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DEPARTMENT OF THE ENVIRONMENT
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REPORT ON THE ANIMAL BONES FROM OLD DOWN FARM, HAMPSHIRE

Old Down Farm Animal Bones - Phase 2

1,820 fragments were found in three deposits (Pits 937, 2492 2498). A substantial number of the bones, however, belonged to a few individuals. Pit 937 contained 449 bones that belonged to several partial or complete sheep skeletons. These included a complete carcass of a young lamb that died within a few weeks of birth and parts of three other animals that died at a similar age. Also dumped in Pit 937 was a remarkable collection of bones of at least part of seven adult or subadult sheep. Unfortunately the skeletons were admixed and this made it difficult to determine exactly how many of these bones belonged to each individual. The survival intact of many of the limb bones and the presence of a large number of phalanges, sesamoids, vertebrae, tarsals and carpals, which are usually much under-represented in faunal samples, set these bones apart from most other assemblages from the site. At least seven sheep were represented by sacral and lumbar vertebrae, although several skeletons could not have been complete. Indeed there was abundant evidence that several of the carcasses had been at least partially butchered. Knife cuts were found on 16 lumbar vertebrae, a thoracic vertebra, four sacral vertebrae and close to the dorsal articulation of nine of the ribs. All these could have been made during the separation of the flanks and the ribcage from the vertebral column. Other knife cuts were discovered on two of the pelves and on an astragalus. None of the limb bones appear to have been broken open for their marrow. The scapula, humerus, radius, femur and tibia were in fact less well represented than bones of the vertebral column and the limb extremities and it is possible that some may have been taken elsewhere as joints along with other meat stripped from the carcasses dumped in the pit.

Pit 2493 contained 30 fragments of a dog skeleton. Its skull was not found but most of the vertebral column and the major limb bones were recovered. The skeleton was notable for knife cuts found on several of the lateral processes of the lumbar vertebrae and thoracic vertebrae, the sacrum, pelvis, a humerus, both femora and tibiae and a calcaneus. The knife cuts were not merely the result of skinning but of the division of the carcass and the removal of meat. The butchery marks on the vertebrae were similar to those found on the sheep skeletons discussed above.

Table [illegible] lists the number of bone elements identified to each of the major species and also includes fragments not identifiable to species but designated as "large mammal" or "sheep-sized fragments". All fragments including shaft fragments, loose teeth and bones belonging to articulated skeletons are included in the table. Sheep/goat bones dominated the sample, even when the articulated bones were disregarded. Their concentration in pit 937 in particular may be misleading, however, as some of the bones may have belonged to the same carcasses as the bones in the skeletons discussed above. No goat bones were identified. Cattle, pig and horse bones were represented but in relatively small numbers. The unidentifiable material included 419 fragments of sheep-sized mammals and only 87 of large mammals. It is likely that most of these belonged to sheep and cattle respectively and supports the former's dominance in these deposits. Preservation generally was good, although apart from the skeletons, the sturdier fragments such as loose teeth, mandible and radius survived more commonly than the more fragile parts of the skeleton. Including those on the skeletons, butchery marks were found on 93 bones, 24 fragments bore evidence of gnawing by canids or rodents, only 56 were recorded as eroded and 27 fragments were burnt. 137 fragments, mainly small fragments of sheep-sized mammal, were described as ivoried.

Bones of other species included 514 of amphibian skeletons, mostl frogs (Rana sp.), . . discovered in several layers of pit 937. Short-tailed vole (Microtus agrestis) was represented by 25 fragments.

Animal Bone Elements Represented in Phase 2 Deposits

Element	Cow	Horse	S/G	Pig	Dog	LM	SM
Skull frags.	1	-	28	3	-	-	15
Mandible	5	-	26	2	-	3	-
Maxilla	1	-	12	2	-	-	-
Loose teeth	14	-	51	1	-	-	-
Scapula	2	-	12	1	1	-	3
Humerus	1	-	18	3	2	-	2
Radius	1	-	28	1	2	-	-
Ulna	2	-	12	2	4	-	3
Pelvis	1	1	19	1	1	-	-
Femur	1	-	26	1	3	-	3
Patella	-	-	1	-	-	-	-
Tibia	1	-	16	-	5	1	-
Fibula	-	-	-	1	2	-	-
Astragalus	1	-	6	-	-	-	-
Calcaneus	-	-	5	-	1	-	-
Tarsals	-	2	12	1	-	-	-
Carpals	1	-	10	1	-	-	-
Metacarpals	2	1	16	-	-	-	-
Metatarsals	1	-	20	-	-	-	-
Metapodials	-	-	8	-	-	-	-
Phalanges	4	-	112	1	-	-	-
Vertebrae	1	-	154	-	16	3	44
Ribs	-	-	67	-	-	15	186
Sternebrae	-	-	4	-	-	-	-
Longbone frags.	-	-	-	-	-	32	106
Other frags.	-	-	-	-	-	33	57
TOTAL	40	4	663	21	37	87	419
Butchered	3	-	48	4	14	3	21
Eroded	3	1	13	-	-	9	30
Burnt	1	-	6	-	-	11	9
Gnawed	3	1	11	2	-	2	5
Ivoried	-	1	16	-	4	9	106

S/G = sheep/goat; LM = unidentified large mammal; SM = sheep-sized mammal.

Old Down Farm Animal Bones - Phase 3

4,003 animal bone fragments were recorded from these deposits. The majority came from pits and only 316 were found in the ditch sections and 172 in various postholes. Table 1 lists the distribution of fragments of the principal stock animals. Bones of cattle and sheep/goat were more common than those of horse and pig. In the ovicaprine sample only three goat bones were identified whereas 36 were distinguished as sheep. Sheep/goat fragments were more common than cattle in pits 243, 895, 1080, 2375, 2610 and 2683. The figures include articulated bones and seven bones from pit 2683 belonged to a skeleton of a very young lamb. Among the larger assemblages, cattle bones were more abundant than sheep/goat fragments in pits 512, 2742, 2778, 2798, 3007 and in the ditch sections. Pit 512 included six lumbar vertebrae, the sacrum and pelvis of one animal. Horse bones were poorly represented except in pits 2623, 2778 and 2798, where they were found in greater numbers than both cattle and sheep/goat. This was the result of the disposal of several bones of a single animal in each instance. 11 of the fragments in pit 2623 consisted of the complete femur, tibia, tarsals and metatarsals of the right hind limb of an adult horse. The metacarpals, phalanges and the distal sesamoid of a left fore foot provided seven of the horse fragments in pit 2798. 45 out of the 50 horse fragments recorded in pit 2778 belonged to the skull, jaws and associated loose teeth of three adult animals. Pig was represented consistently in small numbers in the deposits. In addition, 354 dog bones were found but 341 of these belonged to the skeletons of five individuals. The most complete of these belonged to an immature animal in pit 2623. Including many unfused epiphyses 226 fragments were recovered. The skull and jaws were absent but most of the remaining skeleton was represented. Analysis of the fusion data revealed that the main bones of the pelvis had fused together and the proximal epiphyses of the first and second phalanges had just fused. The epiphyses of the distal humerus, the olecranon of the ulna and the distal metapodia were all just fusing but neither epiphysis of the radius, femur or tibia had fused. Adapting the ages of epiphyseal fusion of modern dogs (Silver 1969: 285-286), it would appear that this animal died between 9-12 months old

Table B.

