

XII.

A SURVEY OF HUMAN REMAINS FROM LONG CIST BURIALS
IN THE LOTHIANS.

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Recent discoveries of extended burials in shallow stone-lined graves or "long cists" in the Lothians include the extensive cemetery at Lasswade, Midlothian, and isolated examples from Longniddry, Dirleton (Craig's Quarry), Camptoun, near Drem, and Dunbar, all in East Lothian. For skeletal material the Lasswade cemetery proved disappointing, only thirteen graves yielding either skulls or long bones on which useful measurements could be taken.

Of earlier finds, the Edinburgh University Anatomical Museum possesses one skull from Arniston, Midlothian, and three from Dunbar (Turner 1915) and two from Nunraw, E. Lothian (Abercrombie and Pirrie 1905-6). The collection of the Society of Antiquaries (now on loan to the E.U.A.M.) includes two undescribed skulls from Dunbar and one from Milton, near Tranent, E. Lothian. Three other skulls in this collection are inscribed "E. Lothian, from cists oriented E. and W.," a description clearly indicative of long cist burials. Two of these can be identified with the specimens from "Stonelaws" (an unidentified locality) recorded by Davis and Thurnam (Reid and Morant 1928) who erroneously included them with skulls from Bronze Age short cists. It also seems highly probable that two skulls in this collection from Cockenzie, which were accepted as short cist skulls by Turner (1915) on the authority of Sir Daniel Wilson, are in fact from long cists. There is also a single skull from Society, Hopetoun, W. Lothian, which cannot from its measurements be identified with any of the four from this locality recorded by Turner (1915).

Stevenson (1951-2) has shown that the long cist belongs essentially to the Dark Ages, though it may well have carried over into the early medieval period. For the Lasswade cemetery a terminal date of *c.* A.D. 1240 can be postulated, with the probability of a commencing date about the 8th century, although a possible earlier dating is not wholly excluded.

LONG BONE LENGTHS AND STATURE.

Measurable limb bones are available of fifteen individuals, six male and nine female. These measurements are set out in Table I. (The measurements of humerus, radius, and femur are the maximum lengths, that of the tibia the condylo-malleolar length.)

TABLE I.
Limb-bone Lengths in mm.

Male :

	Lasswade.				Dirleton.				Longniddry.		Camp-toun.	
	8a.		14.		I.		III.		IV.		2a.	
	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.
Humerus . . .	..	343	330	321	335	329	323	318	..	298?	..	..
Radius . . .	..	..	..	..	242	242	242	241	232	..	..	..
Femur . . .	458	461	453	448	463	469	439	..	427	429	..	450
Tibia . . .	380?	386	..	..	359	364	355	357	354	357	..	..

Female :

	Lasswade.						Longniddry.						Dunbar.				
	0.		2.		11.		29.		30.		I.		II.		III.		(Kirk-hill.)
	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	R.	L.	
Humerus . . .	322	301	295	..	253	..	..	..	..	..	..	..	..	..	..	..	..
Radius . . .	251	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Femur . . .	..	..	..	384	..	..	364	423	424	369	370	431	396	..	..	..	..
Tibia . . .	..	..	329	..	..	..	293	357	361	298	..	..	312	..	..	..	..

Estimates of stature from these bones (Table II) have been based upon the formulæ computed by Trotter and Gleser (1952). These authors point out that the most reliable estimate of stature is afforded by the combined femoro-tibial length, followed in order of decreasing reliability by femur, tibia, humerus and radius. They accordingly deprecate the practice of averaging estimates from different bones and urge that the best available estimate be taken for each individual.

TABLE II.

Estimated Statures in mm. (Trotter-Gleser Formulæ).

