APPENDIX B

Behavioural, Archaeological, Historical and Ethnographic Evidence for Animal Husbandry

The nature of the beast

Cattle

The Iron Age Celtic shorthorn (*Bos longifrons*) is now extinct, but was similar in size and form to modern Highland cattle or Dexter and Kerry cattle. The latter two breeds are popularly used in reconstructions of Iron Age and post-Roman settlements such as the Butser Experimental Farm and Bede's World (Fowler 2002: 231, plate xxxiii; Reynolds 1979: 49-50, 1995) (Figs. B.01-B.03, B.05). The Dexter averages *c*. 300 kilograms in weight, the Kerry *c*. 400kg (Ainsworth-Davis 1918: 506; Alderson 1995: 15), standing roughly 1m and 1.14m respectively. The modern Dexter was probably derived from the Kerry (Alderson 1995: 15), which itself might be distantly related to Camargue cattle of southern France, Hérens fighting cows of the Alps and the fighting bulls of Spain (Porter 2001: 32). The modern Kerry is largely a dairy breed, whereas the Dexter can produce milk but also small joints of good beef. As with many dairy cattle, the cows can be graceful and alert, but the bulls may be aggressive and dangerous. Today these breeds are either fairly smooth haired or have a slightly shaggy coat, and are either black or dun coloured. Like Iron Age beasts, these modern breeds are not usually polled, although some polled Iron Age cattle have been excavated (Maltby 1996: 22). Reconstructions either depict shaggy-haired beasts similar to modern Highland cattle (B.04), or shorter haired Dexter-like animals.

Oxen were castrated male cattle at least four years old (Watts 1999), and supplied the power for ploughing in Britain until the eighteenth century when they began to be replaced by horses. More docile due to their castration, in order to work in a team for ploughing or for draught purposes they have to be trained as left (nearside) or right (offside) animals (ibid.: 17). Individual animals become attached to their partner and to their position within the team. Teams of more than two animals usually required

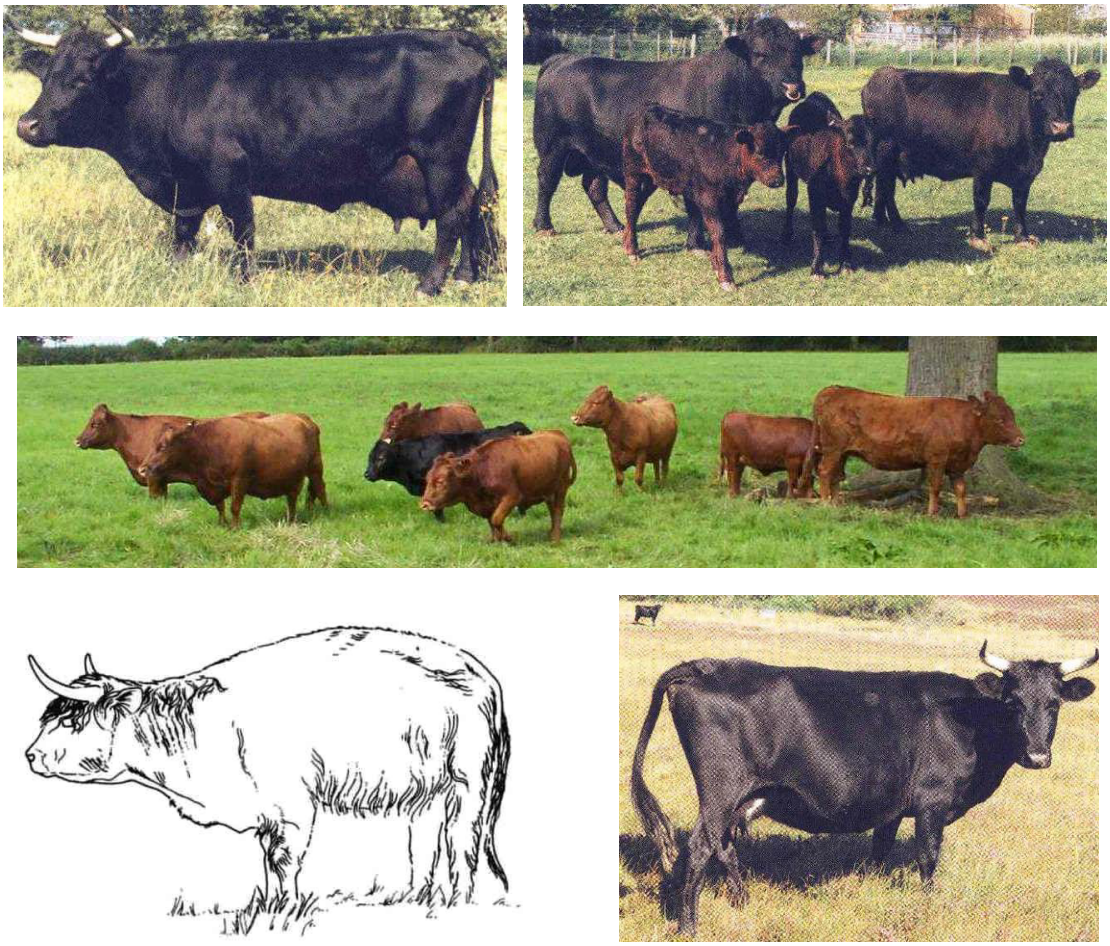


Figure B.01. (top left). *Dexter cow. (Source: Porter 2001: 34).* **Fig. B.02. (top right).** *Dexter cattle. (Source: Porter 2001: 33).* **Fig. B.03. (middle).** *Dexter cattle. (Source: www.brambledexters.co.uk).* **Fig. B.04. (bottom left).** *Reconstruction of an Iron Age cow. (Source: Cunliffe 2003: 118).* **Fig. B.05. (bottom right).** *Kerry cow. (Source: Porter 2001: 34).*

someone to steer the cart or operate the plough, but also someone to walk in front and lead them. Reynolds (1979: 50), however, suggests that cows were also used for traction in the past, allowing farmers to obtain milk from their draught beasts as well. On small farmsteads this might often have been the case, but on larger settlements oxen would probably have been utilised, especially during the Romano-British period. Indeed, a few Romano-British pictorial or figurative representations of oxen-drawn plough and draught teams have been excavated in Britain (see Chapter 4). Cattle might have been yoked at the horns, or at the shoulder. Both are attested to in the ethnographic and ethno-historical record, and both have been tried at Butser. Anglo-Norman landholdings were often measured in *oxgangs* or *bovates* – the area that could be worked by a single ox in a year (Watts 199: 6).

