The animal bone *by C Smith and D Henderson*

Introduction

Animal bones were recovered from three Borders sites excavated under the auspices of the Manpower Services Commission during the 1980s. These were 13–19 Roxburgh Street and Chalkheugh Terrace, Kelso, and Bridgegate, Peebles. Full reports on these assemblages, including the methods used in identifying the bones, are lodged in the site archive.

Bones from the Kelso sites were of fairly recent date, those from Chalkheugh Terrace dating to the 19th century, while those from 13–19 Roxburgh Street spanned the 17th to the early 20th centuries. Bones from Bridgegate, Peebles, which formed the largest assemblage from these sites, dated from the 13th to the 20th centuries.

13–19 Roxburgh Street, Kelso *by C Smith*

A small assemblage of animal bone was recovered from the site. The archaeological phases from which these bones came, Phases 3–8, were dated from the mid 17th century to the early 20th century. No bones were retrieved from late medieval Phases 1 and 2. Condition of the bones was variable; most of the material was poorly preserved, abraded or fragmentary, although occasional specimens were well preserved. Few anatomical measurements were thus possible.

The animal species recovered included (numbers of fragments in brackets) cattle (22), sheep/goat (48), pig (1), horse (4) and cat (3). In addition, one vertebra was thought to come from a dog and two long bone fragments from Phase 8 were most likely to have come from rabbit. Ribs and vertebrae of large ungulate (15) and small ungulate (11) as well as indeterminate mammal fragments (77) were also retrieved (see also Table 3).

Bones were most plentiful in Phase 6, dating to the later 18th to early 19th century. However it is not clear how much of the material had been redeposited from an earlier period, since most of the bones are from the small type of sheep and cattle associated with the medieval and post-medieval periods. In addition, where evidence of butchery has survived on the bones, it is clear that axes or cleavers were used rather than saws. Only in Phase 8 at Roxburgh Street was there any evidence of sawing, and that on only one bone, a large ungulate (cattle) vertebra.

Since the bone assemblage was of such a small size, it is difficult to draw many meaningful conclusions from the material. However sheep bones appear to have been more numerous than those of cattle (allowing for fragmentation) and it is possible that, as at the sites at Chalkheugh Terrace, Kelso and Bridgegate, Peebles, sheep were actually the more plentiful species.

Chalkheugh Terrace, Kelso *by D Henderson*

A total of 787 fragments of bone was recovered from the excavation at Chalkheugh Terrace, Kelso, of which 455 pieces came from the skeleton of a foetal or neonatal calf.

Of the 332 fragments not associated with the calf burial, 206 were from sheep, 58 from cattle, 12 from pig, 17 from rabbit, 2 from horse, 1 from dog, 4 from bird (domestic fowl, *Gallus gallus*), 3 from fish (haddock, *Melanogrammus aeglefinus*, and *Salmo* species) and a further 29 fragments were not identifiable as to bone or species (see Table 3).

A count of minimum numbers of individuals also confirmed the presence of a greater number of sheep than of cattle, although given the small sample numbers, the true ratio of mutton to beef in the diet is impossible to estimate.

Very few measurable bones were recovered but, from single dimension measurements, it may be inferred that the domestic species were of a size comparable with modern animals. This is consistent with the 19th-century date of the site.

There was a fairly even distribution of bones from different parts of the carcasses of sheep and cattle, representing typical domestic midden deposits. The butchery marks on the bones are consistent with domestic use of butcher meat. Most of the butchery marks take the form of sawing or chopping marks on the diaphyses of long bones. Nearly all of the recovered vertebral bodies were longitudinally split; 32 of the 44 sheep vertebrae and four of the eight cattle vertebrae were sawn in half. Ribs were sawn off in a way that suggested they had been parts of meat chops.

