LATE MEDIEVAL TAWYERS' WASTE AND PIG SKELETONS IN EARLY POST-MEDIEVAL PITS FROM BONNERS LANE, LEICESTER, ENGLAND, U.K.

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Summary

In the course of an excavation outside the Roman and Medieval town walls of Leicester in 1993/4 three deposits of particular interest in terms of their environmental archaeological aspects were uncovered. In one pit the feet of twenty-eight sheep had been deposited in a single event. These are interpreted as the waste of a whittawyer or tawyer. Extensive sampling of the pit deposits enabled the recovery of small bones of the carpus and tarsus, providing evidence of the disarticulation points of the feet during skinning. Two later pits contained the skeletons of four pigs aged between three months and two years, possibly victims of an epidemic. The remains of birds and amphibians in the fills of these pits indicates that all the pigs were buried in early spring.

Résumé

Déchets provenant d'une tannerie des époques médiévale récente et post-médiévale, à Bonners Lane, Leicester, Angleterre.

Au cours d'une fouille entreprise à l'extérieur des murs de la ville romaine et médiévale de Leicester en 1993/4, on a découvert trois contextes particulièrement intéressants du point de vue de l'archéologie de l'environnement. Dans l'un d'eux, une fosse, trente-huit pieds de moutons avaient été déposés en même temps et cela fut interprété comme étant les déchets provenant de l'échoppe d'un tanneur. Un échantillonnage fin des couches de la fosse a permis de récupérer des petits ossements, carpes et tarses, qui ont fourni des indices permettant d'identifier les endroits où les articulations ont été coupées pour enlever la peau des animaux. Deux autres fosses d'une époque plus tardive contenaient les squelettes de quatre cochons âgés de trois mois à deux ans, peut-être les victimes d'une épidémie. Des restes d'oiseaux sauvages et d'amphibiens trouvés dans les couches de ces fosses montrent que ces cochons avaient tous été enterrés au début du printemps.

Key Words

Medieval sheep, Tawyers' waste, Post-Medieval pigs, Leicester, England.

Mots clés

Mouton médieval, Déchets de tannerie, Porc post-médiéval, Leicester, Angleterre.

Introduction

In 1993/1994 an excavation was undertaken by Leicestershire Archaeological Unit in the city of Leicester at the junction of Bonners Lane and Oxford Street (NGR SK 5855 0392), some 250 m south-east of Leicester's Roman and Medieval southern town defences and 10 m south of the southern wall of the Newarke enclosure, covering an area of c. 1625 square metres (fig. 1). The site was occupied from the second century until the middle of the twentieth century and significant deposits from the Roman, Saxon, Medieval and Post-Medieval periods were excavated. Features included several large rectangular, possibly timber lined, pits dated to the later Medieval period which are thought to represent some kind of industrial activity, probably tanning or tawing (Baxter, 1994; Finn, 1994; Finn and Gossip, forthcoming).