Male:

	Lasswade.		Long-niddry.	Dirleton.		Camp-toun.	Mean.
	8a.	14.	IV.	I.	III.	2a.	
Humerus	1760	1720	1620	1730	1700	..	..
Femur	1710	1670	1635	1730	1660	1685	1682
Tibia	1760	..	1685	1700	1685	..	..
Femur + Tibia	1735	..	1653	1715	1665	..	1692
Best estimate .	1735	1670	1653	1715	1665	1685	1687

Female:

	Lasswade.					Longniddry.			Dunbar.	Mean.
	0.	2.	11.	29.	30.	I.	II.	III.	(Kirkhill.)	
Humerus	1660	1590	..	1430	..	..	..	..	..	..
Femur . . . . .	..	..	1490	..	1440	1585	1455	1605	1520	1516
Tibia . . . . .	..	1570	..	..	1470	1657	1480	..	1520	..
Femur + Tibia	..	..	..	..	1450	1623	1460	..	1515	1512
Best estimate .	1660	1570	1490	1430	1450	1623	1460	1605	1515	1534

In the case of the male group the mean stature obtained from the femoro-tibial length for four subject differs but slightly from that given by the femoral length for all six. These men thus form a fairly compact group of medium to tall stature (5 ft. 5 ins. to 5 ft. 9 ins.). A just mean for the female group is more difficult to come at, since neither the femoro-tibial nor the femoral length is available in all cases. The mean given by the best available estimate for all nine women is fully an inch greater than those obtained from the femoro-tibial and femoral lengths only. Even this higher assessment appears disproportionately low in relation to the male statures. This discrepancy results from the presence of three remarkably small women (Lasswade 29 and 30, and Longniddry 11); the other six women give a "best estimate" mean of 1577 mm. which accords much better with the male mean.

The limb bones of these three small women are in all cases some millimetres shorter than those of the famous "dwarf" woman from the Roman fort at Newstead (Bryce in Curle 1911). It seems probable that the formulæ used by Bryce led him to underestimate the stature of the Newstead woman, and that though small she was not abnormally dwarfed.

The male counterpart to these short women is represented by a skeleton from the long cist cemetery at Lundin Links in Fife, whose femur and tibia measure respectively 394 mm. and 317 mm., giving a femoro-tibial stature estimate of 1554 mm. It can therefore be said that the long cist people included an element of notably short stature, and that the Newstead woman was probably an earlier example of this. However, it must be remembered that human stature is greatly influenced by nutrition during the growth period, and that a series of bad harvests might by itself produce a stunted generation.

SKULL MEASUREMENTS.

In all, nineteen male and fourteen female adult skulls are available for study. Some of these specimens are, however, very incomplete. For the convenience of future investigators all have been measured as completely as possible, and the results are set out in Tables III and IV.

A glance over these tables shows that the skulls differ considerably both in size and form. There is, however, a clear preponderance of skulls in which both the length and the breadth of the braincase are relatively small; conspicuously long and broad heads are equally uncommon. Of the skulls in which the cranial index can be calculated (sixteen males and twelve females), nine males and nine females fall into the mesaticranial class with indices between 75 and 80. Four males and two females are dolichocranial; three males and one female brachycranial.

Detailed statistical treatment of so small a series would be wasted labour. I have therefore confined myself to simple averages for the

TABLE IIIa.
Measurements of Male Crania.