Figure B.06. (top left). *Experimental ploughing with shoulder-yoked Dexter cows, Butser Experimental Farm. (Source: Reynolds 1979: 48).* **Fig. B.07. (top right).** *Experimental ploughing with horn-yoked Welsh Black-cross cows, as part of the BBC 'Living in the Past' television series. (Source: Percival 1980: 135).* **Fig. B.08. (bottom).** *A Roman ox-cart with wooden disc wheels. (Source: Watts 1999: 7).*

Cattle can require up to 135 litres (or 30 gallons) of water a day per animal (Porter 1991), and thus need regular access to large supplies of water. It is therefore no coincidence that many trackways or droveways in the study region were orientated towards watercourses (see Chapters 6 and 7). All cattle need substantial amounts of food for their digestive systems, and as ruminants this takes time to eat and digest. Teams of oxen could therefore only be worked for part of the day, unlike horses that can function on more concentrated foods at the beginning and end of each working day (Watts 1999: 12). So journeys through the landscape with oxen for ploughing fields would either have been more frequent, or would only have taken place in one part of the day, not in the early mornings and late evenings as with horse-drawn plough teams in the early modern period.

Cattle hooves are more sensitive and prone to damage than those of horses, lameness resulting in reduced food intake and weight loss. Cattle driven on long-distance journeys between Wales and England in the nineteenth century had to be shod in order to prevent lameness on metalled road surfaces (Colyer 1976: 60). These were special two-part metal shoes different from horseshoes. Many droves were accompanied by a smith with cattle shoes and nails smeared in butter or fat to prevent rusting. Romano-British iron hipposandals have been excavated but I am not aware of any 'bos-sandals' of this period, although some finds have been attributed medieval or post-medieval dates. Oxen rather than horses would more likely have pulled the wagons of military supply trains, merchants and farm carts, but if travelling on metalled roads they would have needed metal shoes or padded slippers of leather.

Cattle have many attributes that may have lent them particular significance to people in the past. The gestation period of most breeds is around 283 days, and for the relatively unimproved Chillingham cattle *c*. 286 days (Hall 1979; Porter 1991), which is similar to human pregnancies. Cattle form hierarchies structured by age and sex, with matriarchal cows and dominant bulls; and also by individual personalities. As illustrated in Chapter 6, in many small-scale herding societies the names of people's families and descent groups, and the names and descriptive terms of cattle may be interlinked and interchangeable (Galaty 1989; Ryan, Karega-Munen, Munyiri and Kunoni 1991). Several archaeologists have drawn attention to the ways in which the herd structures and breeding lines of cattle may have formed analogies for human kin relations during prehistory (Edmonds 1999; Giles 2000; Julian Thomas 2000). Cattle are intelligent and inquisitive, and if given names will come to the call (Porter 1991). In turn, they will recognise individual people. They readily establish their own routines of daily movement around fields and pastures for grazing, watering and rest, and this herd knowledge is passed on down to younger animals. Even on modern dairy farms, older and more experienced cows can bring in younger animals for milking at set times of the day with little or no human intervention.

The Romans attempted to increase the size of cattle through breeding, but the smaller size of native animals might have been deliberate, allowing more beasts to be kept (Barker 1999: 279; Roymans 1999: 295-296). Numbers of cattle might have been

important as indicators of wealth and status, and their social role in exchange, marriage, fine payments, tribute and clientship. This is attested by large numbers of ethnohistorical and ethnographic studies (see examples in Arhem 1981; Burton 1980, 1982; Coote 1992; Dyson-Hudson 1973; Evans-Pritchard 1940; Galaty 1989; Herskovits 1926; Kuper 1982; Lucas 1989; Pavitt 1991; Parker Pearson 2000). For many of these groups, cattle form the basis of their social values, beliefs and practices. It has even been argued (albeit problematically) that cattle and cattle raiding formed an ancestral, mythological leitmotif of Indo-European societies (Lincoln 1981). Derks (1997: 102) and Roymans (1999: 299) suggest that Magusanus, a native deity from the lower Rhine that became associated with the Roman god Hercules, was a popular symbol of pastoral/warrior ideology because of the Classical link between Hercules and cattle. I consider cattle symbolism cattle further in Chapter 11. With regard to cattle husbandry it is worth noting this observation by Graeme Barker:

> The larger size of cattle inside the Roman empire compared with amongst the cattle-keeping societies beyond the Limes parallels the differences today between European ranched cattle in Africa and the traditionally-kept herds of indigenous breeds, and probably reflects rather similar differences in husbandry goals and ideologies. (Barker 1999: 279).

Roman writers recommended that mating should take place from mid-June to July, so that calving took place after the end of winter (White 1970). This refers to managed husbandry practices in Italy, and cannot be transposed directly to Britain (Berg 1999: 228), but it would seem logical that Iron Age and Romano-British communities would have avoided too many calves being born during the winter, when fodder for livestock was most scarce and neonate deaths most likely. Winter fodder may have come from hay produced in the autumn from long grass meadows on the river floodplains, although haymaking might have been introduced during the Roman period (see Chapter 6). Another source of fodder may have been trees in managed hedgerows or copses. Pollarded oaks and beeches in hedgerows are an important source of leafy fodder in parts of the eastern Mediterranean region today (Halstead 2006). Oak, beech, ash, and elm foliage was once widely used for fodder in Britain and north-west Europe (Haas, Karg and Rasmussen 1998; Miles 1999), whilst beech nuts or mast was fed to cattle in the autumn as well as to pigs. The branches, twigs and leaves of oak,

alder, ash, willow and hazel were all recovered from waterlogged contexts excavated by several different archaeology units from a series of sites at Balby Carr (Allen 2005; Gale 2005; Hall et al. 2005; Tyers 2005). Some of these branches had been coppiced and cut, indicating human management and thus the potential at least that leaf fodder could have been supplied to livestock. Coppicing is also represented in Roman iconography (M. Aldhouse-Green pers. comm.).

