THREE SCOTTISH CARMELITE FRIARIES: EXCAVATIONS AT ABERDEEN, LINLITHGOW AND PERTH, 1980–1983

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Table 1mf Correspondence between 1542 rental and charter evidence of lands (MCC, 1, 9 and Aberdeen Friars).

LOCATION	1542 RENTAL	CHARTERS AT 1542
Green	5 houses	-
	1 garden tenement	-
	5 lands	4 lands
Shiprow	2 houses	-
	-	1 land
Castlegate	4 houses	-
	1 tenement	-
	1 land	1 land
Gallowgate	2 houses	-
	1 tenement	-
	1 garden	-
	-	1 land
Futy	1 house	1 land
Crofts around town	5 crofts	6 crofts
Netherkirkgate	-	2 lands

Table 2mf. Aberdeen, 12 Martin's Lane. Catalogue of features.

In this catalogue the features are listed in alphabetical order within period and trench. The trenches are handled in the same groupings as in the main text: ie Trenches 1/3, Trenches 4, 4A and 5. The entry for an individual feature indicates in which trench it was recorded. No specific features were recorded in Trench 2. Illustration numbers are quoted where features appear on published plans. Where measurements are given, N-S precedes E-W. Trench numbers are given in brackets after the feature codes. D = depth H = height W = width T = thickness

Catalogue of features

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
Trench 1/3			
Period 2a			
AB(1)	Wall	Substantial wall foundation, running E-W, composed of large stones and mortar bonding. S wall of Building 3. W: c 1m. Surviving H: c 0.60m. Assoc layer: 60. (Ill 18, 19).	coin 157
AF(1)	Post-hole	Sub-circular. 2 stones overlying feature, another (on edge) in fill. Diam: c 0.25m. Assoc layer: 31.	
AG(1)	Hearth?	Sub-circular. Diam: c 0.46m. Assoc layers: burnt clay and charcoal 43, 44, 45, 46. (Ill 18).	
AH(1)	Hearth?	Area of charcoal and red clay, NW corner of area. 0.65 x 0.40m. Assoc layers: 40, 41.	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
AI(1)	Cobbling	Disturbed area of cobbling N of wall AB. 0.60 x 1.40m Assoc layer: 49	
AJ(1)	Wall base	Base of wall AB. Clay bonded. Width c 1.30m. Surviving H: c 0.60m. Assoc layers: 60, 61.	coin 157
AK(1)	Cobbles	Small cobbles, closely packed, below AI. 0.60 x 1.10m. Assoc layer: 50.	
AL(1)	Stone feature	Group of stones assoc with hearth AG. Flat stone (0.12 x 0.22m) with 2 uprights. Set in layer 58.	
AM(1)	Post?	Fragmentary remains of possible post, 0.10 x 0.08m.	
BA(3)	Wall	Substantial wall foundation, running N-S. Upper portion (0.76m) composed of large stones with mortar bonding. Lower portion (0.25m) similar but without bonding. Possible floor level (mortar bedding-layer 92) coincided with lower extremity of mortar bonding. Bonded at right angles with	vessel glass 15

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
		walls AB and ER at S end. BA formed W wall of Building 3. Max W: c 1.25m. D: 1m. Assoc layer: 80. (Ill 18, 19).	
BH(3)	Post-hole?	Diam c 0.28m. Circular. Similar to AF in Trench 1. Assoc layer: 118.	
BI(3)	Stones	Group of stones S of AB. 0.65 x 1.25m. Assoc layer: 126.	
BJ(3)	Cobbles	Group of stones and clay S of ER. 0.50 x 1.05m. Assoc layer: 134. (Ill 18).	copper alloy book fitting 109
Period 3a			
AA(1)	Cobbles	Small rounded cobbles within Building 3, larger stones at S edge. See BD in Trench 3. Assoc layer: 5 (Ill 19).	bone peg 154
AC(1)	Stones	Disturbed group of stones N of AB. Assoc layer: 9.	
AD(1)	Hearth?	Area of black charcoally earth and reddish burnt clay at N edge of trench. Assoc layers: 6, 7.	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
AE(1)	Post?	Decayed remains of wooden post. 0.05 x 0.10m.	
BB(3)	Cobbles	Small patch of cobbles S of BA, partially overlying junction of BA and AB. Overlying part of BC. 2 x 1.20m. Assoc layer: 84. (Ill 19).	
BC(3)	Cobbles	Similar to BB, but partially overlying BB. Also overlying W end of wall AB at junction with wall BA. 2.10 x 1m. Assoc layer: 85. (Ill 19).	
BD(3)	Cobbles	Small group of cobbles within Building 3. Part of same feature as AA in Trench 1. 0.50 x 0.60m. Assoc layer: 86. (Ill 19).	
BE(3)	Stones	Area of random stones at S edge of trench. 0.74 x 3.40m. Assoc layer: 87. (Ill 19).	
BF(3)	Stone dump	Dump of stones W of BA. 2 x 0.90m. Assoc layer: 90.	
BG(3)	Stone surface	Area of orange clay and closely packed stones at N edge of trench. Broadly respects line	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
		of wall BA at W end. Same as layer 12 in Trench 1. 0.70 x 3.20m. Assoc layer: 96.	
Trenches 4, 4A, 5			
Period 1			
CM(4)	Cut	Finger-like cut into natural. D: 0.22m at E end, 0.20m at W end, 0.06m in central area. Probably caused by tree root. Assoc layer: 188. (Ill 8).	
CN(4)	Cut	Sub-circular cut into natural. Diam: c 0.20m. D: 0.17m. Probably not man-made. (Ill 8).	pottery 6, 7
CO(4)	Cut	Similar to CN but straight-sided and oblong in shape. 0.20 x 0.10. D: 0.12m. (Ill 8).	
DE(4)	Post-hole?	Very shallow post-hole, cut into layer 250. Sub-circular. Diam c 0.14m. D: c 0.08m. (Ill 8).	
DH(5)	Pit	Deep pit cut into natural. Full extent not excavated. Extended S under Period 2 wall CA, E under E section of trench. Wall CA partially collapsed into pit, evidence of repair to upper	pottery 1, 2

