

The Animal Bones from the Broad Street and Old Gaol sites

By R. WILSON

With D. BRAMWELL and A. WHEELER

SUMMARY

At the two sites, sheep, cattle, domestic fowl and imported oysters were the most commonly identified animals, evidently contributing to a varied medieval meat diet that included pork, venison, goose, wild fowl, seafish and possibly horse meat. Although pigs were likely to have been reared largely for meat, greater quantities were contributed by cattle and sheep which were killed at much later stages in life, and were likely to have been reared for wool and dairy production. The Old Gaol site can be related to a post-Dissolution butchery centre in Abingdon.

THE Broad Street and Old Gaol sites in Abingdon are about 450 metres apart and the major portions of their reports deal with 12th- early 15th-century deposits of bone and shell. Results from a small Romano-British sample at Broad Street, and a small post-medieval sample at the Old Gaol are discussed briefly. Originally written as separate reports, the two discussions are intended to be complementary to each other. The mortality estimates for both sites are included in the Old Gaol report which also makes some comparisons of the two sites. Bone measurements are not given since they will be more useful in a wider comparative survey of animal populations on the river gravels of the Upper Thames Valley as data become available from three other moderate size samples, from Abingdon and Appleford.

ACKNOWLEDGEMENTS

I am indebted to Mr. D. Bramwell and Dr. A. Wheeler for their informative reports, Mr. R. A. Harcourt for identifying three of the largest sheep bones, Professor B. Marples and Mrs. Judi Startin for their encouragement and help with the problems of identification, Miss Myra Shackley for helpful comments on the Broad Street report, and to the staff of the Oxfordshire Archaeological Unit for their diverse assistance.

BROAD STREET BONE AND SHELL

Romano-British

Some 54% of the 203 Romano-British animal remains at Broad Street were identified, most of these being classified in Table 8. The dating of the features is as follows : 2nd cent. A.D. : 35, 41 ; 3rd cent. : 76 ; 4th cent. : 20, 23, 86. The mini-

imum numbers of individuals are also recorded as determined for the medieval sample (page 108). There are seven dog bones, five probably from the same individual, in Ditch 41, and a cat metatarsal bone in the same feature. No goat bones were identified. In general, oyster shell is quite common, with matching shells in Ditch 41, and cattle may have been relatively more numerous than in medieval times.

TABLE 8
Romano-British Bone and Shell Frequency and Minimum Number of Individuals (M.N.I.)

Trench	III	II	III	I	II	III				
Feature number	35	41	76	23	20	86	Total	%	Feature M.N.I.	Sample M.N.I.
Cattle	2	12	4*	2	—	6*	26	25	7	3
Sheep	1	4*	9	1	—	11	26	25	6	4
Pig					1	4	5	5	2	1
Domestic fowl			1			1	2	2	2	2
Oyster	2	35	1	2	1	2	43	41	26	26
								98		

* Two individuals represented.

One sheep died at an early stage of growth, but nineteen other bones indicated that most stock animals died closer to maturity or after it. One cattle phalanx was still intact and chop marks were common on the other fragments.

Eight rather broken bones came from a Romano-British deposit in Trench I at the Old Gaol, and perhaps Broad Street was closer to the centres of bone-related activities at this time.

Medieval

The sample

The medieval sample consists of the bone and shell contents of medieval rubbish pits in Trench III, Broad Street. The bone and shell fragments are well preserved although 19% of those in Pit 26 are more weathered than the rest of the sample and may be redeposited material. Some 47% of the 2,090 fragments in the sample were identified, most of these remains being classified in Table 9, in the approximate order of earliest to latest pits. The feature numbers of the best dated pits are as follows: early 12th century: 80; mid 12th century: 73; late 12th century: 100; late 12th-early 13th century: 70, 78; late 13th-early 14th century: 66; 14th century: 35, 41; late 14th-early 15th century: 36; early 15th century: 26.

Animal presence and abundance

The bone frequencies, as in Tables 8, 11 and 12, include shafts and epiphyses, cranial bones and teeth, but ribs are not counted. Table 9 also includes seven

TABLE 9
Broad Street medieval pits ; animal bone and shell frequency

Feature number	80	73	100	102	104	110	114	78	70	67	66	96	35	41	36	44	50	52	54	55	26	Total	%
Cattle	19	69	15	—	1	4	16	20	5	5	8	6	23	17	25	1	1	4	18	1	29	287	30
Sheep	9	96	11	—	1	3	10	34	13	2	5	6	16	24	15	4	1	3	22	6	28	309	32
Pigs	1	22	2	1	—	1	2	9	1	3	2	4	8	6	7			—	2	—	2	73	8
Domestic fowl*	2	8	—	—	—	—	2	7	3		1	—	23	64	30			—	1	—	2	143	15
Other Birds			1		1	1	—	—				—	2	17	1			1	1	1		26	3
Oyster			12				1	3				1	8	26	12			1	17	1	6	88	9

* *Gallus domesticus*
Bird bones identified by Mr. D. Bramwell.
Other species listed in text.