Archaeological evidence for the stalling of cattle in prehistoric Europe includes partitions for stalls within longhouses ranging from the Neolithic *Linearbandkeramik* to the Iron Age, plus the presence of dung and urine gutters, hoofprints on floors and direct or indirect evidence for leaf fodder, dung and straw and cattle parasites within buildings (Bakels 1997; Rasmussen 1989, 1999; Zimmerman 1999). This evidence has come from exceptional waterlogged or alluvial contexts, however. The stalling of livestock is a high input: high yield process, and does not generate much additional warmth in inhabited buildings, contrary to popular belief (Zimmerman 1999: 314-315). Nor does it necessarily generate greater milk yields. One advantage is the generation of large quantities of straw and manure for arable fields, although this can equally be done in dung-yards or pens, and there is considerable human labour necessary to produce, collect and bring in fodder, to take out dung and fouled straw, and clean out byres completely in the spring. The main importance of stalling may have been the protection of some (but not all) animals on a settlement from adverse winter weather, and the reinforcement of close relations of affiliation or ownership.

> The animals are taken into the houses in order to become members of the household – not as humans…but because they become a valuable part of the household, they belong and relate to somebody, and the ownership is defined by the building that houses them. Whether this is relevant for all animals or just for the chosen milch cow, the valuable ewe, the horse or perhaps the good, well-trained and valuable draught animals, the pair of bullocks, we do not know…(Rasmussen 1999: 287).

Roman writers who described byres and/or weather-roofed folds included Columella in his *De Re Rustica* or *On Agriculture* in the first century AD (Columella 1, 6, 4-6), and Palladius in his own *Agriculturae De Re Rustica* from the early fifth century AD

(Palladius I, 21 and 22), though they were concerned with villa estates. The early Iron Age rectangular buildings excavated on the Gwent Levels (Bell, Caseldine and Neumann 2000) may have functioned as seasonal byres. There has been no equivocal evidence for stalling in within either round or rectangular domestic *houses* in Iron Age or Roman Britain. Some large early to middle Iron Age roundhouses of southern England, large lowland Scottish roundhouses and Atlantic brochs may have had animals within them (Armit 1997; Pope 2003, 2007, forthcoming), but the generally small size of later roundhouses within my study region would preclude this (see Chapter 9), although some roundhouses might have been solely used as byres.

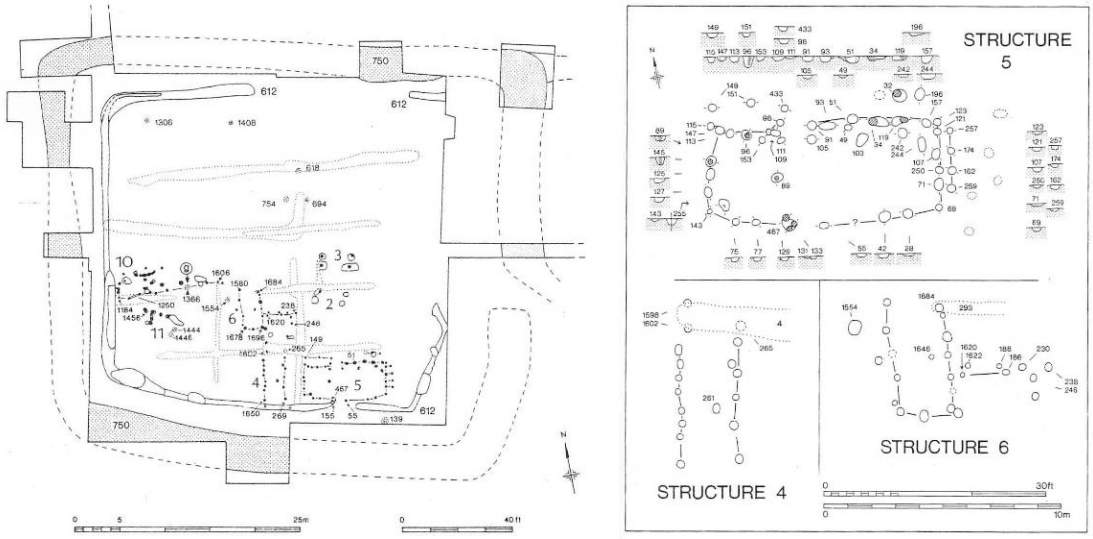


Figure B.09. (left). *Phase III of Dunston's Clump, Notts., showing post and stake built structures in the southern side of the enclosure during the second and third centuries AD.* **Fig. B.10. (right).** *Detail of some of the post-built structures that may have been pens. (Source Garton 1987: 35, 37).*

Rectangular structures that probably represent barns and/or byres have been excavated on many larger Romano-British settlements and villa sites (Hingley 1989). Some of the subdivisions within enclosures, however, might well have represented external byre and stall structures, as with the Phase III structures at Dunston's Clump in Nottinghamshire (Garton 1987: 31-37, figs. 10-11, 13) (Figs. B.09-B.10). These varied between 5-10m long and 3-5m wide. The might also have been a byre (Owen 2000: 7, fig. 3) (Fig. B.11). The number of internal posts in the rectangular, post-built 15m long structure excavated at Garforth imply the subdivisions of a byre rather than a domestic building or a barn. On many sites relatively insubstantial byre structures

may not have survived later plough truncation. Possible pen and corral structures within the study region have been described in Chapter 6 and Appendix E.

