

The Animal Remains found at Kirkstall Abbey

By M. L. RYDER

THE use of archaeology as an approach to the medieval period is fairly recent: where records and ruins existed it was not considered possible to add to our knowledge by excavation. The falseness of this assumption has been amply proved by the yearly excavations at Kirkstall Abbey, Leeds, led by Dr D. E. Owen when he was director of Leeds City Museums. There are no descriptions of Cistercian farm animals; and a study of the animal remains found at Kirkstall has been particularly illuminating in that it has yielded evidence of long-woolled as well as short-woolled sheep.

There were incidental animal finds in most years from 1950 when the excavation started, bones of rat, dog, ox, sheep, pig, and horse being found.¹ The discovery of the skeleton of a horse beneath the refectory floor seemed to indicate animal burial.² In addition, shells of oyster (*Ostrea edulis*) and of mussel (*Mytilus edulis*) were found, often in great profusion, and there were cockles (*Cardium edule*) and whelks (*Buccinum undatum*) in smaller numbers. These are all marine and must have come from the coast. The shells were on the whole smaller than those of the present day, the oysters being markedly smaller and lighter, the major axis being only about half as long as that of a modern oyster.

But it was not until 1956 and 1957 that a large dump of bones was found associated with the meat kitchen.³ This was not built until about the middle of the fifteenth century, when the Cistercians were first allowed to eat meat. During these two excavations the dump has been shown to extend over an area at least 25 yards wide by 40 yards long, and to vary from 18 inches to one yard in thickness. This volume has been estimated to contain bones from about five thousand animals. A small pocket of the bones was sealed under a fifteenth-century drain leading from the meat kitchen annexe. This shows that the dump began to accumulate before the drain was made, probably as soon as the monks began eating meat, and its size suggests that the dump could have been in use until the dissolution in 1540. The majority of the bones were from animals apparently used to provide food. But the fact that

¹ *Kirkstall Abbey Excavations, 1905-54* (Publications of the Thoresby Society, XLIII, 1955).

² *Kirkstall Abbey Excavations, Sixth Report, 1956*.

³ M. L. Ryder, 'Report on the Animal Bones, Kirkstall Abbey Excavations', Seventh Report (1957), and Eighth Report (1958).

they were not all sealed means that intrusion of a few bones of a later date is possible. Shells were less common in this dump than in previous years.

Fowler discusses the lack of slaughter-houses in abbey plans, and suggests that animals were killed in a yard near the kitchen.¹ The meat kitchen annexe at Kirkstall, with its flagged floor and drain, seems a likely place for the killing, and one half of the annexe could have been used to store meat.

Nearly all the larger bones had been chopped, so that with limb bones it was usually the ends that were found. There were hardly any complete bones, and so few measurements of length could be made. The ends of the bones had frequently been chopped a second time; this suggests that they had been stewed and not roasted as a joint. The Cistercians originally ate vegetable stew, and it seems that when they began to eat meat they ate it stewed rather than roasted. With the ox, at any rate, nearly every bone in the body was represented, and so there appears to have been no preference for any particular joint or cut of meat.

Most of the bones were from domestic animals, and counts showed that 90 per cent were from ox, 5 per cent from sheep, 3 per cent from pig, and 2 per cent from deer. Bones from Red, Fallow, and Roe deer were found, but there were too few to estimate the relative numbers of the different species. The lack of antlers suggests either that the whole carcass did not reach Kirkstall, or that the antlers were used for such articles as knife handles.

The monks apparently bought or were given meat from wild animals to supplement that from their farm stock. Bones of rabbit and hare were found (the latter predominating), and in addition to bones of domestic fowl there were bones of duck and goose (which could have been either wild or domestic), and also raven, jackdaw, heron, woodcock, and blackcock (black grouse).

There were about as many fish bones as bird bones, and most of these seemed to be too large to have come from freshwater fish. The records of Fountains mention salmon, and that dried and salted fish (probably cod and ling), as well as oysters, were bought at Hull, Scarborough, and York. There was a skull of a goat, one rat bone, a few dog bones, and one horse bone.