	Lasswade.				Dingleton.			Long-middy.	Camp-toun.
	1.	8a.	12.	34.	49.	I.	III.			IV.	2a.
Maximum cranial length (L)	mm. 179	mm. 190 [?]	mm. 180 [?]	mm. 200	mm. 174	mm. 185	mm. 189	mm. 182	mm. 180
Maximum cranial breadth (B)	145	155	142	152 [?]	92	142	145	154	142
Minimum frontal breadth (B')	94	..	86 [?]	..	100 [?]	95	98	95	91
External biorbital breadth (EOW)	100	..	..	..	125 [?]	101	105	..	100
Basio-bregmatic height (H')	..	..	128 [?]	..	110 [?]	142	140	135	108
Auriculo-bregmatic height (OH')	..	..	112 [?]	..	110 [?]	124	118	115	108
Frontal chord (S ₁ ')	110	110	..	116	109	115	114	111	104
Occipital chord (S ₂ ')	104	114 [?]	..	123	116	120	116	116 [?]	103 [?]
Occipital arc (S ₁)	101	117	..	128	91	100	104	92 [?]	103 [?]
Frontal arc (S ₁)	..	135 [?]	..	142 [?]	119 [?]	132	128	127	117
Occipital arc (S ₂)	115	132	..	128	108	138	125	126 [?]	115
Parietal arc (S ₂)	112	132	..	..	..	121	125	107 [?]	115
Occipital arc (S ₃)	..	..	..	..	..	391	378	360 [?]	127
Total sagittal arc (S)	..	..	..	..	..	328	315	328 [?]	359
Transverse arc (Q')	310 [?]	322	..	..	..	628	542	523 [?]	516
Horizontal circumference (U)	504 [?]	36	39	35	..
Foramen magnum length (U)	..	..	..	..	..	32	32	30	..
Foramen magnum breadth (fmb)	..	..	35	..	38	36	32	30	..
Basio-nasal length (LB)	..	..	26	..	30	96	104	100	..
Basio-alveolar length (GL)	..	..	90 [?]	..	92	88	97	95	..
Upper facial height (G'H)	..	..	92 [?]	70	70	71	..
Bimaxillary breadth (GB)	..	..	73	..	..	88	94	90	..
Bizygomatic breadth (J)	..	..	93 [?]	70	70	71	..
Nasal height I (nasal) (NH)	..	..	49	..	..	88	94	90	..
Nasal breadth (NB)	..	..	21	..	..	48	51	49 [?]	..
Nasal height II (nasospinal) (NH')	..	..	21	..	..	20	22	22	..
Nasal breadth I (maxillofrontal) (O ₁)	..	..	47	..	..	20	22	48 [?]	..
Orbital breadth I (maxillofrontal) (O ₁)	..	..	39	..	..	41	40	40	..
Orbital breadth II (deacryal) (O ₁')	..	..	37	..	..	32	33	36	..
Orbital breadth II (deacryal) (O ₂)	..	..	34	..	..	32	33	33	..
Biocryal breadth (DC)	..	..	37	..	23	39	39	23	..
Maxillo-alveolar length (MAL)	..	..	21	..	..	22	22	23	..
Maxillo-alveolar breadth (MAB)	..	..	53	..	..	51	56 [?]	53	..
Palatal length (PL)	..	..	60	..	..	42	46 [?]	42	..
Palatal breadth (PB)	..	..	43	..	..	42	46 [?]	42	..
..	..	..	40	..	..	38	39	39	..
..
Cranial index (100 B/L)	81.0	81.6 [?]	71.1 [?]	76.0 [?]	71.8 [?]	76.8	76.7	84.6	78.9
Althridinal index (100 H'/L)	..	..	71.1 [?]	..	71.8 [?]	76.8	74.7	74.2	..
Vertical index (100 B/H')	..	..	..	..	..	100.0	103.6	114.1	..
Anticural height index (100 OH'/L)	61.5	57.5 [?]	62.2 [?]	57.5 [?]	63.2 [?]	67.0	62.4	63.2	60.0
Maxillary facial index (100 G'H/GB)	..	..	78.5 [?]	79.5	74.5	78.9	..
Zygomatic facial index (100 G'H/J)	..	..	..	..	..	55.6	52.2	55.5 [?]	..
Nasal index I (100 NB/NH)	..	..	42.9	..	..	41.7	43.1	44.9 [?]	..
Nasal index II (100 NB/NH')	..	..	44.7	..	..	40.8	43.1	45.8 [?]	..
Orbital index I (100 O ₂ /O ₁)	..	..	87.2	..	..	78.0	82.5	90.0	..
Orbital index II (100 O ₂ '/O ₁')	..	..	91.9	..	..	82.1	84.6	94.7	..
Maxillo-alveolar index (100 MAB/MAL)	..	..	113.2	..	..	112.0	110.7 [?]	118.9 [?]	..
Palatal index (100 PB/PL)	..	..	93.0	..	..	90.5	84.8 [?]	92.9	..

TABLE IIIb.
Measurements of Male Crania.