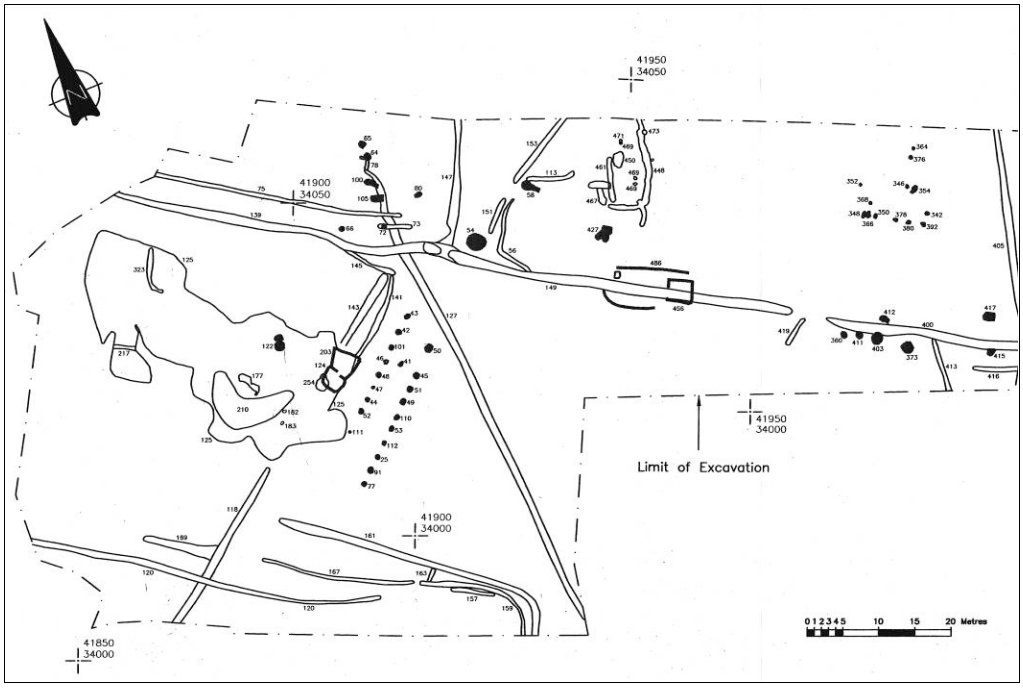


Figure B.11. *Plan of the excavated Romano-British settlement at Garforth, W. Yorks. The rectangular post-built barn or byre structure is located just left of centre. Although undated and unphased, it respects the alignment of some mid-second century AD boundary ditches. (Source: Owen 2000: fig. 2).*

When cattle are kept for milking, with less improved breeds it has been suggested that it is usually necessary to have the calves present in order to stimulate the let down of milk (Balasse 2003: 5). The calf is briefly allowed to suckle to stimulate milk flow, and after milking has finished it finishes the milk remaining in the udder at that time. Subterfuges such as calfskin 'dummies' sprinkled with urine or salted water might be used, but this is only in cases of the accidental loss of the calf. In cattle, the inability to stimulate full milk let down may lead to loss of production, or even the cessation of lactation altogether. The need for calves to be present to stimulate let down in primitive breeds has been debated, however (Halstead 1998; McCormick 1992), and large numbers of young calves in bone assemblages need not reflect dairying. It is also the case that in many small-scale societies milking and cheese and yoghurt production can take place with only the minimum of equipment (Barker 1999; Barker and Grant 1991).

The Ferry Fryston carriage burial was the focus for deposits of butchered and burnt cattle remains from around 160 animals in the square barrow ditch surrounding the central grave pit, the result of several different depositional episodes (see Chapter 11 and Appendix F). Recent isotope analyses have shown that *none* of the animals examined were raised in the immediate area, and were derived from different herds raised on different geologies (Howard-Davis, Lupton and Boyle 2005: 15). Some animals may have travelled considerable distances; perhaps even from outside the study region. Full publication of post-excavation results should clarify this (Boyle et al. forthcoming) – a welcome move towards herd biographies and geographies.

Sheep

Modern equivalents to prehistoric sheep are the small, 'primitive', unimproved breeds such as the Soay of St. Kilda, the Hebridean and the Manx Loghtan, whose mature ewes generally only weigh between 20-30kg (Figs. B.12.-B.16). The Soay sheep in particular are very fast and agile, and can jump heights of up to 1.8m (Alderson 2001: 14; Reynolds 1979). This may be a legacy of their feral past on rocky islands, and this can cause problems with managing them today. 'Primitive' breeds such as the Soay are supposedly impossible to herd with dogs (Reynolds 1979: 53), although Pryor disagrees and has done this successfully with his mouflon flock (Pryor 1998: 96-100). Iron Age sheep may therefore have been less skittish than modern Soays. The sheep from Castleford were quite small, gracile animals less than 0.56-0.57m high at the withers (Berg 1999: 231), and were smaller than those known from other Roman sites, but equivalent in size to Iron Age sheep. Although a small increase in size was noted over time, it is likely that these sheep were locally raised.

The wool of these breeds starts to be shed in spring, and was traditionally plucked (rooed) rather than sheared (Alderson 1995; Hart-Davis 2002), though this tendency has often been bred out of modern animals. They would have produced smaller amounts of hairier wool than modern breeds (Ryder 1981: 185-187), though there is evidence for a gradual improvement towards finer wool. Iron shears suitable for shearing fleeces are known from Iron Age contexts on the continent – a fine pair in a wooden case was also found at Flag Fen (Pryor 1991). Although castrated wethers might have produced more wool, the dominance of females amongst older animals in

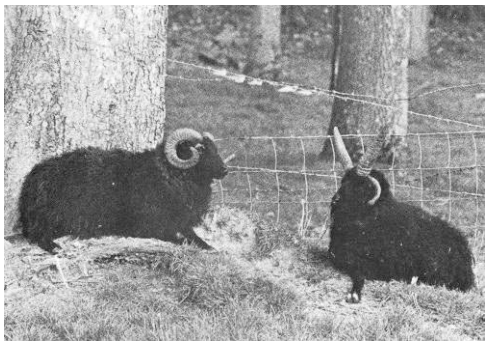


Figure B.12. (top left). *Soay sheep. (Source: Hart-Davis 2002: 171).* **Fig. B.13. (top right).** *Soay sheep near Swillington Common, W. Yorks., April 2006. (Source: author).* **Fig. B.14. (middle left).** *Two-horned and four-horned variants of Hebridean rams. (Source: Alderson 1995: 5).* **Fig. B.15. (middle right).** *Soay sheep. (Source: Alderson 2001: 14).* **Fig. B.16. (bottom left).** *Manx Loghtan ram. (Source: Hart-Davis 2002: 169).*

some excavated assemblages suggests wool was often secondary to milk production and breeding (Maltby 1996: 22). In modern 'primitive' breeds reddish-brown, tan, grey and black fleece colours predominate, and white also occurs (Ryder 1981: 187). Roman woollen textiles were made from predominantly fine, white wool, but there may have been considerable variation at a local level and within individual flocks.