TABLE 10
Minimum Number of Individuals (M.N.I.)

[illegible]

domestic fowl bones not examined for the bird report (page 111). No goat remains were identified.

Other animal remains include three teeth and a metatarsal fragment of horse in Pits 26, 78 and 80, a metatarsal in Pit 35 and a pelvis in Pit 41 of fallow deer, thirty bones of a dog in Pit 26 and single dog bones in Pits 35, 54 and 114 (two individuals), three cat bones in Pits 54 and 114 (one individual), a hare calcaneum and a cockle (*Cardium edule* L.) in Pit 35, and in Pits 35 (four), 41 (nine), and 36 (seven), a total of twenty fish bones (page 112), i.e. 2% of the identified fragment total of 960. Such percentages in Table 9 exclude a count of the dog in Pit 26 and percentages of less than one are not given.

Table 10 gives, in approximate chronological order, the minimum number of individuals¹ for cattle, sheep, and pigs in each pit. The totals of the features are compared with the minimum numbers of individuals from the total number of fragments of each species in the sample. While the feature totals are three times as large as the minimum numbers of individuals from the whole sample, their proportions differ by one or two per cent.

This similarity in proportion implies that, while the feature fragment numbers vary per identified individual, the whole bone sample is relatively homogeneous for determination of minimum numbers. Thus the identification of a small number of bones of a species seems, on the average, to be almost as indicative of the representation of an individual in a pit as are the minimum numbers for the larger pits.

Three hundred fragments have been considered a realistic sample size for minimum numbers,² so the proportion of cattle to sheep seems reliable while the minimum numbers of pig are suspect. Minimum numbers of individuals in the pits were thought worthwhile if they indicate any change in the proportions of the three species during the late medieval period. If the totals of the features are compared for the early (Pits 80 to 70 in Table 3) and late (Pits 67 to 26) periods there is a slight proportional increase of sheep from the ratios of 16 cattle : 21 sheep, to 13 cattle : 21 sheep.

The minimum numbers of individuals method is preferable to counting the number of fragments of each species, but the average number of fragments per individual given by Table 11 shows that care is required in arguing from minimum numbers.

Skeletal proportions

In Table 12 three groups of bones are compared for cattle, sheep and pigs in the early, 12th-13th-century, and late, 13th-15th-century, pits. The bones recorded in Table 9 are divided according to whether they are derived from the head, the limb extremities, i.e. the metapodial and phalangeal bones, or from the rest of the carcass, i.e. all other limb and body bone except ribs which were not included in Table 9. These groups were thought to be most sensitive to changes in diet or butchery practices.

The proportions of loose teeth did not appear to affect the cross table comparison, but the numbers of other bones varied considerably within each group. The sample

¹ R. E. Chaplin, *The Study of Animal Bones from Archaeological Sites* (1971), 70-75.

² N. Gjeval, *Lerna, a pre-classical site in the Argolid* (1969), 1, 4.

TABLE 11
Medieval meat yield and fragment number individual

	Sample M.N.I.	Meat Yield	% of Total	Fragment Number f	Mean f per Individual
Cattle	11	9,900	74.5	287	26
Sheep	15	1,500	11.0	309	21
Pig	7	875	7.0	73	10
Horse	1	800	6.0	4	4
Fallow deer	1	150	1.0	2	2
Domestic fowl	11			143	13
Other Birds	8			26	3
Fish	3	75	0.5	20	7
Oyster	85			88	1
	13,300				

TABLE 12

Early (12th-13th century, Pits 80 to 70 in Table 3) and late (13th-early 15th century, Pits 67 to 26) medieval skeletal remains

	Cattle				Sheep				Pigs			
	f	Early %	f	Late %	f	Early %	f	Late %	f	Early %	f	Late %
Cranium Jaw Tooth	51	34	30	22	78	44	35	27	23	58	13	38
Metapodium Phalanx	44	29	33	25	31	18	33	25	8	21	8	26
Other bone except rib	57	37	72	53	68	38	64	48	8	21	13	38
	152		135		177		132		39		34	

size of Pit 73 contributed most to the early pit group although it appeared to be similar to them.

Relatively more skull debris is present in the earlier pits and this tends to be balanced by increased amounts of the main carcass bones in the later pits.

DISCUSSION

Animal species and diet

Farm animals predominate in the sample, although horse remains are scarce and it seems probable that pigs and domestic fowls were also reared in the town. The proportions of the minimum numbers of individuals change when multiplied by the approximate meat weight each animal would yield when killed. Although the meat weights of Carter and Phillipson³ are used to produce the meat yields of cattle, sheep, pig and horse in Table 11, no reference to weight is given.