	Arnis-ton.	Dunbar B.	Dunbar C.	Nunraw 7.	Cock-enzie.	Stone-laws.	Milton, Tvanent.	Society, Hope-toun.	Kirkhill, Dunbar.	Links, Dunbar.
Maximum cranial length (L)	mm. 189	mm. 186	mm. 186	mm. 177	mm. 179	mm. 190?	mm. 140?	mm. 183?	mm. 185?	mm. 179
Maximum cranial breadth (B)	139	146	137?	135	133	145?	140?	130?	142?	138
Minimum frontal breadth (B')	92	97	99	94	98	95?	..	..	97	100
External biorbital breadth (EOW)	..	107	102	100	103	102?	..	..	103	105
Basi-bregmatic height (E')	124	140	122	..	128	135	137	122	128	125
Auriculo-bregmatic height (OH')	107	110	108	111?	111	116	116	108	112	110
Frontal chord (S ₁ ')	104	114?	108?	108?	102	112	108?	108?	109	107
Parietal chord (S ₁ ')	113	109?	111	103	98?	114	108?	104?	112	108
Occipital chord (S ₂ ')	93	103	93	..	104?	..	98?	88	94?	94
Frontal arc (S ₁)	120	130	130	125?	116	125	120?	127?	127	123
Parietal arc (S ₂)	124	116	126	112	108	130?	120?	114?	124	117
Occipital arc (S ₂)	116	124	121	..	121	..	122?	109	..	114
Total sagittal arc (S)	360	370	370	..	345	..	..	350	..	354
Transverse arc (Q')	298?	315	297	..	..	315	..	..	..	297
Horizontal circumference (U)	528	535	522	..	503	528?	..	..	..	510
Foremen magnum length (fm)	31	40	33	..	44	..	38	36	36	36
Foremen magnum breadth (fmb)	39	35	27	..	..	..	35	27	30?	30
Basi-nasal length (LB)	98	107	95	..	96	98	..	100	96	93
Basi-alveolar length (GL)	95	98?	87?	..	..	96	..	..	90	70
Upper facial height (G'H)	79	74?	72?	..	75	75	..	..	87?	89
Bimaxillary breadth (GB)	..	95	86	..	..	90	..	..	..	87?
Bizygomatic breadth (J)	..	134	121	..	..	..	..	..	..	126
Nasal height I (naral) (NH)	..	55	53?	..	..	..	..	..	..	..
Nasal breadth (NB)	..	26	25	..	..	50	..	..	47	..
Nasal height II (nasospinal) (NH')	..	26	25	..	..	23	..	..	22	..
Orbital breadth I (maxillofrontal) (O ₁)	..	56	53?	..	..	28	..	..	22	..
Orbital height (O ₂)	..	44	38	..	..	43	..	..	47	..
Orbital breadth II (dacryal) (O ₁ ')	..	36	38	..	..	35	..	..	39	39
Bidacryal breadth (DC)	..	40	..	..	..	37	..	..	34	32
Maxillo-alveolar length (MAL)	..	26?	..	..	26	..	..	..	37	36
Maxillo-alveolar breadth (MAB)	..	..	54	..	..	56	..	..	22	26
Palatal length (PL)	..	..	59	..	..	62	..	..	53	..
Palatal breadth (PB)	..	..	44	..	..	45	..	..	42	..
..	..	..	38	..	..	41	..	..	37	..
Cranial index (100 B/L)	73.5	78.5	73.7?	76.3	74.3	76.3	..	71.0?	76.8?	77.1
Altitudinal index (100 H'/L)	65.6	75.3	65.6	..	71.5	71.1?	..	66.7?	69.2?	69.8
Vertical index (100 B/H')	112.1	104.3	112.3	..	103.9	107.4	102.2	106.6?	110.9?	110.4
Auricular height index (100 OH'/L)	56.6	59.1	58.1	62.1	62.0	61.1?	..	59.0?	60.5?	61.5
Maxillary facial index (100 G'H/GB)	..	77.9?	83.7?	..	..	83.3	..	..	80.5?	..
Zygomatic facial index (100 G'H/J)	..	55.2?	59.5?	..	..	..	..	..	46.8	..
Nasal index I (100 NB/NH)	..	47.3	47.2?	..	..	46.0	..	..	46.8	..
Nasal index II (100 O ₂ /O ₁ ')	..	46.4	47.2?	..	..	43.4	..	..	46.8	..
Orbital index I (100 O ₂ /O ₁ ')	..	81.8	..	..	..	81.4	..	72.5?	87.2	82.1
Orbital index II (100 O ₂ '/O ₁ ')	..	90.0	..	..	..	94.6	..	76.3?	91.9	88.9
Maxillo-alveolar index (100 MAB/MAL)	114.5?	..	109.3	..	..	110.7	..	..	109.4	..
Palatal index (100 PB/PL)	..	..	86.4	..	..	91.1	..	..	88.1	..