Very little can be said about the ages at which the animals were killed since the sample is so small. However it is possible to say that sheep were killed at all ages from before one year old to prime meat age (over three years old) and that some animals were killed at a greater age. Evidence from loose teeth (a third molar and third premolar) indicate that a few sheep were killed and consumed at over five years of age. The evidence for cattle is more scanty, but it appears that they were also killed at all ages from neonate to fully mature.

A single deposit contained the nearly complete skeleton of a calf, either foetal or neonatal, but clearly unweaned. The absence of any cut marks on the bones confirms that this was the burial of a

Table 3 Numbers and percentages of food-forming mammals at Chalkheugh Terrace and 13–19 Roxburgh Street, Kelso, based on fragment count

	Chalkheugh Terrace		13–19 Roxburgh Street	
	n	%	n	%
Cattle	58*	20.9	22	29.3
Sheep/goat	206	74.1	48	64.0
Pig	12	4.3	1	1.3
Horse	2	0.7	4	5.3
Deer species				
Total	278	100.0	75	99.9

* indicates that bones from skeleton of foetal/neonatal calf are omitted

complete, unbutchered animal, possibly stillborn or unable to suckle.

Bridgegate, Peebles *by C Smith*

Dating and condition of the samples

Animal bones were retrieved from all phases of the site, which dated from the 13th century (Phase 1), through the medieval period (Phase 2, early 14th century; Phase 2A, mid 14th century; Phase 2B, late 14th century) to the post medieval and modern periods (Phase 3, early 15th-mid 17th centuries; Phase 3A, mid 17th-early 18th centuries; Phase 3B, early 18th century; Phase 3C, 18th century, and Phase 4, 18th-late 19th centuries). Although a small number of bones was recovered from the earliest phase (1), animal remains were most numerous in the post-medieval phases, associated with the town's tolbooth. The condition of the material was generally fair, although some bones had suffered from abrasion, erosion or relatively recent damage. However the fragments were all of reasonably large size and thus the number of bones which could be identified to species was high.

Relative frequencies of species

Bones of domestic mammals dominated the faunal assemblage from Bridgegate: cattle, sheep/goat, pig, horse, dog and cat were all recovered. In the case of sheep/goats, since no goat horn cores or metapodials were identified, it is likely that goats were absent, as these bones are highly diagnostic of species and can usually be confidently identified as either sheep *or* goat. Most, if not all, of the bones from this site are, therefore, thought to be from sheep.

Wild mammals were represented by the bones of red deer (*Cervus elaphus*), fallow deer (*Dama dama*), rabbit (*Oryctolagus cuniculus*) and, possibly, fox (*Vulpes vulpes*), although the last-named, represented by only a single bone shaft, was impossible to distinguish from dog. Bird species found at the site were domestic fowl (*Gallus gallus*), domestic or greylag goose (*Anser anser*) and crow or large rook (*Corvus corone/frugilegus*).

The numbers of bones from each species are shown in Table 4, which shows that sheep/goats are the most consistently numerous species. An estimate of the minimum numbers of individuals present also bears this out. Sheep appear to have continued in importance through the medieval period (Phases 1 and 2), through the late medieval/post-medieval period (Phase 3) and on to relatively recent times (Phase 4) (see Table 5).

This is a notable result; work done on animal bone assemblages of medieval and post-medieval date from urban sites elsewhere in Scotland has tended to show the dominance of cattle over sheep, and has emphasised the importance of the hide trade to the medieval Scottish economy. However most of the published sites have, to date, been concentrated in the north-east of Scotland, within the burghs of Perth, Elgin, Aberdeen and St Andrews (Hodgson 1983; Hodgson and Jones 1982; Smith 1997). The assemblage from Peebles, therefore, appears to demonstrate a heavier reliance on sheep, which almost certainly reflects the importance of the wool trade to the Borders burghs.

In other respects, however, the frequencies of species recovered from Peebles Bridgegate resemble those of assemblages from the north-east of Scotland. Thus, the bones of pigs are poorly represented, their numbers being masked by the large quantities of sheep and cattle bones. Rearing of pigs appears to have been a cottage industry in Scotland until the present century. Although there are numerous documentary references to them in burgh statutes (mainly because of the nuisance they caused within the closed confines of the towns), pigs never had the economic importance enjoyed by sheep and cattle.