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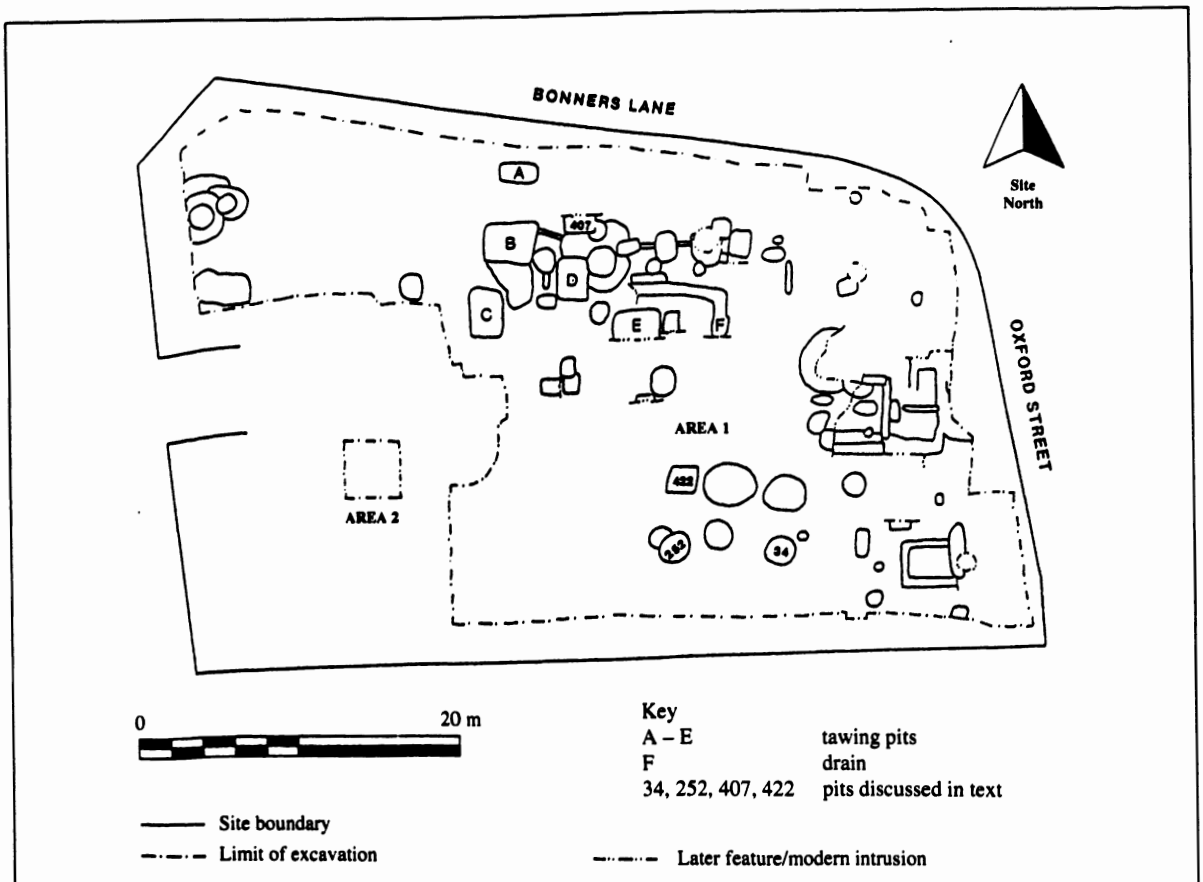

Fig. 1: Principal Medieval and Early Post-Medieval features at Bonners Lane excavations.

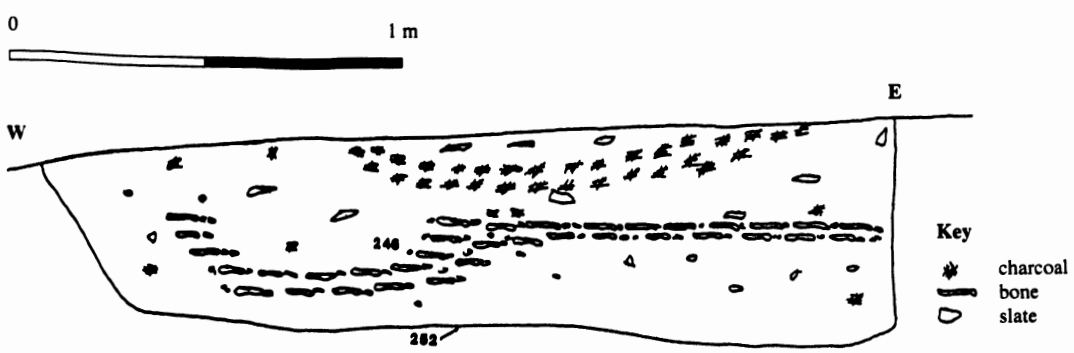

Fig. 2: Section through Pit [252] at Bonners Lane excavations.

