A COMPARATIVE ANALYSIS OF FAUNAL REMAINS FROM SOME ROMAN AND NATIVE SITES IN NORTHERN ENGLAND

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CHAPTER ONE

INTRODUCTION

The animal remains described are from four sites:

(a) The Roman Encampment at Corstopitum

(b) An Iron Age - Romano British Site at Catcote near Hartlepool in County Durham

(c) A Well discovered on the site of Benwell Fort now the site of Condercum House, Benwell, Newcastle upon Tyne,4. The filling of the well contained Roman material, but the animal bones could be of Roman or later date.

(d) Tynemouth Priory from a recent excavation by Mr.George Jobey, F.S.A., of the Department of Adult Education, University of Newcastle upon Tyne, dated to the Mediaeval period

The metrical data so obtained are compared with published material from other ancient sites.

Procedure

Identifications were made by direct comparison with recent defleshed specimens and with disarticulated skeletons now stored in the Hancock Museum, Newcastle upon Tyne.

Expert advice was sought on several occasions and acknowledgements are made in the text to the authorities consulted.

Tentative diagnoses are noted by use of a question mark. Each identified bone from a given site was, where appropriate, designated as either right or left and then assigned a serial reference number, e.g. left scapula 1, 2, 3. right scapula 1, 2,........

The labelled identified material is now stored in the Hancock Museum, Newcastle, for reference purposes.

Measurements taken

Skull - 1. least breadth of single frontal bone

2. greatest diameter of horn core at base

3. least diameter of horn core at base

4. circumference of horn core at base

5. length of outer curvature

Maxilla - No measurement taken but dentition is recorded

Mandible - No measurement taken but dentition is recorded

Atlas vertebra - Maximum length and width

Axis vertebra - Maximum length and width

Scapula - 1. length

2. minimum width of neck

3. maximum diameter of glenoid cavity

Long bones - Where possible the entire length between proximal and distal articulatory surfaces is recorded. Distal and proximal widths are also recorded. The skeletal remains from each site are first described, detailed data for the Corbridge material being given in Volume Two. The descriptions are followed by discussion. Because of problems of nomenclature (Howard 1962) the ox remains from Corstopitum and Catcote are referred to simply as -

Bos taurus Corstopitum type and

Bos taurus Catcote type

Humerus - 1. length

2. distal width between lateral and medial condyles

Ulna - maximum width

Radius - 1. length

2. maximum width of proximal articulatory surfaces (Prox.)

3. maximum width of distal articulatory surfaces (dist.)

Metacarpal - 1. length (L)

2. maximum width of proximal articulatory surfaces (Prox)

3. maximum width of distal articulatory surfaces (dist)

4. Metapodial indices (Howard, M.M. 1962)

(a) the $\frac{DB}{L}$ index. (b) the $\frac{M.B.}{L}$ index

$\frac{\text{Distal breadth}}{\text{Length}} \times \frac{100}{1}$ $\frac{\text{Mid-breadth}}{\text{Length}} \times \frac{100}{1}$

Os Coxae - maximum diameter of acetabulum

Femur - 1. length between the two articulatory surfaces

2. Maximum width between medial and lateral condyles

Tibia - 1. length between the two articulatory surfaces (excluding the medial condyles).

2. Maximum width of proximal articulatory surfaces (Prox.)

3. Maximum width of distal articulatory surfaces (dist.)

Fibula - no measurements taken

Astragalus - extreme length

Calcaneum - Maximum width

Metatarsal - 1. length (L)

2. maximum width of proximal articulatory surfaces (Prox)

3. maximum width of distal articulatory surfaces (dist.)

4. Metapodial indices

(a) the $\frac{D.B.}{L}$ index (b) the $\frac{M.B.}{L}$ index

$\frac{\text{Distal breadth}}{\text{Length}} \times \frac{100}{1}$ $\frac{\text{Mid-breadth}}{\text{Length}} \times \frac{100}{1}$

Proximal)

Middle) Phalanges 1. length

Terminal) 2. maximum width

Measurements were taken in the manner described by Brothwell, D.R. (1963)

Measurements are recorded in c.m.

CHAPTER TWO

CORSTOPITUM - DESCRIPTION OF SKELETAL REMAINS

The material described is from two sources -

(a) from the excavation site at Corstopitum - obtained during 1966 excavation.

(b) from the Department of Archaeology, Durham University - material stored there since being excavated at Corstopitum in previous years.

For discussion purposes the material may all be considered to be Romano-British. Excavation reference numbers are not published but these are available.

Minimum numbers of Animals

For purposes of estimating minimum numbers of animals it was necessary to follow the procedure used in the 1911 excavation report (Meek & Gray 1911) of considering only entire long bones or the distal articulatory surfaces. The proximal fragments were retained, measured and data recorded, hence the different figures in Appendices 'A' and 'B'.

Appendix 'A' records all fragments identified.

Appendix 'B' records either whole bones or those showing a distal surface.

A bone may be recorded in Appendix 'B' but be so eroded that no measurement appears for it in the appropriate table.

Relative abundances of bones from each species may be significant, therefore, they are recorded. (Field, N.H. 1964).

Minimum number of Animals (See Appendix 'B' for animals of food value)

Ox (based on skulls)	192
Horse (based on skulls)	13
Sheep (based on right mandibles)	37*
(based on left metacarpals)	30
Pig (based on right mandibles)	27*
(based on right scapulae)	13
Red Deer (based on antlers associated with bony pedicle of skull)	5

* May be high estimate because not all mandibles are entire.

Species other than those listed in Appendix 'B', but remains of which were recovered in 1966, were considered along with 1911 material to arrive at an estimate of the minimum number of animals. The estimate is as follows -

Dog (based on skull)	13
Fox (based on ramus of lower jaw, radius, femur)	1
Roe Deer (based on antlers associated with bony pedicle of skull)	1

Relative frequencies of bones from different species

Relative frequency of bones (based on either entire bones or those showing distal ends) of various food bearing species were -

Ox 71.0% Sheep 14.4% Pig 6.9% Horse 6.6% Red Deer 1.1%

Validity of treating the metrical data from 1911 report together WITH THE DATA FROM 1966 EXCAVATIONS

It would have been ideal for the author to have measured the material described in the 1911 report, thereby eliminating a possible source of error. Despite a thorough search of the Hancock Museum, Newcastle, the Zoology Departments of The University of Newcastle upon Tyne and of Durham University little of the material was found and is presumed to be lost. A few skulls of the so called Bos longifrons (Bilton 1957 for discussion) bearing alleged javelin marks (Meek & Gray 1911) were found in the Hancock Museum. Whilst it is realised that the validity of treating both sets of measurements (1911 and the present report) together for statistical purposes is open to question, Jewell (1962) has shown the value of taking metrical data from various authorities and appertaining to different archaeological sites, and comparing them.

Often for histogram purposes, the data have been grouped in 2 m.m. intervals, the material having been measured to 0.1 c.m. It is thus hoped to reduce the margin of error inherent in two people measuring material. Further, where possible, the standard deviations and mean values of series of measurements are recorded separately for the two sources of data as well as conjointly.

In order to compare the measurements taken for metapodial distal widths by Meek & Gray (1911) with those in the present report a statistical test was sought to evaluate the similarity of the two sets of data. The statistical tests are discussed in Appendix 'D'. The tests offer some support for the author's using the data from the 1911 report along with modern data, for there seems to be no significant difference in the two sets of data referring to metapodials.

apply?

These tests appertain only to a normal distribution, therefore it was thought worthwhile to see if the distribution of the measurements about their mean values was similar to a normal curve. Cornu's criterion (Brooks & Caruthers 1963) was applied. This compares the standard deviation with arithmetic mean deviation from the average values.

$$\frac{\text{s.d.}}{e} = 1.25 \text{ where } e = \frac{\sum |x - \bar{x}|}{n}$$

The values obtained for metapodials were -

(a) Metatarsals $\frac{\text{s.d.}}{e} = 1.35$

(b) Metacarpals $\frac{\text{s.d.}}{e} = 1.18$

We can expect at a given age class a normal distribution of any single dimension; likewise for the whole age range, provided that equal numbers are present in each age class. If there had been a preference for killing at a given age class this would skew distribution to give a peak at a bone dimension specific to that preferred age class, e.g. veal. The Cornu values obtained; 1.35 for metatarsals, indicate a skew with peak above the mean (for normal distribution) i.e. positive skewing, and 1.18 for metacarpals conversely indicate a skew with peak below the mean (for normal distribution) i.e. negative skewing respectively. As it is not possible to consider bones of specific age groups it can only be assumed that the sum total of bones covers the sum total of age groups at which they were killed. If the sample were larger it would seem probable that a normal distribution in population would have been found and hence for these two values deviating <u>on either side</u>

Ab. 2, p. 30

of Cornu's criterion it seems justifiable to apply statistical tests based upon normal distribution. Thus the students 't' test for small samples has been applied indicating no significance between the metapodial material measured by Meek & Gray and the metapodials measured by the author.

significant difference?

Bos taurus CORBRIDGE TYPE

Horn Cores and Skulls

Data Sheets No.1 and No. 2

Only four skulls (fragmented) were recovered. Because of their eroded and fragmentary nature it was decided to abandon the series of measurements taken by Meek & Gray (1911) and instead to take the measurements made on the Windmill Hill material (Grigson,C. 1965). No hornless skulls were found although in some cases the horn cores were often mere scurrs, being almost as small as the horn cores of some present day sheep.

Specimen No.2 possessed a slight medial prominence, in the other specimens there was no prominence, i.e. frontal chest was flat. The significance of this and of horn core sizes is discussed later in the thesis.

Maxilla - Data Sheet 3

Fourteen fragments were retrieved. Lengths of molar area were not recorded, instead the actual dentition was recorded in the hope that ageing techniques based on tooth eruption sequence will become available in the near future. (Higgs, E.S. personal communication) The data recorded may then be useful in discussing Autumn killing.

Mandibles - Data Sheet 4.

Forty-five specimens were identified. Two of these showed the complete absence of the first cheek tooth, which is P.M.2 (P.M.1 being lacking in sheep and cattle - see Cornwall (1956) for discussion).

This "five toothed" condition was noted by Meek & Gray (1911) as being typical of some of the mandibles recovered from Corstopitum and was alleged to be a characteristic of the Chillingham Cattle. The Chillingham cow's skull in the Hancock Museum shows this condition but Bilton, L. (1957) does not refer to it in his monograph on the Chillingham Cattle. Of the ten specimens of Chillingham Cattle present in the British Museum (Natural History) two specimens (Reference numbers 1890.3.12.1 Male and, 1953 L/4 22-4) appear to have the dentition P3,2,1 P.M.4,3,2 on both left and right mandibles while the deformed mandibles of specimen 1890 3.10.2 (female) also appear to have P.M.2

present. The Specimen 1953 L/4 22.3.10. has a right mandible bearing a socket large enough to accommodate the permanent premolar P.M.2 although the left mandible lacks it. (See Appendix 'E'). On this basis it appears that the absence of the permanent premolar P.M.2 from lower jaws cannot be claimed as being a diagnostic characteristic of Chillingham Cattle.

The lengths of molar area were not recorded, instead, the dentition is given. Deciduous teeth are signified by small letters. Where a tooth is being shed this is indicated by a vertical arrow.

Atlas - Data Sheet 5.

Ten specimens were identified, only four permitted width.÷length index to be measured (Jope, M.1960)
Index values range from 1.32 - 1.57

Axis - Data Sheet 5

Twelve specimens were identified, no measurements were taken because of erosion and butchering damage.

Scapulae - Data Sheets No.6 & 7

Ninety specimens were identified. In only two was it possible to measure length. All the measurements of minimum width of neck and maximum glenoid diameters fell within the Meek & Gray ranges (1911).

(a) Minimum width of neck

Meek & Gray Report	229 specimens.
	Mean = 4.8 c.m.
	Standard deviation = 0.48.
1966 Report	75 specimens.
	Mean = 4.5 c.m.
	Standard deviation = 0.3
Combined material	304 specimens.
	Mean = 4.75 (4.8) c.m.
	Standard deviation = 0.5.

(b) Maximum diameter of glenoid

Meek & Gray Report	138 specimens
	Mean = 5.09 (5.1) c.m.
	Standard deviation = 0.447.
1966 Report	51 specimens
	Mean = 5.04 (5.0) c.m.
	Standard deviation = 0.374.
Combined material	189 specimens.
	Mean = 5.07 (5.1) c.m.
	Standard deviation = 0.424.

<u>Humerus</u> - Data Sheet No.8.

Of the eight specimens recovered five permitted measurement of distal surface. All fell within the Meek & Gray range except one which exceeded the width by 0.1 c.m.

<u>Ulna</u> - Data Sheet No.9.

Four specimens from right side were retrieved. Erosion prevented measurement of lengths. Maximum widths are recorded.

<u>Radius</u> - Data Sheet No.10.

Of the nineteen specimens only four permitted measurement of either length or distal width. These all fell within the Meek & Gray range.

Meek & Gray Report	63 specimens.
	Mean distal width = 5.89 (5.9) c.m.
	Standard deviation = 0.64
1966 Report	4 specimens.
	Mean distal width = 6.13 (6.1) c.m.
	Standard deviation = 0.63.
Combined material	67 specimens.
	Mean distal width = 5.91 (5.9) c.m.
	Standard deviation = 0.58.

<u>Metacarpals</u> - Data Sheet No.11.

Twenty-two left and ten right specimens were identified along with six specimens which it was impossible to diagnose as being either right or left on the accepted criterion of relative sizes (widths) of distal condyles. (McFaydean 1884). Sixteen specimens permitted measurement of length and or distal width. All fell within the Meek and Gray ranges.

Meek & Gray Report	116 specimens
	Mean distal width = 5.4 (4) c.m.
	Standard deviation = 0.6
1966 Report	16 specimens
	Mean distal width = 5.2 (1) c.m.
	Standard deviation = 0.54
Combined material	132 specimens
	Mean distal width = 5.4 (2) c.m.
	Standard deviation = 0.51

Figure No.1 shows the scatter of metacarpal distal widths.

Figure No.3 shows the scatter of the values obtained for the metapodial index.

(No further discussion of Fig 1? e.g. why skewed?)

$\frac{\text{Distal Breadth}}{\text{Length}} \times \frac{100}{1}$, (Howard, M.M. 1963) with possible sex determinations based on Howard's data.

In the case of only six specimens was it possible to calculate the second metapodial index $\frac{\text{Mid breadth}}{\text{Length}} \times \frac{100}{1}$ (Howard, M.M. 1963).

The values of the $\frac{\text{M.B.}}{\text{L}} \times \frac{100}{1}$ index are -

left	2 = 15.8	right 10 = 14.8
"	5 = 15.2	
"	8 = 16.5	
"	9 = 14.7	
"	15 = 14.6	

These values seem to confirm the tentative sex diagnoses based on the first metapodial index $\frac{\text{D.B.}}{\text{L}} \times \frac{100}{1}$, there being five cows and possibly one steer present. No data are available to calculate $\frac{\text{M.B.}}{\text{L}} \times \frac{100}{1}$ index for the Meek & Gray (1911) specimens. (Howard 1963)

<u>Os Coxae</u> - Data Sheet No.12.