If pigs are infrequent, so too are wild game animals, such as deer. As noted above, the deer species found at the site were red and fallow; roe deer (*Capreolus capreolus*), which often occur in small numbers at north-easterly Scottish sites, were absent. A low uptake of venison is not unique to Peebles, however. It has been found that sites in Perth also provide little evidence that venison was hunted by, or otherwise available to, the medieval urban population (Hodgson

Table 4 Total numbers of animal bones at Bridgegate, Peebles by phase

	Phase										
	1	**2**	**2A**	**2B**	**3**	**3A**	**3B**	**3C**	**4**	**5**	**Total**
Cattle	4	28	30	45	44	55	38	8	137	6	395
Sheep/goat	1	45	41	71	51	156	116	39	255	8	783
Pig		4	1	2	6	5	6		27		51
Horse		5	3	4	2	18		1	21		54
Red Deer		7	1			1			1		10
Fallow Deer						1					1
Dog		1	1		1	21	1		12		37
cf Dog					2						2
Dog/Fox							1				1
Cat		4				3	1	1	1		10
Rabbit and cf Rabbit						1				1	2
Fowl and cf Fowl		1		2		2	2	1	3		11
Goose		1	1	1		1	1				5
Crow/Rook						1					1
Indeterminate Bird						1		1	2		4
Fish			2			2					4
Large Ungulate		16	13	23	13	30	39	12	104	7	257
Small Ungulate		5	9	24	18	27	28	10	82	4	207
Indeterminate Mammal	5	62	97	139	101	153	100	20	417	4	1098
Total	10	179	199	311	238	478	333	93	1062	30	2933

1983), although more northerly sites, for example in the burghs of Elgin and Aberdeen, have produced a higher proportion of deer bones (Smith 1998; Smith and McCormick 2001).

Age of animals at death

Study of the approximate age of the domestic livestock at slaughter can be used as a guide to patterns of animal husbandry, economic exploitation and even human dietary preferences.

In the case of cattle, at least 26.3% of the available long bones from post-medieval Phase 3 came from mature adults, while a further 42.1% were classified as immature or adult. In medieval Phase 2, however, more animals may have survived to older adulthood; here, 36.6% of the available long bones came from mature adults while 41.5% were either immature or adult. In both Phases 2 and 3, there is also evidence of small numbers of calves having been killed.

As regards the sheep at Bridgegate, the evidence of mandibular tooth eruption and wear pattern (after the methods of Payne 1973 and Grant 1982) shows that older animals were present. Thus one mandible from medieval Phase 2 came from an animal with heavily worn teeth, which in modern terms would indicate an age between eight and ten years. The majority of the mandibles came from sheep which died at ages estimated between two and six years, although one lamb of between six and twelve months was found in Phase 3. On the basis of the long bone evidence, there appears to be a shift in the age distribution with time. Thus there is a higher proportion of adult animals in Phase 2, which diminishes in Phase 3, with a corresponding increase in the number of young animals killed. Some very young lambs, perhaps newly born, appear to have died in Phase 3. Young lambs were also present in Phase 4. This trend towards younger animals may reflect a move away from wool production towards a meat and dairy economy.