³ E. Carter and P. L. Phillipson, 'The Iron Age farmstead at Hawks Hill', *Surrey Arch. Coll.*, LXII (1965), 40-42.

Firstly the minimum numbers are minimum estimates and secondly, they are relative mainly to sample size, and have an unverifiable relation to medieval populations. The average numbers of fragments per individual also caution against producing absolute results.

With guesses for the meat yield of deer and the other smaller animals, it appears that cattle 74.5%, sheep 11%, pig 7% and horse 6% contributed most to the medieval meat economy, but this is only one aspect of the importance of these animals. If the estimates of the other animals err, their overall contributions are unlikely to be important in these terms and on the evidence of their abundance.

The 14th-century fallow deer bones are interesting as the abbot of Abingdon was one of the few people permitted to hunt deer, but even he was restricted to the roebuck in the woods at Cumnor and Bagley.⁴ The oyster and seafish remains seem related to Thames river transport. In 1534 London was one source of salted fish for the abbey.⁵ In the 11th century herrings were paid as river toll to the abbot.⁶

The skull and body bone differences may mean that the rubbish producers were consuming more of the better cuts of meat during the later medieval period. This is associated with the evidence of a more varied diet in the late 13th and early 14th centuries, e.g. Pits 35, 41 and 54. Alternatively, changes in butchery practices or bone usage could mean that more skull debris tended to be dumped elsewhere during the later period.

Butchery

The angular fragments of limb bones and the chop marks which were common on the vertebrae and scapulae made it clear that deliberate fragmentation produced most of the bone sample. Only 64 complete cattle and pig bones remained, some 10% of their identified debris. The purposes of destruction may have been for kitchen stews, or fat or glue extraction.

Bone dispersal

The average number of bones per species individual in Table 11 shows that considerable dispersal of animal skeletons took place. This poses a question of how rubbish came to be deposited from the butchery centres or the households.

A general lack of evidence of weathering, scavenging—apart from the occasional gnawed bone—and the moderate quantities of bone in the pits, suggest direct dumping of bone into the pits. In contrast, the occasional fragments of species in pits seem related to the average numbers of fragments per individual as evidence of indirect pathways of bone before deposition.

Other questions also remain to be investigated; for example, the butchery and distribution of meat joints to the people of Abingdon, and of who could afford to purchase meat at that time.

⁴ A. L. Poole, *From Domesday Book to Magna Carta* (1951), 28–34.

⁵ M. Cox, *Abingdon, Abbey to Borough* (1974), 33.

⁶ *Chronicon Monasterii de Abingdon* (1858), 481.

REPORT ON BIRD BONES. By D. BRAMWELL

Domestic Birds

- Goose, minimum of 1 adult.
- Duck, minimum of 1 adult.
- Fowl, minimum of 11 or 12 birds.

Wild Birds

- Goose, *cf.* White-front or Pink-footed, minimum of 1 bird.
- Teal, minimum of 3 birds.
- Partridge, minimum of 1 bird.
- Stock dove, minimum of 1 bird.

Comments

Domestic goose is represented by 10 bones and is a fairly large specimen, suggesting a gander. Domestic goose is distinguished from the wild greylag by the stouter bones.

Domestic duck is derived from the mallard and again is recognizable from the stouter build. Six bones were of this form.

Domestic fowl bones predominate, 136 in all, and two or three breeds or varieties are present. Owing to the variation in fowls, from Roman times onwards, it is better to select just skulls and tarsal bones for comparison. Tarsal bones are the means of sexing, the male bone being furnished with a spur. Tarsal bones of three cocks and four hens are present and a histogram shows the lengths of these specimens (FIG. 68). By present-day standards the fowls at Abingdon were fairly small, two or three indeed may have been bantams. There is no evidence to show that any were used in cock fighting although this is not precluded. A few of the leg bones had been cut across to sever the feet in preparation for cooking. Only one bone is slightly charred. About three pullets are present, recognized by their immature bones.

Domestic Fowl: length of tarsal bone

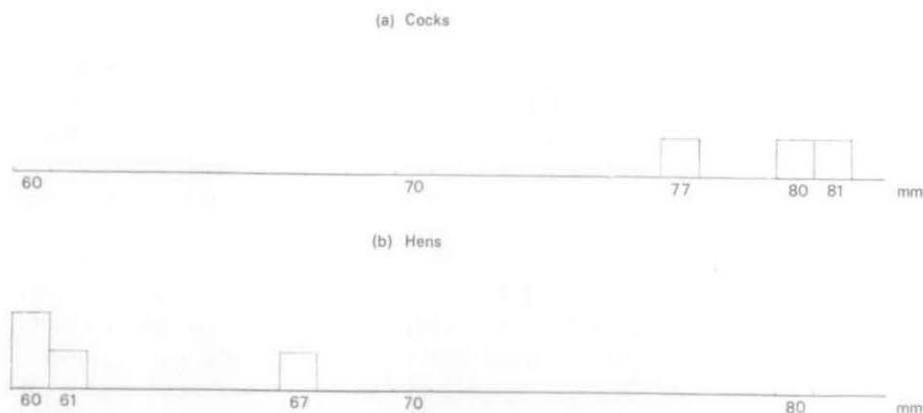


FIG. 68

Length of Tarsal Bone Histogram.