In six specimens it was possible to measure the maximum diameter of the acetabulum. Two of these are considerably in excess of specimens measured by Meek and Gray.

<u>Femur</u> - Data Sheet No.13.

Only three specimens permitted measurement of length and or distal articulatory surface. The latter measurements all fell within the the Meek & Gray range but one specimen was shorter than those previously recorded.

Tibia - Data Sheet No.14.

Ten specimens permitted measurement of distal width and all fell within the Meek & Gray range. One complete bone was shorter than those previously found.

One specimen found in clay was associated with a quantity of a bright blue powder, identified as vivianite. (Provenance number OW64).

Meek & Gray Report	78 specimens
	Mean distal width = 5.35 c.m. (5.4 c.m.)
	Standard deviation = 0.539.
1966 Report	8 specimens
	Mean distal width = 5.25 c.m. (5.3 c.m.)
	Standard deviation = 0.346
Combined material	86 specimens
	Mean distal width = 5.34 c.m. (5.3 c.m.)
	Standard deviation = 0.52.

Astragalus - Data Sheet No.15.

Overall lengths of ten of the eleven specimens recovered are recorded. They range from 5.3 - 6.3 c.m.

Figure 8 compares the astragalus length ranges for cattle from various ancient sites.

Calcaneum - Data Sheet No.16.

Erosion made measurement of the fourteen specimens recovered difficult. Maximum width is reported for several of these.

Metatarsals - Data Sheet No.17.

Twenty five right and twenty five left specimens were identified. In one case it was not possible to assign it either to left or right (see previous note on metacarpals). Proximal widths are again recorded. Of the twenty three specimens which permitted measurement of length and or distal articulatory surface width, only one fell beyond the Meek & Gray ranges and this specimen exceeded the upper limit by only 0.1 c.m.

Meek & Gray Report	127 specimens
	Mean distal width = 5.03 c.m.
	Standard deviation = 0.529
1966 Report	23 specimens
	Mean distal width = 5.02 c.m.
	Standard deviation = 0.575
Combined material	150 specimens
	Mean distal width = 5.03 c.m.
	Standard deviation = 0.52

Figure 2 shows the scatter of the metatarsal distal widths.

Figure 4 shows the scatter of values obtained for metapodial index.

$\frac{\text{Distal breadth}}{\text{Length}} \times \frac{100}{1}$ with possible sex determinations based on the work of Howard, M.M. (196[illegible]).

In the case of only five specimens was it possible to calculate the second metapodial index $\frac{M.B.}{L} \times \frac{100}{1}$ (Howard. 196[illegible])

(No discussion of Fig 2 ?)

The values are -

left 10 = 11.1	right 1 = 11.9
" 13 = 12.6	" 17 = 11.7
" 19 = 13.6	

These values seem to confirm the tentative sex diagnoses based on the first metapodial index $\frac{D.B.}{L} \times \frac{100}{1}$, there being three cows and two possible steers present (Howard, M.M. 1963).

<u>Phalanges</u> - Data Sheets No.18, 19 and 20.

The following lengths + maximum widths are given:-

53 proximal phalanges

25 middle phalanges, (figure 10 compares measurements of them with those from other sites)

22 terminal phalanges

Figure 10 shows the scatter of measurements made of the middle phalanx (phalange) for cattle from certain ancient sites.

CORSTOPITUM

Sheep - Ovis aries

Because of the difficulty in distinguishing between the bones of sheep and goat, and in the absence of any direct evidence (skulls and horns) that goat remains are present it is assumed that all the specimens belong to sheep, although recent work (Boessneck, J. 1964) may offer means of distinguishing between sheep and goat metapodials.

Data Sheets No.21 - 34 refer to the specimens recovered. They include a mutilated skull, specimens of mandible, maxilla, scapula, humerus, ulna, femur, tibia, astragalus, calcaneum, metacarpals, metatarsals and phalanges. Hammond, J. (1962) has commented on the change in shape of bones of sheep and pigs under domestication. This, and the lack of parity in size between the larger modern day defleshed specimens, and the small Roman material has made comparisons difficult. I am grateful, therefore, to have received confirmation of some identifications of sheep, pig and dog scapulae by Dr.Cornwall at the Archaeological Institute, London, and for his confirmation of sheep pelvic fragments.

Skull - Data Sheet 21.

A mutilated specimen, showing part of parietal, occipital bones and foramen magnum, compares in size and nature with the single skull of a Soay sheep in the Hancock Museum. The occipital bone is sliced through and the parietal bone is broken so that horn cores are absent.

Maxilla - Data Sheet 22.

The dention of four fragments are reported.

Mandibles - Data Sheet No.23.

The twenty-one mandibles recovered were examined for tooth eruption pattern and assigned to stages of age in accordance with the criteria laid down by the Cambridge School (Higgs, Ewbank, Phillipson and Whitehouse, 1964). Higgs, E.S. has confirmed some of the queries raised in the implementation of this classification. (Dr.E.S.Higgs - personal communication). Cumulative evidence of this sort, gathered at the annual excavation at Corstopitum, should throw considerable evidence on the whole problem of Autumn killing. The classification of ageing the sheep at their time of death by this method has been preferred to earlier classifications (Higgs, E.S., Silver, I.A., White, P. 1963). Its use, however, implies that the method used on Iron Age sheep may be adopted for sheep from the Romano-British period. This material is discussed in detail later.

Os Coxae

Fifteen fragments displayed acetabulum, Identifications confirmed by Dr.Cornwall. No measurements were recorded because of erosion, therefore no data sheet is included.

Other Bones

Specimens of humerus (8), ulna (12), femur (10), maxillae (4), scapulae (14), metacarpals (18), metatarsals (36), (numbers of each listed in brackets) have not extended the size ranges of Roman sheep to any great extent. For the most part they fall within the limits published (Meek & Gray 1911) but metatarsal

L10 is curious in that it is stained with a green dye, and the end is worn, this may have been used as a spatula or mixing instrument.

All the radius specimens (Data Sheet 27) which permitted measurement of the distal width and the twelve tibia specimens (Data Sheet 29) which permitted similar measurement were all in excess of the Meek and Gray range, as were some of their lengths.

CORSTOPITUM

Pig - Susscrofa

Evidence of several animals was discovered. On the basis of right mandibles bearing the third molar the minimum number of animals must have been seven, while on the evidence of right scapulae there were at least six animals.

Most of the long bones were of immature animals, e.g. articulatory processes seldom fused. Most specimens were heavily eroded. Data are listed on data sheets 35-46.

CORSTOPITUM

Horse - Equus caballus

Data Sheets No. 47 - 58 refer.

Meek & Gray (1911) concluded that there were three "types" of horse present in the Corstopitum material, corresponding in size to a horse skeleton (14½ hands) located in the Natural History Department of Armstrong College (now The University of Newcastle upon Tyne), and to data published privately, Pitt-Rivers (1888) with regard to -

(a) New Forest Pony

(b) The smaller Exmoor Pony

Permission was received to disarticulate the skeleton of a draught horse housed in the Zoology Department at Newcastle University. The skeleton was remeasured in the belief that this was the same skeleton referred to by Meek & Gray (1911) in the hope it would give some idea of the degree of agreement between measurements made by the author and by Meek & Gray. The disappointing measure of agreement may in fact be due to the skeleton having been previously measured in an articulated form.

Measurements made on material excavated in 1966 and on modern comparative material support the view that there was a range in size of horses from a small pit pony to a horse of some fourteen and a half hands.

Skulls - Data Sheet 47

Two specimens. The measurements taken fit into the ranges published for eleven specimens except that condyle width is slightly extended.

Maxilla & Mandibles - Data Sheets 48 & 49

Dentition is reported.

Scapula - Data Sheet 50

One specimen - From a large horse comparable to the College specimen is described. The glenoid cavity range is slightly exceeded.

Radius - Data Sheet 51

Twelve specimens - All the distal widths fall within the previously published range. One specimen bore a circular hole.

Metacarpal - Data Sheet 52

Five specimens - Two extend the distal width range while one exceeds even the College horse specimen in length.

One specimen is heavily arthritic.

Os Coxae - Data Sheet 53

One right, one left and one complete specimen were measured.

Maximum diameter of acetabulum ranges from 5.6 - 5.8 c.m. all within previous range. The occurrence of a circular hole is again noted on one specimen.

Tibia - Data Sheet 54

Of the seven specimens measured one extends the length range and all exceed the distal width. Three specimens bear circular holes.

Metatarsal - Data Sheet 57

Of the five specimens measured, all lie within the distal width range but two extend the length range. One specimen which cannot be assigned to left or right, is curious in that it is smooth and polished. It has been suggested by Mr.Tait of the Archaeology Department, Newcastle University, that this may have been used to "bone leather".

Phalanges - Data Sheet 58

Of the twelve measured one bears a circular hole.

An examination of the circular holes reported above suggests that they are recently made and may have been made by the point of a pick or trowel during excavation.

CORSTOPITUM

Red Deer - Cervus elaphus

Data Sheet 59

One fine specimen of a metacarpal was recovered. Many fragments of antler were recovered but only those bearing the bony pedicle were catalogued for purposes of estimating minimum numbers of animals. The tines appear to be much larger than modern specimens in the custody of the Hancock Museum.

In discussion Dr.Cornwall has suggested that it is not uncommon to find large tines from ancient sites when as forest dwelling animals the deer would enjoy nutritional advantages as regards phosphorus and calcium over their modern counterparts which are forced to live on acid and nutritionally impoverished land.

The sparse representation of deer bones in the Corstopitum material was remarked upon by Meek & Gray (1911) and is again strikingly evident in the 1966 material. Possibly this animal was not prized greatly as a source of meat! or other foods may have been more easily obtained, see (Roche, G. and Stelfox, A.W. 1936) and (Jackson, J.W. 1923) for discussion. Many of the dder antler fragments have been sawn through, presumably with a metal saw.

CORSTOPITUM

Roe Deer - Capreolus caprea

Two single antlers each bearing part of the bony pedicle are recorded.

CORSTOPITUM

Dog - Canis familiaris

A few specimens of mandible, humerus, radius and a single scapula are catalogued on Data Sheets 60-63, but no attempt is made to relate them to present day types of dog owing to the shortage of comparative material.

CORSTOPITUM

Fox - Vulpes vulpes

A single humerus and a radius match very well two specimens of two modern dog foxes recently defleshed.

CORSTOPITUM

Aves

Several bird bones are identified. The single ulna corresponds well with that of domestic fowl (Gallus gallus), and this diagnosis has been preferred to that of pheasant, (Phasianus colchicus) by Mr.G.S. Cowles, Experimental Officer, of the Bird Section, British Museum. The bones are catalogued on Data Sheets 65-69.

CORSTOPITUM

Pisces

Two eroded fish vertebrae are recorded. (Data Sheet 70 refers).

CHAPTER 3

CATCOTE - Description of Skeletal Remains

In this chapter all the data are included with the description of the material.

CATCOTE

Bos taurus - "Catcote Type"

Skulls

Two skulls were recovered. The first of these displays a prominent mesial prominence in the middle of the intercornual ridge. (See discussion in Chapter 6)

Measurement taken	Skull 1 (H13)	Skull 2 (U/qr3)
1. Least breadth of frontal	7.9 x 2	-
2. Greatest diameter of horn core at base	3.7 + 3.6	3.7
3. Least diameter of horn core at base	2.7 x 2	3.1
4. Circumference of horn core at base	10.5 x 2	-
5. Length of outer curvature	8.5 + 7.0	-

Horn Cores

Thirteen cores were examined but few measurements could be made because of erosion.

Measurement taken	left 1	left 2	left 3	left 4	right 1	right 2	right 3	right 4
1. Greatest diameter at base	4.8	-	-	-	4.6	3.4+	12.5	13.0+
2. Least diameter at base	3.7	-	-	-	3.8	2.8	10.5	11.5+
3. Circumference at base	-	-	-	-	-	-	12.5	10.0
4. Length outer curvature	-	-	-	-	-	-	-	-

Provenance numbers are -

Left	1 (O12)	Right	1 (H22)
	2 (K15)		2 (P/U3)
	3 (I3)		3 (Q3)
	4 (O12)		4 (VI N?)

Five specimens were not assigned to either right or left because of erosion. No measurements were taken about these specimens.

Maxilla

Two fragments from each side are reported upon.

Left No.	Site No.		Right No.	Site No.	
1.	(U7)	M2,1	1.	(II)	M3
2.	(H15)	M2	2.	(H13)	M3,2

+ Eroded

Catcote - Bos taurus

Mandibles

Thirteen fragments from the left side and nine from the right were identified. The dentition associated with each fragment is listed.

Left No.	Site No.		Right No.	Site No.	
1	(C3)	M2,1,d.m.3	1	(II)	Entire; M2,1 P.M.4 + sockets
2	(U7)	Teeth lacking	2	(N12)	Entire; M3,2,1 P.M.4,3
3	(-)	M3,2,1 P.M.4	3	(-)	M2 (erupting) M1.d.m.3,2,1 (roots)
4	(U3)	M3,2,1 P.M.4,3 + socket	4	(B3)	M2,1
5	(N13)	M3,2,1- P.M.3 fracture	5	(T^{1}12)	dm.2,1
6	( )	P.M.4,3,2	6	(P/DZ7)	M2,1 P.M.4
7	(N12)	M2 (erupting) M1 d.m. 3,2,1	7	(I/t3)	
8	(H13)	M3	8	(T^{111}3)	M3,2
9	(U7)	M2,1 P.M.4,3 + socket	9	(U7)	P.M.3 with possible P.M.2 remains
10	(H13)	P.M.4,3, + socket			
11	(II)	P.M.3,2			
12	(H17)	M3			
13	(II)	?<u>Bos</u> Two Selenodont teeth emerging			

* So called Chillingham feature (Meek & Gray 1911)

(See also discussion in previous chapter)

dm = deciduous molar. According to Sissons, S. (1948) these should be properly designated deciduous <u>premolars</u> but more recent publications (Higgs 1964) and(Cornwall 1956) designate them as deciduous molars.

Catcote - Bos taurus

Atlas Vertebra

No.	Site No.	Lenght	Breadth
1.	II	7.2+	-

+ eroded

Axis Vertebrae

No.	Site No.	Length	Breadth
1	U3gr	10.8	-
2	H3	10.7 app.	-
3		11.3 app.	-
4	Pit VII	-	-
5	H3	-	-
6	U VII	-	-

app. = approximate

Other Vertebrae

Twenty-one all eroded.

Catcote - Bos taurus

Scapulae

Remains of nine left and ten right recovered. In no case was it possible to measure length.

Left				Right			
No.	Site No.	Min. width neck	Max. width glenoid	No.	Site No.	Min. width neck	Max. width glenoid
1	O12	5.9	-	1	H22	4.5	-
2	II	4.8	4.4 app.	2	N12	4.9	-
3	J13	4.5	-	3	O12	5.0	5.6
4	H15	4.2	-	4	N12	5.7	6.1
5	I3	3.9+	-	5	N?12	5.9	6.0+
6	N12	5.1	5.5	6	N12	-	-
7	P2?	-	-	7	U7	4.6	4.8
8	U3 qr	4.7	-	8	I3	4.7	-
9	U7	-	-	9	I3	-	4.6
				10	-	-	-

+ = eroded.

app. = approximate

Catcote - Bos taurus

Humerus

Remains of nineteen left fifteen right were identified. None was entire. All displayed distal articulation or were distal portions of a fractured shaft, that is, no two specimens belonged to the same bone. No proximal articulations were recovered.

