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Report 4272

LEVEL III ARCHIVE REPORT (NOT FOR PUBLICATION)

REPORT ON THE CATTLE HORN CORES FROM GARDINER'S CORNER, CITY OF LONDON (GDC 1980)

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Date: 9th December, 1983.

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1. INTRODUCTION

A total of 67 cattle horn cores were recovered from post-medieval contexts (Table 1).

Table 1: Gardiner's Corner, summary of contexts yielding cattle horn cores

Context No.	Layer No.	Sample No.	Description of feature	No.core
2	-	-	Dump of organic material (including hair & dung)	3
4	3	-	Trench or pit cutting feature 2, containing cattle horn cores ? deliberately laid as a soakaway (but may simply be dumped waste)	17
153	152	20	Pit lined with cattle horn cores	8
155	154	21	Pit containing horn cores dumped or ?used as lining	31
226	-	-	Pit lined with cattle horn cores & also backfilled with cores	4
228	-	-	Vertical wall of cattle cores against a brick wall	4

2. STATE OF PRESERVATION

Preservation of the majority of the specimens may be described as fair to good but many show evidence of having recently been broken, reflecting the difficulties experienced in removing the cores whilst still soft from the wet ground. Only a very few specimens were recovered intact and in the majority, 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 a yellow brown colour.

3. EVIDENCE FOR THE REMOVAL OF THE HIDE

20 specimens (29.95% of the total) have small superficial cuts on the frontal bone (Table 2). These marks are recognised as having been made by a skinning knife and provide evidence for the removal of the hide.

Table 2: Gardiner's Corner. Cattle horn cores, evidence of skinning

Age class [a]	Description	No. specimens/context					
		2	4	153	155	226	228
1. juvenile	with knife marks	-	-	-	-	-	-
	without knife marks	-	-	-	-	-	-
	uncertain (note b)	-	1	-	-	-	-
2. sub-adult	with knife marks	-	1	-	-	-	-
	without knife marks	-	1	1	3	-	-
	uncertain	1	-	-	1	-	1
3. young adult	with knife marks	-	3	-	3	-	-
	without knife marks	-	-	5	2	2	-
	uncertain	-	-	1	4	-	-
4. adult	with knife marks	-	1	-	5	-	-
	without knife marks	-	4	1	5	1	-
	uncertain	-	-	-	4	1	-
5. old adult	with knife marks	-	5	-	2	-	-
	without knife marks	-	1	-	2	-	-
	uncertain	2	-	-	-	-	3

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

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 ? an 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

In two specimens only, a short horn (old adult) from 155 layer 154 and a medium horn (adult) from 4 layer 3, is there evidence of sawing; both cores have the tip 'sawn-off'. The exact purpose of this sawing is unclear but it may be suggested that a horn worker cut-off the horn tip whilst the horn sheath was still on the bony core. The more common practice was for the horner to first pull-off the outer sheath from the bony core and then cut up the sheath as required (Wenham, 1964).

6. AGE AND SEX OF THE HORN CORES

Using the method of Armitage (1982) the horn cores can be classified into five age classes on the basis of size, surface texture and appearance of the bone (Table 3).

Only in a few of the young adult, adult and old adult cores was it possible to determine the 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, 1982 for post-medieval cattle) (Tables 6, 7 & 8).

Table 3: Gardiner's Corner. Cattle horn cores, age

Age class	Suggested age range (years)	No.specimens/context 2	4	153	155	226	228	Total	% total
1. juvenile	1 - 2	-	1	-	-	-	-	1	1.5%
2. sub-adult	2 - 3	1	2	1	4	-	1	9	13.4%
3. young adult	3 - 7	-	3	6	9	2	-	20	29.9%
4. adult	7 - 10	-	5	1	14	2	-	22	32.8%
5. old adult	over 10	2	6	-	4	-	3	15	22.4%

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

Measurements taken from the specimens are summarised in Tables 4 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 (1982) to describe cattle horn cores from British post-medieval sites. 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 (1982: 43) the young adult, adult and old adult cores (complete and broken) from Gardiner's Corner have been assigned to their respective groups: short, medium and longhorned (Tables 6, 7 and 8). Even though the majority of the Gardiner's Corner specimens are incomplete and lack the tip of the core, it proved possible to estimate the original (complete) length from extrapolation of the surviving portion. The results so

obtained enabled classification of these broken specimens, but 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.