The results of the counts show the proportions in which the different animals were eaten and cannot of course indicate the numbers of animals kept. It seems therefore that the monks ate more beef than any other meat. Sheep would be kept mainly for their wool; Eileen Power has said that in the Middle Ages "meat was only a use to which sheep not good enough to keep for wool could be put."² An idea of the actual numbers can be obtained from

¹ J. T. Fowler (ed.), *Memorials of Fountains*, 111 (Surtees Soc., 130), 1918.

² *The Wool Trade in English Medieval History*, 1941, p. 20.

a record of 1301, which states that the monks then had 618 head of cattle and 4,500 sheep.¹

The majority of ox and sheep bones were from at least mature animals (two to three years old), and the greater proportion of ox bones were from fairly old animals (between five and ten years old). This suggests that the monks were able to keep much of their stock over the winter; had a large number of animals been killed each year through lack of winter feed, one would have expected to find a high proportion of bones from young animals.

Three fragments of bone showing pathological changes were found. The first was a portion of a sheep tibia showing an area of local periostitis. The lesion probably underlay an inflammatory condition, such as an abscess, in the superficial tissue, and the fragment appeared to have been chopped from the rest of the bone because of the lesion. The distal end of an ox metatarsal exhibited a growth of new bone around the edge of the articular surfaces. This arthritis may have affected the articular cartilage, but the underlying bone was unchanged. The new growth was well developed on both posterior and anterior aspects of the bone, and in the latter had changed the arterial groove into a tube. The third find was a vertebral body, probably bovine, showing a spondylitis in which the new growth had resulted in bone extending over the intervertebral disc to produce the effect of 'lipping'.

The cattle were almost certainly hornless: not a single ox horn core was found among the immense amount of ox material. This is of interest because the chronicles of Meaux Abbey mention horned cattle.² Some of the ox bones were from animals as big as those of today, whereas others were from smaller animals. Many measurements were made of the widths of the proximal and distal ends of the cannon bones (only three were found complete). There was a very wide range in these measurements, but when plotted in the form of frequency diagrams three peaks could be discerned. The peak among the larger widths probably indicated bones from bulls, that among the smaller widths bones from cows, and the middle one (of greatest frequency) was probably from bullocks (castrated males).

One would expect more males than females to be eaten, but the bullocks probably were not just beef cattle. The great age of the animals, coupled with the large size of many of the cannon bones, suggests draught oxen, and it seems that these were killed for meat when they were too old to work. Many of the larger cannon bones had exceptionally wide distal ends. The cause of this broadening at the ankle is unknown; no previous record of the phenomenon in cattle has been found, but Dr J. Wilfrid Jackson has told me that

¹ *Fundacio Abbatie de Kyrkestall* (Thoresby Society, IV, 1895), p. 203.

² *Chronica Monasterii de Melsa*, III (Rolls Series 43, 1868), p. xvii.

cannon bones with broad distal ends are common in Iron Age and Romano-British sheep. Ox cannon bones that were extremely narrow may have remained permanently stunted because of poor nutrition during early life.

Most of the pig bones, unlike those of cattle and sheep, had lost their epiphyses and were therefore from young animals; in most of the lower jaws the sixth molar was erupting, showing them to be from animals about eighteen months old. The pigs were apparently therefore killed young, as they are today. The limb bones had the characteristic slenderness of unimproved animals,¹ and were on the whole smaller than those from present-day pigs. There were tusks of three sizes, and it is thought that the largest and the intermediate ones were from boars and sows respectively. But the smallest tusks were of a different character and it is suggested that these might possibly be from wild pigs.