The wild birds are all species commonly hunted or snared, with teal as the most common item. This is a very small duck which likes slow-flowing rivers or ponds. The wild goose is interesting and may have been taken when feeding on fallen grain. The partridge is also a bird of agricultural land while stock dove prefers parkland type of country. It is evident that the few birds in this collection represent but a small part of the town's refuse.

REPORT ON FISH BONES

By A. WHEELER, Department of Zoology, British Museum (Natural History)

Broad Street

III	36		
		Cod <i>Gadus morhua</i>	1 abdominal 1 anterior caudal } centra
		Conger eel <i>Conger conger</i>	1 premaxillary bone
		Plaice <i>Pleuronectes platessa</i>	4 parts of opercular series
III	35		
		Conger eel	1 premaxillary bone
		Cod	2 fragments of clavicle
		Plaice	1 first interhaemal spine
III	41		
		Cod	3 caudal centra
		Conger eel	2 dentary bones
			1 premaxillary bone
			2 centra
			1 parasphenoid
			(lower, posterior end of the cranium)

OLD GAOL BONE AND SHELL

The Sample

The Old Gaol medieval and post-medieval deposits were examined closely if they could be dated to about a century by their stratigraphy or ceramic. Over 99% of the main medieval and post-medieval samples were excellently preserved, only four bones being well weathered. Some 22% of the medieval cattle, sheep, and pig bones were complete, or nearly so, and eight of the seventy-one post-medieval bones also were complete.

Six pits and two ditches of the 12th-14th centuries contributed to the medieval sample of 435 bones, 51% being identified, most of these being classified in Table 13. There, the first four features are from Trench I and the next three are from Trench II. They are arranged in chronological order as follows: 12th-13th centuries, Pits 21 and 40; 13th century, Pits 22, 39/42 and Ditches 26 and 27; and 13th-14th centuries, Pit 19. Table 13 also records 21 bones of 32 from the 16th-century Pit 16 and 17th-century Pit 15. Pit 16 is from Trench II and Pit 15 is from Trench I.

TABLE 13
Old Gaol : animal bone and shell frequency

	Medieval pits and ditches									Post-medieval pits		
Feature number	21	40	22	39/42	26	27	19	Total	%	16	15	Total
Cattle	5	3	16	1	23	10	6	64	30	—	6	6
Sheep	12	3	13	1	33	11	6	79	37	5	7	12
Pig		1	5	1	10		3	20	9	2	1	3
Domestic fowl	1	2	17*	1	9	2	1	33	8			
Other birds		2			2		2	6	3			
87												

* Cockerel bones not included in percentage.
Bird bones identified by Mr. D. Bramwell.
Other species listed in text.

Animal presence and abundance

The fragment totals in Table 15 include all identifiable fragments except ribs. Those remains not listed in Table 13 are three nearly complete horse bones from Features 21, 22 and 26 (one individual), a dog maxilla in Ditch 26, eight cat bones in Features 21, 22 and 26 (4% of the fragment total and three individuals represented), seven oyster shells (3%), a fish bone in Ditch 26, and five fish bones (3% and one individual) from the 13th-14th-century Pit 18. Amongst the undated material excluded from the main results were post-medieval rabbit bones and a medieval common mussel, *Mytilus edulis*, L.

Table 14 records the minimum number of individuals⁷ in the medieval and post-medieval features. The medieval feature totals are almost in the same proportion as the minimum numbers for the whole sample. The sample ratio of 5 cattle : 11 sheep : 4 pigs, has a greater proportion of sheep than the Broad Street ratio of 11 : 15 : 7.

TABLE 14
Minimum Numbers of Individuals (M.N.I.)

Feature number	21	40	22	39/42	26	27	19	Total	Sample		16	15	Sample	
									M.N.I.				Total	M.N.I.
Cattle	1	1	2	1	2	2	2	11	5	—	2	2	2	2
Sheep	2	2	4	1	6	3	2	20	11	3	3	6	5	5
Pig	—	1	2	1	2	—	2	8	4	1	1	2	1	1

Sample problems

When related to the average number of fragments per individual based on the sample minimum numbers of individuals, at the Old Gaol the sheep average is one-third and the cattle and pig average one-half those at Broad Street (Table 15). The

⁷ *Op. cit.* note 1, 70-75.

simplest explanation is that estimates of minimum numbers do not increase at the same rate as sample size increases⁸ and this is consistent for both site samples. It is not consistent within the sheep samples at both sites, especially when the proportions of the minimum numbers in the features and the fragment numbers are considered.