Fragment Totals of Principal Stock Animals in Phase 3 Deposits

Feature	Cow	Horse	S/G	Pig	Feature	Cow	Horse	S/G	Pig
20	1	-	2	1	243	8	4	15	5
329	1	2	1	-	442	1	-	1	-
512	20	1	12	5	549	1	1	-	-
606	-	1	-	-	820	1	3	1	-
839	8	3	6	1	840	1	-	7	2
895	9	4	19	3	1005	1	7	3	-
1049	2	-	7	3	1080	5	3	18	2
2073	2	-	6	-	2267	2	2	7	3
2358	-	-	2	-	2375	10	5	44	8
2417	3	-	6	-	2543	7	2	6	2
2595	3	1	5	1	2610	8	1	15	5
2617	2	-	-	2	2623	2	15	3	2
2678	1	-	5	-	2683	16	1	28	1
2742	26	2	12	12	2778	22	50	3	3
2798	16	17	2	1	2812	4	2	5	-
2835	2	3	4	-	3007	49	12	29	7
Ditch	65	19	37	17	Phs.	3	1	29	6
TOTAL	302	162	340	92					

Cow = cattle; S/G = sheep/goat; Phs. = postholes.

The absence of a baculum in an otherwise fairly complete skeleton suggests that it was a female. In the same pit 28 bones of the front paw of an older dog were also recovered. Pit 2073 contained 84 bones from two foetal or newborn puppies and pit 238 included the skull and associated mandibles of an adult dog.

The assemblages contained a high proportion of fragments that were unidentifiable to species, although of these sheep-sized fragments again outnumbered those of the large mammals (Table). Once again loose teeth formed a high percentage of the bones recovered and the smaller and more fragile parts of the skeleton of all the principal species were under-represented. Only about 10% of the fragments were recorded as eroded but the nature of the assemblages suggests that much of the bone originally deposited had been destroyed despite the excellent preservation conditions in some of the pits. It is possible that much of the bone incorporated into the pit fills may have been lying around elsewhere on the site and thus the original dumped assemblages had already been modified by a variety of destructive agencies before their secondary deposition in the pits. Much fewer bones were recorded as either burnt or gnawed (Table). Butchery marks, mostly knife cuts, were found consistently on cattle, horse, sheep/goat, pig and dog bones, although none of the partial skeletons bore any evidence of butchery in these deposits.

Of the other species, red deer (Cervus elaphus) was represented by a fragment of worked antler and fox (Vulpes vulpes) by a single bone. Four species of bird were represented, each by a single fragment. Those that may have contributed to the diet were the grey lag goose (Anser anser), pheasant (Phasianus colchicus) and mallard (Anas platyrhynchos). A bone of a house sparrow (Passer domesticus) was also discovered. Large numbers of amphibian bones were found in some pits, skeletons of frogs (Rana sp.) being more common than those of toads (Bufo sp.). Four species of rodent were identified: the most common was the short-tailed vole (Microtus agrestis) but the water vole (Arvicola terrestris), house mouse (Mus musculus) and woodmouse (Apodemus sp.) were found in small numbers. Eight bones of a common shrew (Sorex araneus) were also found.

Table C

Animal Bone Elements Represented in Phase 3 Deposits

Element	Cow	Horse	S/G	Pig	Dog	LM	SM
Skull frags.	17	2	17	1	6	98	27
Mandible	23	19	28	13	12	35	10
Maxilla	4	5	2	8	2	-	1
Loose teeth	88	51	97	35	15	3	-
Scapula	5	-	5	2	6	5	6
Humerus	24	6	16	5	7	3	4
Radius	19	8	35	-	9	-	3
Ulna	6	6	7	5	8	-	1
Pelvis	24	5	9	-	3	1	4
Femur	11	8	7	3	6	2	5
Patella	1	-	-	-	2	-	-
Tibia	16	8	29	5	9	2	17
Fibula	-	-	-	2	3	-	-
Astragalus	6	1	2	3	2	-	-
Calcaneus	5	1	2	3	2	-	1
Tarsals	2	5	-	-	8	-	-
Carpals	2	4	-	-	10	-	-
Metacarpals	8	6	22	3	6	-	1
Metatarsals	10	4	29	-	10	-	-
Metapodials	5	8	1	1	6	2	1
Phalanges	7	8	14	2	58	-	-
Vertebrae	19	7	18	1	96	23	24
Ribs	-	-	-	-	57	41	164
Sternebrae	-	-	-	-	11	-	1
Longbone frags.	-	-	-	-	-	226	540
Other frags.	-	-	-	-	-	226	152
TOTAL	302	162	340	92	354	667	962
Butchered	37	10	12	2	5	9	9
Eroded	40	18	40	19	5	88	81
Burnt	1	1	6	2	-	12	22
Gnawed	10	4	10	3	-	1	10
Ivoried	1	-	26	2	1	11	104

S/G = sheep/goat; LM = unidentified large mammal; SM = sheep-sized mammal.

Old Down Farm Animal Bones - Phase 4

A total of 1,869 fragments was examined, all but 12 from pits and the remainder from postholes. 504 fragments of horse, sheep/goat, pig and cattle were identified. 122 of the 245 cattle bones, however, belonged to a calf buried in pit 2664 (Table). The skull, mandible both front legs and vertebral column were represented. The fourth deciduous premolars of the mandibles were in wear but the first molars had only just erupted through the bone. Modern rates of tooth eruptio would age this animal at about six months old (Silver 1969: 296), although the rate of dental development probably was slower in this period. Almost certainly, however, the animal was under a year old. Five cattle carpals from one animal were found in pit 1015. Articulated remains of other species included 10 horse bones in pit 253 belonging to the lower hind limb. The distal articulation of the tibia, the calcaneus, the third tarsal and the central tarsal were all pathologically deformed, possibly as the result of an arthritic condition in an old animal. The same pit produced four bones of a very young dog and a newborn lamb was represented by six bones in pit 2664.

Other bones of the major domesticates were scattered in 16 pits and a few postholes. Excluding the partial skeletons, only pits 253 and 2128 produced over 50 fragments of these species. Cattle and sheep/goat were represented by roughly equal numbers of fragments but their relative numbers varied in the different pits. No goat bones were identified, whereas 13 were identified positively as sheep.

The number of fragments of the different bone elements of the major species is given in Table . The numbers include the bones from the skeletons discussed above and the large number of cattle phalanges, vertebrae, ribs and carpals belonged almost solely to the calf burial. Apart from this, the assemblages were similar to those of Phase 3 with a large proportion of unidentifiable fragments and a high percentage of loose teeth and other dense fragments of all species. About 15% of the bones were recorded as eroded and small numbers were burnt, gnawed or ivoried. Butchery marks were found on bones of all the major species including horse and dog.

