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Vertebrate remains from the Prehistoric site at Coldharbour Farm, Aylesbury, Buckinghamshire

by

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Summary

Excavations at Coldharbour Farm, south of Aylesbury, Buckinghamshire, produced a small animal bone assemblage from five phases of activity ranging in date from the late 3rd millenium BC to the 2nd century AD. Most of the assemblage came from the middle three phases relating to the occupation of the site in the Iron Age.

The vertebrate remains from Coldharbour Farm constituted a fairly typical Iron Age settlement assemblage, the only anomalies being the apparent preponderance of cattle over caprovids and the presence of larger horses than typical of the period, of a size more usually associated with higher status sites. Context 6249 provides an interesting deposit of disarticulated cattle remains, perhaps deposited in one act, possibly to dispose of the victims of disease.

Keywords: COLDHARBOUR FARM; AYLESBURY; BUCKINGHAMSHIRE; IRON AGE; VERTEBRATE REMAINS.

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Introduction

The site at Coldharbour Farm is situated to the south-west of the town of Aylesbury, on land next to Southcourt Brook, a tributary of the River Thame. The land is fairly low lying and, prior to the canalisation of the Brook, was subject to flooding. The underlying geology consists of a calcareous boulder clay which grades from a sandy clay with flints into a chalky clay.

The site was known from work carried out in 1987 and 1990. In 1987 fieldwalking produced a quantity of Saxon pottery. The subsequent evaluation excavation in 1990 (Stewart 1990) failed to locate a Saxon site but instead revealed an Iron Age settlement and traces of Romano-British occupation.

In advance of a housing development and road scheme, the site was excavated by the Buckinghamshire County Museum Archaeology Service in 1996. The whole area was stripped by machine, but time restrictions prevented the full investigation of all features. Most ditches were only sectioned in one or two places. Five phases of activity were recognised at the site, ranging in date from the late 3rd millennium BC to the 2nd century AD. Most of the occupation evidence, however, falls within the middle three phases dating to the Iron Age.

Phase 1: Earlier Prehistoric (late 3rd to late 2nd millennium BC). This phase incorporates Neolithic pits and tree throws (shallow pits left by uprooted or dead trees) containing prehistoric pottery.

Phase 2: Early Iron Age. This phase includes the large main ditch running north-south across the whole site, and numerous pits.

Phase 3: Early Iron Age. The main evidence of occupation at the site was assigned to this phase and included enclosure ditches and gullies, 'four-post' structures and pits.

Phase 4: Late Iron Age/Belgic. This phase included a roundhouse, and ditches making up an associated field system.

Phase 5: Romano-British. A single ditch was dated to this phase.

Most of the vertebrate assemblage was collected by hand, although some bulk sieving (33 samples) was carried out using a 2 mm mesh. A small amount of bone was recovered from the residues of 24 samples. Although not large, the bone assemblage was recovered from a wide range of deposits.

Methods

All the animal bone was examined and records made regarding its state of preservation, colour, and the appearance of the broken surfaces ('angularity'). Semi-quantitative information was also recorded concerning dog gnawing, burning, butchery and fresh breaks. Evidence of pathology was noted where present.

Identification was carried out using the comparative vertebrate collection at the Environmental Archaeology Unit (EAU), University of York and, where possible, identification was to species level. Distinctions between sheep and goats were made on the basis of comparison with

specimens of known identity and also the criteria set out in Boessneck (1969).

The fragments were recorded using the diagnostic zones system described by Dobney and Rielly (1988). Calculation of the Minimum Number of Individuals (MNI) was done simply using the most frequently occurring diagnostic zone (recorded as more than 50% of that zone present) for any element and from any side (Dobney and Rielly 1988). All fragments not identified to species were recorded as unidentified. These included all vertebrae, ribs and shaft fragments. Some fragments, such as those of skulls and maxillae, were classified as 'non-diagnostic zones' and have been incorporated into the unidentifiable fraction.

Tooth eruption and wear stages were recorded using the methods of Levine (1982) for horses, Grant (1982) for cattle and pigs, and Payne (1973; 1987) for sheep/goats. All measurements follow those set out by von den Driesch (1976) unless otherwise stated. Withers height estimations were calculated using guidelines given by Kiesewalter (Boessneck and von den Driesch 1974) for horses, and Fock (1966) for cattle. All biometrical data are presented in the Appendix.

Results

The hand-collected bone assemblage amounted to a total of 2964 fragments, weighing 20.08 kg, of which 2550 fragments (7.76 kg) were unidentified. The 414 identified fragments weighed 12.32 kg. In addition, 1786 fragments (weighing 463.6 g) were recovered by bulk sieving. Of these only 70 (174.8 g) were identified.

Most of the material was from Phases 2-4, with very little from Phases 1 and 5. This is most likely because these are the main phases of occupation at the site. Context 6249 from phase 3 contained a large quantity of bones (3 boxes compared to 5 from the rest of the site) and is discussed more extensively below.

Preservation

Preservation overall was good, with little evidence of chemical or physical modification of most of the fragments. There was some etching on the bones possibly caused by plant roots. Some neonatal bones were present, further indication of good preservation. Colour ranged from beige to fawn for most of the fragments, although a few darker fragments were present. Colour was consistent throughout single contexts.

Few burnt fragments were recorded (less than 5% of the assemblage) and fragments from most of the contexts had at least some fresh breakage evident on the bones (many showed a considerable amount). Dog gnawing was also present on bones from most contexts. Much of the gnawing affected the ends of cattle bones (20-50% affected), with some sheep/goat bones also gnawed. The assemblage from Context 6249 produced almost entirely cattle bones, very few showing dog gnawing. This may be an indication that the bones were incorporated into the deposits more rapidly than elsewhere on the site.

Definite evidence of butchery was rather sparse. Although many fragments may well be the result of butchery, there was little direct indication on the bones themselves. Most of the visible butchery was in the form of knife marks. There was also very little evidence of pathology on the bones and, what little there is, is discussed under the relevant species.

