AML Report 1470. Site No 1466

LEVEL III ARCHIVE REPORT (NOT FOR PUBLICATION)

REPORT ON THE CATTLE HORN CORES FROM CHURCH STREET, WEST HAM, 1973

By Dr. Philip L. Armitage

To: Ms Pat Wilkinson, Passmore Edwards Museum, London Borough of Newham

From: Dr. Philip L. Armitage, Environmental Research Officer, Dept. Urban Archaeology, Museum of London

Date: 17th January, 1984

LEVEL III SERVICE REPORT FOR ARCHIVAL USE ONLY (NOT FOR PUBLICATION)

REPORT ON THE CATTLE HORN CORES FROM CHURCH STREET, WEST HAM, 1973

1. INTRODUCTION

A total of 166 cattle horn cores were recovered from late medieval/early Tudor contexts (Table 1).

Table 1: Church Street, West Ham, 1973. Summary of the contexts yielding cattle horn cores

Phase and context No.	Feature/association	Date	No. cores
B1 F77	'part' of tannery	late med./16th century A.D.	47
B2 F65	ditto	ditto	41
D1 L10	pit filled with cores	c. A.D.1550-75	45
G1 L9	back yard area of main house ('part' of tannery)	late med./16th century A.D.	33

2. STATE OF PRESERVATION

Preservation of the majority of the specimens is good but many lack the tip of the core (either broken-off in antiquity or during excavation): in most specimens, only between one third and one half of the basal part of the core survives attached to portions of the frontal and parietal bones.

All specimens are stained yellow.

3. EVIDENCE FOR THE REMOVAL OF THE HIDE

24 specimens (14.46% of the total) (Table 2) have small superficial cuts on the frontal bone, nuchal eminence, or at the base of the skull (Table 3). These marks are recognised as having been made by a skinning knife and provide evidence for the removal of the hide.

Table 2: Church Street, West Ham, 1973. Cattle horn cores, evidence of skinning

Age class [a]	Description	No. specimens/context			
		B1 F77	B2 F65	D1 L10	G1 L9
2. sub-adult	with knife marks	-	2	-	-
	without knife marks	3	1	-	1
	uncertain (note b)	5	2	-	1
3. young adult	with knife marks	2	3	4	-
	without knife marks	10	7	6	4
	uncertain	9	9	12	7
4. adult	with knife marks	4	-	6	3
	without knife marks	5	5	10	9
	uncertain	5	9	7	6
5. old adult	with knife marks	-	-	-	-
	without knife marks	1	1	-	1
	uncertain	3	2	-	1

KEY: a see Armitage (1982) for explanation of these age classes

b in these specimens - in which either the horn core only has survived or the frontal and parietal bones are poorly preserved - it is not possible to ascertain whether or not knife marks had originally been present

Table 3: Church Street, West Ham, 1973. Cattle horn cores, details of specimens showing evidence of skinning

Phase and context No.	Age class	No.of marks made by knife (per specimen)	Location of knife mark(s)
B1 F77	3. young adult	1	on surface of frontal bone
		3	" "
	4. adult	3	" "
		1	" "
		1	" "
		1	across nuchal eminence
B2 F65	2. sub-adult	1	on surface of frontal bone
		1	" "
	3. young adult	2	" "
		1	" "
		1	" "
D1 L10	3. young adult	1	on surface of frontal bone
		1	" "
		1	" "
		1	" "
	4. adult	2	" "
		2	" "
		3	" "
		1	across nuchal eminence
		1	" "
		1	base of skull in region of frontal-parietal suture
G1 L9	4. adult	1	on surface of frontal bone
		6	" "
		1	base of skull in region of frontal-parietal suture

4. MARKS MADE BY CLEAVER OR AXE

All the specimens examined show evidence of having been 'hacked-off' the skull by means of a cleaver (or ? axe). The right and left horns (together with portions of the frontal and parietal bones) would have been removed separately by a sweeping blow delivered just below the base of each horn in turn. In the majority of the specimens, this blow was directed from behind the skull; possibly when the animal's head was positioned on the ground.

5. EVIDENCE OF SAWING

None of the horn cores from Church Street, West Ham, shows evidence of sawing; a feature recorded in only a very few specimens from other London sites (e.g. Cutler Street and Gardiner's Corner).