TABLE IVa.
Measurements of Female Crania.

	Lasswade.						Kirkhill, Dunbar.	Longniddry.		
	0.	2.	4a.	8b.	30.	I.		II.	III.	
	mm.	mm.	mm.	mm.	mm.	mm.		mm.	mm.	
Maximum cranial length (L)	175	173	..	186	172	181	180	171	169	
Maximum cranial breadth (B)	136	135	..	146	134½	144	131	133	139	
Minimum frontal breadth (B')	87	92	..	..	..	98	98	90	97
External biorbital breadth (EOW)	..	95½	..	..	..	105	103½	..	104
Basal-bregmatic height (H')	132	119	..	135	123	126	113	120	104	
Auriculo-bregmatic height (OH')	114	106	..	118	112	114	103	108	102½	
Frontal chord (S ₁ ')	111	97	..	109	114	108	103	96½	114½	
Parietal chord (S ₂ ')	108	102	..	114	112	121	118	116	104	
Oecipital chord (S ₃ ')	92	91	92	94½	..	89	101½	87	96	
Frontal arc (S ₁)	131	119	..	126	132	125	118	111½	..	
Parietal arc (S ₂)	121	113	..	130	136	135	134	132½	115	
Oecipital arc (S ₃)	117	112	..	117½	..	109	117½	104	112	
Total sagittal arc (S)	369	344	107	373½	..	369	369½	347	291½	
Transverse arc (Q')	305	282	..	..	..	313	..	292	482½
Horizontal circumference (U)	498	492	..	40½	..	532	506½	482½	497½	
Foramen magnum length (fm)	36	32	37	..	..	32	..	36	38
Foramen magnum breadth (fmb)	29	27½	31	98	90	25	..	27	32	
Basal-nasal length (LB)	94	97	..	..	..	92	..	86½	81½
Basal-alveolar length (GL)	83	94	..	..	..	87½	..	..	..
Upper facial height (G'H)	67	64	73	..	..	63½	..	..	..
Bimaxillary breadth (GB)	..	87½	..	..	..	90	..	..	..
Bizygomatic breadth (J)	..	114½	..	..	..	123	..	..	..
Nasal height I (narial) (NH)	..	46	49	..	..	50	..	..	..
Nasal breadth (NB)	49½	18½	..	..	..	26	..	..	..
Nasal height II (nasospinal) (NH')	48½	46	50½	..	..	51	..	..	..
Orbital breadth I (maxillofrontal) (O ₁)	40	37	41	..	39½	41	..	..	..
Orbital height (O ₂)	36½	33½	35	..	..	35	..	..	..
Orbital breadth II (dacryal) (O ₁ ')	37	35	37	..	36	38	..	..	..
Biacryal breadth (DC)	21	24	..	..	..	26	24	..	22
Maxillo-alveolar length (MAL)	49½	52	50	..	..	29½	..	..	..
Maxillo-alveolar breadth (MAB)	..	54	56½	..	..	62	..	..	..
Palatal length (PL)	39	41	42	..	..	39½	..	..	..
Palatal breadth (PB)	38	35	36	..	..	39	..	..	..
Cranial index (100 B/L)	77.7	78.0	..	78.5	77.9½	79.6	72.8	77.8	82.2½	
Altridinal index (100 H/L)	75.4	68.8	..	72.6	71.5	69.6	..	70.2	71.6	
Vertical index (100 B/H')	103.0	113.4	..	108.2	108.9½	114.3	..	110.8	114.9½	
Auricular height index (100 OH'/L)	65.1	61.3	..	63.4	65.1	70.0	62.8	63.2	60.4½	
Maxillary facial index (100 G'H/L)	..	73.6½	..	..	..	70.0	..	..	..
Zygomatic facial index (100 G'H/J)	..	56.1½	..	..	..	51.2½	..	..	..
Nasal index I (100 NB/NH)	..	39.1½	..	..	..	52.0	..	..	..
Nasal index II (100 NB/NH')	..	39.1½	..	..	..	51.0	..	..	..
Orbital index I (100 O ₂ /O ₁)	90.0½	89.2½	..	85.4	..	85.4	..	..	..
Orbital index II (100 O ₂ /O ₁ ')	97.3½	94.3½	..	112.0½	..	94.6	..	..	..
Maxillo-alveolar index (100 MAB/MAL)	..	103.8	..	..	..	126.5½	..	..	..
Palatal index (100 PB/PL)	97.4	85.4	85.7	..	..	100.0½	..	..	..