Species representation

Table 1 lists the range of species represented and the number of identified fragments from the hand collected material, whilst Table 2 contains the same information for the sieved material. Table 3 shows the relative percentages of the main species by phase for the identified hand-collected fragments. The MNIs for the main species are as follows:

Taxon	MNI
Cattle	7
Sheep/Goat	6
Pig	3
Horse	2

The highest frequency of fragments was of cattle bones. This was greatly influenced by material from Context 6249. If the 144 cattle bones from this context are excluded the frequency is reduced from 57 % to 34 %. Even so, cattle (from both the fragment count and the MNI) remain the predominant species represented at the site. The amount of meat obtained from one cow is obviously considerably greater than from one caprovid or pig. Therefore, even though the MNI for cattle is only one more than for caprovids, the proportion of the diet they represent is far larger.

Caprovids are the second most abundant species - a total of 135 fragments, of which three were definitly goat and 14 definitly sheep (Table 4.). Overall, goat bones make up about 2 % of the total assemblage. In comparison to caprovids, pigs appear to be of minor importance. The frequency of horse bones (5 %) is quite high for a site of this period. Both deer and dogs are present in small numbers (MNI =1 for each) and appear to be of minor importance as at other sites of this period.

Table 5 presents the frequency of individual species by context type. Apart from the ditches (including Context 6249), no significant differences between major context types are apparent.

Phases 1 and 5

There were so few bones from deposits from Phases 1 and 5 that little information could be gleaned. The only identifiable bones from Phase 1 deposits were a single cattle tooth and one fragment of roe deer (*Capreolus capreolus* L.) tibia. Phase 5 deposits contained no identifiable fragments.

Phases II to IV

As these phases were all Iron Age in date and individually did not contain enough material for a meaningful analysis it was decided to combine the assemblages for analysis.

Cattle

Skeletal element representation

There were a total number of 241 fragments of cattle bones from both hand collected and sieved material for Phases 2-4. Almost all the ‘diagnostic’ skeletal elements are represented (Table 6), as well as large mammal vertebrae, ribs and skull fragments likely to be cattle. This suggests that the cattle remains represent both primary butchery and domestic waste.

As previously mentioned, Context 6249 contained almost exclusively cattle remains. The skeletal elements present indicate that whole animals were deposited. Skull fragments, vertebrae (cervical to caudal) and

ribs recorded as large mammal from this context are most likely to be cattle. There were several atlases and axes present as well as sesamoids, carpals/tarsals and phalanges. These are not usually found with domestic waste but their presence together with meat-bearing bones suggests that Context 6249 was not a primary butchery deposit either.

Butchery

Cattle bones showing evidence of butchery included two metatarsals with knife marks on the anterior surface below the proximal epiphysis, one humerus with knife marks on the lateral, proximal shaft, and one pelvis with knife marks on the ventral surface of the ischium. A single cattle scapula had been chopped on the anterior medial edge.

Pathology and abnormalities

Three mandibular third molars with reduced third cusps and one with the third cusp absent were recorded. This phenomenon has also been observed on material from the nearby site at Bierton (Jones 1986), where two examples were noted.

One metatarsal had a small, well remodelled, lump on the medial side of the shaft, possibly the result of localised trauma. In addition, a first phalanx showing very slight marginal lipping around the proximal articulation was also noted. The marginal lipping may have caused by stress resulting from the animal being used for traction, but this is far from certain.

Age structure

Tables 7 and 8 show the tooth wear stage and epiphyseal fusion data. The tooth wear stage data show that there are three teeth from young animals and the rest are from adult (>3 years) animals. The epiphyseal fusion data indicate that there is one bone from an individual < 1.5 years old, four < 3.5 years and 14 < 4 years. There are 11 bones from animals probably over four years old.

The numbers involved in both methods of ageing are too small to provide a full picture of the age structure and so only tentative conclusions can be drawn. The presence of the neonatal and juvenile bones and teeth suggests that cattle were being bred on or near the site. The fact that most of the cattle were older adults suggests that they were not just kept for beef production. These older individuals could be those kept for breeding, milk production, traction or as multi-purpose beasts. As there is no evidence for sexing the fragments, and the numbers are too small, it is impossible to say which is the most likely explanation.

Biometry

Very few measurable cattle bones were recovered since many epiphyses were seriously damaged by dog gnawing. Only Context 6249 provided any complete bones (measurements can be found in the Appendix). Only three bones (one femur and two metapodials) provided greatest length measurements for withers height estimations, as follows:

Element	Length (mm)	Withers height (mm)
Femur	312.0	1092.4
Metacarpal	178.5	1096.0
Metatarsal	201.1	1082.6

The three estimates represent a very small range (approximately 14mm). It is widely accepted that Iron Age cattle were small and those from Coldharbour Farm are no exception. These estimates are within the ranges stated by Wilson (1978) and Jones (1986) for cattle at other Iron Age settlements in the area (1.0-1.18 m and 0.98-

1.17 m respectively). They are also within the range for cattle from Maiden Castle (Armour-Chelu 1991) of 0.9-1.1m at the shoulder.

Only two elements were present in sufficient numbers to permit further analysis of metrical data. Figure 1 shows the distal tibia measurements from this and other relevant sites, and also from modern Dexter cattle bones. The measurements from Birdlip and Garton Slack are also presented to provide examples from other Iron Age sites. Three of the distal tibia measurements from Coldharbour Farm fall within the range of those from other sites but one is slightly larger and more robust.

Figure 2 shows the astragalus measurements for Coldharbour Farm, as well as the two other sites and the modern material. The three astragali from the present site, like the distal tibiae, fall well within the range of the material from Birdlip and are similar in size to modern Dexter bones.

Sheep / Goats

Skeletal element representation.

A total of 135 Caprovid fragments were recovered and almost all 'diagnostic' skeletal elements were represented (Table 9). Vertebrae, ribs and skull fragments recorded as medium-sized mammal are also most likely to be from caprovids. As was the case for cattle, this suggests that the caprovid remains represent both primary butchery and domestic waste.