Table 2

Fragment Totals of Principal Stock Animals in Phase 4 Deposits

Feature	Cow	Horse	S/G	Pig	Feature	Cow	Horse	S/G	Pig
244	-	-	3	1	247	-	-	2	5
253	25	17	20	14	261	7	-	10	-
565	-	1	1	-	776	14	1	13	2
777	-	-	3	1	1015	11	2	3	1
1101	11	3	19	3	1167	2	4	2	1
2100	13	7	6	4	2128	22	2	42	16
2290	3	2	2	1	2664	129	1	13	3
2780	6	1	18	1	2823	2	-	2	-
Phs.	3	1	2	-	TOTAL	248	42	161	53

Cow = cattle; S/G = sheep/goat; Phs. = postholes.

Table E

Animal Bone Elements Represented in Phase 4 Deposits

Element	Cow	Horse	S/G	Pig	Dog	LM	SM
Skull frags.	9	1	2	3	-	57	30
Mandible	9	4	11	10	-	6	7
Maxilla	2	-	4	7	-	-	-
Loose teeth	42	7	64	17	-	1	-
Scapula	8	2	2	2	-	5	-
Humerus	15	1	8	2	2	1	1
Radius	11	4	12	1	-	-	3
Ulna	7	-	2	1	-	1	1
Pelvis	8	3	4	2	-	1	1
Femur	4	-	4	-	3	1	3
Tibia	5	4	5	-	1	1	9
Astragalus	2	2	3	-	-	-	-
Calcaneus	3	1	-	1	-	-	-
Tarsals	-	4	1	-	-	-	-
Carpals	16	-	-	-	-	-	-
Metacarpals	8	1	15	2	-	-	-
Metatarsals	3	2	11	1	-	-	-
Metapodials	3	2	-	-	-	-	-
Phalanges	21	-	9	3	2	-	1
Vertebrae	57	4	4	1	-	17	13
Ribs	17	-	-	-	1	30	73
Longbone frags.	-	-	-	-	-	165	270
Other frags.	-	-	-	-	-	163	128
TOTAL	248	42	161	53	9	449	540
Butchered	13	4	5	2	3	4	8
Eroded	27	7	17	6	-	143	35
Burnt	3	1	1	1	-	19	8
Gnawed	3	1	2	2	-	1	8
Ivoried	2	-	17	-	-	3	66

Cow = cattle; S/G = sheep/goat; LM = large mammal; SM = sheep-sized mammal.

Fragments of other species included two antler fragments of red deer (Cervus elaphus) and an antler of roe deer (Capreolus capreolus) A single bird bone - of a mallard (Anas platyrhynchos) was discovered Both water vole (Arvicola terrestris) and short-tailed vole (Microtus agrestis) were found in small numbers. Frog (Rana sp.) and toad (Bufo sp.) bones were found in quantity in some pits.

Old Down Farm Animal Bones - Phase 5

The pits of this date produced the largest animal bone sample from the excavations. 5,833 fragments were recorded, 1,793 of these belonging to cattle, horse, sheep/goat and pig. Bones of these species were recovered from 40 of the pits. Sheep/goat bones were the most commonly identified in most contexts. Over half of their 1,046 fragments, however, came from just three pits (386, 563 and 2598 - Table). Pit 386 produced 83 fragments from the burial of a lamb. This animal possessed mandibles in which only the deciduous premolars had erupted and it was thus a neonatal mortality. Most parts of the skeleton were represented and it seems likely that the whole carcass was buried. Pit 563 produced 347 sheep/goat bones and only a handful of fragments of other species was associated with them. There seems no doubt from the nature of the assemblage that several carcasses of sheep were dumped together in this pit. All parts of the skeletons were represented, many of the limb bones were complete and there was no sign of butchery on any of the fragments. Several matching pairs of mandibles, scapulae, humeri, radii, femora, tibiae and calcanea were recovered but it proved difficult to ascertain which bones belonged to which skeletons from the mixed nature of the assemblage. At least seven animals were represented by the tibiae, six by the humeri and femora and five by the mandibles, scapulae and radii. Two of these skeletons belonged to neonatal mortalities and were distinguished by their very small size and porosity of their bones. At least four skeletons of older lambs were represented. Study of the tooth eruption and wear of the mandibular cheek teeth revealed that the first molar was in an early stage of wear but the second molar had not erupted and it is likely that the mandibles belonged to animals possibly around a year old. In addition, at least one old sheep was represented and this had heavy wear on all three mandibular molars. Although substantial parts of the skeletons were found, some bones, particularly vertebrae, metapodia and phalanges were under-represented. Whether this implies that some of the carcasses were not buried whole is uncertain, since survival factors and excavation methods may have played some part in the recovery of these bones, although the surviving material was in an excellent state of preservation.

Table F

Fragment Totals of Principal Stock Animals in Phase 5 Deposits

Feature	Cow	Horse	S/G	Pig	Feature	Cow	Horse	S/G	Pig
160	2	3	8	5	240	18	11	12	4
386	37	13	124	8	387	10	3	12	1
458	2	-	-	-	551	3	4	12	-
563	14	7	347	4	564	-	1	3	2
865	19	6	32	2	969	2	-	4	1
1046	81	167	26	2	1048	3	-	2	-
1091	2	-	4	2	2032	1	-	12	2
2042	4	-	5	2	2044	11	3	10	2
2050	2	-	16	-	2125	-	-	15	3
2131	8	-	37	4	2134	8	3	27	5
2140	17	1	19	-	2202	3	4	2	2
2317	14	2	18	3	2369	1	-	-	-
2403	-	2	2	-	2405	3	-	3	-
2420	6	-	4	-	2456	14	2	5	-
2583	7	3	39	3	2598	40	14	174	19
2679	-	1	4	-	2755	5	-	4	-
2757	18	2	9	2	2758	10	2	4	-
2760	8	3	29	3	2763	4	2	1	-
2765	-	-	2	-	2792	3	-	6	-
2793	3	-	13	2	2800	18	-	-	2
TOTAL	401	261	1046	85					

Cow = cattle; S/G = sheep/goat.

Other partial skeletons of sheep/goat were discovered in pit 2598 (four cervical vertebrae and three thoracic vertebrae of one animal, and four lumbar vertebrae - two of them butchered on the lateral process - of another), in pit 2050 (13 fragments of thoracic and cervical vertebrae of an immature animal) and pit 2583 (three cervical vertebrae). Only one goat bone was identified in an ovicaprine sample again totally dominated by sheep.

Cattle (401 fragments) and horse (261 fragments) were in general less well represented than sheep/goat bones. A notable exception was the small pit 1046, which produced a great density of bones of these two species. The number of horse bones (167) was exceptionally high and although this figure was inflated by the presence of a few articulated bones (two pairs of astragali and calcanea and a set of tarsals and metatarsals) and 70 loose teeth from broken maxillae and mandibles, no less than six horses were represented by the atlas (first cervical vertebra) and a minimum of three individuals was represented by most of the major limb bones and mandibles. Although it is conceivable that many of these bones belonged to the same few individuals, the presence of butchery marks on 27 of the fragments provided evidence for the division of the carcasses and the stripping of meat from them before disposal. Many of the limb bones were complete or almost complete and it seems unlikely that marrow was extracted from many of them. All the horse bones found in this pit belonged to mature animals. The cattle assemblage from this pit was very similar in nature (80 fragments). At least three animals were represented by mandibles, scapulae, ulnae and cervical vertebrae. 21 bones had knife cuts or chop marks on them, again signifying the disjointing of the carcasses and the removal of meat. The pit seems therefore to have been used mainly as a dump for the butchered bones of several carcasses of horse and cattle. Concentrations of similar material have also been found in early and middle iron age pits at the recently excavated settlement on Winnall Down, near Winchester (Maltby n.d.1). Pig bones were recovered in small numbers from 24 pits (Table).