All three groups (short, medium and longhorned) are represented among the Gardiner's Corner material, with the majority (34 cores) (59.7% of the total) falling in the medium horned group. There are 10 (17.5% of the total) longhorn cores, and only 6 (10.5%) short-horn cores; the rest, 7 cores (12.3%),remain unclassified.

Tables 4 to 8: Gardiner's Corner, Cattle horn cores, tables of measurements. All measurements are given in mm.

Table 4: Juvenile core (1 - 2 years)

Context No.	Measurements [a]			Side
	LOC	BC	MND	MXD	
4 layer 3	-	180	54.3	57.5	R

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

Context No.	Measurements [a]			Side
	LOC	BC	MND	MXD	
2	one non measurable piece (broken)				?
4 layer 3	-	233	65.7	81.5	R
	-	171	49.3	58.7	R
153 layer 152	-	182	47.4	57.0	L
155 layer 154	185	162	44.6	54.0	R
	355	195	57.6	62.6	L
	-	159	44.4	54.5	L
	-	209	59.0	70.7	R
228	245	218	62.0	69.5	R

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

Context No.	LOC	Measurements [a] BC	MND	MXD	Side	Sex	Length cl
4 layer 3	135	142	41.7	48.0	L	?	SH
	-	249	70.1	85.7	R	?	MH
	-	180	48.3	61.0	L	?	?
153 layer 152	-	215	55.9	74.0	L	? M	MH
	-	219	61.2	69.7	L	? C	MH
	-	208	58.4	67.6	L	?	MH
	-	295	76.4	96.8	R	C	LH or ? MH
	-	255	69.4	83.7	R	? C	MH
	355	251	72.8	81.6	R	? C	MH
155 layer 154	230	189	52.6	64.5	L	?	MH
	-	252	68.1	87.0	R	?	MH
	-	289	84.4	94.5	L	?	LH
	-	217	61.2	75.5	L	?	MH
	-	177	56.1	56.5	L	?	MH
	-	192	55.6	62.0	R	?	MH
	-	232	66.9	74.5	R	?	MH
	-	272	73.5	97.0	R	?	LH
		one non measurable piece					
					R	?	?
226	-	272	75.2	91.5	R	C	LH
	-	251	68.7	82.2	L	? C	MH

Table 7: Adult cores (7 - 10 years)

Context No.	LOC	Measurements [a] BC	MND	MXD	Side	Sex	Length clas
4 layer 3	350	250	68.9	90.0	R	M	LH
	261	224	62.7	77.1	L	?	MH
	-	220	68.2	74.8	L	?	MH
	-	231	65.3	76.5	L	?	MH
	-	212	63.5	71.3	L	?	MH
153 layer 152	-	222	66.3	69.8	L	? C or F	MH
155 layer 154	-	241	69.5	80.3	R	?	MH
	-	282	79.5	98.0	R	C	LH
	-	235	66.9	82.0	R	?	MH
	-	201	56.5	69.2	L	?	MH
	-	200	55.9	72.8	L	?	MH
	-	251	74.4	85.9	L	?	MH
	-	180	48.7	61.1	L	?	MH
	-	213	58.5	74.3	L	?	MH
	-	212	63.0	70.1	L	?	MH
	-	249	69.0	84.9	R	?	LH
	-	237	64.3	80.6	R	?	MH
	-	208	60.4	68.9	R	?	MH
	-	216	59.0	75.3	R	?	MH
		one non measurable piece			L	?	?
226	-	179	41.2	59.5	R	? F	SH
	199	161	38.5	56.3	R	C or M	SH

Table 8: Old adult cores (over 10 years)

Context No.	Measurements [a]				Side	Sex	Length cla
	LOC	BC	MND	MXD			
2	610	297	86.3	94.7	L	C	LH
	one non measurable piece				L	?	?
4 layer 3	418	252	67.6	86.6	R	?	LH
	280	183	50.6	65.4	R	?	MH
	225	165	47.0	55.7	L	?	MH
	210	157	43.3	54.5	R	?	SH
	-	227	63.8	79.0	R	?	MH
	-	185	51.9	63.4	R	?	? SH
155 layer 154	-	209	64.1	66.5	R	?	MH
	-	152	42.4	53.6	L	?	SH
	-	175	45.9	63.3	L	?	MH
	-	294	84.4	101.7	R	C	LH
228	three pieces (broken) from 3 cores				?	?	?

