

Animal Bones from Chepstow

A total of 58.4 Kg of animal bone was presented, of which 25% (by weight) proved to be too fragmented for identification. The remainder was typical of urban excavations, well preserved but very fragmented. The bones catalogued according to the excavated site. Following preliminary identification the bones were analysed for the minimum number of individuals, which were aged where possible. It was assumed each archeological layer contained different individuals. An anatomical analysis was carried out upon the most abundant species, cattle. Where possible the bones were measured; these measurements are presented for the whole material, not divided into the sites.

The analysis into species according to weight of bone, which was not divided into sites, was as follows: cattle 63%, sheep/goat 12%, pig 14% and other mammalian species 11%. Besides this there were about 100 fragments of bird bone which were dispatched to Mr. Bramwell for identification; his report follows this one. A few fish spines were also found and sent to Mr. Andrew Jones, who was unable to identify them further except that they probably came from freshwater fish.

The number of identified fragments is set out in Table 1. Except for site XI cattle was always the most numerous species, but the proportion varied from 53 - 31%. Sheep varied from 14 - 29% and a few goats were present at every site, the number probably being under estimated owing to the inherent difficulty in distinguishing goat from sheep bone. Pig varied from 9 - 42%, and was the most numerous species at site XI. Horse was fairly numerous, particularly at site I.

A more reliable assessment of proportions is derived from the minimum number of individuals, since this allows for the dissemination of parts of the carcass to unexcavated parts of the site, and losses due to clearance activities at the time of deposition. This reduces the range of spread

of numbers for the different sites, though it does not greatly alter the main conclusions. The precise data is set out in Table 2.

Besides the main domestic forms, cattle, sheep, pig and horse, bones from other species were identified in small numbers. These are designated "other" in Tables 1 and 2, but are set out in detail in Table 3. A few deer bones occurred at every site, and these were all from red deer apart from single samples of roe and fallow from site XI. This evidence of hunting was supplemented by a few large pig bones which might have come from wild boar. These are underlined in the table of measurements, Table 6. There were no hare bones and very few rabbit (not recorded as probably intrusive) so that hunting evidently played little part in the meat supply. This data has been compared with two other sites of roughly the same date in Table 1. These are Hereford and Bristol Castle, and it can be seen that Chepstow is more similar to Hereford with respect to cattle numbers, but more like Bristol with respect to bird numbers.

An anatomical analysis has been carried out into the main parts of the carcass for cattle bones (Table 4). This was done in an attempt to show whether the different sites contained the same proportions of slaughter waste etc., or whether any of them were purely kitchen middens. There was a higher proportion of good meat bones (from axial skeleton and upper limb) at sites IX and XI. There was a higher proportion of metapodials and loose teeth at site I. However these differences might to some extent be accounted for by differential preservation, since damage before and after entering the ground increases the number of durable loose teeth and reduces the number of fragile vertebrae relative to the rest. All sites would however seem to contain a fair proportion of all kinds of waste.

The age range of the individuals, though it could only be determined in a few of the Chepstow specimens, gives some indication of the local animal husbandry. The data on this is set out in Table 5; though the figures are presented as %, they are based on very few specimens at some of the sites,

and so too much reliance should not be placed in this data. It might be anticipated that if urban consumption was based upon redundant farm animals, rather than those specifically reared for market, that the bulk of the animals would be young potential casualties or worn out breeding stock; plough oxen etc. These two categories of animals would come under the heading of juvenile and mature respectively. This line of reasoning does not apply so closely to the pig, since the only economic function of this animal is to supply meat and hides, or offspring. If, however, animals were being specially produced to supply the market for meat and hides, it might be expected that they would come into the category immature, from which the best hide and carcass would derive. These categories are based on the state of the dentition and the presence or absence of epiphyseal closure in the bones, and for modern livestock they would correspond to juvenile under 18 months, immature 18 months to about 4 years, and mature over that age. However there is no evidence that these ages apply to animals prior to the agricultural revolution and quite a lot to indicate that bone maturity was much later, so these ages are best left under the heading of stages of maturity. Table 5 indicates that for cattle there are roughly one third of the individuals at each stage. On the whole the highest proportion of immature cattle as well as the other animals come from sites IX and XI, suggesting that these were more affluent sites being able to afford choicer meat, which would add weight to the anatomical analysis data. Few juvenile sheep occur at any of the sites; perhaps these animals were not considered worth marketing and were consumed on the farms. Ryder's (1975) findings from the deserted medieval village of Wharrah Percy add weight to this suggestion. Certainly there are some high casualty rates recorded from monastic flocks (Lloyd 1977). The majority of the few aged specimens of pig came from the immature stage.