TABLE 15
Medieval meat yield and fragment number per individual

	Sample M.N.I.	Meat yield	% of Total yield	Fragment Number f	Mean f per individual	Broad Street Mean f/I
Cattle	5	4,500	74	64	13	26
Sheep	11	1,100	18	79	7	21
Pigs	4	500	8	20	5	10
		6,100				

In FIG. 69 each scattergram has a high correlation ($r = 0.94, 0.96$) between fragment number and the feature minimum numbers but there is a marked difference between the slopes of the two regression lines. The other samples are too small to compare although the correlation between these variables for Broad Street cattle is only moderate ($r = 0.77$).

The fresh breaks in the bone contribute to these differences. Broad Street has 14% and the Old Gaol has 8% of new breaks in their bone samples. Within the identified bones the breakage varies at the respective Broad Street and Old Gaol sites, being 9% and 3 bones of 74 for sheep, and 3% and 6 bones of 60 for cattle.

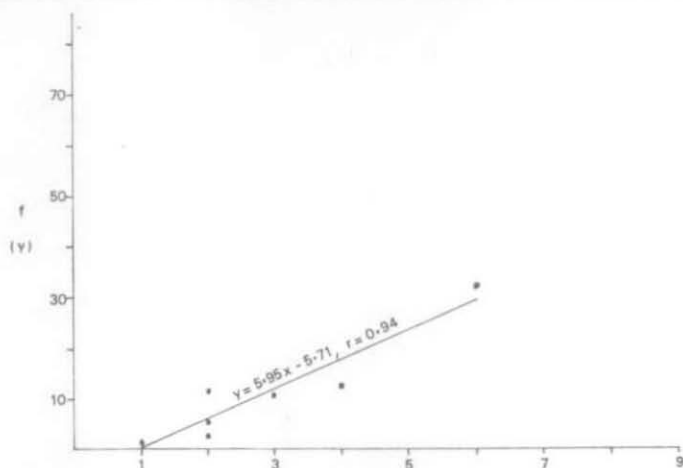
However, as for the percentages of complete bones in the identified cattle, sheep and pig bones, i.e. 10% at Broad Street (page 110) and 22% at the Old Gaol, these differences are too large to be explained only by fresh breakage. Percentage comparisons of the cattle and sheep fragment and bone lengths shows that at least the sheep bones tend to be longer at the Old Gaol. In general the fragment lengths are greater than at Broad Street (FIG. 70). The fragmentation patterns of Pit 73 and the Old Gaol are compared separately since they have nearly the same number of fragments, and Pit 73 would make up a quarter of the whole if included with the rest of the Broad Street sample. All complete and fragmented bones were measured except for teeth, and those with new breaks (FIG. 71).

The irregularities in some of the graphs indicate the limits of sample sizes. Selection of bone is unmeasured although the Old Gaol was dug by an experienced team. Eight months elapsed between the full examination of both site samples, although fragment lengths were taken at the same time for both sites.

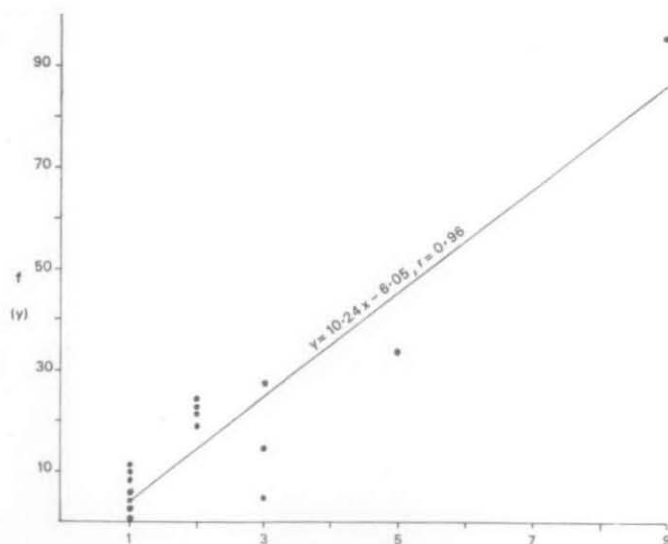
Mortality estimates

The Broad Street and Old Gaol site results have been added together to obtain a larger medieval sample of agable material. While it is desirable to quantify many site and feature differences, most estimates of animal populations are made more reliable by such grouping. The respective totals of epiphyses and agable

⁸ *Op. cit.* note 2, Fig. 1.