Butchery

Evidence for butchery on caprovid bones is extremely limited. Cases recorded included a scapula with knife marks on the ventral, medial surface, an astragalus with knife marks on the anterior surface, and a pelvis with chops on the ventral surface of the pubis. All of these marks are consistent with the removal of meat from bones or cutting joints of meat. There is also a tibia which has been chopped down the shaft at the distal end and smoothed, perhaps an attempt to make a bone point of some sort.

Pathology and abnormalities

As was the case for cattle, little pathology was present. Five isolated teeth and the teeth in two mandibles showed slight calculus formation. A single mandible showed periodontal disease on both buccal and lingual sides of the tooth row. It was more severe around the M1 and M2, with associated substantial swelling of the mandible. An additional mandible exhibited an area of well remodelled bone on the exterior ventral surface below the M1, possibly the result of an apical abcess.

Age structure

Tables 10 and 11 show the epiphyseal fusion and tooth wear stage data. The epiphyseal fusion data show that all the bones are from animals over 10 months old, ranging from < 2 years to < 3.5 years old. The tooth wear stage data suggest that 12 teeth are from pre-adult individuals and 23 are from adult (> 3 years) animals. The presence of teeth from younger individuals than shown by the epiphyses is most likely to be a factor of preservation, since tooth enamel often preserves better than immature bones.

As was the case for cattle a wide range of ages is represented in this small assemblage. The presence of juvenile and subadult animals suggests that these were animals kept primarily for meat. The presence of a single tooth from an animal < 6 months old

provides tentative evidence of animals bred at the site. Older animals are probably breeding stock or those kept for wool production.

Biometry

Although the sheep/goat bones have not been gnawed to the extent of those of cattle, there are still very few complete or measurable fragments. Only tibia and astragalus fragments were frequent enough to present graphically. Values for distal tibia measurements are within the range shown at Aslockton for distal breadth of 20.9 to 24.7 mm (Figure 3). When compared with the modern comparative specimens of unimproved breeds (Figure 4), they are similar in size to the smallest Shetland and Soay ewes.

Pigs

It has been assumed that the pig remains are from domestic rather than wild individuals because there was no evidence to suggest otherwise. This assumption may be false since wild boar were certainly present in Iron Age Britain and the habitat in the locality was suitable (the presence of deer remains at the site indicates woodland in the vicinity, this being the habitat of wild boar).

Skeletal element representation

There are very few pig bones in the assemblage, most frequent elements being isolated teeth (Table 12). Both meat-bearing and non-meat-bearing bones were present but most were those discarded as waste. This may be a factor of preservation as pigs are generally killed young for meat, and hence the more delicate immature bones are less likely to survive burial or dog gnawing (tooth enamel being more readily preserved).

Butchery

There is no direct evidence of butchery on any of the pig bones.

Sex differentiation

Several canines were present, which allowed a determination of sex. Two female and two male canines were recorded along with one probable female canine. One of the male canines was large for a domestic pig, but was still considerably smaller than the wild boar in the EAU reference collection used for comparison.

Pathology and abnormalities

Only two pathological pig fragments (both mandibles) were identified. One mandible showed the P4 rotated slightly clockwise whilst the other manifested a small patch of periosteal new bone formation on the exterior (buccal) side.

Age structure

Tables 13 and 14 show the epiphyseal fusion and teeth wear stage data. The numbers of fragments were too small for any useful conclusionsto be drawn.

Biometry

A single measurable bone (an astragalus) was recorded.

Horses

Skeletal element representation

A total of 21 horse fragments, representing a minimum of 2 individuals, was recovered.

Most diagnostic skeletal elements were present (Table 15), although skull fragments were absent. This is most likely a result of preservation factors, most skull fragments being too small to identify to species (horse skull fragments were therefore more likely to have been recorded as 'large mammal').

Butchery

The horse bones from Coldharbour Farm were from deposits containing a variety of animal remains and showed very little evidence of butchery, whilst at Danebury (Grant 1991), disarticulated horse bones in similar deposits showed a fair amount of butchery evidence. A single horse distal metapodial showed knife marks on the lateral side of the shaft which may have been the result of skinning rather than butchery. From this limited evidence it is impossible to say whether horses were part of the diet in this settlement or not.

Age structure

There were no unfused epiphyses so all the fragments were from individuals older than one year. None of the bones were porous in appearance, indicating that they were probably from mature individuals. One anterior mandible fragment with incisors gave an age of 9-13 years (after Levine 1982). An atlas and axis, both with fused epiphyses, suggested an age > 5 years.

A large proportion of mature individuals is apparantly the norm for Iron Age sites. In the earlier phases at Danebury almost all the horse bones were mature, with unfused bones found only in the later phases (Grant 1991). All the horse bones from Slonk Hill (Sheppard 1978) were also from adult animals.

Biometry

Only six measurable horse bones, four of which were metapodia, were recorded. Three metacarpals were complete, providing lateral length measurements for withers height estimations (hh=hands) as follows:

Bone	**Ll (in mm)**	**Wh (in mm)**	**Wh (hh)**
M / C	208.0	1395.5	14.0
M / C	200.0	1332.6	13.2
M / C	203.4	1378.2	13.3

Withers heights for the Coldharbour horses were all higher than the mean of 12.1 hh for Iron Age horses (Johnstone 1996). The only complete horse bone from Bierton (Jones 1986) gave a withers height of 12 hh, considerably smaller than those at Coldharbour Farm. Four of the six withers heights at Ashville (Wilson 1978) were below 13 hh, and those from Ditches (Rielly 1988) were between 10 and 11.2 hh. However, larger sites such as Danebury (Grant 1991) and Maiden Castle (Armour-Chelu 1991) show wider ranges, 12-14 hh and 11-15 hh respectively. The measurements from Coldharbour Farm fell within these ranges.