Evidence of butchery

During the 17th century, the burgh fleshmarket seems to have been located in close proximity to the site of the tolbooth in the Bridgegate: there is a reference in 1631 to 'ane flesche mercat in the clois of the new tolbuith' (Buchan 1925, 186), although there is some confusion over the location of the tolbooth (see Bridgegate, Documentary Evidence). However a new fleshmarket appears to have been built in the 'Bridgait' in 1671, where the fleshers were 'obleist to kill all thair beasts'

Table 5 Numbers and percentages of food-forming mammals at Bridgegate, Peebles, based on fragment count

	Phase									
	1		2*		3		3A, B, C		4	
	n	%	n	%	n	%	n	%	n	%
Cattle	4	80.0	103	35.9	44	42.7	101	22.8	137	31.1
Sheep/goat	1	20.0	157	54.7	51	49.5	311	70.2	255	57.8
Pig			7	2.4	6	5.8	11	2.5	27	6.1
Horse			12	4.2	2	1.9	19	4.3	21	4.8
Deer species			8	2.8			1	0.2	1	0.2
Total	5	100.0	287	100.0	103	99.9	443	100.0	441	100.0

2* indicates that Phases 2, 2A and 2B are combined, since all date to the 14th century

rather than on the public streets. Slaughter in full view of the public was common practice in medieval Scotland prior to the erection of fleshmarkets. It is, therefore, possible that some of the animal bones recovered during the excavation of the tolbooth site may have been associated with the 17th-century fleshmarket. There are few deposits reminiscent of butchery waste, however, with the exception of one from Phase 3, which included a few highly characteristic fragments of chopped distal humerus, femur head and proximal tibia. These small chopped fragments are 'butchers' chips', struck from the epiphyses of long bones during the accurate disjointing of carcasses by the fleshers. Otherwise, there is a wealth of evidence for long bones having been chopped medio-laterally across the shafts and occasionally split open longitudinally for marrow extraction. However this commonly occurs when the meat is consumed by the purchaser, rather than as an initial part of the butchery process carried out by the flesher. Thus, although knife cuts were also inflicted on many of the bones, these cut marks do not themselves prove that the bones were associated with any commercial practice.

It is notable that the incidence of the use of saws to dismember carcasses was not great, even in contexts associated with the early modern period. Instead, the preferred tool was, as at Scottish sites of both medieval and post-medieval date, the butchers' axe or cleaver. Although the numbers of sawn bones did increase in Phase 4, it was apparent that axes were still being used far more frequently than saws. Although it is possible that some of the bones in the later periods of the site may have been redeposited from the earlier phases, the 'medieval' butchery style in Phase 4 is still striking.

Distribution of bones over the site

Bones from all parts of the carcass were well represented, both high meat-yielding parts such as the vertebrae and upper parts of the limbs, as well as low meat-yielding parts such as the metapodials and feet. There was thus little evidence that good quality cuts had been taken away from the site. However a fragmentary cattle head, which included the skull, maxillae and mandibles, was found in Phase 2, and may represent the discarded end product of medieval butchery. Other incidences of articulating bones from the same skeleton, at least in the case of cattle and sheep, were rare, since joints of meat originating from one animal can be dispersed far and wide. However in the case of horses and dogs, disposal is often different; one context in Phase 3 (190) contained, amongst the remains of meat-bearing animals, the partial skeletons of at least three dogs, as well as two horses. The dog skeletons were probably disposed of intact. However the horse remains consisted of only the carpals, tarsals, a patella and some teeth, which may indicate that the rest of the carcasses became food for either humans or their dogs. A horse phalange from Phase 3 does indeed show the characteristic marks of having been gnawed by a carnivore such as a dog (although it should be noted that many of the bones of cattle and sheep, whose meat was presumed to have been eaten by humans, have acquired dog gnaw marks). Preparation of horse meat for food is also indicated by knife cuts on the anterior surface of an equine patella, presumably inflicted on disjointing the knee.

Size of animals

Anatomical measurements were made on the bones wherever possible, in order to provide some guide as to the sizes of the live animals from which they came. In the case of cattle, it is notable that none of the measurements from the medieval, post-medieval and early modern periods at Bridgegate are larger than those from medieval sites elsewhere in Scotland, and in particular, than the large medieval assemblage at 75–77 High Street, Perth (hereafter abbreviated as PHSE; Hodgson *et al* forthcoming). It should be noted that the Bridgegate sample sizes are fairly small, but there is little evidence to indicate any size difference in the cattle at this site between the medieval and

post-medieval periods, or even between the medieval and early modern period.