OLD GAOL SHEEP: SCATTERGRAM OF FRAGMENT NUMBER (f) AND
THE MINIMUM NUMBER OF INDIVIDUALS (M.N.I.) IN THE FEATURES



BROAD STREET SHEEP: SCATTERGRAM OF FRAGMENT NUMBER (f) AND
THE MINIMUM NUMBER OF INDIVIDUALS (M.N.I.) IN THE FEATURES

FIG. 69
Bone Scattergram.

jaws are cattle 91 and 10, sheep 139 and 23, and pigs 32 and 11. These epiphyseal numbers include the early fusing centres of the pelvis and scapulae, and all estimates are based on information from Silver.⁹

Some 6% of cattle, 8% of sheep and 66% of pigs died during development equivalent of up to one and half years of age in modern cattle and sheep and two

⁹ I. A. Silver, 'The aging of domestic animals', *Science in Archaeology*, eds. D. Brothwell and E. Higgs (1969), 238-301.

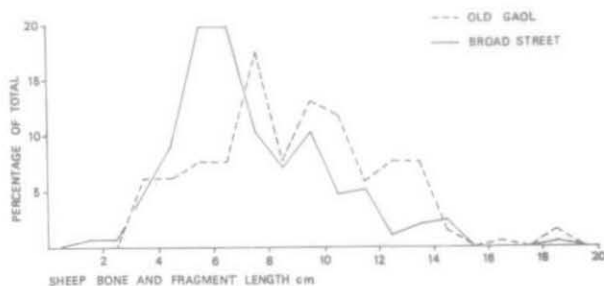
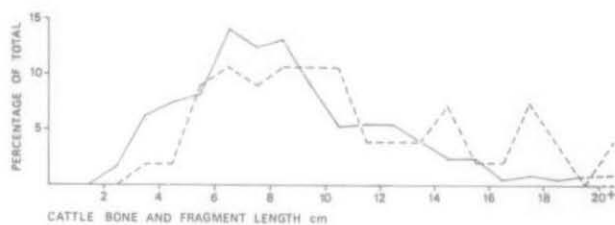
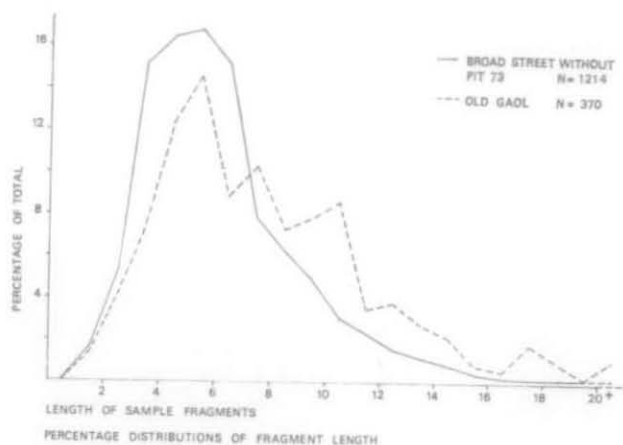
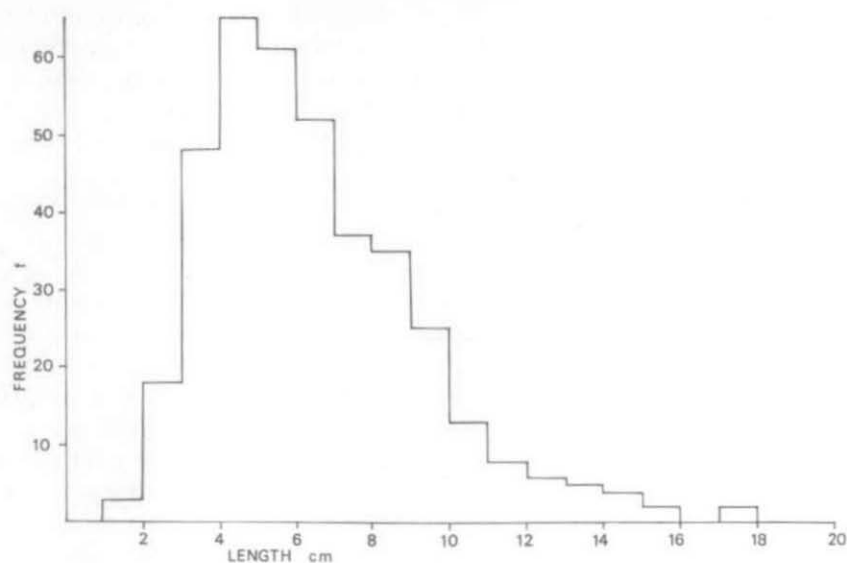
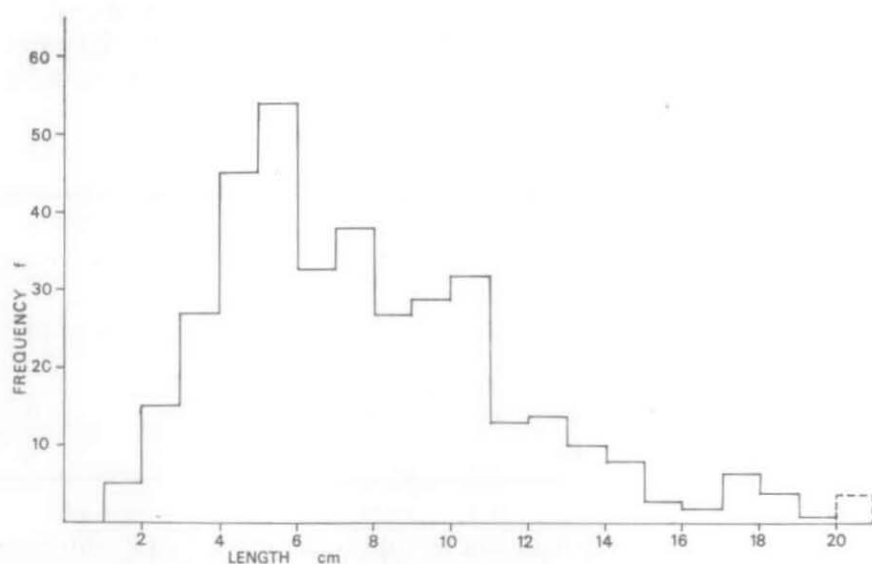