There are two main types of evidence available with regard to the size and type of animals making up the bone sample; these are bone

measurements and the appearance of horn cores in those species that have them. A high proportion of bone fragments proved to be measurable, and these are set out in two ways. The complete bones of cattle and sheep are listed in Table 6, together with all the measurements obtained from the other mammal species. Frequently occurring measurements of incomplete bones are set out in the form of histograms, Fig. 1 showing the cattle bones, and Fig. 2 showing the sheep.

Fig. 1 indicates that the bone sizes showed little variation, most of the measurements being fairly closely grouped. However, estimation of body weight from the astragalus bone (Noddle 1973) shows a wider spread, as does the measurement of the complete metapodials, which include some specimens as large modern cattle. However, the majority of specimens were of the typical small medieval size, in the lower range of the animals from the sites examined by Noddle (1975). Possibly some of the large metapodials were intrusive from modern layers. A number of horn cores were found, all of the same basic shape; their different sizes were probably due to sexual differences. A typical specimen is shown in plate I from site IX.

Sheep were also on the small size compared with other medieval sites. Thus the width of the distal tibia shows a peak at 24 mm, whereas it was at 26 mm for the other sites studied by the author, but Chepstow is not outside the complete range shown by these sites. The sheep were either massively horned, presumably in the male (plate 2) from site IX, or polled or carried minute scurs; these last would presumably be ewes or wethers (plate 3). The proportions of the scapula neck are shown in Fig. 2. This gives an indication of the "mutton qualities" of the animal (Hammond 1932). The Chepstow animals form a group of fairly primitive animals well within the range of other medieval sites; the animals were probably not of the most primitive short-tailed variety.

Too few goat bones were identified to give a full description, but it would seem that the animals were typical medieval specimens with massive horns in the male (Noddle 1975). A good example of such a horn core is shown in plate 4 from site 6.

The pig bones showed a considerable range in size, it seems likely that some of the larger specimens were from wild animals, and these are underlined in Table 6. The remaining animals had rather thickset bones in comparison with other medieval specimens, and it is tentatively suggested that sty husbandry was practised rather than open field husbandry and pannage.

There were very few pathological or abnormal specimens. The only one of any note was a rib, presumed bovine, showing signs of a massive abscess (plate 5). Examples of arthritis in the first and second phalangeal joints were found of both horse and cattle, but this is a common condition, probably the result of infected wounds. There were no examples of periodontal disease in the sheep, and none of the bovine lower third molars had a reduced or absent fifth cusp. There were two spondylosed lumbar vertebrae from a small equid, possibly a donkey.

Captions for Plates

1. Bovine horn core showing proportions and curvature typical of this site.
2. Massive horn core from male sheep.
3. Frontal bones of sheep bearing small scur instead of horn. Presumed to come from wether.
4. Horn core from male goat.
5. Rib of large animal, presumed bovine showing massive osteomyelitis and with abscess formation.

Table 1.

Proportions of Species; No. of Fragments

Site	Total	Cattle	Sheep	Goat	Pig	Horse	Other	Bird
I	279	146	79	7	27	10	9	1
%		53	28	2	10	4	4	0.1
III	158	64	38	7	15	5	9	10
%		50	22.5	4	9	3	5	6
VI	263	130	69	12	35	3	6	12
%		46.5	26	4.5	13	1	2	4.5
IX	242	83	61	1	67	4	8	18
%		34	25	0.5	27.5	1.5	3.5	7
XI	330	112	29	2	29x150	14	20	34
%		31	8	0.5	42	4	55	9.5
Hereford %		57	19	4	12		5	2
Bristol Castle %		27	18	0.7	21	9	12	21

Data for Bristol and Hereford from Noddle (1975).

