In his re-examination of the skeleton Q1 from Maiden Castle, Brothwell, (Brothwell, 1971), showed conclusively that incised cuts, such as those on the horn-core, could not possibly have been produced by a stone weapon, but only by a sharp-edged metal weapon. As noted above, a plasticine cast of the deepest cut, demonstrated the instrument to have had a straight, sharp, fine edge, suggestive of a sword. This evidence suggests a Bronze Age or later date for this animal. Comparison of published sections of bronze swords and axes (Hawkes and Smith, 1955), with the profile, Fig. 26, showed that, in general, the angle of the cutting edge was too great. If the profile, Fig. 26, was correct for a bronze weapon, the edge would probably not have survived the number of cuts required to separate the horn from the core. The five cuts show that a thin edged weapon penetrated the tough horn and up to 9 mm into the core, without obvious damage to the edge. An iron

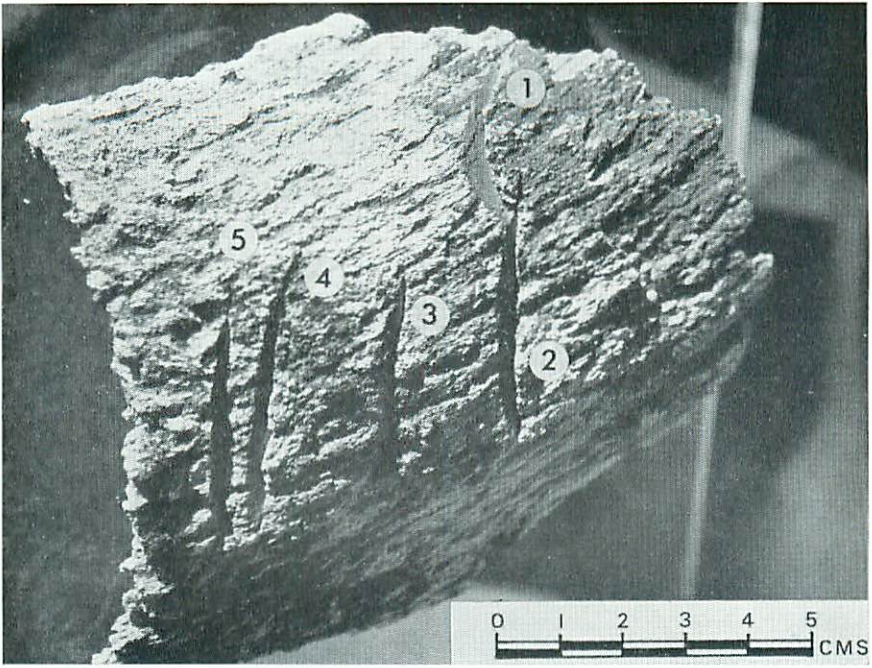
sword with a thin tempered edge would readily fulfil these criteria and would probably have been the only instrument that could have made the incisions in the core.

To date, the evidence for post pleistocene aurochs in Britain, is small, the latest in time being that from Lowes Farm, Littleport, dated by pollen analysis to the Bronze Age. This relative paucity of aurochs remains on neolithic sites and its near absence in later periods, may be because replacement in the economy by the more docile *Bos longifrons*, made the hunting of the fierce aurochs unnecessary.

The evidence from Charterhouse Warren Farm, suggests that aurochs survived in Britain, at least until iron weapons were being used, probably during the Iron Age or Romano-British period. It is even possible that the animal survived in the post-Roman period in remote upland areas, for a much longer period but unlikely to have reached the 17th century (1627), when the last known aurochs, a cow, died in Poland. (Fraser, 1972).

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*Plate 3.* Fragment of proximal part of horn-core to show cuts.