6. AGE AND SEX OF THE HORN CORES

6.1 Age

Using the method of Armitage (1982: 40-43) the horn cores can be classified into five age classes on the basis of size, surface texture and appearance of the bone (Table 4).

Table 4: Church Street, West Ham, 1973. Cattle horn cores, age

Age class	Suggested age range (years)	B1 F77	B2 F65	D1 L10	G1 L9	Total	% total
1. juvenile	1 - 2	0	0	0	0	0	0%
2. sub-adult	2 - 3	8	5	0	2	15	9.0%
3. young adult	3 - 7	21	19	22	11	73	44.0%
4. adult	7 - 10	14	14	23	18	69	41.6%
5. old adult	over 10	4	3	0	2	9	5.4%

As discussed by Armitage (1982: 52) few cattle sold for slaughter in the livestock markets of the later medieval and early modern period were under four or five years of age; cattle of this time were slow to reach maturity and hence were not generally ready for slaughter earlier than this unless specially raised for veal production (see Lisle, 1757). [The horns of these very young animals (veal calves) would have been very little developed and therefore unlikely to be found in excavated horn-core assemblages] Indeed, many of the oxen (castrated males) sent to market were aged ten or more years; all of these beasts having first been used for draught purposes (e.g. as plough oxen)

until reaching the end of their working life, were fattened (Cornwall, 1954: 73; Trow-Smith, 1959).

The slaughter pattern revealed by analysis of the West Ham material (Table 4) fits very well the picture of late killing described above: 91% of the cores fall into the age categories young adult, adult and old adult, while only 9% are under 3 years.

6.2 Sex

Only in a very few of the young adult, adult and old adult cores was it possible to determine gender using a visual appraisal of the shape, curvature and angle of attachment of the core to the frontal bone (after the method of Armitage & Clutton-Brock, 1976: 332 for cattle from Iron Age to Tudor sites) (Tables 6, 7 and 8). The difficulty experienced in identifying the sex of cores was due to a failure in first subdividing each group of specimens into the length classes: small, short, medium and long horned (see Section 7, below, for an explanation of this problem). As discussed in Armitage & Clutton-Brock (1976: 334) and Armitage (1982: 43) it is only after carrying out an initial sorting into these length classes that the sex may then be determined with any degree of confidence.

7. SIZE OF THE CORES AND CLASSIFICATION INTO THE GROUPS: SMALL, SHORT, MEDIUM AND LONG HORNED

Measurements taken from the specimens are summarised in Tables 5 to 10. The specimens were measured using a flexible tape-measure (length of outer curve and basal circumference) and dial calipers (Mitutoyo No. 505-635, range 300 mm, with dial graduations of 0.05 mm) (maximum and minimum diameters of the base).

As discussed by Martin (1847: 56) it is common to subdivide cattle into the broad categories: short, medium and longhorned, on the basis of horn length. This is the classification system adopted by Armitage & Clutton-Brock (1976) to describe cattle horn cores from British sites of Iron Age to Tudor date. It should be noted that only those cores in age classes 3 to 5 (young adult, adult and old adult) may be so classified: in age classes 0 to 2 (infant, juvenile and sub-adult) it is not possible to determine their potential adult length, and so they are omitted from analysis.

Using the classification system of Armitage & Clutton-Brock (1976) the young adult, adult and old adult cores (complete and broken) from West Ham have been assigned to their respective groups: small, short medium and longhorned (Tables 6, 7 and 8). Even though the majority

of the West Ham specimens are incomplete and lack the tip of the core, it proved possible in some of them to estimate the original (complete) length from extrapolation of the surviving portion; which enabled them to be classified. The estimated values are not given in the tables as they were meant only to be used for the purpose of classification; the estimated values themselves are not considered sufficiently accurate for use in metrical analyses with measurements taken of intact specimens.