Polycerate (multi-horned) sheep remains have been excavated from the study region, two from Well 1 at Dalton Parlours (Berg 1990b: 248) and one from Castleford (Berg 1999: 232), all of these being four-horned. These would thus have resembled some polycerate 'primitive' breeds such as the Hebridean or Manx Loghtan (Alderson

1995; Hart-Davis 2002), which usually have between four to six horns (Figs. B.14, B.16). It might be thought that these extra horns would make the animals easier to handle, but they are not that robust and the horn sheaths can become detached from the horn cores, coming off in people's hands (J. Davies pers. comm.).

Shepherds and their dogs would have walked the fields and open hilltops where flocks grazed, looking out for any injured animals or those caught up in vegetation or mired in boggy ground. Modern lowland sheep have been bred for docility for centuries, but upland and 'primitive' breeds can be much more cunning, and if they have not seen people (and dogs) for several weeks they can become feral (Gray 1999: 446). Like cattle, sheep establish daily routines of movement, moving from lower to higher ground in the late afternoon and spending the night on or near the tops of hills, or at the highest part of a field. As they range over land, sheep too learn the best places to shelter or lie in shade, to eat and to hide, to mate or to give birth. In the north of England, the Borders and Wales this process is called 'hefting on' or 'heeafing' (Hart 2005; Hart and Ingelby 1990). This is learned sheep knowledge, which is passed on down the flock through generations of animals, usually from ewes to lambs. Shepherds too must learn these flock geographies, and have to construct their own daily movements around them. They must be able to recognise individual sheep, and know their bloodlines, personalities and habits. In the Borders this is known as being able to 'ken the sheep', and shepherds must be 'good kenners' (Gray 1999: 450).

> If a sheep is in trouble anywhere on the hill, a shepherd should be able to observe it during his round and take remedial action. Shepherds thus connect sight lines directly to the life and well-being of the sheep…shepherds realise they must go round the hirsel [one shepherd's sheep and also the area that flock grazes] many times to become familiar with all of the areas where a sheep might disappear from view. The paths shepherds establish meander over the terrain in relation to the sheep's mobility, visibility, and risk. (Gray 1999: 451, my addition in parentheses).

On the gently undulating Sherwood Sandstones and Coal Measures visibility would have been better, although wooded copses, stream channels and hedged banks may have blocked sightlines. The more elevated and folded Magnesian Limestone landscapes would have required more detailed knowledge. In the summer and during

early stages of pregnancy in autumn and winter, sheep do not require much daily attention (unless weather conditions are severe), but in the later stages they are often moved into infields or pens ready for spring lambing, especially ewes known to experience birth problems. Some traditional lambing pens used in Britain were temporary hurdle structures (Fig. 5.06) that would leave little archaeological trace other than a few stakeholes unlikely to survive modern ploughing. At lambing time, shepherds usually slept out next to the sheep in temporary shelters (Gray 1999: 450; Ward 1991: 72). Regardless of the 'let down' debate in cattle, in goats and sheep it is not necessary to have the young present to stimulate milk let down (Balasse 2003: 8), so keeping lambs and kids alive may not have been essential; although once again uniform assumptions have been criticised (Halstead 1998).

Many modern ewes have a tendency to coup between lambing and shearing time in late June or July, when they may roll on their backs and be unable to right themselves, causing a dangerous build up of gas in their stomachs (Gray 1999: 456). 'Primitive' breeds with their smaller bodies, lighter fleeces and greater agility would have been less susceptible to this though. Using their detailed knowledge of local topography and where their sheep are at different times of the day, shepherds construct paths so that they come around behind the flock, pushing them in the desired direction (ibid.: 452). Shepherds' lives are gruelling, as echoed by this 1930s Wiltshire farmhand:

> All we do is run about and sweat atter they blasted sheep. We be either lambing 'em, runnin' 'em, maken' 'em, shearing 'em, dipping 'em, or some other foolishness. And they can have all the grub we do grow, and God knows how much it do cost the Guvnor fer cake. (Street 1932: 21).

Pigs

At Butser Ancient Farm, wild boar bred with Tamworth pigs were used to produce animals that looked similar to Iron Age pigs (Reynolds 1979: 52). These 'Iron Age' pigs are now often seen at recreated prehistoric settlements (Figs. B.17-B.20). Like wild boar, the young of these hybrids have striped piglets. The Tamworth (Figs. B.21-B.22) is believed to be the only British pig breed that was not crossed with Asian pigs in the eighteenth and nineteenth centuries (Hart-Davis 2002: 193; Porter 2002: 15),

and thus more like ancient European domestic stock. The Tamworth has a longish snout, pricked ears and long legs that make them fast and agile. Intelligent and vocal, they are hardy, being resistant to sunburn and able to live outdoors for protracted periods. Iron Age and Romano-British pigs would have had similar qualities.




Figure B.17. (top left) *and* **Fig. B.18. (top right).** *Wild boar/Tamworth hybrid at Castel Henllys, Pembrokeshire. (Source: D. Roberts and author).* **Fig. B.19. (bottom left)** *and* **Fig. B.20. (bottom right).** *'Iron Age' pigs at the Lejre Experimental Centre, Denmark. (Source: © Lejre Experimental Centre).*

Pigs will comprehensively turn over large quantities of earth (Fig. B.23), and this rooting activity may well have been deliberately utilised to break up the sod and to manure land prior to cultivation (Reynolds 1979: 53). In Britain, rights of pannage allowed many people in rural communities to turn out their pigs to forage in woodland during the late summer and autumn (Fig. B.24), but they were also grazed on stubble after the harvest (Hart-Davis 2002; Ward 1991). Similar practices are likely to have existed during the study period. Although pigs are generally only held to produce meat and manure, pigskin has been cured and utilised as leather in the historical past, and might have been used during the study period.




Figure B.21. (top left). *Tamworth sow. (Source: author).* **Fig. B.22. (top right).** *Tamworth piglets. (Source: unknown Internet image).* **Fig. B.23. (bottom left).** *Pigs turning over earth in a field during the 1950s. (Source: Ward 1991: 24).* **Fig. B.24. (bottom right).** *Rights of pannage. Pigs foraging on New Forest commons during autumn. (Source: Hart-Davis 2002: 190-191).*

Pigs can be most obstreperous animals and difficult to control, but ethnographic evidence suggests that women may routinely look after them and even quite small children can be placed in charge of them (Dwyer and Minnegal 2005; Rappaport 1984: 58) (Fig. 3.22). Photographs (albeit bucolic and romanticised in nature) from the early to mid-twentieth century in Britain seem to confirm this (Fig. 6.26). These pigs were probably mostly sows and gelts (castrated males), however. Pigs can be hard to confine. In parts of New Guinea, stout pig-proof fences are necessary to keep both wild and domestic pigs out of cultivated areas (Lawrence 1984: 18; Steensberg 1980: 111-120). When the 'Iron Age' sow kept at Castell Henllys in Pembrokeshire came into season, the separately confined boar was inspired to put his head underneath a fence of strong, deeply-embedded posts and galvanised steel wire, and he lifted up the fence and got out with no difficulties (P. Bennett pers. comm.). Flush with hormones, at least six men were then necessary to lasso and restrain the animal. Breeding boars might thus have needed very secure pens.