The sheep bones were all smaller than those of present-day sheep, and the long bones had the characteristic slenderness of unimproved animals. The Cistercians at Kirkstall seem to have had both horned and hornless sheep. This provides interesting confirmation of the generally held belief² that they had two kinds, viz. horned short-woolled sheep and hornless, long-woolled 'valley' sheep. The horned and hornless skulls found showed a good resemblance to skulls from modern hill and long-woolled sheep respectively. I have been unable to find any contemporary descriptions of the sheep that the Cistercians kept in Yorkshire. Wroot seems to have got his evidence mainly from eighteenth-century writers such as William Marshall who said that the two main stocks of Yorkshire sheep had not changed for centuries. The hill or moorland sheep were then described as having black faces and coarse fleeces, and the valley sheep as being tall and clumsy, hornless, white-faced animals which produced the long, fine wool used in worsteds. In fact the two main stocks can still be recognized today, although there has been much cross-breeding, and each has given rise to several modern breeds.

Dr Bowden has questioned the classical belief in the existence of long- and short-woolled sheep in the Middle Ages on the grounds that an increase in the supply of long wool could be associated with the later improvement of pasture.³ It is more likely that this was associated with an increase in the number of long-woolled sheep and was not a direct effect of better nutrition on wool growth as he implies. In view of what is known of the inheritance of fleece types it is inconceivable that a small (most likely horned) short-woolled sheep could give rise to a large (most likely hornless) long-wool entirely as the

¹ J. Hammond, *The Growth and Development of Mutton Qualities in Sheep*, 1932.

² H. E. Wroot, *Yorkshire Abbeys and the Wool Trade* (Thoresby Society, xxxiii, 1935), p. 5.

³ *Economic History Review*, 2nd series, ix, 1956, pp. 44-58.

result of better nutrition. Such a change would require selective breeding. This article is not the place for a detailed discussion of the possible origin of the long-wool, which owing to lack of knowledge would involve much speculation.

Mr Trow-Smith, too, has recently discussed the tantalizing question of the origin of long-woolled sheep and suggests that the Romans might have introduced them.¹ That the long-wools form a stock quite distinct from the hill sheep is strongly suggested by recent work on blood types.² J. V. Evans found that whereas in the Swaledale (hill breed) 85 per cent of the sheep were of a certain blood type, the Leicester (long-wool) had no sheep of this blood type.

I have inspected some representations of sheep in medieval illuminated manuscripts at the British Museum. One of these showed polled sheep, a twelfth-century manuscript showed horned sheep, and a thirteenth-century one showed horned and polled sheep together.³ Although it would be unwise to place too much reliance on the appearance of these sheep, it is doubtful whether artists' licence would allow the omission of horns. And it is interesting that a sheep skull of date about 1300 which I examined from the 1957 excavation at the deserted village of Wharram Percy (Yorks.), led by Mr Maurice Beresford, was in fact polled. The inheritance of horns is complicated,⁴ but at Kirkstall one can almost certainly rule out breeds in which the rams are horned and the ewes polled, e.g. Welsh Mountain and Merino. In addition, castration of males in a horned breed is unlikely to cause loss of horns, only the reduction of horn size to that of the ewe.⁵ Evidence is therefore accumulating for the existence in the Middle Ages of polled sheep that were probably long-wools, although it is quite likely that they were outnumbered by horned short-wools.⁶

¹ R. Trow-Smith, *A History of British Livestock Husbandry to 1700*, 1957, p. 165.

² J. V. Evans, *The Advancement of Science*, XIII, 1956, pp. 198-200.

³ Harley 603, fo. 69b; Royal XIX, fo. 19; Adv. 20787, fo. 112b.

⁴ A. L. Rae, *Advances in Genetics*, VIII, 1956, p. 189.

⁵ A. S. Fraser, *Aust. J. Agric. Res.*, VI, 1955, pp. 770-5.

⁶ Since this article was written a new approach to the history of sheep has been started. This is the study of (particularly the grouping of) wool fibres remaining in ancient material such as parchment. Fibres in some of the parchment from the Dead Sea Scrolls showed characteristics of long-woolled sheep.—M. L. Ryder, *Nature*, 182, 1958, pp. 781-3.