One large pit, [252] (fig. 2), cut into the surface of a Roman road contained a total of 1005 sheep/goat bones, over 90% of which comprised elements of the foot. Half of this pit was excavated by hand and half sampled following guidelines established by English Heritage (Payne, 1992). A total volume of 264.5 litres of deposits were removed from the single fill (264) in the form of environmental soil samples. All the residues were sorted to coarse fraction (> 4mm) level and a smaller number to fine fraction (< 4mm) for the recovery of small bones, seeds etc. Pit [252] belonging to phase 13 at the site has been dated to c. 1450 to 1550 AD.

Two other pits belonging to phase 14 and dating from c. 1500 to 1645 AD. contained the skeletons of four pigs aged from approximately 3 months to 2 years old. Pit [407] containing the skeleton of a sow and pit [422] containing three piglet skeletons were extensively sampled to maximise bone recovery with 224.6 litres of samples taken from [407] and 34.2 litres from [422]. All of these were sorted to coarse fraction and the more promising fine fractions were also sorted for the recovery of small bones and seeds.

Sheep feet from pit [252] (246)

Table 1 lists the carcass components of the major domestic species recovered from pit [252], exclusive of ribs and vertebrae, and figure 3 illustrates the most frequent fragmentation zones (exclusive of phalanges) of the most numerous skeletal elements of sheep recovered. Sheep bones comprised an overwhelming majority at 95%, with foot elements accounting for 89%. The foot bones formed a discrete lens within the pit and were certainly deposited in a single event. There was evidence to suggest that the pit had been limed prior to backfilling (fig. 2). Apart from the bones of domestic animals, pit [252] also contained infrequent remains of wild birds (including woodcock, *Scolopax rusticola* L., house sparrow, *Passer domesticus* (L.), and mallard, *Anas platyrhynchos* L.), hare and rabbit, mouse/vole, frog and fish (Baxter, forthcoming; Nicholson, forthcoming).

Table 1: Pit [252] (246): Abundance of carcass components.

	Cattle %	Sheep %	Pig %
Horn cores	0.4	0.0	0.0
Mandible, maxilla	0.1	0.8	1.0
Scapula, pelvis	0.3	1.4	0.3
Distal humerus, radius, ulna	0.1	1.4	0.5
Distal femur, tibia, calcaneum, astragalus	0.7	1.6	0.7
Carpals, tarsals, metapodials	0.4	28.0	0.5
Phalanges	0.3	62.0	0.0

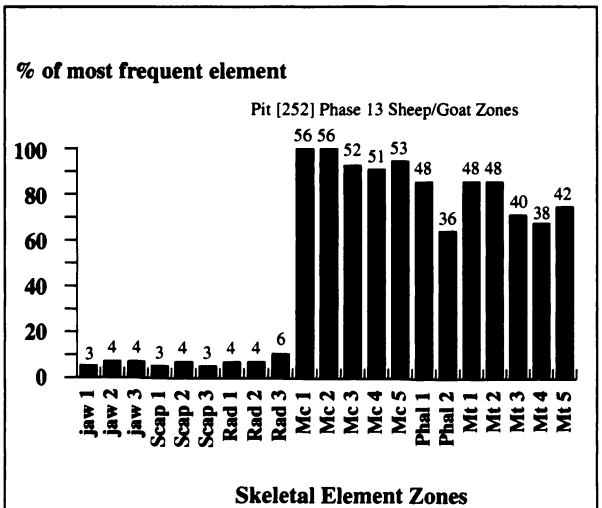

Fig. 3: Pit [252] Phase 13: Sheep/goat fragmentation zones. The system of recording and abbreviations is based on Rackham (1986).

Table 2: Pit [252] (246): Total number of fragments per species (NISP = Number of Identifiable fragments of bones of each Species).