In some pig husbandry practices in New Guinea, piglets are separated from sows early on and are raised within households, often by women. They consequently become extremely tame and may be led around on leads, or will respond to their owners' calls (Dwyer and Minnegal 2005: 45-46). As in parts of New Guinea therefore (e.g. Rappaport 1984: 58; Steensberg 1980: 171, figs. 140, 143), it is possible that on some Iron Age or Romano-British settlements pigs could have been accommodated in stalls within the same roundhouses or rectangular buildings that people lived in, although there is no archaeological evidence for this. Pigs were caught up in a fire within a rectangular Iron Age house at Ginderup in Jutland (Hedeager 1988), although it may have been the case that these animals (and the cattle and sheep found with them) were part of a deliberate, formal or ritualised closing down or abandonment practice.

Goats

Goats have traditionally been regarded as of little importance in both Iron Age and Roman Britain (Coy and Maltby 1987: 227; Fifield 1979: 303; Grant 1984a: 113; Maltby 1981: 160). This assumption may be wrong, however. At Castleford, goats were securely identified from cranial and post-cranial remains, and from waterlogged scraps of their leather (Berg 1999; van Driel-Murray 1998). The goats were larger on average than the sheep (Berg 1999: 232, fig. 120). Leather from cattle skins was mostly used for the large rectangular shield covers used by Roman legionaries and also Roman military footwear, which had to be hard wearing (van Driel-Murray 1985, 1998). Almost all other leather though was actually derived from goatskin, which was more supple and easier to work and maintain. Each auxiliary shield needed two complete goatskins, whilst a single legionary tent for eight men required around 70 goatskins. Substantial numbers of these animals would thus have been associated with Roman military sites, but their remains may often have been confused with sheep. The numbers of goats might thus have been considerably under-estimated by archaeologists in the past, and large flocks would have been managed by or for the military. Goats are hardier and more agile than most sheep, and can do well on poor grazing and browse.

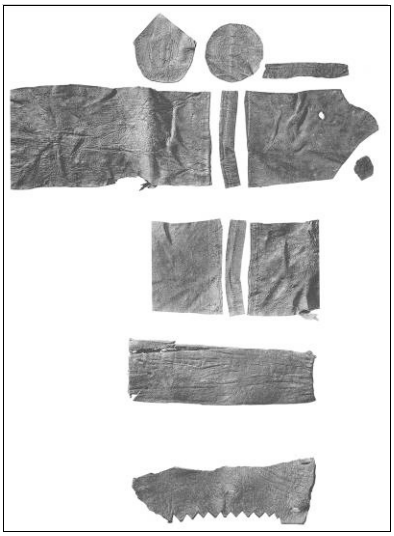


Figure B.25. (top left). *British feral billy goat, and* **Fig. B.26. (top right).** *British feral nanny goat and kid.* (Source: *Hart-Davis 2002: 78).* **Fig. B.27. (bottom left).** *Bagot goats in Cumbria. (Source: Alderson 2001: front cover).* **Fig. B.28. (bottom right).** *Fragments of Roman military tents made of goat leather, excavated at Castleford, W. Yorks. (Source: van Driel-Murray 1998: 314).*

Horses, mules and donkeys

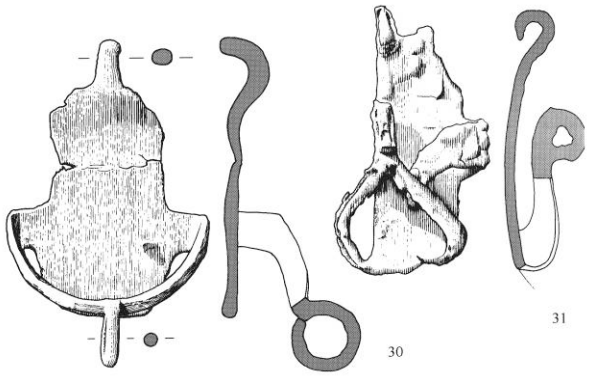
Most horses from British Iron Age assemblages were between 10-13 hands high at the withers, or 1.02-1.32m (Luff 1982: 71, 204; Maltby 1996: 23), a 'hand' being 10.16 centimetres. This was the size of modern Exmoor ponies at 11-12.2 hands, or New Forest ponies at 12-13 hands (Alderson 1995; Johnstone 1996) (Figs. B.29-B.30).

Like these modern breeds, it is likely that Iron Age and Roman horses would have been quite hardy beasts. Even these more robust horses and ponies might have required greater care than cattle and sheep, and during the winter months stalling and fodder provision may well have been necessary. If regularly used on metalled Roman roads, horses would have been provided with iron hipposandals, especially those


Figure B.29. (left). *Exmoor ponies, and* **Fig. B.30. (right).** *New Forest ponies. (Source: Hart-Davis 2002: 135, 138).*

belonging to the Roman military (Figs. B.31-B.33). Several examples of these have been excavated within the study region. Specialist blacksmiths would have travelled with cavalry units to provide these and horse harness equipment. The lack of neonate and juvenile horse remains from Iron Age sites has led to the suggestion that Iron Age horses were not bred, but were captured from wild herds and then trained (Harcourt 1979: 158; Maltby 1996: 23). Others have proposed that the breeding of horses was an important activity at some middle Iron Age sites in the Thames Valley (Allen and Robinson 1993; Lambrick and Robinson 1979). In the densely settled landscapes of my study region, wild or feral herds of horses would not have survived for long. It is possible that horses might have been captured from semi-feral herds (similar to Dartmoor or Exmoor ponies) in the Pennine uplands of Derbyshire and North and West Yorkshire and then traded on to other communities living in the lowland areas, but it is perhaps more likely that by the late Iron Age small numbers were kept and bred. Given the scarcity of horse remains in general and in the study region in particular, especially of post-cranial and non-limb bones, taphonomic factors might well account for the apparent lack of young animals.