The problem of classifying 16th century cattle horn cores

While examining groups of cattle horn cores from post-medieval sites in London and elsewhere (Armitage, 1982: 37) the author found it necessary to revise the original classification system devised by Armitage & Clutton-Brock (1976) to take account of the improvements made in livestock husbandry during the 17th and 18th century. Only by devising a second system could the early modern horn cores be described precisely. Study of the West Ham material, in particular the group from D1 L10 (dated c. A.D.1550-75), has revealed that the late 16th century was also a time of significant advances in cattle husbandry in Britain and that cattle were undergoing transformation during this period, especially with respect to size (including size of horn). Many of the cores from D1 L10 with lengths greater than 200 mm are intermediary in overall size and general appearance between later medieval/early Tudor longhorn and early modern (17th and 18th century) medium horn cores (as defined by Armitage & Clutton-Brock, 1976: 331 and Armitage, 1982: 43). The existing dual classification system (Table 11) is therefore inadequate for classifying certain of the West Ham specimens. There is clearly a need for further revision of the two systems to accommodate the larger-sized 16th century cattle, but, until more examples of horn cores from this period become available for study, it is not possible to suggest new values for the limits of the ranges in length and many of the specimens from West Ham must therefore remain unclassified.

Table 11: Proposed systems for the classification of cattle horn cores from British archaeological sites, based on length of outer curve (mm)

Group (length class)	Length of outer curve (class limits)	
	Iron Age to early Tudor (1st cent.BC to 15th cent.AD) *	Early modern to recent (from 17th cent.AD to present day)
1. smallhorned	less than 96	not applicable
2. shorthorned	96 - 150	less than 220
3. mediumhorned	150 - 200	220 - 360
4. longhorned	greater than 200	greater than 360

* and possibly early 16th century A.D. (?)

Tables 5 to 8: Church Street, West Ham, 1973. Cattle horn cores, tables of measurements. All measurements are given in mm.

Table 5: Sub-adult cores (2 - 3 years)

Phase and context No.	Measurements [a]				
	LOC	BC	MND	MXD	Side
B1 F77	-	174	51.9	54.8	R
	-	200	55.9	65.2	R
	182	173	47.4	60.0	R
	172	154	42.7	48.7	R
	172	160	44.8	51.5	L
	-	171	45.0	55.8	L
	plus two non measurable specimens				
B2 F65	-	167	46.1	54.8	R
	157	168	45.0	54.4	R
	-	110	29.0	34.6	L
	-	155	-	59.7	L
	plus one non measurable specimen				
D1 L10	No specimens				
G1 L9	-	182	52.3	62.3	R
	plus one non measurable specimen				

Table 6: Young adult cores (3 - 7 years)

Phase and context No.	Measurements [a]				Description	
	LOC	BC	MND	MXD	Side	Length class	Sex
B1 F77	-	151	42.9	51.4	R	? MH	?
	123	132	34.7	43.4	R	SH	?
	220 e	183	46.9	62.0	R	LH	?
	-	192	54.4	63.6	R	MH	F/?C
	-	216	58.7	69.9	R	LH	C
	-	191	49.3	63.3	R	MH	?
	-	189	51.2	62.1	R	MH	?
	134	132	36.1	46.7	L	SH	?
	115	126	32.8	41.5	L	SH	?
	125	166	46.8	57.2	L	SH	?C
	-	187	48.7	60.5	L	MH	M
	-	209	53.6	70.6	L	?	C
	-	128	33.5	42.2	L	SH	?
	-	160	40.3	57.4	L	?	M
	-	190	48.9	67.1	L	MH/LH	C/?M
	-	206	59.4	68.2	L	?	C
	-	220	63.4	70.2	L	?	?C
	-	224	62.1	71.4	R	?	?
	plus three non measurable specimens						
B2 F65	-	197	54.5	64.1	R	MH	?C
	-	206	58.4	68.6	R	MH	C
	-	240	65.3	76.9	R	LH	C
	202	200	52.4	67.9	L	LH	M
	225	215	56.8	70.3	L	LH	C
	-	180	49.1	60.1	L	MH	?C
	-	200	54.1	67.1	L	MH	C
	-	190	54.7	59.6	L	MH	C
	160 e	165	46.6	60.1	L	MH	C
	-	190	47.8	67.0	L	MH	C
	-	233	64.1	78.4	L	MH/?LH	C
	-	200	53.0	65.5	L	MH	C
	-	217	58.7	71.7	L	?MH/LH	C
	-	188	49.2	61.7	L	MH	?
	150	155	39.3	51.5	L	SH	?
	-	182	48.9	60.3	L	MH	C
	plus three non measurable specimens						
D1 L10	-	209	60.6	74.9	L	?	?
	-	222	64.7	78.4	R	?	?
	-	155	44.1	51.2	R	?	?
	-	149	40.8	50.1	R	?	?
	-	201	53.5	74.3	R	?	?
	-	259	70.1	93.9	R	?	?
	-	196	53.2	67.1	R	?	?
	-	239	70.3	81.1	R	?	?
	-	227	63.0	78.8	R	?	?
	-	207	58.1	73.4	R	?	?
	-	182	51.7	64.4	R	?	?