Measurement taken was maximum distal width between medial and lateral condyles.

Left			Right			
No.	Site No.	Distal width	No.	Site No.		Distal width
1	II	7.5	1	I3		7.0
2	N12	6.8	2	U24		-
3	N12	6.0+	3	J/P3		6.2 app.
4	H3	6.0 app.	4	II		6.5
5	K3	-	5	H3		6.6+
6	O12	-	6	I3		-
7	J/P3	-	7	N13		6.4 app.
8	B?3	-	8	Uqr3	)	
9	H13	6.8	9	O3	)	
10	I3	-	10	P/DZ7	)	distal
11	I3	-	11	I3	)	
12	I3	6.7	12	H13	)	shafts
13	B3	-	13	E3	)	
14	$T^{1111}{}_{12}$	-	14	O12	)	only
15	P?/L3	-	15	Q3	)	
16	U VII	-	16	-		-
17	U7	-				
18	O12	7.2 app.				
19	Q[illegible]3	-				

+ = eroded

app. = approximate

Catcote - Bos taurus

Radius

Twelve fragments of the left bone and nine of the right were identified on the basis of either proximal or distal articulatory processes. It is possible that two specimens come from the same bone. No specimen was entire. Measurements recorded are maximum distal width and maximum proximal width.

Left				Right			
No.	Site No.	Prox. width	Distal width	No.	Site No.	Prox. width	Distal width
1	R/K3	-	-	1	U7	6.4	-
2	X3	-	-	2	028	-	-
3	U/P3	6.4+	-	3	P/DZ7	6.1 app.	-
4	H16	6.1 app.	-	4	B3	-	-
5	I3	-	-	5	II	6.0	-
6	U3	-	-	6	H/gj3	-	6.0
7	N13	-	-	7	U/03	-	6.0
8	N12	-	-	8	028	-	-
9	I 13	-	6.8	9	$T^{1}3$	-	*
10	I3	-	7.0				
11	N12	-	-				
12	U3	-	-				

* = worn flat by abrasion

+ = eroded

app. = approximate

Catcote - Bos taurus

Ulna

Five right specimens and five left are catalogued although in two of the latter specimens erosion makes it difficult to distinguish between pony, horse and ox. On the basis of the relative absence of horse bones it is preferred to diagnose them tentatively as ox.

No measurement was taken. They all approximate in size to the ulna of the Chillingham cow in the Hancock Museum.

Left No.	Left Site No.	Right No.	Right Site No.
1	II	1	O12
2	O12	2	U/O3
3	B3	3	U/P3
4	K/kn4	4	N/13
5	U7	5	I/t(2)

Catcote - Bos taurus

Metacarpals

Left

No.	Site No.	Length	Distal	Proximal	Metapodial Index $\frac{D.B.}{L} \times \frac{100}{1}$
1	W/P3	18.2	6.1	5.8	33.2
2	P/X(3)	15.5	5.3	-	34.2
3	Q6	-	-	5.8+	
4	P/DZ(7)	-	-	-	
5	N13	-	-	-	
6	J(13)	-	-	-	
7	H3	-	-	-	
8	Q3	-	-	-	
9	U7	-	-	-	
10	P3	-	-	-	
11	K3	-	-	5.0	
*12	K3	-	5.2	-	
*13	T12?	-	5.6	-	

Right

No.	Site	Length	Distal	Proximal	Metapodial Index $\frac{D.B.}{L} \times \frac{100}{1}$
1	II	18.4	5.9	5.2	32.1
2	O(12)	17.6	5.1	4.9	29.0
3	U/K3	18.3	5.4app	5.1	29.0
4	N/12	17.6	5.1+	4.7+	29.0
5	H(13)	-	-	5.0	
6	O28	-	-	4.8	
7	Q6	-	-	4.7	
8	L/k16	-	-	5.1 app.	
9	H3	-	-	-	
*10	H3/17	-	6.0	-	
*11	Q6	-	5.1	-	

*Assigned to right or left on basis of inner condyle being wider than outer condyle (McFaydean 1884).

+ = eroded

app. = approximate

Catcote - Bos taurus

Metacarpals

Butchered shafts assigned neither to right nor left.

No.	Site No.
1	O/K3
2	O12
3	H13
4	13?F
5	H13
6	N13
7	Y1
8	U/p3

The metapodial index $\frac{\text{distal breadth}}{\text{length}} \times \frac{100}{1}$ values would seem to indicate the presence of three cows and three possible steers (Howard, M.M. 1962).

Figure 9 compares the scatter of metacarpal distal widths for cattle at Catcote with those from several other ancient sites.

Comment ?

Catcote - Bos taurus

Os Coxae

Six fragments bearing part or complete acetabulum are recorded.

Maximum diameter of acetabulum was measured.

Left				Right			
No.	Site No.	Max. Diam. Acet.		No.	Site No.	Max. Diam. Acet.	
1	(H/P3)		5.8app.	1	(II)		5.8 app.
2	(Q3)	Ilium fragment	-	2	(H17)	Ilium fragment	-
3	(H15)	Ilium fragment	-				
4	(N12)	Ischium fragment	-				

app. = approximate

Catcote - Bos taurus

Femur

Specimens displaying either distal or proximal articulatory surfaces were identified as were three distal portions of shaft lacking the distal articulatory processes. In all, seven fragments of the left bone and four of the right were catalogued.

Measurements taken -

Length. between the two articulatory surfaces.

Distal width. maximum width between lateral and medial condyles.

Left				Right			
No.	Site No.	Length	Distal width	No.	Site No.	Length	Distal width
1	II	-	-	1	P7DZ	-	-
2	II	-	-	2	H17	27.9	7.9
3	012	-	-	3	N13	-	8.1
4	H3	-	8.7 app.	4	II	-	-
5	H/Fj3	-	-				
6	U7	-	-				
7	II	-	-				

app. = approximate

Catcote - Bos taurus

Tibia

No complete specimens were described. In all, eleven fragments of left specimens and twelve of right specimens were identified. Measurement taken was the maximum distal width.

Left			Right		
No.	Site No.	Distal width	No.	Site No.	Distal width
1	N12	5.5	1	I3	5.7
2	O3	5.5+	2	U7	5.5
3	Uqr3	5.7+	3	N13	-
4	Uqr3	5.8	4	H3	-
5	O/y3	5.8	5	R3	5.4
6	UT	5.5	6	II	5.8
7	U?2	-	7	O12?	-
8	I3	5.3	8	Q6	-
9	N12	-	9	K18	-
10	U7	5.4	10	U7	-
11	I/Gq3	-	11	J3	-
			12	N13	-

+ = eroded

Catcote - Bos taurus

Metatarsals

Left

No.	Site No.	Length	Distal	Proximal	Metapodial Index $\left(\frac{D.B.}{L} \times \frac{100}{1}\right)$
1	II	20.1	5.1	3.9	25.3
2	Q3	-	-	4.0+	
3	E3	-	-	-	
4	U7	-	-	-	
5	HIII	-	-	3.9 app.	
6	Q/X3	-	-	-	
*7	L(6)	-	5.0	-	

Right

No.	Site No.	Length	Distal	Proximal	Metapodial Index $\left(\frac{D.B.}{L} \times \frac{100}{1}\right)$
1	U/O3	20.7	5.0	4.4	24.2
2	O/3	-	-	4.6	
3	U3	-	-	4.5+	
4	I/t2	-	-	4.9	
5	R(25)	-	-	3.9	
6	H17	-	-	-	
7	R/K3	-	-	-	
8	R/K3	-	-	-	
* 9	O/12	-	5.9	-	
*10	I/t2	-	4.7	-	

Not assigned to either right or left - One distal end. Distal width 4.8. Site No. U3.

Butchered shafts assigned neither to right or left -

No.	Site No.
1	N13
2	U(7)
3	H13
4	R/13
5	O/3

*Assigned to right or left on basis of inner condyle being wider than outer condyle (McFaydean 1884).

+ = eroded

app. = approximate

The metapodial $\frac{\text{distal breadth}}{\text{length}} \times \frac{100}{1}$ values indicate the presence of one cow and one steer (Howard, M.M. 1963)

Catcote - Bos taurus

Astragalus

Eighteen specimens were identified, where possible the overall maximum length and maximum width are recorded.

Left				Right			
No.	Site No.	Length	Width	No.	Site No.	Length	Width
1	N12	6.3	4.6	1	H13	5.8	4.1+
2	O12	6.0	4.3	2	O3	6.1app.	4.1+
3	E3	6.1	4.3	3	H23	5.9app.	4.2+
4	P9	5.8	4.1	4	P/DZ7	5.2	3.7
5	P3	6.2+	4.5+	5	N12	5.5	3.9
6	H3	5.4+	3.9+	6	C3	-	-
7	H/K14	5.7+	-	7	H13	-	-
8	T/13	-	-	8	I3	-	-
9	G3	5.3 app.	-				
10	Uqr3	5.1 app.	-				

+ = eroded

app. = approximate

Catcote - Bos taurus

Calcaneum

Sixteen specimens, eight left and eight right are catalogued. No measurement was taken due to erosion

Left No.	Left Site No.	Right No.	Right Site No.
1	U7	1	N12
2	H3	2	N12
3	-	3	H14
4	H14	4	I3
5	P/27	5	I 13
6	Q3	6	I3
7	P3	7	Q3
8	K18	8	I3

Catcote - Bos taurus

Phalanges

Thirty-six Phalanges I)
Twenty-two Phalanges II) maximum length and maximum width recorded

Eighty Phalanges III - No measurement taken.

Phalanges I

Not assigned to either right or left

No.	Site No.	Sagittal Length	Proximal Width	No.	Site No.	Sagittal Length	Proximal Width
1	K3	6.6	2.9	19	O12	5.5+	2.8
2	K3	5.7	3.2	20	I3	5.2+	-
3	P7XV	5.9	2.9	21	U/K3	5.6	2.8
4	K3	5.2	2.7	22	U/K3	5.4	2.8
5	P/DZ7	5.4	3.0+	23	R/6	-	-
6	J3	5.1+	2.7+	24	U/K3	5.0	2.3
7	K3	5.2	2.6	25	O12	4.8app.	2.2 app.
8	K3	5.4	2.4	26	N12	5.0	2.8
9	P/DZ7	5.4	2.7	27	II	5.4+	2.8
10	J3	-	-	28	$T^{11}3/12$	4.8	2.5
11	N12	5.2+	2.6+	29	O12	5.4	2.7
12	K VI	5.8	2.9	30	K18	5.6	3.1
13	H3	5.4	3.3	31	H3	5.3	2.4
14	K18	5.9	3.1	32	J/t2?	-	-
15	N12	5.4	2.7	33	II	5.2	-
16	N13	5.6	2.9	34	H3	-	-
17	U7	5.3	2.4	35	U(3)	+	-
18	K18	5.6	2.9	36	H16	-	-

+ = eroded

app. = approximate

Catcote - Bos taurus

Phalanges II

Not assigned to either right or left

No.	Site No.	Sagittal Length	Proximal Width	No.	Site No.	Sagittal Length	Proximal Width
1	Q3	3.7	2.6+	12	O12	3.7	2.7
2	K3	3.6	2.9	13	II	3.9	2.7
3	P/27	-	-	14	J3	3.4+	-
4	Q3	3.8	2.8	15	K/HL2	3.8	2.9
5	O4	-	-	16	N12	4.0+	2.8+
6	P3	3.6	2.5	17	U/K3	3.7	2.5
7	Q/Xj3	3.7	2.7	18	U/K3	3.7+	2.8
8	K3	3.3	2.5	19	U/K3	3.8	2.7
9	II?	3.5	2.4	20	H3	3.7app.	2.5+
10	T^{1}/12	3.4	2.6	21	N12	4.2	3.3
11	Uqr3	3.7	3.0	22	U/K3	3.7	3.1+

+ = eroded

app. = approximate

Phalanges III

No.	Site No.	No.	Site No.
1	O3	5	H3
2	P/27	6	N12
3	H3	7	L/KL6
4	T^{11}3/12	8	-

Catcote - Ovis aries

Skull

Three eroded specimens were examined.

No.	Site No.	Lamda to Basion	Width Condyles	Length Condyles
1	(J3/1)	7.3	4.2	2.1
2	(K VI N)	-	4.4	-
3	(H III)	-	-	-

Horn Cores

Six specimens were examined.

Measurement taken	Left		Right			
	1	2	1	2	3	4
1. Greatest diameter at base	3.6	2.4	2.5	2.8	-	2.9
2. Least diameter at base	2.8	1.2	1.3	1.8	-	1.9
3. Circumference at base +	9.0	6.0	6.5	8.0	-	8.5
4. Length of outer curvature+	-	-	-	-	-	8.5 app.

+ = approximate measurement.

The words diameter and circumference are misnomers in so far as the horn cores are not round in cross section but are "D" shaped. The flat surface facing backwards as in the Soay sheep skull present in the Hancock Museum, Newcastle.

Catcote - *Ovis aries*

Atlas Vertebra

No.	Site No.	Max. Length	Max. Breadth	
*1	K VI N	4.6+	5.8+	- In articulation with thirteen other vertebrae
2	K VI N	4.0+	4.8+	

Axis Vertebrae

No.	Site No.	Max. Length	Max. Breadth
*1	K VI N	5.8+	-
2	K VI	5.4+	3.7+
3	H 17	5.3+	4.0+
4	K VI	5.3+	-

Other Vertebrae

Forty-nine other vertebrae (all eroded) tentatively assigned to *Ovis*.

+ = eroded

* = in articulation with each other.