For sheep, a comparison of size ranges indicates that the majority of measurements are within the medieval PHSE ranges, with only a few exceptions (one femur in medieval Phase 2 is slightly larger). All sheep bones from the late medieval/post-medieval Phase 3 fall well within the range of the medieval Perth sample. There is some very slight evidence that in Phase 4 sizes were beginning to increase; one broader proximal radius measurement and two larger proximal femur measurements were noted. In addition, some bones from Phase 4 may indicate that body shape had begun to evolve into a more modern form: a group of three sheep metapodials are shorter and thicker in shaft diameter than the typically long, slim, medieval type found in the earlier phases of the site's history. Unfortunately these more recent metapodials are unfused bones from immature animals and therefore not measurable, but they appear to represent an animal, or animals, of stockier build than those found in the earlier periods.

The few horse bones that survived were mainly bones of the fore and hind feet, and thus gave no indication of stature. However as for the cattle and sheep, these bones were of small dimensions. The typical Scottish horse of the medieval and, probably, the post-medieval period appears to have resembled the Highland garron in stature, usually standing around 13 hands high, and with short, relatively stout cannon bones. The bones from Bridgegate probably came from such ponies.

No pig bones were of measurable quality or condition, but the medieval bones from Bridgegate probably came from the small, slim type of animal found elsewhere in Scotland at this period. As in the case of the early modern sheep, a change in pig body conformation appears to have taken place in Phase 4; an unfused radius, ulna and associated loose epiphyses were of very large breadth with respect to their length, and were thus untypical of the primitive, wiry type noted at other Scottish sites of medieval date.

Discussion

The animal bones from these three Borders sites have shown that assumptions based on material from urban excavations in the north-east of Scotland do not necessarily hold true for every other Scottish site. This is particularly so for the evidence from medieval and post-medieval phases at Bridgegate, Peebles, where sheep bones dominated over those of cattle. Thus far, discussions of the pattern of animal exploitation in the medieval and post-medieval periods have relied on results from north-easterly sites, mainly towns, and have concluded that there the economy relied more heavily on cattle than on sheep. Although documentary sources such as the Exchequer Rolls of Scotland indicate that cattle hides were of great monetary value to the medieval economy, wool and woolfells brought in the greater revenue. The bones from Peebles provide the evidence to show that sheep, the producers of wool and thence textiles, play a far more important role than cattle in the Borders region. Other work on animal bone assemblages from sites in the Borders, at the fishing town of Eyemouth (Henderson 1986) and at Jedburgh Friary (P Dixon, pers comm) also confirm the place of sheep in the local economy.

The importance of sheep to the great Cistercian Abbey of Melrose is well documented, and before the Reformation the abbey owned or leased vast acreages of land in the Borders country, particularly in Ettrick Forest, Lauderdale, Teviotdale and the Lammermuir hills where sheep were pastured (Macleod 1995, 120). The Crown also owned flocks of sheep, which were grazed in Ettrick Forest during the 15th century. The wool was sorted and packed in the burghs of the Borders, particularly Selkirk, before being sent to the ports of Berwick and Leith for export to the Low Countries (Elliot 1995, 173). As well as raw wool, the skins of sheep with the wool attached, known as woolfells, were also exported. Since woolfells represent dead, rather than living, sheep, the by-products, mainly in the form of meat, must have been available to the people of the burghs where the animals were slaughtered. The sheep bones, therefore, are the surviving evidence of this thriving trade in wool and woolfells.

The type of sheep that produced this wool appear to have conformed to the small, spindly-legged medieval type found elsewhere in Scotland. They do not appear to have changed much from the early medieval period until at least the latter part of the 18th century, when conscious efforts were made by 'enlightened' landowners to improve them. At Bridgegate, there is some slight evidence that about this time, a new, shorter legged breed began to appear, although the vast majority of the sheep remained little changed in stature from the medieval period.