TABLE IVb.

Measurements of Female Crania.

	Winterfield, Dunbar.	Nunraw.	Cockenzie.	"East Lothian."	Stone- laws.
	mm.	mm.	mm.	mm.	mm.
Maximum cranial length (L)	176	182?	173	175	188
Maximum cranial breadth (B)	135	..	135	135	136?
Minimum frontal breadth (B')	91	90	92	92	96
External biorbital breadth (EOW)	99	93?	95	..	..
Basi-bregmatic height (H')	127	..	126	126	..
Auriculo-bregmatic height (OH')	109	107?	111	106	114
Frontal chord (S ₁ ')	104	97?	104	103	112?
Parietal chord (S ₂ ')	107	122?	113	108	112?
Occipital chord (S ₃ ')	98	83	94	90	98
Frontal arc (S ₁)	119	111?	117	115?	125?
Parietal arc (S ₂)	..	140	128	119	130?
Occipital arc (S ₃)	112	96	114	110	121
Total sagittal arc (S)	..	347?	359	344?	376
Transverse arc (Q')	290	..	297	292	..
Horizontal circumference (U)	499	..	494	500	..
Foramen magnum length (fml)	35	..	30	36	..
Foramen magnum breadth (fmb)	28	..	27	29	..
Basi-nasal length (LB)	98	..	89	98?	..
Basi-alveolar length (GL)	93	..	86	..	..
Upper facial height (G'H)	66	..	64	..	..
Bimaxillary breadth (GB)	93	..	..	..	..
Bizygomatic breadth (J)	122?	..	116?	..	..
Nasal height I (narial) (NH)	49	..	47	..	..
Nasal breadth (NB)	24	..	22?	..	..
Nasal height II (nasospinal) (NH')	49	..	47	..	..
Orbital breadth I (maxillofrontal) (O ₁)	40	..	38	..	..
Orbital height (O ₂)	35	..	32	..	..
Orbital breadth II (dacryal) (O ₁ ')	37	..	36	..	..
Bidacryal breadth (DC)	20	22	21	..	..
Maxillo-alveolar length (MAL)	55	..	51	..	..
Maxillo-alveolar breadth (MAB)	60	..	..	..	..
Palatal length (PL)	46	..	42	..	..
Palatal breadth (PB)	40	..	..	..	..
Cranial index (100 B/L)	76.7	..	78.0	77.1	72.3?
Altitudinal index (100 H'/L)	72.2	..	72.8	72.1	..
Vertical index (100 B/H')	106.3	..	107.1	107.1	..
Auricular height index (100 OH'/L)	61.9	58.8?	64.2	61.3	60.6
Maxillary facial index (100 G'H/GB)	71.0	..	..	..	..
Zygomatic facial index (100 G'H/J)	54.1?	..	55.2?	..	..
Nasal index I (100 NB/NH)	49.0	..	48.6?	..	..
Nasal index II (100 NB/NH')	49.0	..	48.6?	..	..
Orbital index I (100 O ₂ /O ₁)	87.5	..	84.2	..	..
Orbital index II (100 O ₂ /O ₁ ')	94.6	..	88.9	..	..
Maxillo-alveolar index (100 MAB/MAL)	109.1	..	..	..	..
Palatal index (100 PB/PL)	87.0	..	..	..	..