The numbers of fragments of the different elements of the major species are shown in Table . 144 of the 182 dog bones identified could be assigned to the partial skeletons of six animals. The most complete of these was the adult specimen in pit 2317. 54 fragments of the skeleton were counted and butchery marks were found on a radius, an ulna, a carpal and a tibia. The tarsals, metapodia and

Table 6

Animal Bone Elements Represented in Phase 5 Deposits

Element	Cow	Horse	S/G	Pig	Dog	LM	SM
Skull frags.	32	14	111	6	7	418	92
Mandible	31	13	75	10	7	16	16
Maxilla	8	4	24	5	8	-	-
Loose teeth	97	84	218	25	25	1	-
Scapula	19	7	19	4	2	8	1
Humerus	23	7	33	4	6	5	7
Radius	13	5	49	2	5	2	8
Ulna	14	4	18	8	6	-	4
Pelvis	31	12	31	1	2	3	1
Femur	16	11	38	-	2	4	2
Patella	1	2	2	-	-	-	-
Tibia	20	11	69	3	4	3	10
Fibula	-	-	-	2	-	-	-
Astragalus	5	6	15	1	-	-	2
Calcaneus	4	4	19	1	4	-	-
Tarsals	-	3	16	-	6	-	-
Carpals	2	7	-	-	4	-	-
Metacarpals	8	7	27	2	13	-	1
Metatarsals	10	4	46	4	16	-	1
Metapodials	6	13	6	2	4	2	2
Phalanges	17	7	36	4	35	-	-
Vertebrae	43	19	157	2	14	55	84
Ribs	-	7	18	-	11	419	388
Sternebrae	1	-	20	-	-	1	2
Longbone frags.	-	-	-	-	-	353	635
Other frags.	-	-	-	-	1	241	287
TOTAL	401	261	1047	86	182	1551	1543
Butchered	65	38	30	6	17	47	22
Eroded	39	14	32	16	6	115	101
Burnt	2	1	5	2	-	30	69
Gnawed	9	1	9	3	-	8	6
Ivoried	10	1	41	2	24	34	149

Cow = cattle; S/G = sheep/goat; LM = unidentified large mammal; SM = sheep-sized mammal.

phalanges were all well represented. The tibia had been chopped through completely near the distal articulation and only the distal portions of the radius and ulna were present. It appears that the lower limbs had been removed from the rest of the carcass and thrown away. Associated with the sheep skeletons in pit 563 were 16 fragments of another partial skeleton of an adult dog. The skull, mandibles, atlas, both humeri, a radius and ulna and some of the metacarpals were found, although there was no evidence of butchery on these bones. Pit 2640 contained 40 fragments probably belonging to the same skeleton. The skull, part of the vertebral column, pelvis, five ribs, a radius, an ulna and most of the metapodia were identified. Knife cuts were located on the pelvis, one of the thoracic vertebrae and a carpal. The carcass had therefore been butchered and divided and the major limb bones appear to have been removed elsewhere. A similar specimen was found in pit 2758, in which 22 bones probably of the same adult dog were recovered. Only the skull, mandibles and some of the metapodia and phalanges were found. Finally, two small groups of associated major limb bones were discovered in pit 240. The first consisted of a scapula, both humeri, a radius and ulna of one animal. Knife cuts probably made during the dismembering of the carcass were found on the scapula, ulna and one of the humeri. The second group of bones consisted of the scapula, both humeri (all butchered) and possibly a maxilla, two cervical vertebrae and a thoracic vertebra of the same animal.

Despite the variability of the faunal assemblages in the pits, certain general tends could be discerned (Table). The high percentage of unidentifiable fragments of both large and sheep-sized mammals was consistent in most pits, although 40 of the sheep-sized ribs recorded in pit 563 probably belonged to the associated sheep skeletons. Loose teeth formed a high percentage of the identified material. The large numbers of skull fragments and vertebrae in the sheep/goat sample reflects their abundance in pit 563 and the comparatively large numbers of vertebrae discovered in pit 1046 resulted in these elements forming a relatively high proportion of the cattle and horse assemblages in these deposits. Apart from the skeletons, phalanges, tarsals and to some extent the metapodia of the large mammals were under-represented in the deposits Most of the bones recovered were well preserved and relatively few

eroded, gnawed or burnt fragments were recorded (Table).

Other faunal remains from this phase included 13 fragments of red deer (Cervus elaphus). Ten of these were fragments of antler, eight of which bore evidence of working. A humerus in pit 2032 was found to have been butchered near its distal articulation in a manner similar to the butchery on cattle and horse humeri and the knife cuts were probably made when the humerus was detached from the cubital joint. Pit 564 contained 20 fragments of a partial skeleton of a fox (Vulpes vulpes). No signs of butchery were found on any of those bones. A single metatarsal of hare (Lepus sp.) was recovered from pit 2131. Five bird bones were discovered; two belonged to a raven (Corvus corax); one to a mallard (Anas platyrhynchos); one to a smaller duck the size of a pochard (Aythya ferina) and one to an unidentified corvid. Short-tailed vole (Microtus agrestis) was by far the most abundant of the small mammals recovered but water vole (Arvicola terrestris), house mouse (Mus musculus) and woodmouse (Apodemus sp.) were also present. Once again frog bones (Rana sp.) outnumbered those of toad (Bufo sp.) amongst the abundant amphibian remains in several of the pits.

1,526 of the fragments dated to this phase were found in pits and 201 in gullies. The distribution of fragments of the principal stock animals is given in Table 16.

Table 16

Fragment Totals of Principal Stock Animals in Phase 6 Deposits

Feature	Cow	Horse	S/G	Pig
92	2	-	-	-
879	4	1	31	1
966	57	5	69	1
2345	66	8	96	31
2841	2	1	-	3
Gullies	22	12	27	2
TOTAL	153	27	223	38

Cow = cattle; S/G = sheep/goat.

These totals include the bones of partial skeletons of cattle and sheep. In pit 966, 28 fragments of a calf were discovered. The skull, jaws, a radius, both metacarpi and most of the fore phalanges were recovered as well as three of the vertebrae, a calcaneus, an astragalus and a metatarsus. In the same pit seven fragments of the upper hind limb of a sheep were found. The mandibular deciduous premolars were unworn and the animal must have died within a few weeks of birth. The proximal epiphyses of the femora were just fusing but the distal epiphyses were unfused as was the proximal epiphysis of the tibia. Modern estimates of epiphyseal fusion ages would place this animal between 3-3½ years of age (Silver 1969: 286), although fusion rates are so variable that such estimates may be wildly inaccurate. Knife cuts were located on the ilium, the proximal articulation of both femora and near the proximal articulation of the tibia. It is possible that 14 fragments of vertebrae from the same layer of this pit belonged to the same animal. A scapula, a complete humerus and most of a radius and ulna of a cow were found in pit 2345. Knife cuts were located on the lateral and posterior aspects of the humerus near the distal articulation. The proximal epiphysis of the humerus had just fused and the animal had therefore died probably over four years of age but

before attaining old age. Pits 966 and 2345 contained the bulk of the animal bones dated to this phase and once again sheep/goat and cattle bones dominated the sample, although none of the ovicaprine fragments were identified as goat. Pig bones were only recovered in any quantity in pit 2345 and horse fragments were found relativ frequently in the gullies than the pits, although the samples were small.