The modern division between ponies and horses is drawn at 14 hands, and the mean for Roman horses in north-west Europe has been calculated as 1.37m (Johnstone 1996; Luff 1982). At Castleford, although there was no evidence of an increase in size between early and late phases of the fort and *vicus*, there were fourteen horses ranging from 12 to 15.6 hands or 1.22-1.58m, in addition to seven more 'native-sized' ponies of 11-13 hands (Berg 1999: 236). The former group of larger animals were likely to



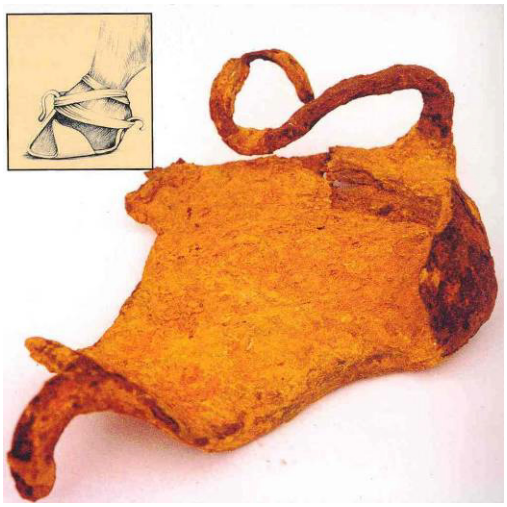


Figure B.31. (top left). *Romano-British iron hipposandal. (Source: © The British Museum.* **Fig. B.32. (top right).** Two iron hipposandals excavated at *Rossington Bridge, S. Yorks., 1956-61. (Source: Lloyd Morgan 2001: 23).* **Fig. B.33. (bottom left).** *Reconstruction of a fitted hipposandal, along with an excavated example. (Source: Highways Agency 1999: 10).*

have been associated with military cavalry units. Iron Age and Roman horse riders did not use stirrups, which do not seem to have been introduced across Europe until the early medieval period. As Native Americans demonstrated in the nineteenth century, however, the lack of stirrups does not preclude excellent riding skills, and the development of accomplished cavalry techniques and tactics. So although bareback riding may be initially harder to master, it is probable that where horses were kept on settlements some Iron Age and Romano-British people would have been skilled riders from an early age. In addition, in military as well as perhaps in civilian contexts, Iron Age and Roman horse riders probably utilised saddles with four pommels which would have given them greater stability and manoeuvrability (James 1993: 78-79). Where carriages or chariots were used, the horses would have had to be trained from an early age to work together as a team. This, together with the breeding, breaking-in and training of horses, would have been practices that comparatively few individuals were skilled in, and this may have leant them greater social status.

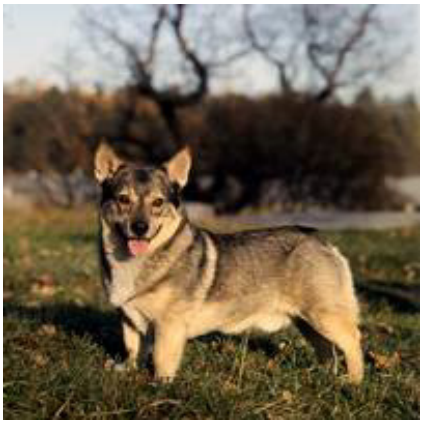
The Romans introduced mules and donkeys to Britain, and the former were the main draught animals of the Roman army (Applebaum 1987: 512). Possible mule skeletal remains have been excavated elsewhere in Britain, and donkey remains were found at Newstead on Hadrian's Wall (ibid.), but I am not aware of any such finds from the study region. A curse tablet found at Redhill in Nottinghamshire, however, noted the theft of a mule, along with bags and domestic items (Hassall and Tomlin 1992).

Dogs

A relatively limited range of dog sizes was present in the Iron Age (Harcourt 1974; Maltby 1981: 192, 1996: 23). Some dogs were probably used to herd cattle, and many modern cattle herding breeds such as Swedish Vallhunds, Welsh Corgis, Lancashire Heelers and Australian Cattle Dogs are all quite small, nipping the back of cattle and sheep legs to drive them on, but using their small stature and agility to dodge the inevitable kicks and butts (Figs. B.35-B36, B.38-B.39). Although a corgi-sized dog was excavated from the crannog at Llangorse Lake in Wales, this was dated to the eighth or ninth century AD (J. Mulville pers. comm.), and it is not known if the corgi breed has a pre-Roman origin, or was introduced to Britain by Scandinavian settlers. Most sheepdog breeds used for herding sheep tend to be the size of modern Border or bearded collies, whilst other dogs might have been purely guard animals for herds and flocks, kept in order to watch over flocks and ward off wolves, foxes and other predators, as with dog breeds in the Alps, Pyrenees, eastern Europe and Turkey today. These are typically larger, more massive animals such as the Pyrenean Mountain Dog or Great Pyrenees, the Pyrenean Mastiff, and the Kangal köpegi of Turkey. Some dogs would also have been bred and kept for hunting, and these would have been rangier animals varying in size from lurchers to Scottish and Irish deerhounds.

A greater variety of dogs appeared during the Romano-British period, including small 'lap dogs' that were clearly pets (Harcourt 1974). Examples of these have been excavated at Castleford (Berg 1999: 236) and Garforth (Jaques 2000: 23), the latter being short and squat with bowed legs. Three dog humeri recovered from Castleford had knife marks, indicating that they had perhaps been skinned to use their pelts.




Examples of herding dogs. **Figure B.34.** *and* **Fig. B.35. (top row).** *Australian Cattle Dogs.* **Fig. B.36.** *and* **Fig. B.37. (second row).** *Swedish Vallhunds.* **Fig. B.38.** *and* **B.39. (third row).** *Pembroke Welsh Corgis in action.* **Fig. B.40. (left).** *The Pembroke Welsh Corgi. These intelligent animals may be the most ancient dog breed in the British Isles. (Source: unknown Internet images).*

Dogs often occupy liminal positions within human societies, and may be reviled as much as they are appreciated, even within the same culture. These ambiguous and complex beliefs surrounding them may also have been in place during the Iron Age and Romano-British periods, and meant the special treatment of their remains on occasion (q.v. Black 1983; Serpell 1995; Smith 2005). This use of dogs in placed deposits is explored further in Chapter 11.