FIG. 70
Bone Fragment Length Graph.



BROAD STREET, PIT 73: FREQUENCY DISTRIBUTION OF FRAGMENT LENGTH N=384



OLD GAOL: FREQUENCY DISTRIBUTION OF FRAGMENT LENGTH N=370

FIG. 71

Distribution of Fragment Length.

years in modern pigs. These figures are based on the proportion of unfused epiphyses in the total of early fusing epiphyses.

The proportions of fused bones in the number of late fusing epiphyses indicate that 45% of the cattle, 61% of the sheep, and 19% of the pigs died during the later

stages of development or after maturation. From the proportion of unfused bones in their sample totals, 36% of the cattle, 19% of the sheep and 71% of the pigs died before maturity. These last two slightly different methods of estimation therefore suggest that 45-64% of cattle, 61-81% of sheep and 19-26% of pigs reached maturity as estimated from their fused epiphyses indicating the end of the most rapid period of body growth.

From very limited sample sizes, and the criterion of the third molar coming into wear, 50% (5 jaws) of cattle, 65% (15 jaws) of sheep, and 27% (4 jaws) of pigs produced a full set of teeth, but this occurs about halfway through the epiphyseal development of the individual in modern stock animals. While tooth eruption data from the 18th-19th centuries indicate a slower jaw development, this has an unknown relation to epiphyseal fusion in medieval and post-medieval animals.

There is little difference between the two site samples except to note that three lamb bones are included in the Old Gaol sample. Ten post-medieval epiphyses indicate that 80% of sheep reached the late fusing stage equivalent to more than one and a half years of age in modern sheep, but it is not possible to say how many reached maturity.

Skeletal debris

Table 16 is a comparison of the proportions of skeletal debris for the three main species at Broad Street and the Old Gaol. This represents all the bones of those species that are recorded in Tables 9 and 13 of both reports. All the main carcasses

TABLE 16
Percentages of medieval skeletal fragments

	Cattle				Sheep				Pigs			
	Old Gaol f	Broad Street %	Broad Street f	Old Gaol %	Old Gaol f	Broad Street %	Broad Street f	Old Gaol %	Old Gaol f	Broad Street %	Broad Street f	Old Gaol %
Cranium Jaw Tooth	25	38	81	28	24	30	113	36	6	30	36	49
Metapodium Phalanx	20	31	77	27	16	21	64	21	2	10	21	29
Other bone except rib	20	31	129	45	39	49	132	43	12	60	16	22
	65		287		79		309		20		73	

i.e., the vertebrae, pelvis, scapulae, and the upper limb bones, are contrasted with those of the head and feet as their numbers may be sensitive to changes in butchering practices. The results are variable and suggest no obvious differences between the sites in this respect.

DISCUSSION

The percentages of the medieval fragment numbers differ by up to 7% from the equivalent species at Broad Street. Counts of fragment numbers are not reliable indicators of animal abundance, but the proportion of the minimum numbers of

individuals also varies between the two sites. The proportions of sheep are greater at the Old Gaol since their bones appear to be less fragmented than at Broad Street. In general, the site differences in the average number of fragments per individual is probably a function of their sample sizes.

While the minimum number proportions of pig on both sites are similar, their fragments are few in number. If the totals of ageable bone in the mortality estimates are used, they give a ratio of 10 cattle : 15 sheep : 4 pigs, suggesting that pigs are slightly over-represented by their minimum numbers, yet again, under-represented if unfused bones are less well preserved.