As in the previous phases, loose teeth formed a high percentage of the cattle, sheep/goat and pig assemblages, particularly in pit 2345. There was also a very high proportion of small unidentifiable fragments (Table 17). The bones from the gullies were in general preserved less well than those from the pits. Butchery marks were found in small numbers on cattle, horse, sheep/goat and pig bones. A few bones were burnt and a relatively high proportion of the sheep-sized bones were ivoried. Four bird bones were recovered including the only occurrence of a domestic fowl bone from the excavations. A single bone of teal (Anas crecca) and two bones of ducks not identifiable to species were also found. A few fragments of frog (Rana sp.) and toad (Bufo sp.) completed the assemblage.

Table I

Animal Bone Elements Represented in Phase 6 Deposits

Element	Cow	Horse	S/G	Pig	Dog	LM	SM
Skull frags.	8	-	6	1	2	112	46
Mandible	7	2	18	5	1	15	20
Maxilla	1	-	6	2	1	-	-
Loose teeth	52	7	88	17	2	1	1
Scapula	4	1	5	-	-	6	2
Humerus	5	2	8	2	-	4	2
Radius	5	2	17	-	-	-	-
Ulna	1	3	4	2	-	-	-
Pelvis	9	-	4	-	-	1	-
Femur	4	-	15	-	-	-	-
Patella	-	-	1	-	-	-	-
Tibia	6	1	11	2	-	-	3
Astragalus	3	1	2	-	-	-	-
Calcaneus	3	1	1	1	-	-	-
Tarsals	-	1	-	-	-	-	-
Carpals	4	-	2	-	-	-	-
Metacarpals	6	1	1	2	-	-	1
Metatarsals	6	1	7	1	-	-	-
Metapodials	3	1	-	-	-	1	-
Phalanges	15	-	9	2	-	-	-
Vertebrae	11	3	18	-	1	12	4
Ribs	-	-	-	1	-	33	81
Longbone frags.	-	-	-	-	-	112	232
Other frags.	-	-	-	-	-	149	108
TOTAL	153	27	223	38	7	446	500
Butchered	17	7	12	2	-	10	7
Eroded	15	3	11	5	1	33	40
Burnt	4	-	5	-	-	5	18
Gnawed	3	-	5	-	-	1	-
Ivoried	3	-	9	-	-	12	53

Cow = cattle; S/G = sheep/goat; LM = unidentified large mammal; SM = sheep-sized mammal.

Old Down Farm Animal Bones

Ageing Data

This analysis is confined mainly to the ageing of the mandibles by the examination of the eruption and wear of the cheek teeth. Although the wear on loose teeth and epiphyseal fusion data were recorded for the archive, a combination of preservation, recovery and methodological problems makes those sources of evidence less reliable. Analysis of mandibles is not free from these problems and it is possible that some (perhaps all) of the samples are unrepresentative of the kill-off patterns of the various species. Indeed the size of the samples allowed only for a detailed discussion of the sheep/goat mandibles.

Sheep/Goat

The mandibles of the two species are very difficult to separate. However, the predominance of sheep identified by the diagnostic features of other bones would suggest that almost all the mandibles examined also belonged to sheep. The method of analysis followed that of Grant (1975). Numerical values (n.v.) were assigned to each jaw after observation of the stages of eruption and surface wear of each molar. Higher numerical values indicate heavier tooth wear and thus an older animal. The numerical values do not represent equal units of time - the earlier stages of eruption and wear generally last for a shorter period. As a guide, the first molar comes into wear at c. n.v.8, the second molar at c. n.v.19 and the third molar at c, n.v.29-30. Absolute ageing of iron age sheep mandibles is still unresolved because of the inadequate knowledge of tooth eruption rates and the possible variability of these rates in different flocks of the period. The ages given here are no more than educated guesses. Figure shows the number of mandibles assigned to each n.v. for each of the major phases. These include estimated values from incomplete tooth rows but exclude a few mandibles that possessed only the second or third deciduous or permanent premolars. The largest sample was obtained from the Phase 5 deposits. This contained two main groups of mandibles, those with a n.v. of 0-15 and those with one of 33 and over. The first group included mandibles of neonatal mortalities, in most cases probably belonging to animals that died of natural causes, and older lambs which possessed first molars that were erupting or in

an early stage of wear. Even allowing for very slow tooth eruption rates, it is unlikely that many of these animals were over a year old. In contrast, the second group of mandibles had fully erupted tooth rows and hence belonged to sheep probably over three years of age and in many cases substantially older. If these mandibles are representative of the kill-off pattern of sheep at the settlement, it appears that provided the animals survived their first year, they could expect to reach a relatively old age before slaughter. Although there were fluctuations in the relative number of very youn and old mandibles represented, the same appears to be true for the earlier phases. Apart perhaps from the Phase 3 sample, there were very few mandibles with a n.v. of 15-30 (Figure). If the ageing estimates are accurate, this implies that very few sheep were killed in their second or third years. Certainly it would appear that few were killed at an age and weight that were ideal for the exploitatio of sheep mainly for meat. Although most of the lambs represented probably provided meat, they had not attained a size from which a lot of meat could be obtained from them. The quality of the stock was poor and so a high rate of natural young mortalities is to be expected. In addition there appears to have been a deliberate cullin of lambs not required for breeding or other purposes, possibly to conserve limited fodder or pasture. Greater refinement of the absolu ageing of the mandibles may demonstrate that were peaks of mortalitie within this group. The culling would have made more fodder available for the animals kept alive and required for breeding, wool and possibly milk production.

The importance of wool production is difficult to assess. Certainly wool could have been obtained from the older animals and in some cases several annual fleeces would have been grown. The importance of wool production can theoretically be gauged by the number of sheep that were allowed to mature (Payne 19773: 281-284). 38.2% of the mandibles from Phase 5 belonged to adult animals. This figure was as high as 55% in the smaller Phase 3 sample. It is premature, however, to interpret literally such figures derived from archaeological samples. The more fragile young mandibles may be under-represented especially in poorly preserved deposits and it is perhaps significant that all five of the ageable mandibles from the Phase 3 ditch belonged only to adult animals. The younger jaws may

not have survived in those deposits. Secondly, there is no proof that the mandibles deposited and recovered mirror the kill-off pattern exactly. Carcass redistribution, cooking and butchery practices may have combined to produce a misleading picture of the sheep population from the bones deposited in the excavated deposits.