The limb proportions of the horses from Coldharbour Farm again fell at the upper end of the range seen at other Iron Age sites (Figure 5). These were therefore animals with robust limbs in proportion to height. They are roughly comparable to some Przewakslii individuals (Figure 6) but are slightly more robust in relation to height.

The volume of the astragalus correlates well with the weight of the animal and, in conjunction with the height estimates, provides an estimation of build. The volume of the Coldharbour astragalus is 167.1 cm^3, within the range for other Iron Age sites (Figure 7). This corresponds to an

approximate weight of 260 kg, very near the mean estimated weight for Iron Age horses, (257.2 kg, Johnstone 1996). For the mean height of 12.1 hh this weight is just below that of modern animals, but for taller animals would indicate a more gracile build. It is suggested that the Coldharbour Farm astragalus was from a smaller individual than those represented by the metacarpals.

Dogs

Six fragments identified as domestic dog and a single canid fragment (probably domestic dog), all from Phase 3, were recovered. No evidence of butchery was recorded. The presence of dogs at the site was also confirmed by the numerous cattle bones showing signs of dog gnawing.

Although none of the bones provided biometrical data, comparison with modern breeds provides a rough guide to the size of these species. Most were from medium sized dogs, although a canid tooth was similar in size to fox.

Deer

Only three fragments of Cervidae were present from the entire assemblage (Table 16). These were single fragments of roe deer (*Capreolus capreolus* L.) and red deer (*Cervus elaphus* L.).

Small mammals and amphibians

A small number of small mammal and amphibian bones were recovered by wet sieving. The most abundant small mammal remains (16 fragments) were those of the water vole (*Arvicola terrestris* (L.)), most of the fragments being teeth. Their presence is hardly surprising as the site is next to a watercourse, although they have a tendency to burrow and could be intrusive.

Other small mammals included: one *Microtus agrestris* (L.) fragment; one Murine fragment; two Microtine fragments; and three mouse/vole fragments.

Two amphibian fragments were attributed to common frog (*Rana temporaria* L.) but eight fragments may have been either frog or toad. Again the presence of amphibians is not surprising in view of the proximity of the watercourse.

All the small mammal and amphibian fragments were examined under a binocular microscope and showed no evidence of acid etching or erosion characteristic of ingestion. This suggests that they did not represent a predator accumulation such as owl pellets. The fragments were from ditch deposits, suggesting they may have been incorporated into the deposits as the result of a ‘pit-fall trap’ situation. If the ditch contained water then this could also be a ‘natural loss’ assemblage.

Discussion

The small size of the assemblage limits the interpretation that can be placed upon it and, therefore any conclusions are tentative.

The representation of species at Coldharbour Farm seems to be slightly unusual for Iron Age sites. Both the MNI and fragment counts suggest cattle to be the most frequent species. At Ashville, (Wilson 1978), Bierton (Jones 1986), Garton Slack (Noddle 1979), Slonk Hill (Sheppard 1978), Danebury (Grant, 1991) and Maiden Castle (Armour-Chelu, 1991) the most numerous taxon was sheep/goat.

References to cattle being the most numerous species are rarer. For Coxhoe (Rackham 1982) the conclusions were tentative as a result of the small assemblage and limited sampling strategy. At Birdlip

(Dobney and Jaques 1990) the hand collected assemblage was again small and the preponderence of cattle was thrown into doubt by the data from the sieved assemblage, which suggested that caprovids were the most abundant taxon. At Pennyland (Holmes 1993) there was a large enough assemblage for the observed high frequency of cattle to be significant. It has been suggested that lower-lying farms near rivers tended to have more cattle (Wilson 1978), and Coldharbour Farm fits into such a picture quite neatly. If Coldharbour Farm had a real preponderance of cattle, it is extremely unusual for an Iron Age site and particularly one this early.

Cattle appear to have been bred and consumed at the site, probably as multi-purpose beasts. Biometrical data indicated that the cattle bones came from small individuals, comparable in size to other Iron Age material and of a similar size to the modern Dexter breed. However, the numbers limit further conclusions.

Context 6249

Context 6249 was somewhat of an enigma. The disarticulated remains of whole animals of all ages, showing no signs of butchery, was difficult to interpret. It is possible that deposit included the corpses of animals that died whilst calving and those lost early in life, or from a disease that wiped out a cross section of the population. This would explain why the material was incorporated into the deposit more quickly here than on the rest of the site. The material may well have been deliberately buried or covered over in one action rather than being gradually incorporated over a period of time. This may also explain why there is very little dog gnawing on material from this context.

Sheep and goat remains were less numerous than the cattle remains and also indicated that animals were bred and consumed at the site. The age structure suggested that they were perhaps used for both meat and wool The proportion of goat bones appears similar to that found on other Iron Age sites, such as Danebury (Grant 1984). The numbers of bones from Coldharbour Farm were, however, too small to draw further conclusions. Noddle (1994) suggests that, on present evidence, goats were much rarer in the Bronze Age than in the Iron Age. Their presence at Coldharbour in early Iron Age deposits is, therefore, interesting. The limited biometrical data suggest that the Caprovids from Coldharbour are similar to those from other Iron Age sites and of a similar size to the modern unimproved Soay and Shetland breeds.

The pig remains were poorly represented, as was usual at other Iron Age sites. There was no evidence to suggest that wild boar is present but the possibility cannot be ruled out.

The horse remains recovered from Iron Age sites are usually surrounded by controversy because of the modern British abhorrence for eating horse flesh. There is, however, no definite evidence of butchery on horse bones at this site.

It has been suggested (Harcourt 1979, quoted in Moore-Colyer 1994) that the absence of immature horse bones from Iron Age sites indicates that horse breeding was not practised there, and that horses from either wild or semi-managed herds were periodically rounded up, and selected animals caught and trained.