TABLE 1

MEASUREMENTS OF *BOS PRIMIGENIUS*, CHARTERHOUSE WARREN FARM

All measurements in millimetres

Skull 1. Max. width of occipital condyles. . . . .	150.					
Skull 2. Max. width of occipital condyles. . . . .	134.					
Horncore (fragment with cut marks). Diam. . . . .	140. (est).					
	Circumference above base . . . . .	440. (est).				
Mandible. (left).	Length of tooth row . . . . .	164.				
	Length of M3 . . . . .	45.6.				
	Width of M3 (max) . . . . .	20.1.				
	Length of premolar row . . . . .	57.7.				
	Length of molar row . . . . .	106.2.				
	Height (min) in front of PM2 . . . . .	45.				
	Height (min) behind M3 . . . . .	84.4.				
	Breadth of condyle (est) . . . . .	58.				
	Length of PM2 . . . . .	12.8.				
	Breadth of PM2 . . . . .	10.2.				
	Length of PM3 . . . . .	21.2.				
	Breadth of PM3 . . . . .	13.9.				
	Length of PM4 . . . . .	24.8.				
	Breadth of PM4 . . . . .	14.6.				
	Length of M1 . . . . .	27.6.				
	Breadth of M1 . . . . .	18.8.				
	Length of M2 . . . . .	30.0.				
	Breadth of M2 . . . . .	18.6.				
	Length of M3 . . . . .	45.6.				
	Breadth of M3 . . . . .	20.1.				
Axis. Odontoid process breadth (max) . . . . .	59. (est).					
	Anterior articulatory surface breadth (max) . . . . .	109. (est).				
Scapula. Breadth of "waist" (min) . . . . .	90.					
Humerus. Breadth of shaft (min) . . . . .	60.					
	Breadth of trochlea . . . . .	106.				
Radius. Sagittal length . . . . .	370.					
	Proximal breadth . . . . .	113.				
Meta-carpal. Maximum length . . . . .	L. 262.	R. 262.				
	Proximal breadth . . . . .	83.				
	Distal breadth . . . . .	84.				
	Breadth mid-shaft . . . . .	50.				
	Thickness mid-shaft . . . . .	35.				
Pelvis. Breadth of "waist" of Ilium . . . . .	63.	60.				
	Breadth of acetabulum . . . . .	73.				
	Length of acetabulum . . . . .	102.				
Femur. Length (max) . . . . .	—	525.				
	Breadth of head . . . . .	—				
	Thickness of head . . . . .	—				
Patella. Breadth (max) . . . . .	—	85.				
	Thickness . . . . .	—				
Tibia. Proximal breadth . . . . .	—	140. (est).				
	Proximal thickness . . . . .	—				
Astragalus. Lateral length (max) . . . . .	92.	92.				
	Distal breadth . . . . .	60.				
Calcaneum. Length (max) . . . . .	182.	—				
Cubo-navicular. Breadth (max) . . . . .	—	82.				
Meta-tarsal. Length (max) . . . . .	300	300.				
	Proximal breadth . . . . .	69				
	Distal breadth . . . . .	73 (est).				
	Breadth mid-shaft . . . . .	43				
	Thickness mid-shaft . . . . .	42				
Lateral maleolus. Breadth (max) . . . . .	—	51				
	Thickness . . . . .	—				
Proximal phalanges.	1.	2.	3.	4.	5.	6.
	Length. sagittal . . . . .	74	76	74 est	—	77 72
	Length (max) . . . . .	87	87	79	—	80 84
	Proximal breadth . . . . .	42	40	44	—	42 42
	Proximal thickness (height) . . . . .	48	46	46	—	47 est 49
Middle phalanges. Length sagittal . . . . .	51	47	52			
	Length (max) . . . . .	56	55	54		
	Proximal breadth . . . . .	39	39	39		
	Proximal thickness . . . . .	44	50	42		
Terminal phalanges. Length (max) . . . . .	90 est	89	96			
Height at withers. . . . .	176 to 180 centimetres.					

est = estimated measurements.



TABLE 2

A comparison of bone sizes of post-glacial *Bos primigenius* from different areas in Great Britain.

	C.H.W.F. Left		C.H.W.F. Right		C.H.W.F.		C.H.W.F.		Star Carr (Fraser 1954)	Star Carr (Fraser 1954)	East Ham (Grigson 1969)	East Ham (Grigson 1969)	Windmill Hill (Grigson 1965)	Windmill Hill (Grigson 1965)	Woodhenge (Grigson 1969)	Durrington Walls (Harcourt 1971)	Durrington Walls (Harcourt 1971)	Maiden Castle (Johnson 1943)	Maiden Castle (Johnson 1943)	Maiden Castle (Johnson 1943)	Lowes Farm (Shawcross 1961)	Lowes Farm (Shawcross 1961)	Lowes Farm (Shawcross 1961)	Lowes Farm (Shawcross 1961)
Skull. Max. width occip' condyles.	150								110	113		—						125	—	—		—	—	—
Horn core. Circumference at base.	440e								214	224	350	345	210to	260	—	—	376	—	245	228	342	—	—	—
" " Diameter at base.	140e																							
Mandible. Length of tooth row.	164									168											152			
Length of M3.	46									46						46					47			
Breadth of M3.	20									18														
Axis. Max. breadth of odontoid proc.	59																							
" " " Ant. Articular surface.	109e																				53			
Humerus. Breadth of trochlea.	106								70 to	104(8)						90	102	87			127			
Radius. Length.	—		370																		90			
Proximal breadth.	—		113						79 to	176(3)						101					390			
Meta-carpal. Max length.	262		262								255										118			
Proximal breadth.	—		83																		260	260		
Distal breadth.	83		84						63 to	84(24)											83	84		
Breadth mid-shaft.	50		50																		83	83		
Thickness mid-shaft.	35		36																		—	—		
Femur. Max. length.	—		525																		—	—		
Tibia. Proximal breadth.	—		140e																		—	—		
Astragalus. Max. lateral length.	92		92						81 to	96(13)			93			82	97				—	—		
Calcaneum. Max. length.	182		—						—	186											188	—		
Meta-tarsal. Max. length.	300		300																		296	—		
Proximal breadth.	69		69						58 to	66(6)											61	—		
Distal breadth.	—		76						62 to	73(15)											76	—		
Breadth mid-shaft.	43		43																		44	—		
Thickness mid-shaft.	42		43																		—	—		
Proximal Phalanges. Sagittal length.	74	76	74	77	72			78	72			61	60								82	82	84	84
Proximal breadth.	42	40	44	42	42							35	38								—	—	—	—
Proximal thickness.	48	46	46	47c	49							37	39								44	44	47	45
Max. length.	87	87	79	80	84																—	—	—	—
Middle Phalanges. Sagittal length.	51	47	52																		53	52	56	56
Proximal breadth.	39	38	39																		—	—	—	—
Proximal thickness.	44	50	42																		45	48	46	48
Max. length.	56	55	54																		—	—	—	—
Terminal Phalanges. Max. Length.	90	89	96																		90	—	—	—
Height at withers.	170to		180cm																					

Numbers in brackets denote numbers of animals.  
 "e" indicates an estimation.  
 "f" is used to denote a female animal.  
 All measurements in millimetres except height at withers.