If the samples do reflect accurately the mortality rates of sheep, two explanations could be put forward. The first is that mil production was an important aspect of sheep exploitation. Intensive dairy production involves a high kill-off of lambs to enables the ewes to provide milk for human consumption. It is more likely, however, that the regime of sheep husbandry was not an intensive one and, on the contrary, obtained only a low level of efficiency, which resulted in a high rate of first year mortalities either through natural causes or through a desire to keep alive mainly the animals required for breeding. As a result, although sheep were kept in large numbers, their exploitation seems not to have been at a level greater than needed for basic subsistence requirements.

The sample of sheep mandibles from Old Down Farm has parallels with several others of contemporary date in southern England. The two major concentrations of young lambs on the one hand and mature animals on the other are similar to those apparent in the deposits of Phases 1-2 at Gussage All Saints, Dorset (Harcourt 1979: 152) and those from the nearby hillfort at Balksbury (Maltby n.d.2) and the settlement on Winnall Down near Winchester (Maltby n.d.1). Samples from the Ashville Trading Estate site, Abingdon in Oxfordshire produced similar concentrations, although the immature specimens were generally less well represented (Hamilton 1978). Perhaps a general pattern of sheep husbandry is beginning to emerge at least for the middle iron age.

Cattle

Only 24 mandibles assigned to phase produced any tooth eruption evidence. Ten of these were found in Phase 5 pits. Seven of those possessed fully erupted tooth rows. Younger specimens were found in all phases and include the calf skeleton from pit 2664 (Phase 4) and a neonatal or foetal mandible in pit 937 (Phase 2). There were not, however, large numbers of calf bones, unlike the situation in the early iron age phase at Gussage All Saints (Harcourt 1979: 151). Compared to sheep and dog, few porous or unfused bones were recovered and the majority of the cattle represented in the deposits

of all phases were either mature or subadult. Whether this reflects the actual cattle mortality rates is unclear, although the bias towards adult animals has some similarities with the samples obtained from Winnall Down (Maltby n.d.1) and Balksbury (Maltby n.d.2 Mature cattle could have been used as working, breeding or dairy animals. Unfortunately there was little sexing data available to establish whether steers as well as cows commonly reached maturity. As Harcourt (1979:157) has pointed out, unimproved cattle may take upto five years to reach full size and there certainly appears to be no evidence that any of the stock were fattened rapidly for slaughter.

Pig

Most domestic pigs are killed immature for their meat and lard. The intensity of their exploitation can be best gauged by how quickly they were fattened for slaughter. Assuming that all the pigs represented were domesticated, at least nine of the 27 ageable mandib from Phases 2-5 had their third molar in wear, albeit at an early stage in most cases. Modern estimates would place such animals over two years of age (Silver 1969) and it is likely that the stock represented here had a slower rate of tooth development. There is no evidence therefore that pig exploitation was very intensive. The samples included a few bones of very young animals that were probably natural mortalities.

Horse

Very few horse bones belonged to immature animals. No porous bones were recovered and most of the mandibles possessed fully erupted tooth rows, many of which must have belonged to animals well over ten years of age, judging by the heavy tooth wear. Several mandibles, however, had relatively little wear on the permanent teeth and belonged to young adults probably not over five years of age at the most. Harcourt (1979: 160) interpreted a similar age distributior at Gussage All Saints as indicative of the fact that horses were not bred but rounded up periodically and then trained for work. In support of this, the lack of newborn or foetal animals in the horse sample was contrasted with their abundance in the sheep, cattle and pig assemblages. At Old Down Farm, there was little evidence for the

presence of very young cattle either and there is a possibility that neonatal mortalities of the larger mammals were not dumped in the pits. Although this does not disprove Harcourt's theory, it should be remembered that several alternative theories can be put forward to explain the lack of young horse bones in the deposits. Nevertheless it is clear that although horses seem to have provided an important portion of the meat diet throughout the settlement's history, they were never exploited intensively for their meat. Many reached old age and must have been used as transport and pack animals.

Metrical Analysis

Despite the large sample, relatively few measurements could be taken. This was due to the high percentage of immature bones of sheep in particular and also to the fact that erosion and gnawing had often destroyed the articular surfaces of the bones making measurements impossible. Similarly, both ancient and modern fragmentation hindered the analysis. Many of the horse limb bones, however, were complete and this allowed estimations of withers heights to be made. Using Kiesewalter's (1888) method of multiplying the lateral lengths of complete limb bones by a constant factor, withers heights were estimated from 23 horse bones, mainly metapodials. The estimates varied between c.115-135 cm. with a mean of 123.4 cm. for bones belonging to Phases 2-5. There was no evidence that there was any significant change in size in horses within these periods. The animals were therefore the size of small ponies of c.10-12 hands and their small size is typical of horses found in other iron age samples in southern England (Harcourt 1979: 153; Wilson 1978: 117-118; Maltby n.d.1).

The other major domestic species appear also to have been typical of the small stock kept in the iron age. For example, seven cattle tibiae from Phase 5 deposits had maximum distal widths that ranged between 50.0-58.0 mm. with a mean of 55.4 mm. Other middle iron age samples from Hampshire have produced tibiae of similar size (Maltby n.d.1; n.d.2). The sheep were similar in size to the small Soay breed. The eight complete metapodia from the Phase 2 deposits produced estimates of withers heights of 51.8-57.5 cm., using the conversion factors of Teichert (1975). In this and other phases the samples were small but there was no evidence for any significant

improvement in the stock during the lifetime of the settlement. For example, the eight proximal radii that were measured from the Phase 5 deposits had maximum widths of only 22.7-25.0 mm. (mean 23.7 mm.), similar in size to those recorded from other iron age collections and smaller than most Romano-British samples examined to date. Too few measurements were possible from dog and pig bones to make any realistic assessment of their size. None of the pig bones were of a size large enough to be considered to be from the wild boar (Sus scrofa) and the bones appear to belong to a small domestic breed. The butchered dog skeleton in pit 2493 (Phase 2) belonged to an animal with an estimated shoulder height of c.54-55 cm using the conversion factors of Harcourt (1974). A radius from Phase 5 belonged to an animal with a shoulder height of c.53 cm. Both these specimens fall into the upper size range of dogs recorded from other iron age sites (Harcourt 1974: 162-163).

Consequently the metrical analysis showed that the major domesticated species were typical of the small stock found at other sites in this region of contemporary date. There appears to have been no attempt to improve the quality of the stock and if any of the species were regarded as symbols of wealth, it was their quantity rather than quality for which they were valued.