Taxon		NISP
Cattle	*Bos taurus*	28
Sheep/Goat	*Ovis aries/Capra hircus*	1005
Pig	*Sus scrofa*	39
Large mammal		18
Medium Mammal		79
Dog	*Canis familiaris*	1
Hare	*Lepus europaeus*	2
Rabbit	*Oryctolagus cuniculus*	2
Fowl	*Gallus gallus*	14
Goose	*Anser anser*	17
Duck	*Anas platyrhynchos*	1
House sparrow	*Passer domesticus*	1
Woodcock	*Scolopax rusticola*	1
Indeterminate bird		30
Mouse/Vole		5
Frog/Toad		4
Total		**1247**

Table 3: Pit [252] (246): Summary of sheep metapodial measurements (based on Driesch 1976) and calculation of withers height (W.H.) (based on Teichert 1975).

	GL	Bp	SD	Bd	W.H. (m)
Metacarpus					
Range	105.7-125.6	19.0-23.3	12.3-14.7	21.5-26.6	0.51-0.61
Number	43	47	46	44	43
Mean	113.88	21.6	13.27	24.1	0.55
SD	5.26	1.07	6.0	6.0	0.025
Metatarsus					
Range	112.1-136.5	17.7-20.9	10.6-12.7	20.0-24.7	0.51-0.62
Number	33	39	39	39	33
Mean	123.2	19.39	11.38	22.7	0.56
SD	5.63	0.81	0.51	0.94	0.025

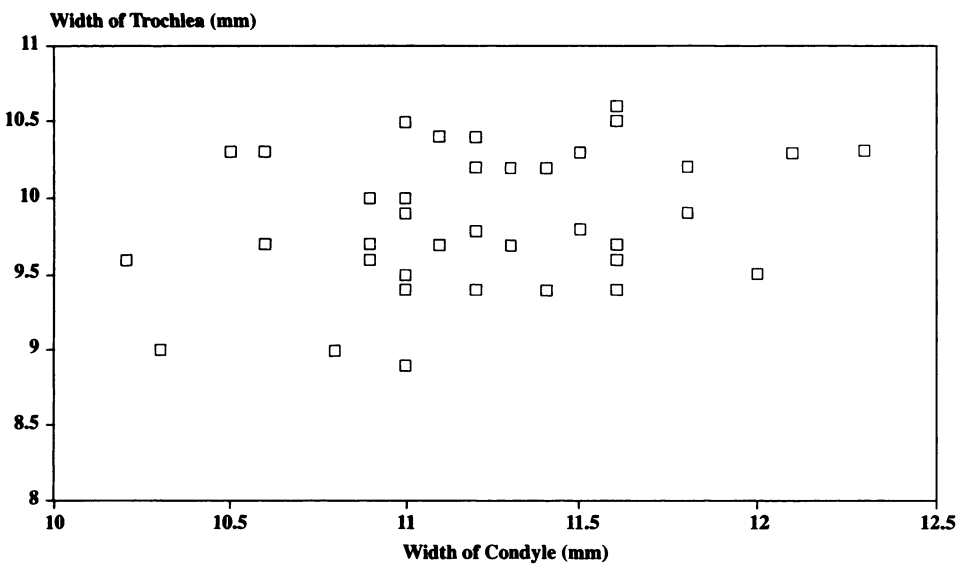

Fig. 4: Pit [252] Phase 13: Sheep metacarpals from pit [252] Phase 13: Plot of trochlea and condyle measurements.

The foot bones from [252] (246) were mostly from adults, as shown by the fact that 95% of the foot bones epiphyses were fused. They were identified as belonging to sheep by comparison with modern reference material and the morphological criteria described and illustrated by Boessneck (1969), and Prummel and Frisch (1986). The plot of metacarpal width of trochlea/width of condyle (Payne, 1969) seems to indicate three clusters, possibly, representing ewes, wethers and rams (fig. 4). Bone measurements and withers height estimations (tab. 3) indicate that these sheep are similar in size to the Medieval range from the Shires and Causeway Lane sites in Leicester (Gidney, 1991, forthcoming a and b). By analogy with the bones of modern sheep of known weight, it is possible to suggest that a mature ewe would have reached around 37.5 kg liveweight (Dobney *et al.*, 1996). The foot bones derive from a minimum (MNI) of 28 sheep based on the recovery of 56 proximal metacarpals.