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

Side: R right; L left

Sex: M male; F female; C castrate

Length class: LH longhorn (over 360 mm); MH medium horn (220-360 mm): SH shorthorn (less than 220 mm)

Table 9: Gardiner's Corner. Cattle horn cores, summary of metrical data. All measurements are given in mm.

Age class (years)	Point of measurement (note a)	No. specimens	Mean	Range	Standard deviatio
1. juvenile (1-2)	LOC	1		-	
	BC	1		180	
	MND	1		54.3	
	MXD	1		57.5	
2. sub-adult (2-3)	LOC	3	261.66	185-355	-
	BC	8	191.13	159-233	-
	MND	8	53.75	44.4-65.7	-
	MXD	8	63.56	54.0-81.5	-
3. young adult (3-7)	LOC	3	240	135-355	-
	BC	19	229.32	142-295	41.34
	MND	19	64.03	41.7-84.4	10.79
	MXD	19	76.49	48.0-97.0	14.20
4. adult (7-10)	LOC	3	270	199-350	-
	BC	21	220.19	161 282	27.84
	MND	21	61.91	38.5-79.5	9.92
	MXD	21	75.18	56.3-98.0	10.02
5. old adult (over 10)	LOC	5	348.6	210-610	-
	BC	11	208.73	152-297	52.38
	MND	11	58.85	42.4-86.3	15.72
	MXD	11	71.31	53.6-101.7	16.70

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

Table 10: Gardiner's Corner. Cattle horn cores, frequency distribution for the basal circumference (mm). Young adult, adult and old adult cores only.

Basal circumference class interval (mm)		Number of cores
140-149	X	1
150-159	XX	2
160-169	XX	2
170-179	XXX	3
180-189	XXXXX	5
190-199	X	1
200-209	XXXXX	5
210-219	XXXXXXX	7
220-229	XXXX	4
230-239	XXXX	4
240-249	XXX	3
250-259	XXXXXXX	7
260-269		0
270-279	XX	2
280-289	XX	2
290-299	XXX	3

Number of specimens = 51

Mean = 221.12 mm

Range 142-297 mm

Standard Deviation = 39.16 mm

Distribution: continuous

8. DATING THE GROUPS OF CATTLE HORN CORES

Measurements of the length of outer curvature (complete cores only) and basal circumference (complete and incomplete cores), and the shape of certain cores suggest that the groups from Gardiner's Corner date between the 16th and early 18th century - certainly no earlier than c. A.D.1500 and no later than A.D.1790's - with the majority of the specimens (from all contexts) indicating that the most probable time for their deposition was the latter half of the 17th/first half of the 18th century.

Evidence for this date range is provided by the following specimens:

(i) The earliest date is suggested by a stumpy/stubby, incurving conical core (LOC 350; BC 250 mm), possibly male, from context 4 layer 3. This form is characteristic of bulls of the 16th and 17th century and so far has not been recorded in London assemblages earlier than c. A.D.1500.

(ii) A date after the mid 17th century is indicated by the presence of shorthorn cores similar to those found elsewhere in London (e.g. Cutler Street) in late 17th/early 18th century contexts. These shorthorn cores are curved in the horizontal plane with only very slight torsion (twisting) towards the end of the core. This form may be compared with the horns of shorthorn cattle of the early to mid 17th century described by contemporary writers on agriculture as 'little and crooked' (Markham, 1657: 69); no examples of this type were found at Gardiner's Corner.

(iii) The presence of unimproved longhorn cores, with length of outer curve greater than 360 mm (contexts 2, 4 layer 3, 155 layer 154 and 226) substantiates the majority of the dating evidence which suggests that the cores were deposited in the late 17th/early 18th century. Similar unimproved longhorn cores have previously been found at Cutler Street in contexts dated c. A.D.1680-1710 (Armitage and O'Connor Thompson, in prep.). The horns of the unimproved British longhorn are outward directed, the end curving gently forwards; the frontal profile of the skull appears flat, or only slightly convex when viewed from the back of the head.

(iv) One massive core (max.diam. base 101.7 mm) (context 155 layer 154) believed to be an ox (castrate) of the unimproved longhorn breed, closely matches a similar specimen of c. A.D.1700 date from Hertford Castle (Armitage, 1978: Fig. 2(B), 218).