Occurrences of Butchery Marks on Animal Bones - All Phases

Element	Cow	Horse	S/G	Pig	Dog	LM	SM
Skull	6	1	7	-	1	5	-
Mandible anterior	6	2	-	-	-	-	-
middle	4	2	-	-	-	-	-
posterior	5	5	-	1	-	-	-
Scapula	8	3	5	1	2	-	2
Humerus proximal	1	1	-	1	1	-	-
midshaft	--	1	-	3	-	-	-
distal	24	8	-	1	5	-	-
Radius proximal	7	-	-	1	-	-	-
midshaft	1	-	-	1	-	-	-
distal	1	-	-	-	-	-	-
Ulna proximal	5	-	-	3	-	-	-
distal	1	-	-	-	3	-	-
[illegible]	5	1	-	-	1	-	-
[illegible]	3	4	3	-	-	-	-
[illegible]bis	4	5	8	-	1	-	-
Femur proximal	5	2	4	-	4	-	-
midshaft	-	1	1	-	-	-	-
distal	3	4	1	-	-	-	-
Tibia proximal	3	4	3	-	1	-	-
midshaft	2	-	3	1	1	1	1
distal	2	-	2	-	-	-	-
[illegible]tragalus	8	3	11	-	-	-	1
[illegible]anews	1	1	1	-	1	-	-
[illegible]	-	1	-	-	-	-	-
[illegible]	2	-	-	-	-	-	-
[illegible]us proximal	1	-	-	-	-	-	-
[illegible]s proximal	2	-	1	-	-	-	-
[illegible]ges	4	-	-	-	-	-	-
[illegible]	2	4	3	2	-	-	-
[illegible]	1	2	1	-	-	-	-
[illegible] vertebrae	5	3	6	-	-	-	-
[illegible] vertebrae	4	-	1	-	-	-	-
[illegible] vertebrae	6	-	20	-	-	-	-
[illegible]	-	-	5	-	-	-	-
[illegible]rsal	-	-	9	-	-	-	-
midshaft	-	-	-	1	-	-	-
ventral	-	-	-	-	2	-	-
[illegible]gbone fragments	-	-	-	-	-	11	-
[illegible]er fragments	3	-	1	-	-	13	-
TOTAL	135	63	110	16	29	73	[illegible]

[illegible] S/G = sheep/goat; LM = large mammal; SM = small-sized mammal.

facial area; two skulls had their horn cores chopped at their base; two specimens exhibited fine knife cuts on the frontal and orbit probably made during skinning; finally two skulls had been chopped obliquely through the occipital condyle during the detachment of the skull from the vertebral column. Knife cuts were located quite commonly on both cattle and horse mandibles. Most of the cuts on the anterior or lingual aspects of the middle of the jaw were made during the removal of the tongue. Those on the posterior of the mandibles could have been caused during the detachment of the mandibl from the skull, although other explanations are possible.

Two main types of cut marks were found on the scapulae. The more common were located on both the medial and lateral aspects of the neck of the bone and suggest that the ligaments of the shoulder joint were severed here during the disjointing of the scapula from the humerus. The second type of butchery produced much shallower cuts and these ran along the length of the blade on either surface and were the consequence of the stripping of meat from the scapula. There was one example from both species of knife cuts on or near the proximal articulation of the humerus presumably made during the severing of the shoulder joint.

Butchery marks around the cubital joint were very common in both horse and cattle. Deep knife cuts were found often in profusion on the medial and lateral aspects of the distal humerus. Similar cuts were found less commonly on the posterior and anterior surfaces. Most of the cuts on the proximal radii were located close to the articulation on the anterior aspect of the bone and across the ligament attachments on the medial side. Nearly all the butchery on the ulnae consisted of knife cuts near the anterior of the olecranon process. The cuts on all three elements were made during the process of disjointing the forelimb at the cubital joint. Similar iron age examples of this process have been recorded in detail at Ashville, Oxfordshire (Wilson 1978: 120-121) and at Winklebury, Hampshire (Jones 1977: 61-62).

Severance at the hip joint was also evident from the occurrence of knife cuts near the acetabulum and on or near the proximal articulation of the femur. Several pelves of both species had been chopped, particularly on the midshaft of the ischium but also

occasionally on the ilium and pubis. These marks were probably made during the detachment of the pelvis from the rest of the carcass. Fine knife cuts on the ilia and ischia were more likely to have been associated with the stripping of meat from the hindquarters.

Knife cuts around the distal articulation of the femur and the proximal articulation of the tibia were made during the severance of the knee joint. Knife cuts on the midshaft of some of the cattle tibiae were probably made during the stripping of meat from the bone. A large number of cattle astragali had knife cuts that ran across the anterior surface and these indicate that the limb extremities were separated from the major limb bones at this point. Similar butchery was found on cattle astragali from Ashville (Wilson 1978: 123). Only three cattle metapodia possessed knife cuts, all near the proximal articulation and also made presumably during the detachment of the metapodia from the tarsals and carpals.

Butchery marks on cattle and horse cervical vertebrae consisted mainly of chop marks, although knife cuts were also found on both the dorsal and ventral surfaces of two horse atlases and axes and a cattle atlas. This butchery was probably associated with the severance of the skull, perhaps on some occasions with a few of the cervical vertebrae still attached. Several thoracic vertebrae of cattle and unidentified large mammal possessed knife cuts and several lumbar vertebrae had been cut with a knife on the lateral process. Knife cuts were found on both the lateral and medial aspects of ribs usually towards the ventral end.

In addition to the butchery marks, many of the limb bones had been broken. Both carcass dismemberment and marrow extraction would have necessitated such breakage. It was often difficult to be certain, however, how much of the fragmentation of the bones was the result of such activities. Modern fragmentation of the bones from the excavations did not assist in the interpretation nor did the fact that erosion or gnawing had also destroyed parts of the bones. In fact, quite a high proportion of the cattle and horse limb bones were complete or almost complete and it seems that marrow extraction was not carried out systematically on all the carcasses. Harcourt (1979: 160) noted the high incidence of complete horse bones in particular at Gussage All Saints.

Sheep

Only 110 sheep/goat bones bore evidence of butchery, a small number considering the size of the sample. The small size of the sheep carcasses may not have required much butchery to have taken place. Most of the knife cuts found were associated with the dismemberment of various parts of the skeleton. Two skulls had knife cuts on the occipital condyle made during decapitation. Knife cuts around the distal scapulae and proximal humerus would have been made during the disarticulation of the shoulder joint. Knife cuts on the distal humerus and the proximal radius were made during the separation of the cubital joint. The frequency of cuts around the acetabulum and the proximal articulation of the femur revealed that the hip joint was usually detached from the hindlimb at this point. A very high proportion of the astragali were butchered in a similar way to those of cattle and, like the large mammals, very few metapodia of sheep appear to have been butchered. Separation of the head from the vertebral column was also carried out by cutting or chopping through one of the cervical vertebrae. A large number of lumbar vertebrae of sheep and sheep-sized mammals had been cut on the ventral aspect of the lateral process of the bone close to the main body of the vertebra. The cuts ran in a cranio-caudal direction and similar knife cuts were found on five sacra and many ribs had also been cut just beneath the dorsal articulation. All these cuts were probably related to the same process of detaching the flanks of the carcass from the vertebral column.

It would be wrong to assume that the processes of butchery summarised above were carried out on all sheep. It is probably significant that butchery marks were found predominantly on the older and larger carcasses. Less butchery may have been needed on the smaller lambs, particularly their limb bones and it is also possible that the lambs were prepared and cooked in a different way to the adult animals.

Pig

Relatively few pig bones possessed butchery marks. The limited evidence available suggests that their carcasses were treated in a similar way to those of sheep.