Table 6 continued

Phase and context No.	LOC	Measurements [a] BC	MND	MXD	Side	Description Length class	Sex
D1 L10 (contd.)	-	215	61.5	78.2	R	?	?
	-	185	56.1	60.4	R	?	?
	-	172	49.1	60.2	R	?	?
	-	217	58.9	79.3	L	?	?
	-	212	60.0	73.9	L	?	?
	-	180	47.1	64.8	L	?	?
	-	235	62.1	78.6	L	?	?
	-	215	59.1	74.3	L	?	?
	-	193	50.8	69.1	L	?	?
	plus two non measurable specimens						
G1 L9	-	207	58.9	65.1	R	MH	?
	-	220	60.5	73.0	R	MH	C
	-	222	62.3	76.8	R	MH	C
	-	208	55.7	67.4	R	MH	C
	-	207	55.4	72.2	R	MH	C
	-	223	59.3	74.9	R	MH	C
	87 e	-	-	-	R	SmH/SH	?M
	-	276	74.7	90.7	L	MH	C
	-	203	58.0	67.8	L	MH	?
	-	192	53.8	64.8	L	MH	?
	plus one non measurable specimen						

Table 7: Adult cores (7 - 10 years)

Phase and context No.	LOC	Measurements [a] BC	MND	MXD	Side	Description Length class	Sex
B1 F77	-	203	59.0	65.9	L	MH	?C
	-	207	53.5	67.9	L	MH	?C
	-	221	57.3	75.1	L	MH	C
	-	212	53.8	70.9	L	MH	C
	-	193	52.1	68.1	L	MH	?
	-	223	61.8	76.6	R	MH	C
	-	213	-	78.3	R	MH	C
	-	128	37.7	39.3	R	SH	?
	-	195	53.7	62.8	R	MH	F/?C
	-	182	50.8	64.4	R	MH	F/?C
	-	203	54.6	66.4	L	MH	C
	-	197	53.4	65.2	L	MH	C
	plus two non measurable specimens						

Table 7 continued

Phase and context No.	LOC	Measurements [a] BC	MND	MXD	Side	Description Length class	Sex
?							
B2 F65 same animal	195	202	49.0	72.6	R	? LH	?M
	198 e	193	49.0	71.4	L	? LH	?M
	152	138	35.2	50.0	R	MH	?C
	285	196	50.5	64.9	R	LH	F/?C
	-	221	62.7	72.9	R	MH	C
	-	220	58.3	73.1	R	MH	C
	109	107	27.7	35.1	L	SH	?F
	-	175	44.9	58.4	L	MH	F/?C
	-	205	53.9	70.8	L	MH	C
	-	205	61.1	67.1	L	MH	C
	-	195	52.4	64.3	L	MH	C
	-	240	69.4	77.2	L	LH	C
	-	243	69.7	79.0	L	LH	C
	plus one non measurable specimen						
D1 L10	-	229	65.0	77.4	L	?	?C
	-	163	48.2	55.0	R	?	?
	-	165	43.2	55.9	R	?	?
	-	141	41.4	47.2	R	?	?
	-	166	44.5	55.8	L	?	?C/M
	340	217	60.8	75.7	R	LH	?C
	265	210	56.6	74.5	R	LH	M/?C
	-	220	63.7	74.9	R	LH	?
	-	196	56.7	63.9	R	?	?
	-	204	57.9	70.9	R	?	?
	-	198	58.9	73.1	R	?	?
	-	206	53.9	75.6	R	?	?C
	-	204	61.0	72.4	R	?	?C
	-	227	60.7	78.8	R	LH	C/?M
	-	217	59.9	76.9	R	?	?C
	-	235	66.3	81.7	R	?	?C
	-	250	67.2	86.6	L	LH	C
	-	237	68.2	78.3	L	LH	C
	185	162	46.4	54.2	L	MH	?F
	280	189	50.9	67.1	L	LH	C/?F
	-	171	47.1	60.6	L	MH	?
	plus two non measurable specimens (one with LOC greater than 200 mm = LH)						
G1 L9	290	199	50.5	63.8	L	LH	?F
	-	233	62.7	80.1	L	LH	C
	-	230	58.1	77.2	L	?	?C
	-	193	52.3	62.9	L	?	?
	-	127	35.8	40.6	L	?	?F
	-	215	57.4	73.3	R	?	C
	-	207	58.2	69.3	R	?	?C
	-	178	45.9	59.7	R	?	?
	-	221	64.9	75.1	R	?	C
	127	128	34.4	34.0	R	SH	?
	-	231	61.2	78.6	L	LH	C
	-	203	55.3	68.8	L	?	?C
	-	194	55.6	64.6	L	?	?F
	plus five non measurable specimens						