Catcote - Ovis aries

Maxilla

Left			Right		
No.	Site No.	Dentition	No.	Site No.	Dentition
1	-	M2,1	1	U VII	M3,2,1 P.M.4
2	H13	M3,2,1	2	N12	M1 P.M.4
3	II	d.m.3,2 being shed	3	$T^{11}3/12$	M3,2
4	K VI N	M2,1 P.M.4	4	K VI	M3,2
5	II	M3,2,1 P.M.4 broken	5	O12	M3,2,1 P.M.4?
6	N12	M3,2,1	6	O3	M3,2,1?
7	N12	P.M.4,3,2			
8	N12	M2,1 -			
9	O3	? M,? P.M.4			

dm = deciduous molar - see page 27, Volume I for discussion

Catcote - *Ovis aries*

Mandibles

Left				Right			
No.	Site No.	Dentition	Stage	No.	Site No.	Dentition	Stage*
1	U7	M3,2,1 P.M.4,3	x	1	K VI	M3,2,1 P.M.4,3,-	u
2	K VI	M3,2,1 P.M.4,3	x	2	K VI	M3,2,1 P.M.4,3,-	y
3	U7	M3,2,1 P.M.4,3	w	3	U VII	M1 m3,2,1	g
4	K VI N	M3,2,1 P.M. 4--	v	4	K VI	M2,1 P.M.4,3,2	n
5	K VI	M3,2,1 P.M.4--	u	5	P3	P.M.4?3?	x?
6	O3	M1 m3,2,1	h	6	P/DZ7	P.M.4,3 probably	w
7	U7	M3,2,1 P.M.---	z	7	H3	P.M.3 probably	w or x
8	U/P3	M2,1 P.M.4,3.	w or x	8	K VI N	M3	u
9	U/O/JW3	M2,1 m$\overset{\uparrow}{3}$,$\overset{\uparrow}{2}$,$\overset{\uparrow}{1}$	r	9	H7	M1 P.M.4,3	s
10	I3	M1 m3,$\overset{\uparrow}{2}$ -	j-r	10	U7	M3,2 (damaged)	y
11	U7	m$\overset{\uparrow}{3}$,$\overset{\uparrow}{2}$,$\overset{\uparrow}{1}$	r	11	U/P3	m3,2	r?
12	P3	M3,2	y	12	T^{111}_{3}	m2,1	r?
13	II	M2,1 m3,2	o	13	I3	M1 m3	f
14	O12	M3,2,1	w	14	II	M3,2,(1 P.M.4 broken)	z
15	N12	M3,2,1 P.M.4,3,2	w	15	II	M3,2,1 ---	v
16	O28	M2,1 m$\overset{\uparrow}{3}$,$\overset{\uparrow}{2}$	r	16	O12	M1 m3,2,1	(j-o)
17	O12	M1?, P.M.4,3,-	v or w	17	II	M1 m3,$\overset{\uparrow}{2}$,1	r-s
18	-	M1 P.M.4,3	w	18	$T^{1}12$	M3,2,1	y
19	II	M3,2	x	19	T12	P.M.3,-	x?
20	O12	M1 m$\overset{\uparrow}{3}$,$\overset{\uparrow}{2}$	r				
21	K18	m$\overset{\uparrow}{3}$,$\overset{\uparrow}{2}$	r				

* Stage assigned according to Ewebank, Phillipson, Whitehouse and Higgs classification (1964).

m = Deciduous Molar. M = Permanent Molar. P = Premolar

\- = socket ↑ = being shed

Catcote - Ovis aries

Scapula

Left					Right				
No.	Site No.	Length	Min. width neck	Max. diam. glenoid	No.	Site No.	Length	Min. width neck	Max. diam. glenoid
1	U7	12.00 app.	1.8	2.1app.	1	O28	-	1.7	2.1
2	K VI N	-	1.9	2.2	2	-	-	1.7	2.0
3	K18	-	1.9	2.5	3	K VI N	14.4	1.6	2.2
4	-	-	1.5	2.1app.	4	K VI	-	1.7	2.3 app.
5	U VII	-	1.4	2.0app.	5	O12	-	1.7app.	2.4
6	H16	-	1.7app	2.2	6	II	-	-	-
7	K VI	-	1.9	2.3	7	N12	-	1.7	-
8	I13	-	1.6	2.4	8	U/P3	-	1.5	-
9	K VI	-	1.7	2.5	9	K VI	-	1.8+	-
10	H3	-	1.8	-					
11	U3	-	-	-					
12	O28	-	-	-					
13	K VI	-	-	-					
14	O12	-	-	-					
15	U/K3	-	-	-					
16	II	-	1.8	-					

+ = eroded

app. = approximate

Catcote - *Ovis aries*

Humerus

Remains of fifteen left and fifteen right bones were identified. Few were entire but all displayed distal articulatory surfaces or were distal portions of fractured shaft. No two specimens belonged to the same bone. Also catalogued are six fragments of shaft assigned neither to right or left sides.

Measurements taken were (a) length, (b) maximum distal width between medial and lateral condyles.

Great difficulty in distinguishing between this bone of *Ovis* and *Sus* was experienced.

The use of a question mark in front of the serial number indicates author's doubt.

Catcote - Ovis aries

Humerus

Left				Right			
No.	Site No.	Length	Distal Width	No.	Site No.	Length	Distal Width
1	K VI	12.3	2.6	1	K18	-	2.6
2	K VI	-	2.5 app.	2	Q3	-	2.5+
?3	R/K3	-	-	3	K VI N	-	2.7app.
4	K VI	-	2.8	4	K VI	-	2.6app.
5	N12	-	2.5 app.	5	N12	-	2.6
6	H15/16	-	-	6	K VI	-	2.6
7	U/J?3	-	-	7	N12	-	2.5
*8	II	-	2.6	8	II	-	2.6
?9	N12	-	-	9	U/7	-	2.5
?10	N12	-	-	10	I/HS13	-	2.8
?11	K VI N	-	-	11	Q3	-	2.6
?12	+	-	-	12	K VI	(Proximal portion)	
?13	II	-	-	?13	O12	-	-
?14	I3	-	-	?14	H13	-	-
?15	-	-	-	?15	U24	-	-

* = incinerated. + = eroded. app. = approximate

Not assigned to either left or right.

? XI

? X2

? X3

Eroded portions of shafts.

?X4

?X5

?X6

Catcote - Ovis aries

Radius

Nine fragments of the left bone and eighteen of the right are recorded.

In only three cases is the distal articulation present. It is possible that two specimens come from the same bone.

No.	Site No.	Length	Prox. width	Distal width	No.	Site No.	Length	Prox. width	Distal width
		Left					Right		
1	U7	-	shaft only	-	1	KVI	-	2.5	-
2	H3	-	shaft only	-	2	KVI	14.3	2.6	2.2
3	K VI	13.8	2.6	2.1	3	K VI N	-	2.7	-
4	K VI N	-	2.7	-	4	U/03	-	-	2.3
5	I/Fp3	-	shaft only	-	5	U3	-	2.5+	-
6	N3	-	2.4	-	6	03	-	2.5	-
7	II	-	shaft only	-	7	I13	-	2.6	-
8	U3	-	shaft only	-	8	$T^{111}3$	-	2.4	-
9	U3	-	shaft only	-	9	$T^{11}3/12$	-	2.7	-
					10	U3	-	2.6	-
					11	$T^{1}12$	shaft fragments only		
					12	U7	shaft fragments only		
					13	I3	shaft fragments only		
					14	U7	shaft fragments only		
					15	U7	shaft fragments only		
					16	II	shaft fragments only		
					17	-	* Proximal end - eroded		
					18	I3	* distal articulation 2.3		

+ = eroded. * = incinerated or burnt so as to be brittle.

Catcòte - Ovis aries

Ulna

Eleven left specimens and four right are catalogued. No measurement was taken because the shaft is often broken and the bone eroded.

Left

No.	Site No.
1	(II)
2	(U/P3)
3	(II)
4	(UT)
5	(K VI N)
6	(K VI)
7	(H13)
8	(U7)
9	(II)
10	(K VI)
?11	(H13)

Right

No.	Site No.
1	(II)
2	(U7)
3	(K VI)
4	(K VI N)

Catcote - *Ovis aries*

Femur

Difficulty was encountered in distinguishing between eroded specimens of *Ovis* and *Sus*.

Left				Right			
No.	Site No.	Length	Distal width	No.	Site No.	Length	Distal width
1	K VI	15.5 app.	-	1	K VI	-	3.6 app.
2	T^{11}3/12	16.3	3.4	2	K VI	-	-
3	K VI	shaft and proximal end		3	K VI	-	-
4	K VI N	shaft and proximal end		4	028	-	-
				5	H15/16	-	-
				6	H15/16	-	-
				7	K VI	-	-
				8	028	-	-
				9	K VI	-	-

app. = approximate

Catcote - *Ovis aries*

Tibia

Only one complete specimen was recovered. In all fifteen fragments of left specimens and sixteen of right were identified.

Left				Right			
No.	Site No.	Length	Max.dist.width	No.	Site No.	Length	Max.dist.width
1	K VI	-	2.2	1	K VI	-	2.0 app.
2	K VI	-	-	2	K VI N	-	-
3	U/O3	-	-	3	K VI	-	-
4	K VI N	-	2.3	4	B3	-	-
5	K VI N	-	2.1	5	Q28	-	-
6	I3	-	2.3 app.	6	T^{11}3/12	-	-
7	R6	-	2.3	7	Uqr3	-	-
8	O12	-	2.2	8	U7	-	-
9	P/xj3	-	2.2	9	O12	-	-
10	O28	-	-	10	S/t3	-	-
11	K VI N	-	-	11	U VII	-	2.4
12	E3	-	-	12	K VI N	-	2.4
13	U3	-	-	13	T^{11}3/12	-	2.0
14	DZ7	-	-	14	K VI	-	-
15	JI	-	-	15	O28	-	-
				16	P3	-	-
				17	P3	-	2.3
				18	K VI	-	-

app. = approximate

Catcote - Ovis aries

Os Coxae

Fragments displaying acetabulum cavity.

Left No.	Left Site No.	Right No.	Right Site No.
1	II	1	N13
2	N12	2	H3
3	-	3	R3
4	U/qr3	4	KVI
5	HK14	?5	J3
6	K VI		
?7	O3		

No measurements taken because of erosion.

Catcote - Ovis aries

Metapodials

(a) Metacarpals

Left					Right				
No.	Site No.	Length	Distal	Proximal	No.	Site No.	Length	Distal	Proximal
1	KVI	13.4	2.4	2.1+	1	KVIN	13.4	2.4	2.1
2	U7	11.8app	-	-	2	P/DZ(7)	-	-	2.1+
3	KVI	12.1	2.1+	1.9+	3	II	11.1+	2.1	-
4	$T^{11}3/12$	-	-	2.0	4	II	-	-	-
5	012	11.8app	-	2.1+					
6	KVI	-	-	1.9+					

Not assigned to either right or left.

No.	Site No.	Length	Distal	Proximal
1	KVI	-	2.2	1.8 app.
2	012	-	-	-
3	I/t3	-	-	-
4	KVI	-	2.3	-
5	I/Gq(3)	-	-	-
6	KVI	-	2.3	-

+ = Eroded

app. = approximately

Catcote - Ovis aries

Metapodials

(b) Metatarsals

No.	Site No.	Length	Distal	Proximal	No.	Site No.	Length	Distal	Proximal
		Left					Right		
1	KVI	14.5	2.3	1.9	1	KVI	13.1	2.1	1.8
2	II	12.2	2.0	1.7	2	KVI	12.9+	2.0	-
3	O(3)	13.1	2.1	1.7	3	U7	-	-	1.7
4	II	-	-	1.9	4	-	12.4	2.1	1.8
5	Uqr3	-	-	1.9	5	KVI	-	-	1.8
					6	KVI	-	-	2.1
					7	U/P3	-	-	1.8
					8	II	-	-	1.8

Not assigned to either left or right.

No.	Site No.	Length	Distal	Proximal
1	N12	-	2.1	-
2	UVII	-	-	-
3	I/Fp3	-	-	-
4	H3	-	-	-
5	O12	-	-	-
6	I13?	-	-	-
7	P3	-	-	-
8	D12	-	-	-
9	KVIN	-	2.3	-
10	KVI	-	2.0+	-
11	I(19)?	-	2.0	-

+ = eroded.

Catcote - Ovis aries

Astragalus

Six left and six right specimens were identified. Maximum lengths and maximum breadths are recorded.

One specimen is not assigned to either right or left and is only tentatively diagnosed as belonging to *Ovis*.

Left				Right			
No.	Site No.	Length	Breadth	No.	Site No.	Length	Breadth
1	012	-	-	1	B3	3.4app.	-
2	03	3.6	-	2	KVI	2.8	1.8
3	KVI	2.7	1.8	3	KVI	2.4	1.8
4	-	2.4+	1.6app.	4	N12	2.3	1.6
5	KVI	2.3+	1.7app.	5	KVI	2.4	1.7
6	012	2.5	1.7	6	P/xj3	2.4+	1.6+

+ = eroded app. = approximate

?*Ovis*

X1 U/03 - No measurement possible.

Catcote - Ovis aries

Calcaneum

Eleven left specimens, six right were identified.

No measurements taken.

Left No.	Left Site No.	Right No.	Right Site No.
1	H3	1	B3
2	-	2	K VI
3	P/K3	3	K VI
4	UVII	4	U3
5	VI N	5	II
6	-	6	H17
7	UVII		
8	J13		
9	N12		
10	N12		
11	K VI		

Catcote - Sus scrofa

Mandibles

Left No.	Left Site No.	Left Dentition	Right No.	Right Site No.	Right Dentition
1	(H16)	M2,1 P.M.4	1	U7	M3,2 d.m.3,2,1
2	(II)	d.m.4,3,2	2	T^{11}3/12	M2,1
3	(N13)	M2,1 P.M.4,3 & root	3	U/K3	M3
4	(O12)	M2,1	4	K18	M2,1 P.M.4,3
5	(H3)	C	5	H2	M3. roots of M2
6	(U/P3)	C broken, P.M.3	?6	O12	? M2
7	(HIII)	C P.M.2	7	I3	M2,1
8	(II)	M2?	8	J13?	M2,1
			?9	U7	M2, ? M

Catcote - Susscrofa

Left No.	Left Site No.	Left Dentition	Right No.	Right Site No.	Right Dentition
1	O12	M2,1 P.M.4?	1*	J/P3	P.M.4,3,2
2	H3	M3,2,1	2*	J/P3	M2,1
3	P/U3	P.M.4,3,2	3	U/E13	M2,1 P.M.4
4	P/9	M2,1 P.M.4,3	4	I/t3	M2,1 P.M.4
5	II	M2,1 P.M.4			
6	I13	C			
7	I/t2	P.M.4			

* Apparently from same maxilla although fracture lines are not an exact fit.

I = Incisor. C. = Canine. P = Premolar. M = Molar.

dm = Deciduous molar - see Volume I, p27 for discussion.

Catcote - Sus scrofa

Scapula

No.	Site No.	Max.diam glenoid	Min.width neck	No.	Site No.	Max.diam. glenoid	Min.width neck
1	028	-	2.1	1	J3	2.9 app.	2.3
2	J3	-	2.1				
3	P7/XV	-	1.9				

Catcote - Sus scrofa

Humerus

Three possible specimens are catalogued. Erosion made certain identification difficult.

Left			Right		
No.	Site No.	Distal width	No.	Site No.	Distal width
?1	I3	2.9 app.	?1	H3/17	2.9 app.
			?2	I/t3	Shaft only

Catcote - Sus scrofa

Femur

Left	Right		
	No.	Site No.	Distal width
NIL	1	$T^1 12$	3.9

Catcote - Sus scrofa

Tibia

Left			Right
No.	Site No.	Distal width	
?1	U/P3	2.6	NIL

Catcote - Sus scrofa

Metapodials

Not assigned to front or hind limb. Nor assigned to left or right.

No measurements taken due to butchering and erosion.

No.	Site No.
1	I/Fp3
2	II
3	H3
4	T/Gq(3)
5	U7
6	B3
7	I?3
8	O12

Catcote - Sus scrofa

Os Coxae

Fragments displaying acetabulum cavity.

Left		Right	
No.	Site No.	No.	Site No.
1	J/P3	1	N12

Catcote - Equus caballus

The remains of one large horse, found in a rectangular pit, were thought by the excavator to be intrusive and are thought by the present author to be probably modern. They are not described here.

Skulls

No.	Site No.	Length occipital condyle	Width condyle	Crest to basion
1	U7	2.8	7.3	5.0

Catcote - Equus caballus

Axis vertebra

No.	Site No.	Length	Breadth	
1	R25	13.0 app.	-	In articulation with three other vertebrae.