TABLE V.
Mean Measurements of Male Cranial Series.

	Long cists.	Short cists (Reid and Morant 1928).	Iron Age (Morant 1926).	Anglo-Saxon (Morant 1926).
Maximum cranial length (L).	182.9 mm. (18)	180.8 mm. (44)	187.4 mm. (61)	190.6 mm. (58)
Maximum cranial breadth (B)	142.4 " (17)	148.0 " (41)	141.4 " (102)	141.7 " (103)
Minimum frontal breadth (B')	95.8 " (13)	102.7 " (3)	98.0 " (45)	97.3 " (59)
Basal-bregmatic height (H')	130.8 " (14)	136.4 " (35)	132.9 " (77)	136.0 " (31)
Upper facial height (G'H)	72.7 " (9)	66.9 " (18)	69.1 " (30)	71.1 " (22)
Bizygomatic breadth (J)	128.2 " (6)	133.9 " (20)	130.6 " (55)	133.3 " (34)
Nasal breadth (NB)	22.6 " (8)	24.8 " (24)	23.7 " (67)	24.5 " (28)
Nasospinal height (NH')	50.5 " (8)	51.1 " (20)	50.6 " (99)	52.7 " (28)
Cranial index (100 B/L).	77.1 (16)	81.9 (37)	74.8 (61)	74.7 (52)
Altitudinal index (100 H'/L).	71.0 (13)	75.3 (35)	70.8 (51)	71.2 (25)
	Edinburgh and Leith (Turner 1903).	Midlothian (Turner 1903).	East Lothian (Turner 1903).	Belgian (Little 1943).
Maximum cranial length (L).	182.3 mm. (19)	190.7 mm. (18)	183.6 mm. (12)	183.9 mm. (133)
Maximum cranial breadth (B)	142.2 " (18)	144.9 " (18)	146.9 " (12)	145.3 " (133)
Minimum frontal breadth (B')	95.6 " (19)	97.7 " (18)	98.0 " (12)	98.2 " (52)
Basal-bregmatic height (H')	129.2 " (13)	134.5 " (16)	129.6 " (7)	131.1 " (52)
Upper facial height (G'H)	68.6 " (7)	73.2 " (13)	69.4 " (5)	"
Bizygomatic breadth (J)	131.3 " (9)	134.5 " (12)	128.3 " (3)	132.0 mm. (52)
Nasal breadth (NB)	22.7 " (10)	23.3 " (15)	24.0 " (5)	23.5 " (52)
Nasospinal height (NH')	50.6 " (10)	53.5 " (15)	51.4 " (5)	"
Cranial index (100 B/L).	76.9 (18)	76.0 (18)	80.0 (12)	79.0 (133)
Altitudinal index (100 H'/L).	70.9 (13)	70.7 (16)	71.1 (7)	71.0 (52)

principal measurements of the male skulls, as the basis for a rough comparison with some other groups (Table V).

The short cist series of Reid and Morant (1928) belongs largely to the earlier part of the Bronze Age, though burials in short cists probably continued sporadically through the whole of this period. As already noted, Reid and Morant's series is contaminated with long cist skulls; this would of course tend to approximate the averages for the two groups. Despite this, the short cist skulls are strikingly broader and higher than those from the long cists.

Morant's composite British Iron Age series (1926) also includes a few long cist skulls, but not enough to modify its character appreciably. Compared with this series, the long cist group is conspicuously shorter, though similar in height and width. Anglo-Saxon skulls (Morant 1926) are more robust and in particular higher than those of the Iron Age.