On counts of ageable bones, the three epiphyses of horse are over-represented by the minimum numbers method and, since there is no direct evidence that horse was eaten, it is not considered in the Old Gaol meat yields. The sample is small enough for a horse or ox to have 12-15% of the meat yield, and the smallest animals are also unlikely to contribute much at this level of discussion, so that the Old Gaol percentages are given only the three main species (Table 15). The method has been discussed for Broad Street which has more reliable figures (page 109), and on comparison, if the relative abundance of sheep varies considerably on the sites it seems to be less important in assessing their contribution to the meat economy.

Beef was the most commonly eaten medieval meat, but if any animals were mostly reared for meat these were pigs. From their epiphyses two-thirds died before they were half-grown and relatively few died toward epiphyseal maturation. So it appears from this small sample that most pigs were killed during the early period of maximum body growth and that the quarter to one-third of the original population kept after this represents breeding stock.

In contrast to pigs approximately half of the medieval cattle and approximately two-thirds of the sheep reached maturity, less than a tenth of either population dying during the equivalent stage of one-third pig mortality. Thus considerable numbers of these animals appear to have been kept after the main period of body growth and, even allowing for a lesser reproductive capacity than pigs, this points more to milk and particularly wool production, both species being efficient producers for several years after maturation in modern animals. Wool and cheese are discussed in the Victoria County History of Berkshire but their local documentation is rather fragmentary.¹⁰

There are small proportional increases of sheep over cattle during the period, both at Broad Street (page 108) and at Seacourt, seven miles north of Abingdon¹¹ but the minimum numbers at the Old Gaol do not support this, possibly because there is a virtual lack of 14th-15th-century pits. The post-medieval pits are also unhelpful since they have non-random deposits of sheep metapodial bones in them (page 120).

Butchery and bone dispersal

Consistent medieval butchery technique is not very obvious at the Old Gaol. Of the sheep humeri, two are complete, two chopped through close to the glenoid

¹⁰ V.C.H. Berks I (1906), 304-8, 387-95.

¹¹ M. Jope, in M. Biddle, 'The Deserted Medieval Village of Seacourt, Berkshire', *Oxoniensia*, xxvi/xxvii (1961-62), 197-201.

articulation, four midshaft, one at the distal articulations and one at both ends. At Broad Street midshaft destruction is the rule and proximal ends of the humeri scarcely survive. The Old Gaol sheep pelves are virtually complete except for their weaker pubic portion, whereas at Broad Street only the unfragmented area around the acetabulum tended to be identified. With the overall fragment length differences and bone completeness discussed in the results, the main conclusions are, firstly that the evidence of carcass disjuncting, if a common practice, tends to be obscured by the intensity of later bone fragmentation. Secondly, if the differences between the sites had not been produced by archaeological methods, then Broad Street was close to a focus of more intensive use of bone, e.g. for fat or glue.

More complexly, the evidence of the fragmentation also may be related to the directness of rubbish dumping and to the differential scattering of rubbish by scavengers. Personal, but limited, field observation around Abingdon suggests that as bones are scattered by scavengers such as dogs and birds, the smaller fragments tend to stay in place at least on open sites. The greatest observed distance of carried bone was twenty metres but much bone disappeared altogether, evidently to travel further than this.

An overall impression of the bones as rubbish need not exclude the possibility that either site was cultivated during medieval times but at the Old Gaol the land use seems to have changed some time after the 14th century. The post-medieval sheep bones consist of eleven metapodials, a distal humerus and a distal tibia and suggest rubbish from sheep slaughtering. More metapodials were noted but not collected from the flooded Pit 16 and its 16th-century date would closely associate it with Johanna Wyks' slaughter house and the meat trade on Butcher-row (page 59).

REPORT ON THE BONES OF BIRDS FROM THE OLD GAOL, ABINGDON. By D. BRAMWELL
12th-14th Century

Goose, domestic

Five bones belong to an adult goose which was probably a domestic bird, though it is about the size of a present-day grey-lag. Most medieval sites show that geese provided as much or more meat than the small domestic fowls of the period.

Fowl, domestic

There are parts of at least 3 adult and 3 immature birds. They are mostly small by present-day standards and are thought to be mostly hen birds with one possible cock bird. 16 bones.

Wood pigeon

One bone.

13th Century. Pit 22

Fowl, domestic

A most useful occurrence of most of the skeleton of a cock bird. Fowl bones are usually a very mixed 'bag' so this group gives a good idea of the relative proportions and appearance of one individual. My conclusion is that the bird

was of 'dumpy' appearance, having short and thick bones, and it was not much larger than some present-day bantams. The following measurements are obtained :

humerus, incomplete, estimated to be about 67 mm. long.

radius	58
ulna	65
femur	75
tibio-tarsus	107
tarso-metatarsus	73, with spur of 21.5
synsacrum	73

General remarks

The small collection is typical of medieval sites, with the accent on domestic geese and fowl and the occasional wild bird, in this case a wood pigeon.

There are no bones of hawks or falcons and the cock is not of the stature used for cock-fighting.