This appeared to be the case at many sites including Gussage-All-Saints (Harcourt 1979), Danebury (Grant 1991) and Maiden Castle (Armour-Chelu 1991). The data from

Coldharbour Farm perhaps also support this hypothesis, although the numbers are too small to be conclusive. Absence of evidence is not evidence of absence; the younger, unfused, horse bones may simply not have survived to be recovered.

The estimated heights of the horses from Coldharbour Farm appear to fall at the upper end of the range for the Iron Age. These taller animals are more usually associated with large, high status, hillfort sites (Johnstone 1996). To find taller horses on a small rural settlement site is perhaps unusual, as previous data have suggested that they were prized, high status animals (Grant 1991). The data relating to weight and build (based on a single bone) gave a picture much more in keeping with other archaeological data of the period, i.e. of small stocky ponies (Johnstone 1996).

There is very little that can be said about the dog remains except that there appear to have been several sizes/types of dog present. The presence of deer remains on the site (albeit very few) suggest that the inhabitants utilised wild as well as domestic resources. The presence of deer also suggests that woodland was present in the vicinity of the site.

The small mammals and amphibians say little about the environment of the site. The species, other than water vole and amphibians, are not very habitat specific and so do not yield any information of this nature. It should also be remembered that water voles burrow and could be intrusive to the deposits they were found in and, that they are found away from water in the present and, it is suspected, also in the past.

Summary

The vertebrate remains from Coldharbour Farm constituted a fairly typical Iron Age settlement assemblage, the only anomalies being the apparent preponderance of cattle over caprovids and the presence of larger horses than typical of the period, of a size more usually associated with higher status sites. Context 6249 provided an interesting deposit of disarticulated cattle remains, perhaps deposited in one act, possibly to dispose of the victims of disease.

The human remains

A few fragments of human bones were present. Context 2046 (Phase 2) contained 10 fragments of the right and left frontal and right parietal bones of a single skull. Context 4056 (Phase 3) also provided 10 fragments of the right frontal bone of another skull. The small size of the fragments and their small number precludes any further comment.

Archive

The bones from Coldharbour Farm are retained at the Buckinghamshire County Museum. Copies of the paper and electronic archive pertaining to the work described here are kept at the Buckinghamshire County Museum with the site archive and also at the Environmental Archaeology Unit, University of York.

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References

Armour-Chelu, M. (1991). *The faunal remains*, pp. 139-151 in Sharples, N. M., Maiden Castle: Excavations and field survey 1985-6. *English Heritage Archaeological Report* **19**. London: HBMC.

Boessneck, J. (1969). Osteological differences between sheep (*Ovies aries* Linne) and goat (*Capra hircus* Linne), pp. 331-58 in Brothwell, D. Higgs, E. S. (eds.), *Science in Archaeology.*

Boessneck, J. and von den Driesch, A. (1974). Kritische Anmerkungen zur Widerristhöherberechnung aus Längenmassen vor- und frühgeschichtlicher Tierknochen. *Säugetierkundliche Mitteilungen* **22**(4), 325-48.

Dobney, K. and Rielly, K. (1988). A method for recording archaeological animal bones: the use of diagnostic zones. *Circaea* **5**, 79-96.

Dobney, K. and Jaques, D. (1990). Animal bones from the excavations at Birdlip, Glos. *Ancient Monuments Laboratory Report* **36/90**.
Fock, J. (1966). *Metrische Untersuchungen an Metapodien einiger europaischer Rinderrassen.* Unpublished dissertation. Munich.

Grant, A. (1982). *The use of tooth wear as a guide to the age of domestic ungulates*, pp. 91-108 in Wilson, B., Grigson, C. and Payne, S. (eds.), Ageing and sexing animal bones from archaeological sites. *British Archaeological Reports, British Series* **109**. Oxford.

Grant, A. (1984). *Animal Husbandry*, pp. 496-548 in Cunliffe, B. (ed.), Danebury, an Iron Age Hillfort in Hampshire. *Council for British Archaeology Research Report* **52**. London.

Grant, A. (1991). *Animal Husbandry*, pp. 447-487 in Cunliffe, B. and Poole, C. (eds.), Danebury, an Iron Age Hillfort in Hampshire. *Council for British Archaeology Research Report* **73**. London.

Harcourt, R. A. (1979). *The Animal Bones*, pp. 150-160 in Wainwright, G. (ed.), Gussage-All-Saints: An Iron Age settlement in Dorset. *Department of the Environment Archaeological Report* **10**. H.M.S.O.
Hillson, S. (1986). *Teeth*. *Cambridge Manuals in Archaeology*. Cambridge: University Press.

Holmes, J. (1993). *The animal bones*, pp. 133-154 in Williams, R. J., Pennyland and Hartigans: two Iron Age and Saxon sites in Milton Keynes. *Buckinghamshire Archaeological Society Monograph Series* **4**.

Johnstone, C. J. (1996). *Changes in size and shape of horses from the Iron Age to Medieval periods in Northern Europe*. Unpublished undergraduate dissertation, Bradford.

Jones, G .G. (1986). *The Iron Age animal bones*, pp. 32-39 in Allen, D., Excavations in Bierton, 1979. *Records of Buckinghamshire* **28**.

Levine, M. A. (1982). *The use of crown height measurements and eruption wear sequences to age horses teeth*, pp 223-50 in Wilson, B., Grigson, C. and Payne, S. (eds.), Ageing and sexing animal bones from archaeological sites. *British Archaeological Reports, British Series* **109**. Oxford.
Moore-Colyer, R.J. (1994). The Horse in British Prehistory: some speculations. *Archaeological Journal* **151**, 1-15.

Noddle, B. (1979). Animal bones from Garton Slack. *Ancient Monuments laboratory Report* **2754**.

Noddle, B. (1994). *The under-rated goat*, pp. 117-128 in Hall, A. R. and Kenward, H. K. (eds.), Urban-rural connections: Perspectives from environmental archaeology. *Symposia of the Association for Environmental Archaeology* **12**. *Oxbow Monograph* **47**. Oxford.