Chickens and domestic fowl

The domestic chicken *Gallus domesticus* is thought to be derived from the wild red jungle fowl (*Gallus gallus*) of south-east Asia (Hart-Davis 2002: 196). A few remains have been recovered from later Iron Age sites in Britain (Maltby 1981: 159-160, 1996: 24), but possible domestic chicken bones have been identified from deposits dated to around *c*. 800 BC at Cladh Hallan on South Uist in the Outer Hebrides (J. Mulville pers. comm.). This makes the route of their introduction into the British Isles even more obscure. Greylag geese and mallard ducks might have been domesticated in the Iron Age, and were certainly present on some Romano-British settlements.

Figure B.40. *Geese at a reconstructed prehistoric settlement. (Source: © Lejre Experimental Centre).*

Chickens, ducks and geese would have quite happily scrabbled about for food themselves, although as today this could have been supplemented at times with household scraps or any spare grain. Wolves and foxes were all potential predators, as were raptors, whilst mustelids even including badgers and otters have been known to attack domestic fowl at times and take their eggs (Lister-Kaye 2003). Some predator-proof coop structure would have been required, and it is possible that some elevated four or six-post structures were built or adapted for this purpose (Reynolds 1979: 55).

Other animal products

In addition to their meat, blood, fat and hides, and secondary products such as milk, wool and manure, it is important to consider some of the other uses of animal carcasses. Bone and horn were used for many different everyday artefacts and fittings, and animal guts may have been a source of containers and tubes, in addition to fishing lines and bowstrings (Ryder 1981: 196-197). Sinews from animals would have had uses as cords and ties, and bones could have been boiled up to produce animal glue.

Animal ailments

One common ailment in cattle and sheep is foot-rot, caused by copper deficiency allowing the growth of bacteria that normally live in the soil (Coleby 2001; Sheepnet n.d.). Wet weather and boggy ground often causes hooves to soften, allowing the micro-organisms to spread more rapidly, and forming very tender, suppurating and smelly sores on feet, especially in between the hooves. Lameness and weight loss result, and ewes and cows cannot milk properly. Sheep are especially susceptible to foot-rot, and also to liver fluke that is also often associated with low-lying sites prone to flooding. The damp valley bottom floodplains within the study region would thus have not been the most suitable places to keep sheep.

Ragwort can be extremely poisonous, causing irreversible cirrhosis of the liver (Mabey 1998a: 16). Cattle and horses will not generally eat the growing plant, but they will if it has dried out and if it has become incorporated into fodder or hay. Until recently it was responsible for around half the cases of stock poisoning in Britain. White bryony, common in many hedgerows, has roots that if exposed are highly

attractive to cattle but also deadly poisonous (Mabey 1998b: 131). Too much clover in grass (a sign of poor-quality pasture) will cause bloat in cattle and sheep (Coleby 2001; Sheepnet n.d.; Straiton 2001), which can suffocate the beasts through the gas build up within them. Too much rich vegetation including accidentally grazed cereal crops can cause similar problems (staggers). Bloat can be treated through doses of oil and vinegar, but in severe cases the gas has to be released by puncturing the animal's gut wall. People would have kept careful note of the state of pasture, and which parts of the pastures, fields and hedgerows livestock were grazing and browsing on.

This attentive observation would have ameliorated some effects of the many other ailments caused by mineral deficiencies such as swayback, milk fever, grass tetany and acetonaemia or ketosis (Coleby 2001; Russell Lyon n.d.; Sheepnet n.d.). For example, in the historic period it was widely believed that grazing bog asphodel made the bones of sheep and cattle brittle (Mabey 1998a: 23). It was not the plant causing this, but rather the calcium-poor pastures in which it grows. The avoidance of such areas, though based on a false premise, would nonetheless have been advantageous. Parasites such as sheep scab and liver fluke can also become endemic in particular fields and pastures. People in the past would not have understood the chemical and biological basis for these ailments, but their accumulated lore meant that they would often have known that certain fields were better or poorer than others, or that pasture fields should be rotated so that they were not in constant use by stock, thus helping to limit external and internal parasites. There would probably have been many traditional remedies for common animal ailments (e.g. Kalbermatter 2006).

> As well as being able to control animals in his charge, the drover had to be capable of administering rough and ready veterinary treatment. Several drovers' pocket books contain veterinary recipes, often of an extremely bizarre nature, by which common cattle ailments could be treated. As a means of dealing with cases of bloat which regularly occurred when cattle strayed overnight into nearby cornfields, most drovers carried a crude form of trocar [a pointed, hollow instrument] and canula, while lactating cows which succumbed to mastitis were treated by the simple expedient of cutting off the affected teat with a sharp knife. (Colyer 1976: 62, my addition in parentheses).

Comfrey, marsh mallow, greater celandine and even rhubarb were probably amongst the plants used as remedies for animal (and human) ailments (de Bairacle Levy 1991; Mabey 1998b). Birthwort was traditionally used in parts of Britain to expel the cows' afterbirth after calving, whilst elder leaves and bog myrtle were employed as natural insect repellents to deter biting insects. Much of this knowledge of farmers and shepherds has now been lost in the modern West, although several ethno-vetinerary studies are now examining traditional animal healthcare (e.g. Pieroni et al. 2006; Pieroni, Howard, Volpato and Santoro 2004; van der Werwe, Swan and Botha 2001). Potions and poultices would probably have been the principal methods of delivery.

Nevertheless, there would have been many ailments for which there were no remedies, and outbreaks of infectious diseases in particular might have occurred episodically every few human and animal generations. In the Anglo-Saxon period for example, there were many references in saga poetry and other literature to 'murrains' and 'pestilences' of livestock, and these words also feature in medieval stock accounts (Colyer 1976: 63; Fowler 2002: 230). References to 'contagions' in the post-medieval period probably relate to livestock diseases such as rinderpest and anthrax. Outbreaks of diseases such as these would have been devastating for most small-scale Iron Age and Romano-British communities, as people could potentially have faced starvation as a consequence. If the livestock of every family in one particular area had suffered, then little help would have been available from neighbours and other clan members.