It may therefore be said that, on the average, the long cist skulls approximate in length to the Bronze Age, but in breadth to the Iron Age and Anglo-Saxon, and in height to the Iron Age series. Face breadth seems also to go with the Iron Age, and face height with the Anglo-Saxon, but these comparisons are vitiated by the small size of the long cist group.

There is good warrant for believing these skull measurements to be determined by separately inherited factors. It may therefore be suggested that the average characters of the long cist group could result from hybridisation between a type as short-headed as the short cist series, and one as narrow-headed as the Iron Age and Anglo-Saxon. A comparable situation in respect of African skulls has been discussed by Dreyer, Meiring and Hoffman (1948). The argument developed by these authors would account not only for the average character of the long cist group but for such aberrations of type as Lasswade 34 and Longniddry IV, as against the Cockenzie and Hopetoun skulls (Table III).

Historically it seems very probable that the long cist population in Lothian could be a mixture of Short Cist, Iron Age and Anglo-Saxon elements. Both Piggott (1951) and Hogg (1951) argue for Bronze Age population persisting into the Iron Age in this area, while Blair (1952) points out that in south-east Scotland much of the British (Iron Age) population probably survived the Anglo-Saxon conquest.

It remains to consider the relations which the long cist people bear to the more recent population of the Lothians. Turner (1903) has recorded measurements of skulls from this area, mostly belonging to the 16th-18th century, although some, especially among those from Edinburgh and its environs, may go back to the late medieval period. Hooke and Morant (1926) noted that Turner's data fell into three groups whose average characters are sharply differentiated; these derive respectively from Edinburgh and Leith, from rural and coastal Midlothian, and from

E. Lothian burghs. Of these three, the group from Edinburgh and Leith is almost identical in average character with the long cist skulls, while that from other localities in Midlothian approximates most nearly to the Anglo-Saxon series. The E. Lothian burgh group is short-headed, but broader than the Edinburgh and long cist groups; its striking agreement with a modern Belgian series (Little 1943) suggests that we may see here the influence of the Franco-Flemish component in the medieval burgh population (Malcolm 1951), rather than a reversion to the short cist type.

It does not seem at all likely that Edinburgh and Leith should have retained to the end of the Middle Ages a population of unmixed long cist ancestry. A more reasonable supposition is that the Edinburgh population has continuously absorbed accretions both of the long-headed (Iron Age or Anglo-Saxon) type represented by the rural Midlothian group and of the broad-headed type of the E. Lothian burghs, the balancing influence of these two types maintaining an average character similar to that of the long cist group.

ADDENDUM.

The Mandibular Torus in the Lasswade Remains.

One feature of the remains from the Lasswade cemetery deserves special notice. This is the frequent presence of the mandibular torus, a tumour-like thickening of bone on the inside of the lower jaw near the roots of the canine and premolar teeth. Of sixteen jaws which could be examined, only four showed no trace of this feature, and in seven it was considerably developed. The torus appeared to be present more frequently in women than in men, and better developed in elderly than in young persons, but there are too few specimens for these impressions to be of much worth.

Nine other lower jaws from long cist burials could be examined. Of four jaws from Dunbar, two showed a well-developed and two a slight torus; in two jaws from Dirleton, two from "Stonelaws," and one from Longniddry, it was absent or only slightly indicated.

The mandibular torus was observed by Sir Arthur Keith (1929) in specimens from long cists on Rathlin Island, and by Hill (1952) in four jaws from long cists at Galson, Lewis. While Sir Arthur Keith regarded it as a functional development, Hill took it to be a racial characteristic. A study by Moorrees, Osborne and Wilde (1952) leaves little doubt that the tendency for a mandibular torus to develop is in fact inherited. The mechanism of inheritance appears to be complex, and it is still possible that the degree of development is influenced by functional factors.

On consideration of all the evidence, it seems improbable that the occurrence of the mandibular torus has any racial significance. No data are yet available on the frequency of the torus in the groups from which the long cist population may be descended. The erratic appearance of this feature in the Lothian long cist group may well reflect the effect of inbreeding in local communities.

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