O'Connor, T.P. (1984). Selected groups of bones from Skeldergate and Walmgate. *The Archaeology of York* **15** (1), 1-60, plates I-II. London: Council for British Archaeology.

O'Connor, T.P. (1991). Bones from 46-54 Fishergate. *The Archaeology of York* **15** (4), 209-298, plates XII-XV. London: Council for British Archaeology.

Payne, S. (1973). Kill-off patterns in sheep and goats: the mandibles from Asvan Kale. *Journal of Anatolian Studies* **23**, 281-303.

Payne, S. (1987). Reference codes for the wear state in the mandibular cheek teeth of sheep and goats. *Journal of Archaeological Science* **14**, 609-14.

Rackham, D. J. (1982). *Faunal remains*, pp. 43-44 in Haselgrove, C.C. and Allon, V.L,. An Iron Age settlement at West House, Coxhoe, County Durham. *Archaeologia Aeliana*, fifth series, **10**.

Rielly, K. (1988). *The animal bone*, pp. 77-82 in Trow, S. D., Excavations at Ditches hillfort, North Cerney, Gloucestershire, 1982-3. *Transactions of the Bristol and Goucestershire Archaeological Society* **106,** 19-85.

Sadler, P. (1990). *The Animal Bones* in Stewart, I. J., Coldharbour Farm, Aylesbury, an Archaeological Investigation. *Records of Buckinghamshire* **32**, 91-104.

Sheppard, P. (1978). *Animal remains*, pp. 133-139 in Hartridge, R., Excavations at the Prehistoric and Romano-British site on Slonk Hill, Shoreham, Sussex. *Sussex Archaeological Collections* **116**, 69-141.

Stewart, I. J. (1990). Coldharbour Farm, Aylesbury, an Archaeological Investigation. *Records of Buckinghamshire* **32**, 91-104.

Teichert, M. (1975). Osteometrische Untersuchungen zur Berechnung der Widerristhohe bei Schafen, pp. 51-69 in Clason, A. T. (ed.)., *Archaeozoological studies.* Amsterdam: Elsevier.

Wilson, B. (1978). *The Animal Bones*, in Parrington, M., The excavation of an Iron Age settlement, Bronze Age ring-ditches and Roman features at Ashville Trading Estate, Abingdon (Oxfordshire) 1974-76. *Council for British Archaeology Report* **28**. Oxfordshire Archaeological Unit and CBA.

Table 1. Total bone fragment counts for the hand collected material.

Taxon	**Phase 1**	**Phase 2**	**Phase 2/3**	**Phase 3**	**Phase 4**	**Phase 5**	**Total**
Bos f. domestic	1	29	14	173	20		237
Caprine		35	3	67	9		114
Sus. f domestic		13		16	3		32
Equus f. domestic		8	6	6	1		21
Cervus elaphus L.					1		1
Capreolus capreolus L.	1			1			2
Canis f. domestic				6			6
Canis sp.				1			1
Sub total	2	85	23	270	34		414
Large mammal	17	68	25	1171	73		1354
Medium mammal	8	224		520	140	6	898
Unidentifiable	1	38	26	224	9		298
Sub Total	26	330	51	1915	222	6	2550
Total	28	415	74	2185	256	6	2964

Table 2. Total bone fragment counts for the bulk-sieved material.

The fragments of fossil fish are not of interest in a discussion of the animal remains related to human activity on the site but included for completeness.

Taxon	**Phase 1**	**Phase 2**	**Phase 2/3**	**Phase 3**	**Phase 4**	**Phase 5**	**Total**
Bos f. domestic		1		3	1		5
Ovi-caprine		8	1	5	7		21
Sus f. domestic		3			1		4
Arvicola terrestris (L.)		9		1	6		16
Microtine sp.		2					2
c.f. *Microtus agrestris* (L.)					1		1
Murine/Microtine					3		3
Murine sp.				1			1
Rana temporaria L.		2					2
Amphibian		8			5		13
Fossil fish		1			1		2
Sub total	0	34	1	10	25	0	70
Medium mammal		105		2			107
Small mammal		6	3	7	13		29
Frags <10mm		910	14	292	194		1410
Frags >10mm		66	2	54	48		170
Sub total	0	1087	19	355	255	0	1716
Total	0	1121	20	365	280	0	1786

Table 3. Relative species representation - % of identified hand collected fragments.

Taxon	**Phase 1**	**Phase 2**	**Phase 2/3**	**Phase 3**	**Phase 4**	**All phases**
Cattle	50 %	34 %	61 %	64 %	59 %	57 %
Sheep/Goat		41.5 %	13 %	25 %	26 %	27%
Pig		15 %		5.5 %	9 %	8 %
Horse		9.5 %	26 %	2 %	3 %	5 %
Red Deer					3 %	< 1 %
Roe Deer	50 %			< 1 %		< 1 %
Dog/Canid				23 %		2 %
Total (n=100%)	2	85	23	270	34	414

Table 4. Numbers of sheep, goat and caprovid fragments.

Taxon	**Phase 2**	**Phase 2/3**	**Phase 3**	**Phase 4**	**Total**
Ovis f. domestic			13	1	14
Capra f. domestic	2		1		3
Caprovids	41	4	58	15	118
Total	43	4	72	16	135

Table 5. Species representation by context type.

The second ditches column excludes Context 6249.

Taxon	**Pits & Post holes**	**Ditches**	**Ditches**	**Gullies**	**'Ponded' areas**	**Hearths**
Cattle	8 %	82 %	46 %	32 %	58 %	25 %
Sheep/goat	58 %	12 %	30 %	46 %	23 %	50 %
Pig	26 %	2 %	9 %	10 %	5 %	25 %
Horse	5 %	4 %	15 %	4 %	14 %	
Deer	3 %			1 %		
Dog				7 %		
Total (n=100%)	38	208	56	108	43	16

Table 6. Representation of cattle skeletal elements (number of fragments).