Catcote - Equus caballus

Scapula

Left

No.	Site No.	Length	Min.width neck	Max.glenoid diameter
1	H13	-	5.8	4.7 app.

Right

No.	Site No.	Length	Min.width neck	Max.glenoid diameter
1	N12	-	5.3	5.0+
2	N12	-	5.4	5.2

+ = eroded

Catcote - Equus caballus

Humerus

One left specimen only.

1. (E3) Distal width = 5.4 approx.

Catcote - Equus caballus

Radius

Left					Right				
No.	Site No.	Length	Prox. width	Dist. width	No.	Site No.	Length	Prox. width	Dist. width
1	012	29.8	6.6	5.6	1	P/xv7	-	5.9app.	-
					2	P/DZ7	-	6.8app.	-
					3	U/P3	-	-	-

Catcote - Equus caballus

Tibia

No entire specimens, distal ends only.

Left			Right		
No.	Site No.	Distal width	No.	Site No.	Distal width
1	II	5.8	1	N13	5.4
			2	N13	-

Catcote - Equus caballus

Metapodials

(a) Metacarpal

One broken right specimen.

1 (H3) Proximal width = 4.5 approx.

(b) Metatarsal

Left					Right				
No.	Site No.	Length	Dist width	Prox width	No.	Site No.	Length	Dist. width	Prox. width
1	J13	24.0	4.1	4.3	1	H13	-	-	3.9

(c) Metapodials

Not classified.

No.	Site No.	
1	H15/16	No measurement.
2	K3	Distal width = 4.7
3	H3	Distal width = 4.0 approx.
4	Q3	Distal width = 4.2 approx.
5	N13	No measurement.

Catcote - Equus caballus

Astragalus

Three specimens were identified. Maximum lengths and widths are recorded.

Left				Right			
No.	Site No.	Length	Width	No.	Site No.	Length	Width
1	B3	-	6.3+	1	B3	6.3	6.3+
2	J7	4.9	5.4				

+ = eroded.

Catcote - Equus caballus

Calcaneum

One certain and one possible specimens are reported. No measurement taken due to erosion.

Left		Right	
1	(B3)	1?	P/Z7

Catcote - Equus caballus

Phalanges I

Not assigned to either right or left.

No.	Site No.	Length	Width
1	H23	7.9	5.2
2	N12	7.3	4.9
3	L6	7.1	4.2
4	N13	7.3app.	4.5+
5	H2	7.4+	4.9+

app. = approximate. + = eroded.

Phalanges II

Not assigned to either right or left.

No.	Site No.	Length	Width
1	Q3	4.3	4.9
2	K3	-	-
3	H15	-	4.5

Phalanges III

1 H17

2 U/P3

Catcote - Cervus elaphus

Metapodials

One broken shaft.

Catcote - Canis familiaris

Scapula

One possible fragment of shoulder blade is reported on.

No.	Site No.	Diam. glenoid	Width neck
1	N13	-	2.2

Maxilla

Left	Right		
	No.	Site No.	Dentition
NIL	1	H3	M2,1 P.M.4
	2	N12	M2,1 P.M.4

Mandibles

Left			Right		
No.	Site No.	Dentition	No.	Site No.	Dentition
*1	H17	M2,1 P.M.4,3	*1	H17	M2M1 P.M.3,2,1 C., I3,2.

* Two rami fit together.

Catcote - Vulpes vulpes

Ramus

Left

No.	Site No.	Dentition
1	N12	M2,1 P.M.4,3

Catcote - Pisces

One eroded vertebra

Catcote - Aves

Seven eroded bones five humerus, two radius and ulna fused and three possible fragments of tibio-tarsus.

Catcote - Mollusca

Four specimens of common winkle, Littorina littorea plus the eroded columella of another specimen.

Catcote - Human remains

Human remains were discovered. The description of them is by Miss R. Powers of the Department of Anthropology, British Museum. - "The bones are those of the right arm of a young individual, and consist of humerus, radius and ulna, and the shaft of a metacarpal. The epiphyses are open, and that of the humerus head is the only one preserved. Two teeth, an upper right molar and premolar, are also from the right side of a young individual. The state of wear and root formation of the teeth agree with the size and development of the bones to give an age of about twelve to fourteen years. The sex is uncertain but most likely male."

Chapter 4

BENWELL FORT — Contents of Well

Bos taurus - "Benwell Type"

Maxilla

	Left	Right
1	M2,1 P.M.3	NIL

Mandible

	Left	Right
1	M2 and several sockets.	NIL

Atlas vertebrae

	Length	Width
1	9.1 c.m.	-
2	-	- (eroded but smaller than specimens)

Other vertebrae

Seven eroded specimens - probably *Bos*.

Scapula

One left and two right specimens are catalogued.

No measurements possible due to erosion.

Humerus

One left specimen. Minimum distal width = 7.6 c.m.

Os Coxae

One fragment of left side displaying acetabulum.

Calcaneum

Two left specimens.

1 Length = 10.4 c.m. Breadth = 4.4 c.m.

2 No measurement possible.

Tarsal/Carpal

Fused masses - four retrieved.

Bos taurus - "Benwell Type"

Phalanges I

No.	Length	Breadth
1	-	2.3 c.m.
2	-	2.2 c.m.

Phalanges II

No.	Length	Breadth
1	3.5 c.m.	2.3 c.m.

Two rib fragments.

Benwell - *Ovis aries*

Skull

None.

Vertebrae

Other than atlas or axis.

Nine tentatively assigned to *Ovis*.

Mandible

	Left	Right
1	M2,1 P.M.3,2.	NIL

Humerus

Left		Right	
No.	Distal width (Minimum)	No.	Distal width (Minimum)
1	2.8 c.m.	1	2.9 c.m.
		2	3.3 c.m.
		3	3.1 c.m.
		4	2.4 c.m.

Metatarsal

Left		Right
No.	Proximal width	
1	2.6 c.m.	

Calcaneum

One right specimen. Length = 5.1 c.m.

Ribs

Four recovered and assigned to *Ovis*

Benwell - Sus scrofa

Mandible

One right specimen - dentition = M3,2,1

Benwell - Cervus elaphus

Twenty-five fragments of antler. The points of several tines are included. Some specimens are much more massive than their present day counterparts. Only one specimen bears fragments of skull.

Benwell - Canis familiaris?

Canid Mandibles

Left

1 M2,1 P.M.4,3,2,1

2 M2,1 P.M.-,3,2.

Benwell

Other bones and antlers

Also present are thirty-one fragments of skull (not assigned to species) and fifty-five splinters or fragments of antlers and long bones respectively. The antler fragments are much more massive in diameter than those specimens displayed in the Hancock Museum, Newcastle. Many of the antlers have been sawn through.

One unidentified fragment of Os Coxae displaying left acetabulum is believed to be from a large dog. Absence of a range of comparative material makes diagnosis uncertain.

CHAPTER 5

TYNEMOUTH PRIORY - 1966

Ox - Bos taurus (Tynemouth Type)

(a) Minimum number of animals is two, three or four based on horn cores, depending on assignation of these to left or right.

Horn Cores

No.	Site No.	Right or Left	Greatest diam at base	Least diam. at base	Circumference at base	Length of outer curvature
1	T/63/92	L	5.2	4.1	15.0	-
2	T/78	?L	-	-	> 20	-
3	T/63/?4	?L	5.3	3.8	>16	15.5
4	T/63/64A	L	-	-	-	-

Mandibles

Left

No.	Site No.	Dentition
1	T/63/10	M2,1 d.m.3,2,1

Vertebral column

Medial: sacral crest of several fused sacral vertebrae T/21 or T/28

Single teeth

Two selenodont molar like teeth assigned to Ox in view of known species present.

T/63/47A
T/63/47A

Tynemouth - Bos taurus (Tynemouth Type)

Metacarpal

Proximal end only.

Left	Right		
	No.	Site No.	
NIL	1	T/55	Proximal width = 5.4 c.m.

Tibia

Left

No.	Site No.	Distal width
1	T/63/64A	5.2 c.m.

Carpals

Fused mass. (Cuneiform, unciform, lunate, scaphoid, magnum)

Left			Right
No.	Site No.		
1	T/63/10		NIL
2	T/63/69	(eroded)	

Phalanges

1st Phalanx.

One only. Length = 5.9 c.m. T/63/59

Tynemouth - *Ovis aries*

(b) Minimum number of animals equals two. In the absence of any evidence of goat (*Capra*) remains it is assumed that the remains belonged to sheep.

Horn cores

1+ T/74

+ = eroded.

Mandibles

Left

1 T/223 Assigned to stage "f", therefore, three months old (Ewbank, Phillipson, Whitehouse, Higgs 1964)

2 T/63/31 Fragments.

Scapula

Left

1 T/63/82. Neck eroded+

Humerus

Fragment

Right

1+ T/74

(T/74) Also one distal condyle with distal width of 2.7 c.m.

+ = eroded.

Radius

Distal ends missing.

Left	Right
NIL	1+ T/74

Tynemouth - *Ovis aries*

Ulna

Measurement taken is (U & Ll) (Brothwell, D.R. 1963)

Leff

1 T/223 10.9 c.m.

Metacarpal

Left

No.	Site No.	Length	Proximal width	Distal width
1	T/63/2	12.3 c.m.	2.3 c.m.	2.4 c.m.
2	T/63/20	-	-	2.4 c.m.

Tibia

Left

No.	Site No.	Dist.width
1	T/63/20	2.4 c.m.
2*	T/63/20	

Right

No.	Site No.	Dist.width
1	T/74	Shaft only

Astragalus

Left

No.	Site No.	Length
1	T/63/2	2.9 c.m.

Right

No.	Site No.	Length
1	T/63/20	2.7 c.m.
2	T/63/2	2.7 c.m.

Tynemouth Priory - Ovis aries

Phalanges

No.	Site No.	Sagittal Length
1	T/63/49	3.4 c.m.
2	T/63/105	3.6 c.m.

Os Coxae

T/63/49 Left acetabulum

Thoracic vertebrae

Tentatively assigned to sheep.

1 T.223

2 T.21

3 T.22?

Tynemouth Priory - *Sus scrofa*

(c) Minimum number of animals equals four.

Mandibles

Left			Right		
No.	Site No.	Dentition	No.	Site No.	Dentition
1	T/21	M3,2,1 P.M.4,3	1	T/63/2	M1, P.M.4, ~~[illegible]~~ d.m.3,2,-,C.
2	T/21	M3,2,1 P.M.4,3			
3	T/21	M3,2,- P.M.4			
4	T/21	M3,2,1 P.M.4,3			

Maxilla

Left			Right
No.	Site No.	Dentition	
1	T/255	Fragment	NIL

Single teeth

No.	Site No.	Type
2	(T223, TY63/10)	Lower Incisors
2	(T/63/2, T/63/49)	Upper Incisors
1	(T/63/31)	Canine

Metatarsal

No.	Site No.	Length
1	T/255	8.5 c.m. (excluding plantar projection)

Vertebrae

Three

Atlas

No.	Site No.
1	(T/63/2) - fragment only

Cervical

No.	Site No.
1	T/223
2	T/63/20

Tynemouth Priory - *Sus scrofa*

Phalanges

No.	Site No.	Sagittal Length
1	T/63/105	1.8 c.m.
2	T/63/2	3.3 c.m.

Tynemouth Priory - Aves

(d) Minimum numberof animals equals two. Lengths where given are maximum lengths.

Fore Limbs

Humerus

Left	Right		
NIL	1	T/63/17	Length = 6.7 c.m.
	2	T/255	Incomplete but exceeds 15 c.m.

Ulna

Left			Right		
1	T/63/105	Length = 10.7 c.m.*	1	T/223	Length = 13.2 c.m.*

II Metacarpal Bone

1 T/63/90 Fragment only

2 T/78 Fragment only

Hind Limb

Femur

Left			Right		
1	T/63/20	Incomplete proximal end only	1	T.223	Length = 8.3 c.m.

Tibio-tarsus

No.	Site No.	Length	No.	Site No.	
1	T/223	13.6 c.m.	1	T/63/20	Incomplete, distal end only.

* Identified by G.S.Cowles, ExperimentalmOfficer, Bird Section, British Museum, and thought to be from domestic fowl (Gallus gallus dom.)

Tynemouth Priory - Aves

Tarsometatarsus

Left	Right
NIL	1 T/63/20 Length = 8.0 c.m.

Sacrum

T/223 Fragment

Tracheal bony rings

Ten of these were found, each ring being oval in shape, forming a series in descending order of size.

Maximum diameter = 12.8 m.m.

All are T/63/2.

CHAPTER 6

DISCUSSION AND CONCLUSIONS

From excavation so far, the site at Catcote seems to be dominantly a village of the Roman period, although it may have started before this. It is clearly a civilian settlement comparable with other Iron Age and Native Roman Period sites in Britain. It seemed worthwhile, therefore, to compare the animal remains from Catcote with those from the Roman garrison site at Corstopitum. The first comparison is of the ages of the animals when slaughtered.

(a) AGES OF ANIMALS ON SLAUGHTER

1 Sheep

The mandibles were allocated to eruption stages a - z in accordance with the method described by Ewbank, J.M., Phillipson, D.W., Whitehouse, R.D. and Higgs, E.S. (1964). They were then assigned to the appropriate three month age group ranging from birth to two years. Assuming that the Iron Age lambing season corresponded in time with the present one, and that it took place in February and March, and also that the rate of development of sheep varies little from Catcote to Corstopitum, a comparison of the percentages of sheep in each age group may be made. However, the rate of development of sheep may vary from site to site because of differences in breed and in the levels of nutritional status of the sites due to soil, climate and altitude. In these cases comparisons cannot be exact.

In the report on sheep mandibles from Barley (Ewbank, J.M., Phillipson, D.W., Whitehouse, R.D., Higgs, E.S., 1964) have suggested that it may be impossible to draw valid conclusions from samples of less than one hundred mandibles. The distribution of ages of mandibles on death is as follows.

Corstopitum

Sheep mandibles - Twenty-one specimens

Lambing in February		Group		Lambing in March	
Percentage	Number			Number	Percentage
0	0	I	Feb. - March March - April April - May	I 0	0
0	0	II	May - June June - July July - Aug.	II 0	0
0	0	III	Aug - Sept Sept - Oct Oct - Nov	III 0	0
0	0	IV	Nov - Dec Dec - Jan Jan - Feb	IV 0	0
4.8%	1	V	Feb - March March - April April - May	V 1	4.8%
42.9%	9	VI	May - June June - July July - Aug	VI 9	42.9%
4.8%	1	VII	Aug - Sept Sept - Oct Oct - Nov	VII 1	4.8%
14.3%	3	VIII	Nov - Dec Dec - Jan Jan - Feb	VIII 3	14.3%

Seven specimens were older than two years

(33.3%)

Catcote

Sheep mandibles - Forty specimens

Lambing in February					Lambing in March	
Percentage	Number	Group		Group	Number	Percentage
2.5%	1	I	Feb - March Mar - April Apr. - May	I	1	2.5%
5.0%	2	II	May - June June - July July - Aug	II	2	5.0%
0.0%	0	III	Aug - Sept Sept - Oct Oct - Nov	III	0	0.0%
0.0%	0	IV	Nov - Dec Dec - Jan Jan - Feb	IV	0	0.0%
7.5%	3	V	Feb - March Mar - April Apr - May	V	3	7.5%
25.5%	10	VI	May - June June - July July - Aug	VI	10	25%
7.5%	3	VII	Aug - Sept Sept - Oct Oct - Nov	VII	3	7.5%
20.0%	8	VIII	Nov - Dec Dec - Jan Jan - Feb	VIII	8	20.0%

Thirteen specimens were older than two years

32.5%

At both sites only a very small percentage of sheep died or were killed during the first year of life; 0% at Catcote and 7.5% at Corstopitum. It could be argued from this that the inhabitants had little preference for lamb but it is more likely that under the comparatively rigorous conditions obtaining at both sites they were unlikely to have produced fat lamb within six months of birth on spring and early summer grazing.