(v) It is important to note that the groups of horn cores recovered from Gardiner's Corner do not include any example of the improved Leicester Longhorn breed. The skulls and horns of these highly modified cattle are readily recognised by the shape of the frontal eminence which is convex, producing a dome-shaped forehead, and by their extremely long horns which curve sharply

downwards and then inwards towards the nose, forming a distinctive bow configuration. These improved longhorn cattle are not described in the literature until c. 1790's when they apparently largely replaced the older unimproved longhorn (Armitage, 1983, in press). The absence of the improved longhorn at Gardiner's Corner suggests that the horn cores from this site were therefore deposited no later than c. 1790's.

9. 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), Thompson (1981: 162) and Armitage (forthcoming).

Of the three possible sources for the Gardiner's Corner horn core deposits it seems most unlikely that they derived from a tanyard. From the 17th century onwards, London's tanning industry was located across the Thames in Bermondsey (Spate, 1963: 529-548) and as far as I have been able to ascertain, there were no tanners living in the eastern parishes of the City. Of the two remaining sources, that of horn-working is the less tenable. Although documentary sources of the 17th and 18th century record the presence of a few horn-workers in this part of the eastern suburbs, the majority were apparently located to the north of Whitechapell Street (renamed today, Aldgate High Street) with the main concentration centred on Petticoat Lane (now Middlesex Street) (Strype, 1720: 28: Fisher, 1936: 117-119). The presence of butchers in the vicinity of Gardiner's Corner from the 17th century onwards, on the other hand is well attested: the post-Fire Hustings Rolls of c. 1672 show that

many of the inhabitants nearby (Aldgate High Street) were engaged in butchery and associated trades. Strype (1720: 27) also records that in his day Whitechapell 'is taken up by a great many butchers, who drive a considerable trade, and kill excellent beef, veal, mutton and lamb; lying conveniently for driving and carrying cattle from Romford market'. The tradition of butchering animals in this part of the City continued in the late 18th century when twenty butchers are recorded as owning premises in Aldgate High Street, and even as late as 1924 there were still six privately run slaughterhouses in this street that were responsible for killing each year over 50,000 animals (Jones, 1976: 13 & 98). Given the high concentration of butchers nearby throughout the early modern period, it seems very probable that the horn cores found at Gardiner's Corner were mainly from a local slaughterhouse (or slaughterhouses?). The presence of two sawn specimens (4 layer 3 and 155 layer 154) may, however, indicate that some cores derived from horn-working and became mixed in with the slaughterhouse debris (?).

10. USE OF THE HORN CORES AS CONSTRUCTIONAL MATERIAL

A search through the literature and a recent survey of the archaeological evidence by Armitage (in prep.) has revealed the widespread practice in post-medieval Britain of the use of animal bone for constructional purposes (e.g. agricultural land drains, floors and walls etc.). Much of this activity is concentrated in the late 17th and early 18th century and it is against this background that one should view the recent discovery of pits at Gardiner's Corner whose sides were apparently lined with cattle horn cores laid in distinct courses.

Cattle horn cores, in the form of discarded debris from slaughteryards, tanyards and horn-working, would have been readily abundant in London in the post-medieval period and therefore available to be exploited as building material in place of the more expensive

brick and stone. In addition to the examples of horn core lined pits discovered at Gardiner's Corner, archaeologists from the Museum of London's Department of Urban Archaeology working in the eastern suburbs have uncovered similar features at Mansell Street (3 pits), Crosswall (2 pits) and Cutler Street (18 pits) - all of which are dated to the 17th and 18th century. Details of these will be published elsewhere (Armitage, in prep., Armitage and O'Connor Thompson, in prep.).

Many of the pits found at Cutler Street and Crosswall contained the same dark silty fill, but extensive studies (including chemical analysis) conducted on this material has so far failed to discover its nature and origin. The question of the function of the pits therefore remains unresolved, but presumably they were associated with some as yet unidentified industrial process which clearly was carried out in many localities throughout the eastern parishes of the City. If this process was so widespread, there should be some mention of it in contemporary documents (property deeds, surveys etc.), but the only description known to me of the practice of building with cattle horn cores in London's suburbs is found in Kalm (1748 reptd. 1892) and deals with the construction of garden walls from horn cores and earth.

The only known parallel for the London pits was discovered at Greyfriars in Oxford, where a cesspit dated between c. 1750 and 1800 had been lined with cattle horn cores obtained from a nearby tanyard (Armitage, 1983, in press).

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