Table 2.

Minimum Number Individuals

The figure. in brackets is the %

<u>Site</u>	<u>Cattle</u>	<u>Sheep</u>	<u>Pig</u>	<u>Other</u>	<u>Total</u>
I	56 (44)	32 (26)	18 (14)	19 (16)	125
III	18 (31)	17 (29)	9 (15)	15 (25)	59
VI	31 (31)	34 (33)	21 (21)	15 (15)	101
IX	49 (34)	32 (27)	36 (31)	10 (8)	118
XI	39 (28)	29 (21)	54 (39)	16 (12)	138

Table 3.

Bones from Less Common Species

Numbers of Fragments. Nos. individuals in brackets.
(Designated "other" in Table 1).

Site	Deer	Dog	Cat	Fox	Rat
I	● (4)	5 (3)			
III	1 (1)	4 (3)		4 (1)	
VI	5 (4)		1 (1)		
IX	1 (1)	1 (1)	6 (4)		
XI	5 (3)	12 (1)	2 (2)		1 (1)

All the deer bones were from red deer except for specimens of roe and fallow deer in site XI.

Table 4.

Anatomical Distribution of Cattle Bones %

Site	I	III	VI	IX	XL
Mandible	5	11	9	4	5
Vertebrae	2	8	5	15	12
Upper fore limb	16	15	17	19	17
Upper hind limb	14	18	12	19	19
Carpals & tarsals	3	5	4	6	8
Metapodials	26	18	20	13	13
Phalanges	9	13	12	6	13
Loose teeth	18	5	15	12	9

Table 5.

Age Range of Individuals

Expressed as % Juvenile (J) Immature (I) Mature (M)

For definition of age ranges see text.

<u>Site</u>	<u>Cattle</u>			<u>Sheep</u>			<u>Pig</u>		
	J	I	M	J	I	M	J	I	M
I	39	30	30	17	50	33	50	50	-
III	25	25	50	20	30	50	20	60	20
VI	13	47	40	7	36	57	-	82	18
IX	20	45	35	38	50	12	14	63	20
XI	20	45	35	38	50	12	14	63	23

Table 6.

Measurements of Bones, complete Bones of
Cattle and Sheep, all Measurements of Horse and Pig

Species	Bone	Length	Prox Width	Dist Width	Mid Shaft Width	
Cattle	Radius	235	63	55	32	
		Metacarpal	165	47	43	24
		168		43	25.5	
		160	44	43	27	
		170	-	47	28	
		175	50	47	28	
		175	52	51	30	
		175	51	47	28	
		180	53	-	29	
		200	45	50	26	
		218	68	64	39	
		Metatarsal	172	27	38	20
			190	45	45	26
			200	39	43	21
			200	44	45	25
			210	45	46	22
			210	38	42	22
			210	38	47	27
Sheep	Radius	130	26	25	16.5	
	Metacarpal	118	-	25	14.5	
		115	-	23	14	
		120	23	25	14	
	Tibia	190	-	24	-	
	Metatarsal	122	19	22	11	
		120	20	25	13	
130		18	21	12		
Goat	Metacarpal	125	23	24	15	
		112	24	27	17	
Pig	Lower 3rd molar length 28, 29, 33, 33, 33.5, <u>35.5</u> , 37					
	Scapula. Minimum shaft width 18, 21, 20, 23, <u>25</u> , 26					
	Humerus. Width distal condyles 30, 30, 31, <u>34</u>					
	Metacarpal length 73, 74					
	Distal tibia width 26, 27, 28.5, 31					
	Metatarsal length 73, 74, 78					
Lateral metapodial length 55, <u>69</u>						
The underlined figures may derive from wild boar.						
Horse	Metacarpal	170	39	37	25	
		215	-	49	34	
	Tibia	340	-	49	-	
	1st phalanx	74	51	43	-	
Cat	Humerus length 117					
	Tibia length 103					