The high percentage in group VIII for each site may be due to early winter killing of animals brought in from the summer grazing. Such summer grazing, particularly in the case of Corstopitum, may have been on upland pasture and it would have been logical to have brought the sheep back from such pasture before the full rigours of winter. It is interesting to note that about one third of all sheep survived into their third year of life at Catcote (32.5%), Corstopitum (33.2%) and Barley (35%) (Higgs 1966). There is no evidence from the two Northern sites considered here that sheep were being kept to an advanced age. Watson and More (1962) have pointed out that under comparatively rigorous conditions the death rate among ewes tends to rise after the age of five years. It seems likely, therefore, that the Catcote and Corstopitum sheep were lambing in the third year and were dying or were culled in subsequent years before they became aged, flocks, therefore, being kept at optimum production.

II. Cattle

On the basis that the third permanent molar erupts between two and two and a half years of age (Sisson, S. 1910), and assuming the same eruption times for earlier cattle, thirty-one of the forty-two cattle mandible fragments retrieved from Corstopitum were from animals at least two to two and a half years old. Three quarters of the animals had already survived two winters.

At Catcote only five out of twenty-two mandible fragments possessed the third permanent molar, but on this site the mandibles were much more fragmentary. Although we do not know at what age before two and a half years they were dying or being killed, there appears to be a high percentage of animals not reaching the optimum age of meat or calf production at Catcote. Our knowledge of this herd is incomplete and this may not have been a self contained herd. The small percentage of old animals may represent the breeding stock from which were derived younger animals for slaughter locally, or to supply a market at some distance away.

III. Horse

At Corstopitum all six maxillae fragments displayed either the first pre molar and/or a Canine. On the basis of tooth eruption in their modern counterparts this gives them a minimum age at death of five years (Sisson, S. 1910).

At Catcote there were no horse teeth associated with bone except for the almost complete skeleton of a large draught horse probably recent, and mentioned earlier in this thesis. The data from this horse are not included in this report.

IV Pig

In modern pig the time of eruption of the third permanent molar is about from eighteen to twenty months after birth. (Sisson, S. 1910). It is assumed that eruption times have remained constant it appears, as at Windmill Hill (Jope, M. & Grigson, C. 1965), that there was no preponderance of young animals at Corstopitum. At this site six out of seven maxillae fragments displayed the third permanent molar as did seven out of seventeen mandible fragments. Some of the fragments may lack the third permanent molar only because they are incomplete and not because the tooth had not erupted by the time of death. On the other hand, at Catcote, there is some evidence of younger animals being killed than at Corstopitum.

Of the Catcote material there were seventeen mandible fragments, only three of which display the third permanent molar, and eleven maxillae fragments, only one of which bears this tooth.

At neither site is there any evidence of old animals such as may have been expected from a boar kept for breeding purposes, nor were there any remains obviously belonging to wild pig.

(b) RELATIVE NUMBERS OF SPECIES AS A GUIDE TO THE ECONOMY OF THE SITES

A comparison of the relative abundance of some of the food forming species may shed some light on the economy of ancient sites. It may reflect the extent to which certain animals were hunted or reared. For the following reasons comparison cannot be exact:

(a) excavations at several sites are not complete, e.g. Catcote and Corstopitum.

(b) Some reports include all identified fragments in assessing the relative abundance of species so that the proximal and distal fragments of the same bone may count as two (Ryder, M.L., 1961). The author felt obliged in the case of Corstopitum and Catcote to follow the example set by Meek and Gray (1911) and count only entire bones and fragments displaying a distal articulatory process. Chaplin, R.E. and Atkinson, J. (1966) in their report on the Animal Bones from The Roman Villa at Twyford have maintained that comparisons of the relative abundance of different species can only realistically be achieved by comparing the minimum numbers of each species. The minimum numbers of the various food species found at Corstopitum, Catcote and Tynemouth are included in this thesis. However the comparison has been made on totals of fragments identified, since minimum numbers have not been published for most sites. In many cases only descriptive comments have been published and there are no metrical data. The species are, therefore, listed in order of abundance. In some cases a significant phrase or adjective is quoted from the text so that a better idea of the frequencies of the species is given. Where it is not possible to judge which species was most abundant the various species are placed in brackets to signify this uncertainty.

(c) The data concerning bones from Tynemouth are only from the most recent excavation.

(d) The data from Windmill Hill (Jope, M. 1965) concerning food animals does not include red deer. Red, and other, deer are included for those sites for which data are available.

(e) The data for Puddlehill have been recalculated to include only ox, pig and sheep. Red and roe deer have been excluded as they were represented only by shed antlers.

(f) Not all reports on animal bones include data about horse remains. Opinions vary as to the extent to which ancient peoples ate horse. Despite the lack of any evidence of cracking of horse bones for marrow at either Catcote or Corstopitum, the bones of horses have been included in the calculations to arrive at frequencies of each species.

(g) The data for Les Camps Des Matignons (Poulain-Josien, T., 1966) have been recalculated so that the so called Bos taurus L (boeuf) and Bos primigenius L (Le grand boeuf) are treated together as are roe and red deer. Sheep and goat have been grouped together and the distinction between domestic pig (le porc - Sus domesticus L) and wild pig (le sanglier - Sus scrofa L) has been abandoned for this comparison. This bulking of wild and domestic animals, although useful from the food point of view, cuts across the distinction between hunting and farming.

(h) Data dealing with skeletal remains from several Irish sites are expressed in terms of weight (Roche, G., Stelfox, A.W., in Hencken, H., 1936, 1942, 1950).

(i) Data for the Roman levels at Upton, Gloucestershire, (Yealland, S. and Higgs, E.S., 1966) ~~refers~~ to percentages calculated on numbers of bone fragments counted and ~~does~~ not include loose teeth.

RELATIVE FREQUENCIES OF FOOD FORMING SPECIES AT CERTAIN ANCIENT SITES

Mesolithic sites

Star Carr		Roe & red deer, elk, ox, pig, no sheep

Neolithic sites

Maiden Castle I		Ox, sheep, pig, roe and red deer, horse teeth
Matignons	- Camp 1	Ox 51.7%, sheep 24.1%, pig 18.1%, roe & red deer 6.1%, horse teeth nil.
	Camp 2	Ox 68.1%, sheep 14.6%, pig 14.3%, roe & red deer 3.0%, horse teeth nil.
Puddlehill	- Pit I	Pig 43.2%, sheep 33.8%, ox 23%
	Pit II	Pig 60.0%, ox 40%, sheep nil.
	Pit III	Pig 65.5%, ox 33.3%, sheep 1.2%
Ronaldsway		Ox, sheep, pig
Skara Brae		Ox, sheep, pig rare, red deer
Stonehenge		Ox, red deer, sheep scarce, few pig remains, horse absent.
Thickthorn Down		(Ox), sheep, pig scanty, red & roe deer, horse (R).
Trundle I		Ox, pig, sheep, roe deer, no horse or red deer.
Whitehawk Camp		Ox very abundant, sheep & pig scanty roe and red deer.
Windmill Hill	(a) pre-enclosure	Ox 70.3%, pig 17.2%, sheep 12.5%
	(b) Primary levels	Ox 60%, sheep 24.8%, pig 15.2%
	(c) late Neolithic	Ox 61.2%, pig 24.5%, sheep 14.3%
Woodhenge		Ox, pig, sheep scanty.

Bronze Age Sites

Boscombe Down	Ox, sheep, goat, pig, horse
Castle Hill Newhaven	Ox, sheep, pig, horse, red & roe deer
Jarlshof Sumburgh	Sheep, ox & pony, pig, walrus, whale, no deer.
Lowes Farm Littleport	Report on cattle skeleton only.
Maiden Castle II Bronze levels	Ox
Milden Hall Fell	Ox, sheep, pig, roe & red deer, no horse.
Minnis Bay	Ox, sheep & horse.
Ogbourne West Enc.	Ox, sheep
Overton Hill Avebury	Ox, horse & pig. No sheep.
Ratfyn Amesbury	Ox, pig, bear and deer
Skendlebury Lincs.	Ox, pig & sheep, horse & 3 kinds deer

Iron Age sites

All Cannings Cross	(Ox, sheep), horse, pig, red deer.
Camerton	Ox, sheep, horse, pig (few)
Catcote	Ox 54.6%, sheep 39.6%, pig 9.1%, horse 5.5%, red deer 0.2%
Glastonbury	Sheep & Ox, pig (fairly numerous), horse.
High Field Pit Dwelling	Present - horse, ox, sheep, pig
Little Woodbury	Ox, sheep, horse, pig
Llyn Cerrig Bach Anglesey	Ox, sheep, horse
Lydney I	Ox, pig, rabbit, sheep, fallow deer.

Maiden Castle II	Ox, (horse, sheep, pig)
Staple Howe	Ox, sheep, pig were most abundant, horse.
Trundle II - Iron Age	Ox, sheep, (pig & roe deer), horse.

<u>Roman sites</u>

Balmuildy Fort	Ox, pig, horse
Bar Hill	Ox, sheep, pig, horse, red deer
Caerleon	Ox 51%, pig 23%, deer (?red) 8.0%, horse 5.7%, sheep 4.6%
Caerwent	"numerous" remains of pig, ox, roe deer, sheep, horse & whale
Clausentum	Ox 65%, pig 20.2%, sheep 10.7%, red deer 3.1%, horse 1.0%
Corstopitum	Ox 71%, sheep 14.4%, pig 6.9%, horse 6.6%, deer 1.1%
Colchester	Ox 60.5%, pig 18.7%, sheep 14.6%, horse 6.2%
Eastwood Fawkam	Ox 56%, sheep 27%, horse 13%, pig 4%
Exeter	Ox, sheep, pig, horse. "No deer present"
Hambleden, Bucks	"Horse exceptionally numerous", "Ox very numerous". Sheep & pig.
Highdale Hill	Ox, sheep, horse, pig, deer
Lydney II	Ox, pig, sheep, horse, red deer.
Newstead	Ox, horse, pig, sheep, red & roe deer, elk.
Rothedey	Sheep 42.2%, ox 34.7%, horse 19.1%, pig 3.0%, red & roe deer 1.0%
Segontium	Ox, (pig, sheep, horse), red deer
Silchester	(Ox, sheep, pig "all very numerous"), horse, roe deer

Upton	Sheep 72%, ox 21%, horse 5%, pig 2%
The Rumps *	Sheep 68%, pig 18%, ox 14%
Twyford ″	Sheep 35.8%, ox 26.9%, pig 17.9%, horse 13.5%, red deer 5.9%
Woodcuts	Ox 41.8%, sheep 30.8%, pig 13.5%, horse 10.7%, roe & red deer 3.2%
Woodyates	Ox 37.7%, sheep 33.8%, horse 26.2%, pig 2.1%, roe deer 0.2%

<u>Mediaeval sites</u>

Kirkstall	Ox 90%, sheep 5%, pig 3%, red deer 2%
Pontefract	Sheep 45%, ox 30%, pig 20%, red deer 5%
Tynemouth	Sheep 50%, pig 26.6%, ox 24.4%, deer nil.
Well Street, Coventry *	Ox 72%, sheep 13.3%, pig 10.7%, horse 4.0%
WharramPercy	Sheep 60%, ox 30%, pig 9%, red deer 1.0%
York	Ox 60%, sheep 30%, pig 10.0%, red deer nil

* calculated on the basis of minimum number of animals.

The types of animals at both Catcote and Corstopitum in order of abundance were -

Ox, sheep, pig, horse, red deer.

The frequencies of the animals at Catcote are strikingly akin to the frequencies calculated from Pitt-Rivers' (1888) report on the Romano-British village at Woodcuts.

The relative order of abundance of species at Corstopitum is similar to that calculated for Woodcuts (Pitt-Rivers, M.L., 1888) and to those inferred for Barr Hill (Bryce, T.H., 1906), Exeter (Fraser, F.C., 1952), Segontium (Watson, D.M.S.) and Silchester (Jones, H., 1891), (Newton, E.T., 1904).

It is striking that Corstopitum has the highest percentage of ox bones recorded for any of the Roman sites discussed here.

Proudfoot (1961) has commented on the danger of underestimating the extent to which sheep were kept by considering only the faunal evidence from sites, i.e. the bones found being essentially those of the animals eaten and not those of animals kept to grow wool.x

Yealland, S. and Higgs, E.S. (1966) have very properly shown that these percentage frequency figures may not accurately indicate the amount of meat which each species supplies. Accepting their estimated weights, a sheep weighs 125 lbs., a cow 900 lbs., a horse 800 lbs. and a pig 200 lbs. and making their assumption that all these domestic animals were eaten, the percentages of meat supplied by each species would be

x But they doubtless ate the wool-sheep also! 'Waste not, want not' What became of them otherwise?

as follows -

CORSTOPITUM		CATCOTE	
Ox	88.3%	Ox	78.6%
Sheep	2.5%	Sheep	9.5%
Pig	2.0%	Pig	3.5%
Horse	7.2%	Horse	8.4%

At Catcote and Corstopitum as at Windmill Hill (Jope, M., 1965) domestic animals, especially cattle, play an important part in the economy. The higher percentage of sheep at Tynemouth is similar to those reported at Pontefract (Ryder, M.L., 1961) and Larrybane (Proudfoot,V.B. and Wilson, B.C.S., 1961). The relative scarcity of Red Deer bones has been remarked upon in the description of the Corstopitum material and it may be that other food was more easily procured (compare Roche, G. & Stelfox, A.W. in Hencken, H. 1936). The almost complete absence of bird and fish bones from Catcote and Corstopitum is striking but this may be due to their rapid erosion in soils of this type.

Proudfoot (1961) in commenting on the paucity of fish bones from Irish sites has suggested that it may be misleading for fish bones, like many bird bones, would disintegrate more quickly than animal bones and might also have been eaten by dogs or cats. However none of the bones from Corstopitum or Catcote show signs of gnawing.