Dog

Much of the butchery on dog bones has been discussed in the previous sections. In all, 39 bones bore evidence of butchery(Table The knife cuts on the pelvis, vertebrae, distal humerus, proximal femur and the occipital condyle of the skull were similar in appearance to those found on sheep and were made during the division of the carcasses. They provide conclusive evidence that dog flesh was eaten. Knife cuts on the distal radius and ulna, a carpal, a tibia and a calcaneus indicate the removal of the limb extremities from the rest of the carcass. It is interesting to note that there were several instances of groups of dog lower limb bones that had bee thrown away in pits and had obviously been separated from the more important meat-bearing parts of the skeleton. There are now several parallels for butchery of dogs for meat in the iron age in England (Harcourt 1974: 171; Wilson 1978: 122, 125; Maltby n.d.2).

It is possible, therefore, to observe the general patterns of carcass utilisation in the various species exploited at Old Down Farm. There remain several areas where more research on this topic would be rewarding. It is by no means certain that all carcasses wer butchered in the same way. The presence of butchery marks on some bones can be interpreted as evidence for carcass dismemberment, meat stripping or marrow extraction, for example, but the lack of similar butchery marks on similar bone elements may also be significant. Careful butchery need not leave any cuts on the bones and this may explain some of the absences. On the other hand, butchery techniques may have varied depending on whether the meat was for immediate consumption or was to be preserved by drying, smoking or salting and stored. The presence of concentrations of butchery waste - of sheep in pit 937 (Phase 2) and of cattle and horse in pit 1046 (Phase 5) - may indicate that on some occasions several animals were butchered together. The abundance of horse and cattle carcasses in pit 1046 in particular would have produced more meat than could have been consumed in a short period by the number of inhabitants envisaged to have been living at the settlement. If these bones were butchered and then dumped at roughly the same time, as seems likely, some provision for the preservation and storage of meat would have been essential, unless a lot of the meat was redistributed to inhabitants of other settlements. It seems likely that the majority of the

animals represented were butchered at or close to the settlement, although it is evident that not all aspects of the butchery process need be represented by the faunal contents of a single pit or even a relatively large group of deposits.

Discussion

The faunal remains were dominated by the bones of five species - sheep, cattle, horse, pig and dog. All contributed to the diet and the eating of meat from other sources appears to have been a very rare event. Goats were scarcely represented and several of their few identified bones were horn cores, which may have been brought to the settlement attached to horn required for working. Similarly the majority of red deer (Cervus elaphus) bones were antler fragments, several of which had been worked, and they are likely to have been introduced as a commodity separate from the carcass. In fact a butchered humerus from Phase 5 was the only positive indication that venison was eaten. Roe deer (Capreolus capreolus) too was represented only by a single antler. If domesticated birds were kept, they appear not to have been eaten. The few duck and goose remains are more likely to have belonged to the wild mallard (Anas platyrhynchos) and grey lag goose (Anser anser) than their domestic counterparts. The only evidence for domestic fowl was a single bone from the Phase 6 deposits.

The relative importance of the principal species is more difficult to estimate. Numerically sheep bones were the most abundant but it is apparent from the study of the contents of the individual pits that there was a tremendous amount of intra-site variability of the faunal material. The pits that produced the most bone were used as depositories for complete skeletons, burials of newborn animals and partially butchered carcasses as well as for the refuse collected from cooking waste. There is no guarantee that the excavated pits of any period have produced an accurate representation of the disposal activities and thus a true reflection of the relative number of each species exploited. Butchery evidence has demonstrated that meat was often stripped from the bones of cattle and horse and the contents of pit 1046 (Phase 5) showed that such

bones were sometimes dumped together at the extremity of the settlement. If this was common practice, it is possible that many of the horse and cattle bones were never brought to the heart of the settlement. It was unfortunate that so little of the Phase 3 ditch produced securely dated material, since its fills may have contained a greater proportion of such butchered cattle and horse bones than those found in the pits within its cicuit. The smaller sheep and pig skeletons do not appear to have been subjected to the same treatment and it is possible that most parts of their carcasses were brought to the cooking areas and eventually dumped in the pits nearby when they were infilled. This of course oversimplifies the situation, since some horse and cattle bones were found in the pits as well. Another problem relates to the possibility that much of the bone deposited in the pits had already been lying around elsewhere on the site before being incorporated into the fills. The effects of differential preservation of the bones in such circumstances is as yet not clearly understood. The large number of loose teeth and the poor representation of the more vulnerable articular surfaces testify to the partial destruction of the assemblage despite the excellent preservation conditions in many of the pits.

It may be possible to compare directly the horse and cattle assemblages since their carcasses seem to have been treated in a similar manner, although more horse bones survived intact than cattle. Cattle fragments in all phases comfortably outnumbered those of horse and if such remains do have a direct bearing on their relative abundance, cattle must have contributed significantly more to the meat diet and have been kept in greater numbers than horse. Similarly it could be argued that sheep greatly outweighed pig in importance. The major difficulty arises when attempts are made to compare the relative numbers of sheep and cattle, because of the uncertainty of how much effect differential recovery, preservation, butchery and disposal practices had in the formation of the samples. Although it would be misleading to estimate the minimum meat weights represented, cattle, because of their greater size, provided more of the meat diet than the number of their bone fragments would imply, especially when one considers the small size of many of the lambs represented. Indeed, even though it is possible that significantly more sheep than cattle

were kept, cattle may well have contributed most to the meat diet. Similarly, the importance of horse as a contributor of meat was probably quite considerable. Dog also appears to have played a small but perhaps not insignificant part in the supplement of the diet. The variability in the contents of the samples makes it difficult to recognise any significant changes in species composition during the life of the settlement, although superficially there appears to have been little dramatic change.

Studies of the ageing, metrical and butchery data were limited by the size of the samples. It was particularly difficult to demonstrate whether there were variations in species exploitation or in the size of the stock, for example, within the different phases. Generally the metrical analysis showed that the stock were of typically small iron age standards. Analysis of the ageing data from the sheep mandibles suggested that, if the samples were typical, a low level of subsistence husbandry was being practised. Indeed there was little evidence for very intensive exploitation of any species nor was there any indication that redistribution of the stock was taking place, although comparisons with assemblages from neighbouring settlements may provide further information on this topic. Certainly, there was no evidence for systematic butchery of carcasses on the large scale as found in some Romano-British settlements (Maltby 1979: 10-15). In contrast, the presence of neonatal mortalities of sheep in particular, and to a lesser extent, cattle, pig and dog, is perhaps indicative of the fact that many of the animals eventually eaten by the inhabitants had also been bred by them. The faunal remains are in fact what should be expected from a settlement, from which basic subsistence pastoral farming was practised.

The analysis of the Old Down Farm animal bones should be regarded as a preliminary one. More detailed investigations, particularly of the intra-site variability and the association of the different types of bone elements are envisaged together with detailed comparisons with samples from neighbouring contemporary sites when they become available. It is hoped, however, that this report has demonstrated the complexities of such data. It is only by

detailed study of faunal remains that they can be properly understood. The recording of so many partial skeletons in all phases was the result of careful observation of the material and the study of these in conjunction with the analysis of butchery and preservation conditions has enabled a clearer understanding of the derivation of the faunal samples to be made. It remains to be seen how the patterns of carcass disposal witnessed at Old Down Farm are typical of other iron age settlements.

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