Table 8: Old adult cores (over 10 years)

Phase and context No.	Measurements [a]					Description	
	LOC	BC	MND	MXD	Side	Length class	Sex
B1 F77	173	143	37.5	48.4	R	MH	M
	135	133	35.5	39.5	R	SH	?F
	205	-	-	-	R	LH	F
	plus one non measurable specimen						
B2 F65	172	151	41.2	52.3	L	MH	?F
	115	120	30.6	41.3	L	SH	?
	-	215	60.3	72.8	L	? MH	C
D1 L10	no specimens						
G1 L9	-	270	69.7	89.3	L	LH	C
	-	233	62.7	78.8	R	LH	C

KEY:

a Measurements: LOC length of outer curve;
BC basal circumference;
MND min. diam. base;
MXD max. diam. base

Side: R right; L left; ? indeterminate

Sex: M male; F female; C castrate; ? indeterminate

Length class: LH longhorn (over 200 mm);
MH medium horn (150-200 mm);
SH short horn (96 - 150 mm);
SmH small horn (less than 96 mm)

Table 9: Church Street, West Ham, 1973. Cattle horn cores, summary of the metrical data (B1 F77, B2 F65, D1 L10 and G1 L9 combined). All measurements are given in mm.

Age class (years)	Point of measurement (note a)	No. specimens	Mean	Range	Standard deviation
2. sub-adult (2 - 3)	LOC	4	170.75	157 - 182	-
	BC	11	164.91	110 - 200	22.31
	MND	10	46.01	29.0 - 55.9	7.29
	MXD	11	54.71	34.6 - 65.2	8.20
3. young adult (3 - 7)	LOC	10	154.1	87 - 225	47.10
	BC	63	196.63	126 - 276	30.16
	MND	63	53.81	32.8 - 74.7	8.89
	MXD	63	66.64	41.5 - 93.9	10.52
4. adult (7 - 10)	LOC	11	220.55	109 - 340	75.55
	BC	59	198.02	107 - 250	31.21
	MND	58	54.18	27.7 - 69.7	9.15
	MXD	59	67.16	34.0 - 86.6	11.52
5. old adult (over 10)	LOC	5	160	115 - 205	-
	BC	7	180.71	120 - 270	-
	MND	7	48.21	30.6 - 69.7	-
	MXD	7	60.34	39.5 - 89.3	-

KEY: a Point of measurement: LOC length of outer curve;
BC basal circumference;
MND min. diam. base;
MXD max. diam. base

Table 10: Church Street, West Ham, 1973. Cattle horn cores, frequency distribution for the basal circumference (mm) (B1 F77, B2 F65, D1 L10 and G1 L9 combined). Young adult, adult and old adult cores only.