(c) TYPES OF CATTLE FOUND ON ANCIENT SITES

In reviewing the evidence of cattle remains from British Archaeological sites, Jewell (1962) has referred to the difficulty in distinguishing the types that are present. The types present are, in Jewell's view, *Bos primigenius*, the wild aurochs, and a number of varieties of

Bos taurus, the domestic ox. Of the latter Jewell discusses the Neolithic Ox which had close affinities with Bos primigenius, and the Celtic Shorthorn, Bos longifrons, notable for its diminutive form. The detailed archaeological reports for Neolithic and Early Bronze Age sites in Britain provide descriptive, if not metrical evidence, of two kinds of ox, one being undoubtedly, the wild aurochs or Bos primigenius, the other, believed by many authors to be a domesticated Neolithic longhorned ox. Trow Smith (1957) recalls Piggott's (1954) contention that there were two types of Bos primigenius in Britain, one smaller than the other and forming a prototype for the Neolithic Ox. Jope (1960) describes remains in Irish Quaternary deposits as belonging to "a breed of Ox other than what has been called Bos primigenius" and compares it to the small types described at Star Carr (Fraser 1954) Juliet Clutton-Brock has similarly described, from an almost certain pre-Neolithic context, the remains of Ox smaller than the usual Bos primigenius (Bellamy et al. 1966 and personal communication). There is therefore some evidence of variation in size of indigenous cattle before the Neolithic period so that it becomes increasingly difficult to determine the course of cattle domestication in Britain. Trow Smith (1957) contends that the two types of Bos primigenius discussed by Pigott, would interbreed from time to time producing a wide range of intermediate types, while Jewell (1962) has speculated that Neolithic Oxen, brought as domestic stock from the continent, could have cross-bred with wild indigenous cattle and that these crosses would have shown hybrid vigour and would have given rise to some of the large remains such as are found at Maiden Castle (details are discussed later). He dismisses the speculation, however, with the conclusion that all the large specimens are probably the remains of wild Bos primigenius. Trow Smith (1957) has revived Pigott's (1954) notion that domestication need not initially have produced animals as docile as our present domestic stock, and suggests that the first Neolithic settlers did not necessarily bring their own domesticated stock with them but that they may have taken the wild auroch calves of Britain and tamed them to their purpose. To avoid the confusion of referring to Bos primigenius (wild aurochs), and to a possible near relative of it, i.e. a domesticated longhorned Neolithic Ox of "primigenius" type, Howard (1962) has revived the nomenclature Bos taurus frontosus, first used by Nilsson in 1849, to describe the Neolithic domestic ox.

Thus according to Miss Howard, there are three types to consider -

(a) Bos taurus primigenius - the wild aurochs or URUS

(b) Bos taurus frontosus - domesticated Neolithic Ox

(c) Bos taurus longifrons - Celtic Shorthorn

Jewell (1962) describes the probable decline in Bos primigenius during the late Neolithic and Early Bronze Age but we know from the work of Higgs and Shawcross (1961) that it persisted until the Early Bronze Age. It was formerly generally agreed that the Celtic Ox, Bos taurus longifrons, did not appear at British sites for some centuries after a form of Neolithic domestic ox, having some of the features of Bos primigenius, was established, i.e. the Bos taurus frontosus of Howard. (See Trow-Smith (1957) and Jewell (1962) for discussion). However, the report on the cattle remains from Neolithic pits at Puddlehill (Field, Mathews and Smith,1964) reporting a small domestic variety of oxen along with a larger creature, possibly a female Bos primigenius, may cause us to revise this opinion. Certainly when discussing continental sites, Zeuner (1963) has recalled the finding by Dottrens (1948) of "longifrons" cattle at the lowermost stratum of the Neolithic site at Saint-Aubin, on Lake Bienne in Switzerland. Jewell (1962) has remarked upon the lack of metrical data about cattle from early sites but the published accounts give an impression of a type of apparently domestic animal, intermediate in stature between the wild aurochs (Bos taurus primigenius) and the later (?) Celtic Shorthorn (Bos taurus longifrons). Of remains at Stonehenge and Maiden Castle (Jackson 1935 and 1943) and at Windmill Hill (Jewell 1962), oxen are claimed to be of a "primigenius" type.

Of the Skara Brae cattle (Watson 1931), Jewell (1962), discounts Watson's claim that they were larger than other Neolithic cattle and presumes them to be of a "primigenius" type. It is interesting to note that Watson felt he was dealing with "only one breed of larger cattle" despite sexual Trimorphism due to alleged castration. Of cattle at Woodhenge (Jackson 1929), we are told "The domestic ox does not conform to Bos longifrons. It is more robust and having a different type of horn. Inhabitants of this site possessed domesticated long horned cattle allied to the Urus but smaller than that species". He claimed that there were dwarf forms of a primigenius race.

Of the Whitehawk Bay cattle, Jackson (1934) states "The Oxen are not Bos longifrons, being more robust with larger horns and a wider skull". While of the Thickthorn Down (Jackson 1936) he says "they are not Celtic Shorthorn but rather animals with long robust horns". At

Trundle (Watson 1928 and 1930) the remains are described as being from a small ox with powerful horns.

The case appears to be made that there was, on Neolithic sites, in addition to the wild aurochs, a domestic type of oxen of robust proportions. The specialist reports of material from Bronze Age levels contain similar descriptions. Jackson (1931) said of cattle remains found at Overton Hill "all the others are larger and more robust and agree closely with the remains of the large ox at Woodhenge. They indicate a bigger ox than the typical Bos longifrons of early Iron Age sites". At Jarlshof Sumburgh, Shetland, Platt (1933) described remains of Shetland Ox and the presence of a larger ox. Cattle bones from Castle Hill (Jackson 1934) are said to be more robust than those attributed to Bos longifrons, while a horn core from Boscombe Down is said by the same author (Jackson 1936) to be "larger and much coarser, and fluted and belonging to another type". Of a horn core from Ratfyn, Jackson (1935) says "It is Bos primigenius kind but smaller than the true Urus". Of the bones, he says "It is clear that the ox bones do not belong to the small Celtic ox of the old Iron Age sites". He claims that "The oxen of Ratfyn, Stonehenge, Windmill Hill, Woodley and Whitehawk Camps appear to have been of a robust type with large horn cores derived, possibly, from a Bos primigenius stem".

A large horn core is reported by Jackson (1936) at Mildenhall Fen, while robust horn cores from Minnis Bay (Jackson 1943) are attributed by him to Bos taurus frontosus.

The published references for Mesolithic, Neolithic and Bronze Age sites suggest that there were present cattle which were clearly not the diminutive Celtic Shorthorn (Bos longifrons) nor the large Urus (Bos primigenius). It would appear reasonable, therefore, to group such remains together and consider the Neolithic domestic ox as a successor to the smaller Mesolithic Ox. How it was domesticated and whether it was a distinct breed, i.e. Bos taurus frontosus, will remain a matter of speculation in the absence of fresh material and metrical data. At Catcote and Corstopitum, however, all the material appears to belong to Celtic Shorthorn (Bos taurus longifrons).

(1) Diversity of Size

Jewell (1962) has commented on (1) the gradual diminution in size of cattle from British ancient sites from the Neolithic Ox of the earlier sites to the Celtic Shorthorn so common in the Iron Age and (2) the diversity of types of cattle from Roman sites with the emergence of beasts larger than those which commonly existed in the preceding centuries. Jewell's (1962) work has been extended to include the new data from Corstopitum and from Catcote along with data recorded for sites not included in Jewell's comparison. Figures No.5 - 9 refer and are discussed in turn.

Figure No.5.

This compares the metacarpal length ranges of cattle remains reported from twenty-nine sites.

The six specimens from Catcote fall within the lower part of the Corstopitum range and the ranges for other Romano-British sites. The range of the Catcote material compares well with the Iron Age materialfrom Glastonbury and All Cannings Cross as well as with Bronze

Age material from Jarlshof. It is apparently shorter than modern material except for Kerry Cow and Chillingham cattle. The paucity of collections of modern material makes it dangerous to draw exact comparisons with modern breeds. The top part of the Corstopitum and other Romano-British ranges must represent animals with substantially bigger metacarpals than those found among Iron Age animals. Possibly these bones belonged to bulls or they represent a bigger variety of cattle.

Figure No.6.

This compares the distal width ranges of cattle remains reported from twenty-three sites.

The range for Corstopitum is very great. Some of the bones are as narrow as anything published for British sites and almost as narrow as a specimen of Chillingham bull, while others are as wide as much of the modern material in The Royal Veterinary College except for a Chartley Bull specimen; indeed they are wider than any clearly domesticated prehistoric animals.

The Catcote material shows a smaller range which fits into the middle range of Iron Age Glastonbury and Roman Corstopitum. The Catcote range is similar to that of the mediaeval material from Petergate, tending to be narrower in extent than the ranges reported for Windmill Hill and Woodhenge and being made up of bones which were themselves narrower than similar bones reported at either of these sites.

Figure No.7.

This compares the distal width ranges of cattle humerus bones recovered from seventeen sites.

The Corstopitum material has the widest range for any site except Star Carr. The narrowest bones being narrower than even modern Chillingham bull while the widest bones reach well into the modern ragne. The widest specimens are not as wide as some reported from Mesolithic, Neolithic and Bronze Age sites.

The few specimens fromCCatcote lie in the middle range of the Corstopitum material and compare well with mediaeval and some modern material, especially Jersey and Chillinigham specimens.

Figure No.8.

This compares the astragalus length ranges for cattle remains from eighteen sites.

At both Corstopitum and Catcote astragalus lengths are shorter than most of the modern material in the Royal Veterinary College but not as short as much of the Iron Age Glastonbury material. If we assume a general dimunition of cattle bones in time down to the Iron Age then the Catcote and Corstopitum materials may represent a start of an increase in size reflected in the longer astragalus bones reported for the Roman site of Highdole Hill and the Mediaeval site at Northolt.

Figure No.9.

This compares the scatter of cattle metacarpal distal widths from mesolithic, neolithic, Iron Age, Roman and mediaeval sites with those of sme modern material.

The Corstopitum range is again great, on the one hand overlapping into the wide specimens of Bos primigenius from Star Carr and the wide specimens from mediaeval and modern times, on the other hand the bulk of the specimens are more gracile than either the smallest Neolithic or mediaeval material.

The Catcote range is small but it fits into the Corstopitum range.

Grigson, C. (1965) has attempted comparisons of cattle on the bases of measurements of sagittal length and proximal breadth of the second phalanx. This has been extended to include the Catcote and Corstopitum data.

<u>Figure No.10 (a)</u>

<u>Scatter of sagittal lengths of middle phalanx</u>

The Corstopitum material shows a wider range than the Catcote material. There is some evidence of a bigger boned animal present at Corstopitum and absent from Catcote; an animal comparable in size with some of the <u>Bos primigenius</u> specimens from Star Carr as regards this particular measurement.

<u>Figure No.10 (b)</u>

<u>Scatter of proximal breadths of middle phalanx</u>

The Corstopitum and Catcote specimens are substantially narrower than the Wild Danish Maglemosian material and the Star Carr <u>Bos primigenius</u> but are not very different in size from the Windmill Hill material. With shortage of Iron Age material it is difficult to discern whether the biggest specimens from Corstopitum are a survival of prehistoric bigness or the advent of increase of size which continues into mediaeval and modern times.

Published references to larger animals on Roman sites are frequent, Bryce (1906), speaking of cattle remains from Bar Hill Fort says "The Romans here had a larger, probably mixed breed of oxen, besides the Celtic Shorthorn".

At Clausentum (Cornwall 1958) reference is made to "one larger specimen of cattle possibly a throwback". Of the earlier Corstopitum material Meek & Gray (1911) commented "Numerous variations in size seem to us to indicate the many different types of domesticated Bos that existed in Britain during the Roman period." In the first report on animal bones from Silchester (Jones 1891) it is suggested that possibly two sub-varieties of ox are present. At Colchester (Jackson 1958) a larger ox is reported upon and it is likened to the Woodhenge type. The same author reporting on cattle from Highdole Hill (Jackson 1936) mentions cattle larger than the Celtic Ox and suggests that they may have been imported to this country and used for draft purposes. Two breeds of cattle, one large and the other small, are reported from the Roman levels at Lydney (Watson 1932), while at Newstead, Ewart (1911) speaks of bones belonging to "cross bred animals" heavily built animals used for transport. McKenny Hughes (1896) in his review of breeds of cattle from British archaeological sites concludes that the Romans improved the Celtic Shorthorn by crossing it with cattle imported from Italy. The same author cogently argues the case that the Celtic Shorthorn stock found here by the Romans, was improved by them, and that this improved stock was the basis of our present varieties of cattle.

Against this is Bryner Jones (1942) evidence that a wide variety of cattle breeds, similar and ancestral to our present breeds, is found on Irish Early Christian Period sites. This variety can scarcely be the result of imports of fresh stocks of cattle from the Roman world.

(ii) Variations in horn size

At Corstopitum, of the few skulls retrieved in 1966 there are some where the horn cores are reduced to mere scurrs but none of which is polled. It will be recalled that at Glastonbury (Dawkins, Boyd and Jackson 1917) the horn cores are reported as being mere scurrs while at Bar Hill (Bryce 1906) and All Cannings Cross (Jackson 1923) a new phenomenon, the polled animal is reported. Whether the polled cattle are a genetic reversion or are due to an influx of Scandinavian stock is discussed by Proudfoot (1961). Most modern authorities would suppose polled cattle to be a genetic reversion.

Speaking of cattle in Britain during the eighteenth century, Trow-Smith (1959) says "Most of these black cattle were long-horned, but there was a polled strain running through them, particularly in northern Britain", and although this hornless characteristic was very ancient - indeed, probably synchronous with the beginnings of pastoral husbandry in Britain - it had rarely, if ever, yet been bred for and its carriers deliberately multiplied." Possibly people from the ancient sites described in the reports considered in this thesis, prized horn and actually selected against the polled form, so that only rarely would it appear among cattle remains.

(iii) Types of dentition

The variant bearing only five premolars and molars has been discussed in the detailed report of the Corstopitum material earlier in this thesis, but it is interesting to note that similar "five toothed" types have been reported at several sites, Maiden Castle (Jackson 1943), Woodhenge (Jackson 1929), and Glastonbury (Dawkins, Boyd & Jackson 1917) as well as at Corstopitum (Meek & Gray 1911). Jackson, J.W. (1929) recalls the fact that this "five toothed" condition was known to Rütimeyer (1862) who regarded it as unimportant while we have already noted the variable occurrence of this feature in Chillingham cattle.

(iv) Development and variability of a mesial prominence

The development of a "mesial prominence" along the inter-cornual ridge was formerly supposed to be one of the attributes of domestication. The presence of such a prominence is recorded in the reports from Whitehawk Bay (Jackson 1934), Minnis Bay (Jackson 1943), Glastonbury (Dawkins, Boyd & Jackson 1917), Maiden Castle (Iron Age levels) (Jackson 1943), and has been reported earlier in this work for one of the skulls from Catcote. Jewell (1962) re-examining the Star Carr material, detected the presence of a mesial prominence in undoubtedly wild material so this criterion of domestication is rejected and was, therefore, not invoked previously in discussion of Neolithic Ox.

(d) CONCLUSIONS

The skeletal remains from Benwell Fort Well tell us little about the animals kept or hunted by our ancestors because the bone material was dug out and no record of depth or horizon was kept. It is known that the atlas of one cow is from Roman times because it was associated with Roman pottery similar to that described by Charlesworth (1960) and belonging to the same Well. The massive red deer antlers are presumed, from their great size, to be ancient.

The animal remains from Tynemouth Priory are somewhat unlike the remains from several mediaeval sites in that Ox remains are fewer than sheep or pig. Here, as at WharramPercy and Pontefract (Ryder 1959) sheep bones are in the majority. It may be that this is due to sampling difficulties, i.e. the material comes only from the most recent excavation. The bones appear to have been cracked as if for marrow extraction.