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
		portion of wall at EF (Ill 9). Coffin DA (SK 110, Ill 14) also subsided into upper part of DH. D: at least 1.10m. Assoc layers: 259, 315, 344, 345. (Ill 8).	
DO(5)	Pit	Rectangular pit cut into natural Vertical sides. DP, cut into upper levels, may be shadow of wooden post within DO. Upper fill (268) re-deposited natural, lower fill (269) thick brown organic material. Cut at E side by DR (grave of SK 123). 0.76 x 0.50m. D: 0.23m. Assoc layers: 268, 269. (Ill 8).	
DP(5)	Post shadow?	Rectangular area within DO. Possible shadow of wooden post. Diam: c 0.12m D: c 0.12m. Assoc layer: 269. (Ill 8).	
DQ(5)	Pit	Pit cut into natural. Only S portion within excavated area. Straight-sided, similar to DO and DW. D: 0.44m Assoc layer: 270. (Ill 8).	pottery 3
DS(5)	Post	Placed on general layer 238. Little sign of pit. Post heavily decayed. Diam 0.10m.	pottery 2, 4

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
		D: 0.06m Assoc layer: 283. (Ill 8).	
DT(5)	Burnt area	Area of burning on natural. Composed of clay (275), charcoal (274) and reddened natural sand (272). Small group of stones overlain by hard black charcoal (274). Possibly remains of tile kiln? Lumps of glazed clay in burial soils above DT, also crudely-made floor tiles (39, 43) in destruction deposits. 0.50 x 1.10m. Assoc layers: 254, 272, 274, 275, 276, 277. (Ill 8).	lead waste piece 103
DU(4)	Post shadow?	Rectangular cut within larger pit DW. Similar to BP within DO. 0.24 x 0.20m. D: 0.12m. Assoc layers: 279. (Ill 8).	
DV(5)	Post-hole	Shadow post-hole cut into natural sand. A few stones at bottom, no wood remains. Patch of orange clay (280) and charcoal (281) above stones apparently derived from DT. 0.24 x 0.26m. D: 0.15m. Assoc layers:	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
		280, 281. (Ill 8).	
DW(4)	Pit	Rectangular pit cut into natural. Smaller cut DU may be post shadow within it. Similar fill to DO, but less organic. 0.80 x 0.60m. D: 0.23m. Assoc layer: 284. (Ill 8).	
Period 2			
CA(4/5)	Wall	Substantial stone wall, S and W wall of Building 1. Upper 0.65m mortar bonded, lower 0.35m bonded with pink clay. Similar to AB in Trench 1/BA in Trench 3. W: (inc 'scarcement' EO) 2m. D: (inc EO) 1m. (Ill 9, 14, 16, 17).	
CK(4)	Ditch	Irregular shallow ditch cut into natural running E-W. Cuts pink clay layer 184. Possibly drain assoc with original surface outside Building 1. Filled in with stones prior to Period 4. Up to 0.75 x 3.40m. D: 0.15m. Assoc layer: 183. (Ill 9, 14).	peg tile 85, 86 copper alloy vessel 136
CR(4)	Stone feature	N end of feature EC. Boulders and small stones bonded with	peg tile 84 chimney pot 93