Element	**Phase 1**	**Phase 2**	**Phase 2/3**	**Phase 3**	**Phase 4**	**Total**
Horncore				5		5
Cranium		1				1
Maxilla				4		4
Mandible		2	5	34		41
Isolated teeth	1	5	1	44	5	56
Atlas/Axis				7		7
Scapula		1	1	7		9
Humerus		2		10	2	14
Radius		2		3	2	7
Ulna		4		3	1	8
Metacarpal		2		2	1	5
Pelvis			1	5	1	7
Femur		3	2	7	1	13
Tibia		4	2	11	1	18
Calcaneum					1	1
Astagalus				2	1	3
Metatarsal		3	1	8	1	13
Metapodial						
Phalanges		1	1	13	3	18
Carpal/Tarsal				11		11
Total	1	30	14	176	20	241

Table 7. Age categories for cattle mandibles and isolated teeth. There were 5 mandibles containing 14 teeth. Age categories after O'Connor (1991)

Age category	**Number of Teeth**
Neonatal	1
Juvenile	2
Immature	
Subadult 1	
Subadult 2	
Adult 1	1
Adult 2	3
Adult 3	23
Elderly	2
Total	32

Table 8. Cattle epiphyseal fusion data. Age categories after O'Connor (1984).

F = fused, NF = not fused (number of fragments).

Age Category	**Phase 2**		**Phase 2/3**		**Phase 3**		**Phase 4**		**Total**	
	F	NF	F	NF	F	NF	F	NF	F	NF
Early	3		1		13	1	3		20	1
Intermediate	1	2	2		4	2	2		9	4
Late	6	1		2	5	11			11	14

Table 9. Representation of caprovid skeletal elements. No of sheep (S) or goat (G) fragments.

Element	**Phase 2**	**Phase 2/3**	**Phase 3**	**Phase 4**	**Totals**
Horncore	(1G)	1	2 (1S, 1G)		4
Cranium					
Maxilla	1				1
Mandible	8		8 (3S)		16
Isolated teeth	14		26	5	45
Atlas/Axis			1		1
Scapula	1	1	2		4
Humerus	2 (1G)		4 (1S)	2	8
Radius	6	1	2		9
Ulna		1			1
Metacarpal	1		1		2
Pelvis	1		3		4
Femur				1	1
Tibia	1		9 (5S)		10
Calcaneum				1	1
Astagalus	2		2 (1S)		4
Metatarsal	2		4		6
Metapodial				1	1
Phalanges	3		6 (2S)	4 (1S)	12
Carpal/Tarsal			2	2	4
Total	43	4	72	16	135

Table 10. Caprovid epiphyseal fusion data. Age categories after O'Connor (1984).

F = fused, NF = not fused (number of fragments)

Age Category	**Phase 2**		**Phase 3**		**Phase 4**		**Total**	
	F	NF	F	NF	F	NF	F	NF
Early	5		1		1		7	
Intermediate 1		2	2	2	1		3	4
Intermediate 2			5	2			5	2
Late		1		1				2

Table 11. Age categories of caprovid mandibles and isolated teeth. There were 7 mandibles containing 18 teeth. Age categories after O'Connor (1991).

Age Category	**Approx. Age**	**Number of Teeth**
Neonatal	0-2 months	
Juvenile	2-6 months	1
Immature	6-12 months	5
Subadult 1	1-2 years	2
Subadult 2	2-3 years	4
Adult 1	3-4 years	
Adult 2	4-6 years	6
Adult 3	6-8 years	16
Elderly	8-10 years	1
Total		35

Table 12. Representation of pig skeletal elements (number of fragments).

Element	**Phase 2**	**Phase 3**	**Phase 4**	**Totals**
Cranium		2		2
Maxilla	1			1
Mandible	3		1	4
Isolated teeth	9	5	2	16
Atlas/Axis				
Scapula	1	1		2
Humerus	1	2		3
Radius				
Ulna		2		2
Metacarpal		1		1
Pelvis				
Femur				
Tibia		1		1
Calcaneum				
Astagalus		1		1
Metatarsal	1			1
Metapodial				
Phalanges		1	1	2
Carpal/Tarsal				
Total	16	16	4	36

Table 13. Pig epiphyseal fusion data. Age categories after O'Connor (1984).

F = fused, NF = not fused (number of fragments)

Age Category	**Phase 2**		**Phase 3**		**Total**	
	F	NF	F	NF	F	NF
Early			1	1	1	1
Intermediate 1						
Intermediate 2		1				1
Late				1		1

Table 14. Age categories for pig mandibles. There were 2 mandibles containing 7 teeth. Age categories after O'Connor (1991).

Age Category	**No.of Teeth**
Neonatal	
Juvenile	
Immature	
Subadult	
Adult 1	4
Adult 2	3
Adult 3	
Elderly	
Total	7

Table 15. Representation of horse skeletal elements.

Element	**Phase 2**	**Phase 2/3**	**Phase 3**	**Phase 4**	**Totals**
Cranium					
Maxilla					
Mandible	1				1
Isolated teeth	1	3	2		6
Atlas/Axis			2		2
Scapula	1				1
Humerus	1				1
Radius		1			1
Ulna					
Metacarpal	2		1		3
Pelvis	1				1
Femur			1		1
Tibia		1			1
Calcaneum					
Astagalus	1				1
Metatarsal					
Metapodial		1			1
Phalanges				1	1
Carpal/Tarsal					
Total	8	6	6	1	21

Table 16. Representaion of dog (C) and deer (D) skeletal elements (number of fragments).