The animal remains from Catcote and Corstopitum are similar in both the frequency of the different animal species present, and in the types of species present. The higher percentage of cattle bones at Corstopitum compared with the lower percentage at Catcote may reflect the difference between a garrison town and an agricultural settlement.

Haverfield (1920) in arguing that in the Early Empire, the Roman army was fed mainly on cereals, and ate comparatively little meat, concedes the point that in the later Empire the consumption of flesh increased. He claims that the _prata_ or _territoria_ attached to fortresses or forts were at least to some extent grazing grounds for regimental cattle which the soldiers called pequarii herded. The same author refers to an inscription in Cumberland which mentions certain venatores and suggests that they "saw to the provision of fresh meat". In commenting upon the absence of byre like buildings in the Roman forts of Housesteads and Gellygaer, Haverfield maintains that if the garrisons lived on fresh beef or mutton they must have pastured their herds somewhere outside the forts. He doubts whether the Romans c ould have grazed their cattle in safety outside the ramparts and suggests that either another method for getting meat must have been adopted or that the Roman garrisons depended for their food on something else than a supply of fresh meat. Possibly it was part of the economy of Catcote and similar settlements to supply beef and mutton to garrisons such as Corstopitum!

At Catcote and Corstopitum the bones are broken and split as if for marrow. The Catcote material often having the bone shafts broken several times.

Of the Corstopitum animals it appears that the sheep were slender legged somewhat similar to the Soay sheep, while the horses were small as compared to modern day standards ranging in size from that of a pit pony to a small horse of fourteen and a half hands. The Corstopitum pig remains are heavily eroded and very different from recent defleshed specimens. They hint of a longer legged animal; possibly they correspond to the so called Irish Grehound pig which figures so frequently in reports from Irish sites. (See Roche, G. & Stelfox, A.W. 1936 also Proudfoot, V.B. 1961 for discussion). This type of pig was of an athletic type being free to forage about in scrubland. The main interest rests on the cattle remains from Corstopitum. The measurements of bones discussed in detail show a large range of size, often including bones as short or as narrow as anything reported from other sites, and others as long and as wide as some mediaeval and modern material. It remains difficult to ascertain whether this larg(e)ness is a hangover (survival ?) of ancient massiveness from a Bos taurus primigenius stock or whether it is the beginning of a new increase in size culminating in the large types of the mediaeval period. Jewell's (1962) contention that there was a gradual dimunition in size of cattle from Neolithic times to Iron Age is sustained by comparison of the published data. His claim that there was a diversity of types of cattle from Roman sites and the emergence of larger beasts seems to be borne out by the large ranges of bone sizes of the Corstopitum material and the descriptions of material from other sites quoted in this thesis. The large amount of data we have for the Corstopitum cattle bones taken together with the data gained from future annual excavations there should permit the application of statistical methods. It may be that by these means we shall be able to throw some light on the origin of these larger forms.

10. BIBLIOGRAPHY REFERENCES

Atkinson, J. & Chaplin, R.E. (1966) The Animal Bones from the Roman Villa at Twyford Hamps - Occasional Paper of the Passmore Edwards Museum.

Bilton, L. (1957) "The Chillingham Herd of Wild Cattle". Transactions of Natural History Society of Northumberland, Durham and Newcastle upon Tyne. Vol.XII. No.5.

Boessneck, Muller & Teicher (1964) Osteologische Unterschiedungsmerkmale Zwischen Schaf (Ovis aries Linne) und Ziege (Capra hircus Linne). Kuhn-Archiv, 78 1/2, 1-129

Brooks & Caruthers (1953) "Handbook of Statistical Methods in Meterology" H.M.S.O.

Brothwell, D.R. (1963) "Digging up Bones" - British Museum (Natural History)

Bryce, T.H. (1906) In MacDonald, C. & Park A. "The Roman Forts on Bar Hill" Glasgow Archaeological Society.

Bryce, T.H. (1922) In Miller "The Roman Fort at Balmuildy" Glasgow Archaeological Society.

Bryner Jones, C. (1942) In Hencken H.O'Neill Ballinderry Crannog No.2. Proc. Royal Irish Academy. Vol.XLVII. No.1

Chaplin, R.E. & Coy, J.P. (1963) In Philip B.J. The Romano-British Farmstead at Eastwood Fawkham (Archaeologica Cantiana Vol.LXXVIII)

Chaplin, R.E. & Coy, J.P. (1964) In Brooks, R.T. Report of the 1963 Excavations at the Rumps. St.Minver. (Cornish Arch. No.3. 1964)

Chaplin, R.E. (1966) The Animal Remains from the Well Street Site Coventry. (Birmingham Arch. Soc. Vol.86)

Charlesworth, D. (1960) A Roman Well at Benwell. Archaeology Aeliana 4. XXXVIII

Clutton-Brock, J. (1966) In Bellamy D.J. et al. Two Quaternary Deposits in the Lower Tees Basin. New Phytologist 65.

Cornwall, I.W. (1956) "Bones for the Archaeologist" London.

Cornwall, I.W. (1958 (a)) In Cotton, M.A. "Clausentum" (Ministry of Works Publication. Appendix III)

Cornwall, I.W. (1958 (b)) In Hull, M.R. Roman Colchester (Rep. Res. Comm. Soc. Antiq. XX)

Cowley, L.F. (1946) In Fox, C. A find of the Early Iron Age at Llyn Cerrig Bach Anglesey (Cardiff Nat. Museum Wales).

Dawkins, W., Boyd & Jackson, J.W. (1917) In Bulleid A and Gray A St.G. "The Glastonbury Lake Village (Glastonbury Antiquarian Society)

Dottrens, E. (1948) Le Grand Bos des quatre couches néolithiques d'Auvernier et de Saint-Aubin. Eclogae geol. Helv. 40.

Empel, W. (1962) *Bison bonassus*. Acta Theriologica. Vol.VI,4,10. XI. 62

Ewart, J.C. (1911) In Curle, J. "A Roman Frontier Post and its People", the Fort of Newstead in the Parish of Melrose, Glasgow.

Field, N.R., Mathews, C.L., Smith, I.F. (1964) "New Neolithic Sites in Dorset & Bedfordshire" (Proceedings Prehistoric Society. No.15)

Fisher, R.A., Yates, F. (1938) "Statistical Tables for Biological, Agricultural and Medical Research". London.

Fraser, F.C. (1949) In Brailsford, J. Excavations at Little Woodbury. Proc. Prehist. Soc. Volumes XIV & XV.

Fraser, F.C. (1952) In Fox, A. Roman Exeter. Manchester University.Press.

Fraser, F.C. & King, J.E. (1954) In Clark, J.G.D. Star Carr. Cambridge University Press.

Hammond, J. (1962) "Some changes in the form of sheep and pigs under domestication" (Z.Tierz. Zucht. Biol. 77. p.151)

Haverfield, F. & Collingwood, R.G. (1920). Provisioning of Roman Forts. Cumberland & Westmorland Transactions. New series. XX

Higgs, E.S. & Shawcross, F.W. (1961 (a)) The Excavation of a *Bos primigenius* at Lowes Farm, Littleport (Proc. Camb. Ant. Soc. LIV)

Higgs, E.S. (1961(b)) In Cra'ster M. The Iron Age Settlement at Aldwick, Barley, Herts. (Pro. Camb. Ant. Soc. LIV)

Higgs, E.S., Ewbank, J.M., Phillipson, D.W., Whitehouse, R.D. (1964) Sheep in the Iron Age. A Method of Study. (Proceedings Prehistoric Society p.423 - 426)

Higgs, E.S. (1966) In Hilton, R.H. & Rahtz, P.A. Upton, Gloucestershire. Transactions of Bristol & Gloucestershire Arch. Soc. Vol.85.

Howard, M.M. (1962) The Metrical Determination of the Metapodials and Skulls of Cattle. Royal Anthropological Society. Occasional Paper.

Hudd, A.E. (1901) Notes on the Animal Remains found at the excavations at Caerwent 1899 - 1900 (Arch. XXXVI)

Jackson, J.W. (1923) In Cunnington, M.E. The Early Iron Age Site at All Cannings Cross Farm, Wilts. Devizes.

Jackson, J.W. (1929) In Cunnington, M.E. Woodhenge. Devizes.

Jackson, J.W. (1931) In Cunnington, M.E. The Sanctuary on Overton Hill near Avebury. (Wilts. Arch. Mag. xlVI)

Jackson, J.W. (1934(a)) In Curwen, E.C. Excavations in Whitehawk Neolithic Camp. Brighton 1932-33 (Antiq. Journ. 14)

Jackson, J.W. (1934(b)) In Stevens, F. The Highfield Pit Dwellings, Fisherton, Salisbury (Wilts. Arch. Mag. xlVI)

Jackson, J.W. (1935(a)) The Animal remains from the Stonehenge excavations of 1920-26 (Antiq. Journ. 15)

Jackson, J.W. (1935(b)) In Stone, J.F.S. Some discoveries at Ratfyn, Amesbury (Wilts. Arch. Mag. xlVII)

Jackson, J.W. (1935(c)) In Phillips, C.W. The Excavations of the Giant Hills Long Barrow, Lincs. (Archaeologia 85)

Jackson, J.W. (1936(a)) In Drew, C.D. and Piggott, S. The excavation of the Long Barrow 163a on Thickthorn Down, Dorset (Proc.Prehist. Soc.2)

Jackson, J.W. (1936(b)) In Stone, J.F.S. An enclosure on Boscombe Down East. (Wilts. Arch. Mag.47)

Jackson, J.W. (1936(c)) In Clark, J.G.D. Report on a Late Bronze Age Site in Mildenhall Fen, West Suffolk. (Antiq. Journal 16).

Jackson, J.W. (1936(d)) In Holleyman, G.A. An early British agricultural village site on Highdole Hill, Tescombe. (Sussex Arch. Coll. 77)

Jackson, J.W. (1937) In Home, P. Early Iron Age site at Camerton (Somerset Arch. & Nat. Hist. Soc. LXXXIII)

Jackson, J.W. (1939) Report on the animal remains from the Late Bronze Age site of Castle Hill. (Sussex Arch. Coll. 80)

Jackson, J.W. (1942) Five Late Bronze Age Enclosures in North Wilts (Proc. Prehist. Soc. 8)

Jackson, J.W. (1943(a)) In Wheeler, R.E.M. Maiden Castle, Dorset, London.

Jackson, J.W. (1943(b)) In Worsford, F.H. Late Bronze Age Site at Minnis Bay, Birchington, Kent. (Proc. Prehist. Soc. 9)

Jackson, J.W. (1947) In Bruce, J.R. A Neolithic Site at Ronaldsway. I.O.M. (Proc. Prehist. Soc. 1947)

Jackson, J.W. (1958) In Hall, M.R. Roman Colchester (Rep. Res. Comm. Soc. Antiq. London. XX)

Jewell, P.A.(1962) Changes in size and type of Cattle from Prehistoric to Mediaeval Times in Britain (Z.Tierz. Zucht. Biol.77. p.159-167)

Jewell, P.A. (1962) Cattle from British Archaeological Sites. Royal Anthropological ~~Society~~ Institute - Occasional paper.

Jones, H. (1891) Note on the Animal Remains found at Silchester (Arch LIII)

Jope, M. (1960) In Stephens, N. and Collins, A.E.P. The Quaternary Deposits at Ringneill Quay and Ardmillan,County Down. Proc. Royal Irish Acad. Volume 61. Section C. No.3.

Jope, M. & Grigson, C. (1965) In Keiller. Windmill Hill.

King, J.E. (1963) In Brewster, T .C.M. The Excavation at Staple Howe (East Riding Arch. Res. Comm. Pub.)

McFaydean J.(1884) The Comparative Anatomy of the Domesticated Animals. Part I. Osteology and Arthrology.

McKenny Hughes, T. (1896) The more important Breeds of Cattle which have been recognised in the British Isles at successive periods (Arch.55. Part I)

Meek, A. & Gray, R.A.H. (1911) In Forster, R.H. & Knowles, W.H. Corstopitum. (Archaeologia Aeliana, Ser.3,7.)

Newton, E.T. (1904) In Fox, G.E. Silchester, Hants report 1903-04 (Arch LIX)

Newton, E.T. (1921) In Cocks, A.H. A Romano-British Homestead, Hambledon, Bucks. (Arch.lXXI)

Piggott, S.(1954) Neolithic Cultures of the British Isles (Cambridge)

Pitt-Rivers, A. (1888) Excavations at Cranbourne Chase. Volumes I,II,III (Published privately)

Platt, I.P. (1933) In Curle, A.O. Excavation at Jarlshof, Shetland (Proc. Soc. Antiq. Scot. Volumes LVII and LVIII)

Poulain-Josien, T. (1966) In Burney, C. and Case, H. Les Camps Néolithiques des Matignons. (Gallia Préhistoire Tome IX. Fascicule 1).

Proudfoot, V.B. (1961) The Economy of the Irish Rath. Mediaeval Arch. Vol.V.

Proudfoot, V.B. & Wilson, B.C.S. (1962) Further Excavations at Larrybane Promontory Fort, Co.Antrim. Ulster Journal of Archaeology. Vol.24-25.

Roche, G. & Stelfox, A.W. (1936) In Hencken, H.O. Neill Ballinderry Crannog No.1. Proc Royal Irish Acad. Vol.XLIII Section C. No.5.

Ryder, M.L. (1959) The Animal remains from four mediaeval sites in Yorkshire. British Association Lecture. Section H. Also published in Agricultural Historical Review 9. 105. (1961)

Ryder, M.L. (1964) The History of Sheep Breeds in Britain. Agricultural Historical Review. Volume 12.

Rutimeyer, L. (1862) Die Fauna der Pfahlbauten. Zürich.

Silver, I.A. (1963) "The Ageing of Domestic Animals". In Science in Archaeology (Higgs & Brothwell. editors)

Sissons, S. (1910) A text book of Veterinary Anatomy. London.

Sissons, S. (1948) The Anatomy of the Domesticated Animals. London.

Trow-Smith, R. (1957) A History of British Livestock Husbandry to 1700.

Trow-Smith, R. (1959) A History of British Livestock Husbandry 1700-1900.

Watson, D.M.S. (1923) In Wheeler, R.E.M. Segontium and the Roman Occupation of Wales. London.

Watson, D.M.S. (1928) In Wheeler, R.E.M. & Wheeler, T.V. Report on the Animal Bones from Caerleon (Arch. lxxVIII)

Watson, D.M.S. (1928 & 1930) The Excavations in the Trundle (Sussex Arch. Coll. 70 & 72)

Watson, D.M.S. (1931) In Childe, V.G. Skara Brae - A Pictish Village in Orkney. London.

Watson, D.M.S. (1932) In Wheeler, R.E.M. & Wheeler, T.V. Report on the Excavation of the Prehistoric Site at Lydney Park, Glouc. (Rep. Res. Comm. Soc. Antiq. London. 9)

Watson, J.A.S. & More, T.A. (1962) Agriculture. The Science & Practice of Farming. Edinburgh.

Zeuner, F.E. (1963) A History of Domesticated Animals. London.