Basal circumference class interval (mm)		No. cores
100 - 109	X	1
110 - 119		0
120 - 129	XXXXXX	6
130 - 139	XXXX	4
140 - 149	XXX	3
150 - 159	XXXX	4
160 - 169	XXXXXXX	7
170 - 179	XXXX	4
180 - 189	XXXXXXXXXXX	11
190 - 199	XXXXXXXXXXXXXXXXXXX	20
200 - 209	XXXXXXXXXXXXXXXXXXXXXXX	24
210 - 219	XXXXXXXXXXXXX	14
220 - 229	XXXXXXXXXXXXXXX	15
230 - 239	XXXXXXXXX	9
240 - 249	XXX	3
250 - 259	XX	2
260 - 269		0
270 - 279	XX	2
280 - 289		0
290 - 299		0

Number of specimens = 129
Mean = 196.40 mm
Range 107 - 276 mm
Standard deviation = 32.47 mm

8. SOURCE OF THE CATTLE HORN CORES

As discussed in Armitage (1983 in press and forthcoming) assemblages of cattle horn cores found on archaeological sites generally represent discarded waste from one (or combination) of the following three sources:

(i) slaughteryard (i.e. butcher's shambles)

(ii) tanyard

(iii) horn-worker's premises

For an explanation of the association between deposits of cattle horn cores and the crafts of butchery, leather and horn working, reference may be made to Fisher (1936: 23), Wenham (1964), Prummel (1978: 399-402 & 409), Thomson (1981: 162).

The proximity of the deposits of cattle horn cores on the West Ham site to a nearby tannery (16th century) clearly points to the material being discarded waste from leather-working. Pictorial evidence showing that tanners bought hides of cattle which still had horns attached is provided by an early 19th century engraving of the 'skinmarket' at Leadenhall, City of London (Wilkinson, 1825), and a photograph of a modern leather market in Cooke (1917: 17). As discussed by Prummel (1978: 399-402) this practice is well documented and there is archaeological evidence showing that the tradition is long established and may be traced back to medieval times. Having purchased hides, the tanner's first task in preparing them for the tanning process was to cut out the horns (see Thomson, 1981: 162) which he would sell to the horn-worker either as complete horns (sheath and core) or as outer sheath only (Fisher, 1936: 23). If the latter procedure was followed, the tanner soon accumulated large quantities of horn cores, as demonstrated by the excavation of a 16th century tannery site in St. Albans, Hertfordshire, where there was found a pit filled with oak bark and cattle horn cores (Saunders, 1977).

9. REFERENCES

P. L. Armitage (1982) — A system for ageing and sexing the horn cores of cattle from British post-medieval sites (17th to early 18th century) with special reference to unimproved British Longhorn cattle. In B. Wilson, C. Grigson and S. Payne (eds.) Ageing and Sexing Animal Bones from Archaeological Sites. BAR British Series 109: 37-54.

P. L. Armitage (1983, in press) — Preliminary report on the cattle horn cores from Greyfriars (Site B) Oxford. In T. Hassall, Post-medieval material from the St. Ebbes survey area of Oxford. Oxoniensia.

P. L. Armitage (forthcoming) — The mammalian bones from Aldgate (AL 74), City of London. In A. Thompson, J. Schofield and F. Grew, Excavations at Aldgate 1974. (Copies of the Level III archival report on the mammalian bone are now available, on request).

P. L. Armitage and J. Clutton-Brock (1976) — A system for classification and description of the horn cores of cattle from archaeological sites. Journal of Archaeological Science, 3: 329-348.

A. O. Cooke (1917) — A Day with Leather Workers. London.

J. Cornwall (1954) — Farming in Sussex, 1560-1640. Sussex Archaeological Collections, 92: 48-92.

F. J. Fisher (1936) — A Short History of the Worshipful Company of Horners. London.

E. Lisle (1757) — Observations in Husbandry. London.

W.C.L. Martin (1847) — The Ox. London.

W. Prummel (1978) — Animal bones from tannery pits of 's Hertogenbosch, Berichten van de Rijksdienst voor het Dudheidkundig Bodemonderzoek 28: 399-422.

G. Saunders (1977) — A sixteenth century tannery in St. Albans. Hertfordshire's Past, 3: 9-12.

R. Thomson (1981) — Leather manufacture in the post-medieval period with special reference to Northamptonshire. Post-Medieval Archaeology, 15: 161-175.

R. Trow-Smith (1959) — A History of British Livestock Husbandry 1700-1900. London.

L. P. Wenham (1964) — Hornpot Lane and the horners of York. Annual Report of the Yorkshire Philosophical Society, York, for the year 1964: 25-56.

R. Wilkinson (1825) — Londina Illustrata. London.

10. ACKNOWLEDGMENT

I wish to thank Mrs. Alison Locker, D.O.E. Fortress House, for helping with the measurement and description of the West Ham cattle horn cores.