The significant numbers of sheep foot bones recovered from pit [252] allow comparisons to be made between hand-collection and sample recovery. Very few elements of the carpus and tarsus were recovered by hand, only 5% of carpals and 13.5% of tarsals. Hand recovery of phalanges was also significantly down on sample recovery with 38% phalanx I, 28% phalanx II, and 17% phalanx III. In the assemblage as a whole there is a significant loss of carpals from the top row that articulate with the distal radius and ulna which cannot be accounted for by sampling bias. There is also a disparity between the numbers of centrotarsale and tarsale 2+3 compared with proximal metatarsus. It seems probable, therefore, that although skins arrived on site with metapodials and phalanges attached, detachment of the foot in the carpal area took place either by disarticulation at the carpo-metacarpal junction, or by division between the proximal and distal group of carpals, or in a very few cases by cutting between the distal articulation of the radius and the proximal group of carpals. In the hind foot the joint was either disarticulated between the centrotarsale and the distal tibia or at the tarso-metatarsal junction. Any of these operations would have required skilled manipulation of a small, sharp knife. The evidence from [252] points to the general use of a knife for the removal of the feet, probably as part of the skinning procedure. Detailed examination of the surfaces of metapodials from [252] revealed a number of knife cuts, both singly and in groups. This confirms the impression already gained by observation *in situ* and frequency of elements recovered that the phalanges were left in articulation in the majority of cases.

Discussion

Serjeantson (1989: 136-139, fig. 7), has suggested that disproportionately high numbers of metapodials in bone assemblages, along with other evidence such as groups of square or round pits, may indicate that tanning activities took place in the vicinity. The presence of several, largely empty, rectangular pits grouped in one area of the site together with the large number of articulated sheep foot elements and relatively few other bones of the skeleton in pit [252] fits the established pattern. Figure 3 illustrating the representation of the main bones of sheep from pit [252] is very similar to those in Serjeantson's figure 7 for sites where she has suggested tanning activities took place. If the deposit originated from primary butchery one would expect a much higher proportion of elements from the head and other parts of the skeleton. The sheep foot bones from [252] would seem to have been brought to the site attached to skins and represent the waste of a light leather manufacturer such as a fellmonger, whittawyer or glover. This deposit of foot bones is very similar to more extensive 18th century deposits, also associated with large square possibly timber lined pits, at Walmgate in York (O'Connor, 1984). The sheep feet would have been used as an aid to stretching the skins and would have provided neatsfoot oil which would have been used, along with alum and perhaps other organic ingredients, in the tawing process. There is documentary evidence that the oil could be obtained without disarticulating the foot bones (Serjeantson, 1989: 141).

Whereas the tanner was restricted to the production of leather from cattle hides, the whittawyer or tawyer utilised the hides of sheep, goats, deer, horses and dogs. These were often casualty skins recovered from animals which had died naturally (Thomson, 1981: 171). These sheep from the late Medieval deposits at Bonners Lane are lightly built unimproved animals, similar in size to the Medieval and most of the Post-medieval sheep from the Shires and Causeway Lane sites in Leicester (Gidney, 1991, forthcoming a and b). The Bonners Lane sheep are not as robust as the 16th century improved stock from Hungate in Lincoln, animals presumably bred primarily for mutton (Dobney *et al.*, 1996: 59-61). To date there is no evidence from Leicester sites of improved sheep until the 18th century (Gidney, forthcoming b). Also, as with these other sites the majority seem to have been horned. No polled sheep crania were recovered from any period at the site and a complete skull with horn cores removed was found in pit [34], also of phase 13, situated very close to pit [252]. The Old Midland longwool is described as a large-boned, long-legged and hornless animal (Trow-Smith, 1957: 165, 206), while horned sheep may be expected to be short-wools (Ryder, 1961: 1081).