Element	**Phase 1**	**Phase 3**	**Phase 4**
Horncore			
Cranium			
Maxilla			
Mandible		1C	
Isolated teeth		4C	1D
Atlas/Axis		1C	
Scapula		1C	
Humerus			
Radius			
Ulna			
Metacarpal			
Pelvis		1D	
Femur			
Tibia	1D		
Calcaneum			
Astagalus			
Metatarsal			
Metapodial			
Phalanges			
Carpal/Tarsal			
Total	1D	7C, 1D	1D

Appendix 1. Measurement data

Table A1. Cattle bone measurements

Context	**Element**	**Side**	**Measurements**							
			41	42	43	BC				
6249	Horncore	L	43.5		31.4	124.0				
			SLC		GLP					
4078	Scapula	R	47.0		62.0					
5004	Scapula	R	43.8		58.9					
6249	Scapula	L			64.9					
6249	Scapula	R			65.0					
7025	Scapula	R	56.8		69.6					
			Bp	SD	GLC	Bd	BT			
6249	Humerus	L		26.7		77.3	71.1			
			Bp	BFp	GL	SD	Bd	BFd		
4074	Radius	L	75.1	70.1		38.1				
			SDO	DPA	Lo					
3015	Ulna	R	49.3	63.1						
4082	Ulna	L		53.2						
5004	Ulna	L	48.9	58.8						
6249	Ulna	R	43.9	55.2						
			Bp	SD	GLC	Bd				
6009	Femur	L	103.0	34.0	312.0					
			SD	Bd	GL	Dd				
6249	Tibia	L	22.0	58.5		39.9				
7025	Tibia	L	21.8	54.3		41.8				
7025	Tibia	R	21.4	56.1		42.9				
4097	Tibia	L		63.2		42.1				
			Bd	DL	GLl					
6249	Astagalus	L	37.9	33.3	60.9					
6249	Astagalus	R	37.9	31.7	57.5					
4062	Astagalus	L	39.0	33.3	57.4					
			GB	DS	GL					
4095	Calcaneum	R	32.6	36.0						

Context	**Element**	**Side**	**Measurements**							
			Bp	Dp	GLl	SD	Bd	Dd		
6249	Metacarpal	R	55.6	34.5	178.5	30.0	57.4	31.9		
4064	Metacarpal	R					54.6	29.0		
4078	Metatarsal	L	40.8			28.0				
6249	Metatarsal	R	44.3		201.1	24.5	52.9	30.5		
6249	Metatarsal	R	42.2			23.4				
6249	Metatarsal	L	44.5							
			GLpe	Bp	SD	Bd				
6207	Phalanx 1	L	54.5	27.3	22.2	24.9				
5004	Phalanx 1	R	54.3	25.6	20.7	24.4				
7025	Phalanx 1	L	48.8	27.7	21.5	24.9				
			GL	Bp	SD	Bd				
4104	Phalanx 2	R	36.2	28.6	23.4	23.9				
6001	Phalanx 2	L	35.9	28.6	22.4	24.1				
6001	Phalanx 2	L	33.9	26.3	20.8	22.4				
6249	Phalanx 2	R	34.8	29.0	21.6	23.1				
6249	Phalanx 2		33.0	28.2	22.6	23.3				
6249	Phalanx 2		32.7	25.8	19.6	21.9				
6249	Phalanx 2		35.6	27.5	20.3	22.6				
6249	Phalanx 2		35.3	29.8	22.7	24.6				
6249	Phalanx 2	L	37.0	27.1	20.5	22.3				
6249	Phalanx 2		32.8	28.6	22.9	24.2				
4070	Phalanx 2	L	34.0	23.8	18.1	20.3				
6243	Phalanx 2	R		25.9	20.8	21.1				

Table A2. Caprovid bone measurements.

Context	**Taxon**	**Element**	**Side**	**Measurements**						
				41	42	43	BC			
6052	Goat	Horncore	L	35.1	22.4		96.5			
				GLC	SD	BT	HT	HTC		
5004	S/G	Humerus	R			24.8	16.8	11.6		
				GL	Bp	BFp	SD	Bd	BFd	
4078	S/G	Radius	R		28.0	25.7	13.5			
				GL	SD	Bd	Dd			
5004	S/G	Tibia	R		10.3	22.6	17.1			
6001	S/G	Tibia	R		10.1	23.6	18.2			
6252	S/G	Tibia	L		10.1	22.1	17.4			
6246	S/G	Tibia	R		10.6	22.5	19.3			
2001	S/G	Tibia	R			22.2	16.2			
				GLl	Bd	DL				
5033	S/G	Astragalus	L	23.9	15.3	13.4				
2011	S/G	Astragalus	L	25.0	15.2	13.4				
5004	S/G	Astragalus	L		15.0	13.5				
				GL	Bp	Dp	SD	Bd	Dd	
2003	S/G	Metacarpal	L		18.8	13.8	10.9			
5042	S/G	Metatarsal	L		18.3					
5022	S/G	Metatarsal	R		16.3		10.2			
6256	S/G	Metatarsal	R		16.3		9.6			
				GLpe	Bp	SD	Bd			
5004	S/G	Phalanx 1	R	31.7	10.2	7.8	9.4			
6004	S/G	Phalanx 1	R	31.1	10.9	8.2	10.6			
4070	S/G	Phalanx 1	L	36.9	14.4	11.9	13.5			

Table A3. Measurements of bones of other species.

Context	**Species**	**Element**	**Side**	**Measurements**						
				GLl	GLm					
6032	**Pig**	Astragalus	L	36.6	34.8					
				GLl	LmT	GB	BFd			
6009	**Horse**	Astragalus	R	53.1	54.0	56.1	47.9			
				GL	Ll	Bp	Dp	SD	Bd	Dd
6009	**Horse**	Metacarpal	R	217.7	208.0	49.1	32.8	33.4	49.9	34.8
4078	**Horse**	Metacarpal	L	207.9	200.0	46.8	30.9	32.1	47.3	32.6
6171	**Horse**	Metacarpal	R	215.0	203.4	47.2	31.1	29.9	48.3	34.8
7025	**Horse**	Metapodial	R					28.3	43.5	33.1
				GL	Bp	Dp	SD	Bd		
4070	**Horse**	Phalanx 2		36.7	42.3	25.2	36.5			
				GL	SD	Bd	Dd			
5038	**Roe Deer**	Tibia	L			25.5	20.4			