1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960

WINTER RESERVE
ON HAND 1300000 DAX

1ST QUARTER
2ND QUARTER
3RD QUARTER
4TH QUARTER

ESTIMATED

GOODY

WILEY

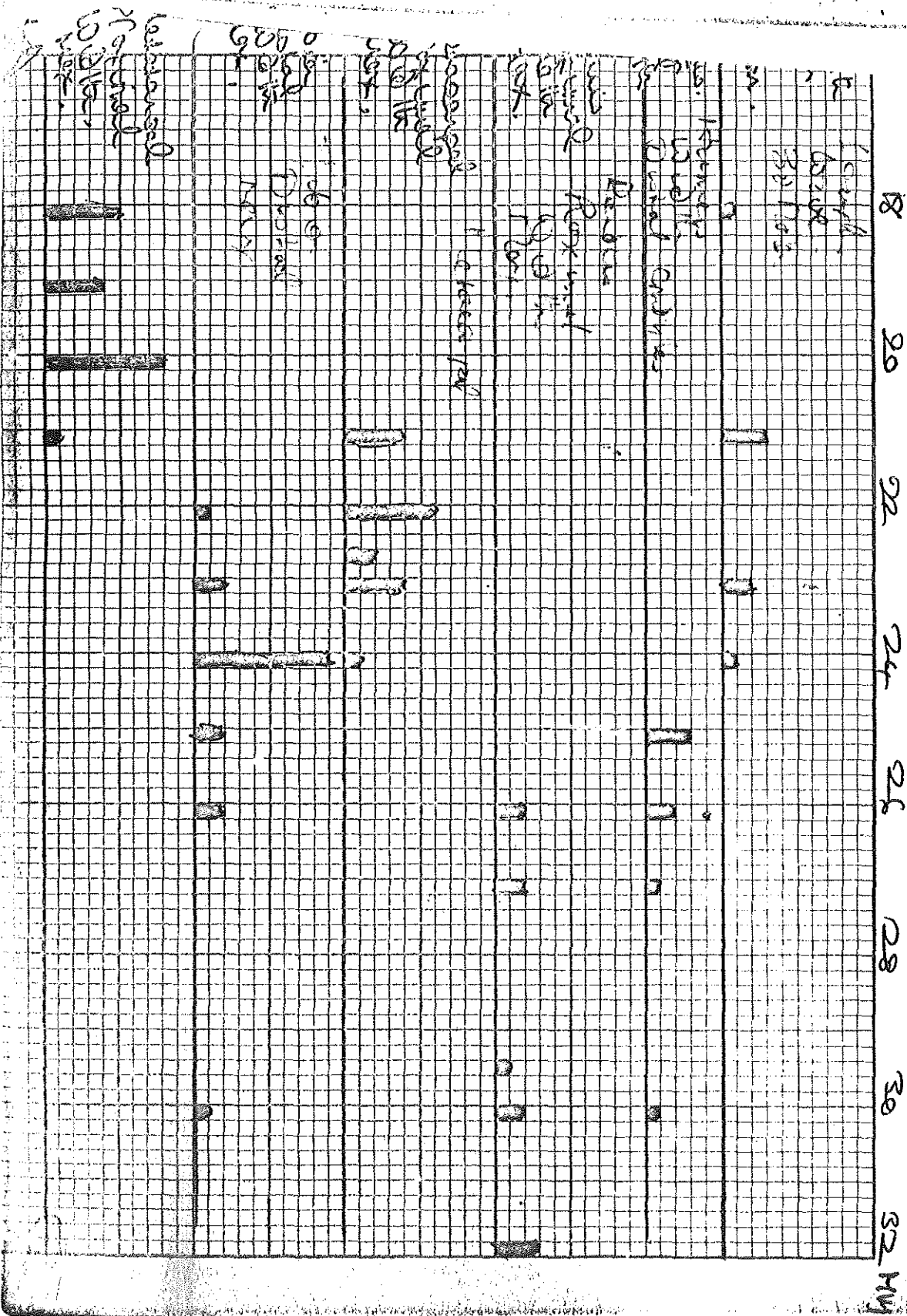
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Fig 1.