There was a rising demand for wool in the Tudor period with a concomitant increase in enclosure for pasture farming. Sheep farming intensified, particularly in central England, between the mid 15th and 16th centuries (Bowden, 1962: 10). Certainly large flocks were maintained by the butcher-graziers, several of whom became Lord Mayor, on accommodation land around the town in the 16th century, although their type is not precisely known (Trow-Smith, 1957: 206). There is evidence to suggest that during the mid 15th century the predominantly short and fine wool of the Midlands began to give way to wool with a longer and coarser staple (Ryder, 1960). However, the skeletal remains from Leicester sites indicate the continued dominance of horned short-wools throughout the Medieval and early Post-Medieval periods (Baxter, forthcoming; Gidney, 1991 and forthcoming a & b; Thawley, 1981). Horned sheep would also have been useful to horners as a source of raw material and the horns of sheep, along with those of

Table 4: Pit [407]: Total number of fragments per species (NISP=Number of Identifiable fragments of bones of each species).

		Context/NISP				
Taxon		**406**	**412**	**430**	**456**	**Total**
Cattle	*Bos taurus*	4	0	0	0	4
Pig	*Sus scrofa*	5	17*	3*	3	28*
Sheep/Goat	*Ovis/Capra*	5	3	0	0	8
Large mammal		4	1	0	0	5
Medium mammal		6	4	0	0	10
Fowl	*Gallus gallus*	1	1	0	0	2
Goose	*Anser anser*	2	1	0	0	3
Jack snipe	*Lymnocryptes minimus*	0	1	0	0	1
Black rat	*Rattus rattus*	2	1	0	0	3
Wood mouse	*Apodemus* sp.	1	0	0	0	1
Field vole	*Microtus agrestis*	0	0	0	5	5
Mouse/Vole		10	5	0	25	40
Shrew sp.		3	0	0	0	3
Indeterminate bird		2	0	4	0	6
Frog	*Rana temporaria*	0	0	0	31	31
Toad	*Bufo bufo*	0	0	0	1	1
Frog/Toad		4	2	0	212	218
Total		**49**	**36**	**7**	**277**	**369**

*includes skeletons, skulls and associated elements

cattle and goats, were invariably removed prior to discard of the crania. It has been suggested that polled sheep may not have been desirable in urban centres if sheep horn was a marketable commodity (Gidney, forthcoming b).

Pig skeletons in pits [407] and [422] of phase 14

The largely complete skeletons of four pigs were recovered in bulk samples from pits [407] (fig. 1, tab. 4) and [422] (fig. 1, tab. 5) of phase 14. Pit [422] was square and stone lined and may have originally functioned as a cess pit. Pit [407], which could only be partially excavated due to being cut by the stone foundations of a later building, was either a cess pit or one of the large square industrial pits. Prior to the deposition of the pig carcasses both pits had lain empty for long enough to become waterlogged and full of breeding frogs. The remains of at least one toad (*Bufo bufo*) and ten frogs (*Rana temporaria*) were recovered from the primary fill of pit [407] amounting to 239 fragments. Pit [422] contained 651 amphibian bones belonging to at least two toads and eighteen frogs. A carpometacarpus of jack snipe, *Lymnocryptes minimus* (Brunnich), was found in the same layer as the pig skeleton in pit

Table 5: Pit [422] (392): Total number of fragments per species (NISP=Number of Identifiable fragments of bones of each species).

Taxon		**NISP**
Horse	*Equus caballus*	2*
Cattle	*Bos taurus*	26
Large mammal		4
Pig	*Sus scrofa*	21*
Sheep/Goat	*Ovis/Capra*	28
Medium mammal		23
Cat	*Felis catus*	1*
Mallard duck	*Anas platyrhynchos*	2*
Cf. Greenfinch	*Carduelis chloris*	1
Cf. Great Tit	*Parus major*	1
Indeterminate bird		32
House mouse	*Mus* sp.	1
Mouse/Vole		1
Frog	*Rana temporaria*	80
Toad	*Bufo bufo*	5
Frog/Toad		566
Total		**794**

* includes skeletons, skulls and associated elements

[407] and the skeletons of two female mallards with medullary bone in the long bones were found associated with the piglet skeletons in pit [422]. The breeding season of the common frog is from early February to the end of March (Burton, 1960: 160), the jack snipe is a winter visitor to Britain from September to April, and the mallard generally lays its eggs in March (Patten, 1906: 44; Cramp, 1977, I: 516). Medullary bone in the cavities of bird long bones, particularly in the femur, is indicative of females in egg-laying condition (Driver, 1982; Wing and Brown, 1979). This suggests that all the pigs were buried in the early spring.

The skeleton from pit [407] belonged to a female approximately 2 years old on the basis of tooth eruption and wear together with the state of fusion of the epiphyses. The head of the pig had been removed from the carcass and placed at the rear end of the body (fig. 5), probably in order to make it fit in the pit. The left posterior distal femur diaphysis has two transverse chop marks, perhaps a half-hearted attempt to remove the lower leg. The skeleton is otherwise unbutchered. Cause of death is unknown.

The three skeletons in pit [422] belong to animals under one year old. Based on the state of tooth eruption (Getty, 1975: 1272, Table 40-1) they represent individuals from different litters, a porker of 6 to 8 months old, a weaner of 4 to 6 months old, and a younger animal of between 3 to 4 months of age. These three piglets were deposited along with a foals' head, a cat and two ducks. The differing stages of development of these three pigs suggest that they originate from different litters born in the vicinity of the site and that they died of unknown causes at the same time and were buried in the same pit sometime in the early spring. None of these pigs has been butchered and there is no evidence that they had been utilised as food. An ordinance of 1467 forbade any butcher in Leicester to sell meat from animals "with any manner of sickness" on pain of imprisonment at the mayor's pleasure (Farmer, 1991: 390). By-laws requiring the burial of dead animals are also known (Thomson, 1981). The scattered remains of foetal/neonatal pigs were also found in the deposits of pits [407] and [422]. It is possible, but incapable of proof, that the foals' head and other odd inclusions in pit [422] formed some kind of superstitious deposit intended to avert evil (for examples of such practices see Merrifield, 1987).

Discussion

The Bonners Lane pigs are of the same unimproved type prevalent in Britain since the Neolithic. Although there is no evidence of any outside genetic strain being introduced into the British pig population until the mid

Fig. 5: Pig skeleton *in situ* in pit [407] Phase 14.

18th century, by Tudor and Stuart times a certain amount of artificial selection and somewhat better feeding was producing larger and better fattened animals than before (Trow-Smith, 1957: 232). The pigs of Leicestershire and its adjacent clay lands were held to be the best in England and fattened on the beans and peas which formed such an important crop in the region. One of these pulse fed pigs reached a dressed weight of 140 lb (56 kg) at an unknown age in 1615 (Trow-Smith, 1957: 251). Pulses have been found in a number of contexts of similar date to the pits containing pig skeletons at Bonners Lane (Monckton, forthcoming). It is thought that these pulse fed pigs of Leicestershire and the neighbouring counties formed the basis of the Tamworth breed, which despite the introduction of West Indian genes retains the long snout of its unimproved ancestors (Trow-Smith, 1957: 199, 233). The four complete skeletons of animals from 3 months to 2 years old and the scattered remains of foetal/neonatal animals and individuals a few weeks or months old suggests that pigs may have been kept and bred on site more intensively than in earlier periods. Various pathogens are known that may cause foetal death, abortion, stillbirth and death during the first month of life. The simultaneous deaths of older animals up to two years old, however, could have been caused by a particularly virulent outbreak of viral swinepox, such as that caused by the *vaccinia* virus (Jubb and Kennedy, vol.I 1970: 7, 522-4, 604). Unlike sheep and cattle there is little evidence for large scale pig husbandry in England in the late medieval/early post-medieval period. Pigs were still generally kept on a domestic or very small commercial scale (Trow-Smith, 1957: 250).

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