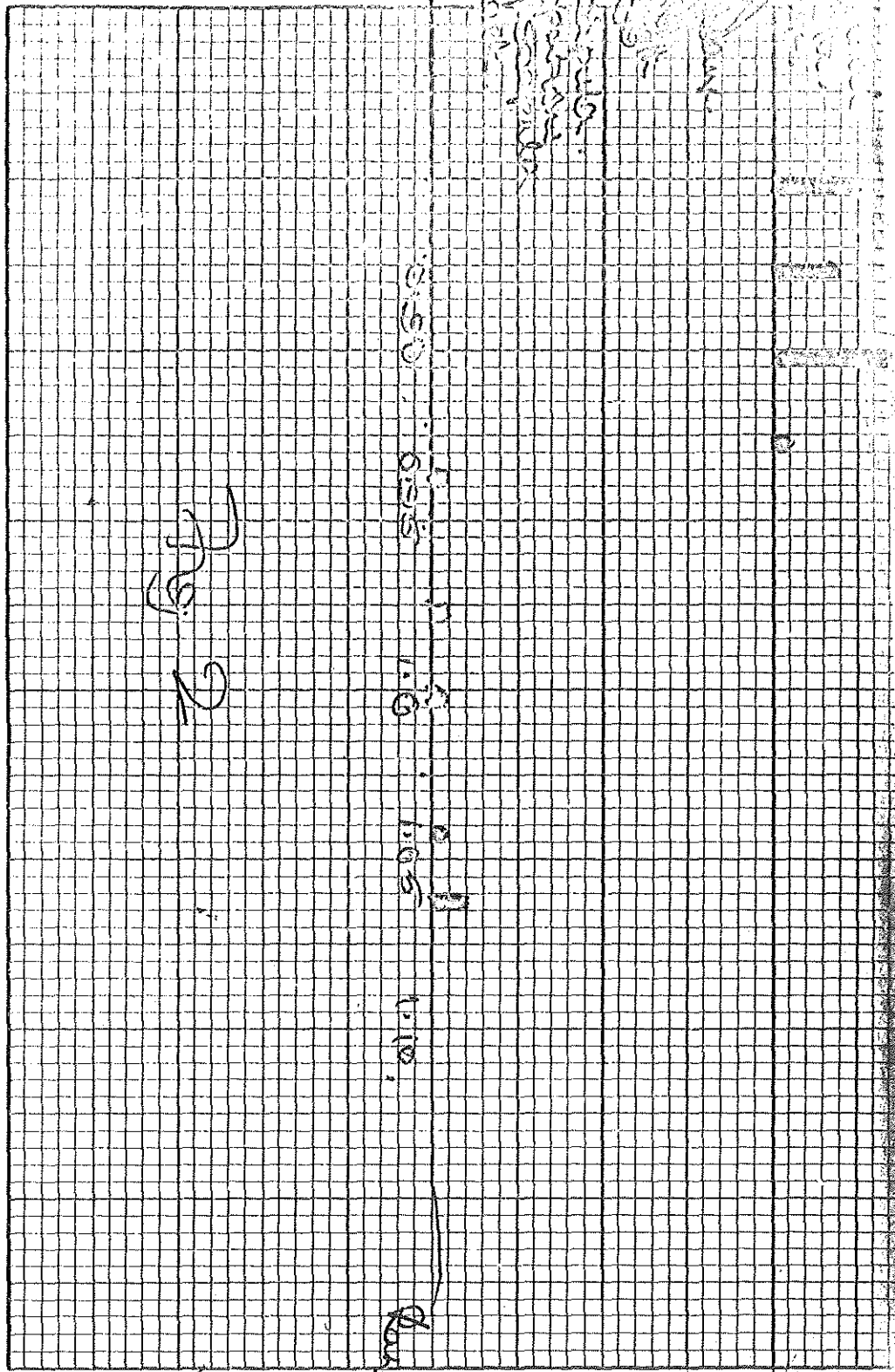
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CHEPSTON DIMENSIONS SHEEP BONES.



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Division