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
		pink clay. Overlain by wall CF in Period 4. Assoc layers: 177, 193, 194, 196.	
CS(4)	Stone feature	Anomalous group of stones bonded with pink clay noticed in wall CF, thought initially to be a feature similar to EC but in fact portion of wall DX. Assoc layer: 195.	
DD(5)	Clay base	Yellow clay 'stripe' running N-S across trench. Base for lead water pipe, removed prior to Period 2c. Frags of decayed lead survived over clay base. 2.40 x 0.22m. D: up to 0.05m. Assoc layer: 249. (Ill 9).	
DI(4/5)	Clay	Strip of clean thick pink clay, running N-S. Similar to layer 184 and to pink clay used for bonding in CA, CF and CG. ?Deposited during construction or repair of CA. 2.90 x up to 0.38m. T: up to 0.06m in centre (convex). (Ill 9).	
DX(4A)	Walls	Portion of N and W walls of Building 3. Similar to AB,	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
		BA, CA. W: 0.78m; inc foundations EI and EM, c 1.65m. Depth 0.65m; inc foundations 1.40m. EM cut c 0.40m deeper at W side of DX than EI at E side. (Ill 9, 14, 16, 17).	
EC(4A)	Stone feature	Linear construction, composed of mixed large and small rough boulders on natural sand. Pink clay bonding at N end. W side some pink clay, also grey clay as above natural. CR represents N end of this feature. Assoc with pit EK at S end. No fill assoc with original use. 2.50 x 1.20m (max). D: 0.70m (max). Assoc layers: 307, 309, 310, 314, 319, 320, 321, 322, 323, 324, 329. (Ill 9, 14, 16).	peg tile 63, 67, copper alloy pin 127 bone peg 153
ED(5)	Stone feature	Mortar bonded structu[illegible] of CA. Contained lead water pipe in stone-lined culvert (EH). 1 x 1m. Assoc layer: 351. (Ill 9).	
EF(5)	Wall	Part of CA adjacent to E section where CA may have collapsed into DH and have been repaired, using soft yellow/brown sandy mortar and small stones. W: 1m. D: 0.75m.	

Table 2mf (cont)

NO	TYPE	DESCRITTION	ASSOC POTTERY AND FINDS
		Assoc layer: 327. (Ill 9).	
EG(4A)	Wall?	? Wall fragment W of EC. Stones and pink clay. 0.80 x 0.90m. Assoc layer: 329. (Ill 9, 14, 16).	
EH(5)	Culvert	Culvert containing lead water pipe within CA and below ED. Towards S end of ED diverged E off line of ED. Below ED capping stones bonded with green/yellow sandy clay. Pipe lay in c 0.05m of soft yellow clay (cf DD) with bottom layer of smaller, irregular stones. Within CA capping of very large irregular stones over pipe. Sides of culvert bonded with pink clay. At N end, large lintel at part where EH left CA, bonding of pink clay above, below and around lintel. Within CA bottom of culvert formed by 3-4 flat slabs (c 0.20m square) with pink clay seal. L: 2.03m. W: (inc sides) 0.34m. Assoc layers: 330, 337, 346.	architectural fragment 20
EI(4A)	Wall foundation	Foundation course of DX on E side. At S end lying on natural; at N	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
		end on clayey soil not further excavated. W: 0.37m. D: 0.21m.	
EK(4A)	Pit	Pit cut into natural at S end of EC. Fill clay with lumps of natural, similar to fill of DO, DQ. D: 0.65m. Assoc layer: 336. (Ill 9, 14).	
EL(5)	Wall foundation	Foundation course of wall CA at E end below EF. D: 0.42m. Assoc layer: 338.	window glass 6, 13, peg tile 57, architectural fragment 19.
EM(4A)	Wall foundation	Foundation course of DX on W side. Cut c 0.15m into natural. W: 0.40m. D: 0.70m. Assoc layer: 347.	peg tiles 58, 82.
EN(4/5)	Wall foundation	Stepped-out foundation course of CA on exterior side of wall. Uppermost course bonded in places with mortar, lower with pink clay. W: 0.08m (min), W: 0.68m (max). D: 0.40m.	
EO (4/5)	Wall foundation	Foundation or 'scarcement' inside wall CA. Flat stones bonded with mortar and overlain by sand (214). W: 0.44m (max). D: 1.20m. Assoc layer: 216. (Ill 9, 14).	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
Period 2c			
CH(4)	Grave	Grave of SK 18. Cut layer 214 (sand overlying 'scarcement' E0). Assoc layer: 167.	copper alloy sheet 144.
CL(4)	Grave	Grave of SK 20. Assoc layer: 187.	
CT(4)	Stones	Group of 6 stones N of CA. 0.48 x 0.66m. Assoc layer: 211.	
CV(5)	Mortar	L-shaped patch of mortar. 0.50 x 1.02m. Assoc layer: 215.	
CW(4) * DC	Coffin?	Group of 4 nails ?coffin of SK 62. See also DC.	
CX(4)	Coffin?	Thin dark line around S edge of pit DM assoc with SK 51 or SK 125. ? coffin W: 0.01m. Assoc layer: 222.	lace-ends 114, 115, 116, 118, iron cylinder 151.
CY(4)	Roof slates	Group of complete roof slates, ?used to cover pit DJ. See Chapter 9.3.2). SK 51 partially lying on slates. Assoc layer: 223.	roof slates 22, 24, 25, 26, 27.

Table 2mf (cont)

NO	TYPE	DESCRIPTIONS	ASSOC POTTERY AND FINDS
CZ(4)	Grave marker	Approximately triangular-shaped upright stone. ? headstone assoc with SK 32, 37. H: 0.27m. W: 0.09-0.19m. T: 0.08m.	
DA(5)	Coffin	Coffin of SK 110. Some wood (possibly charred) remaining. W (head) end appeared to be square-ended. W: 0.56m L: 0.20m (max). Assoc layers: 252, 255.	pottery 11, 13 lead waste 104
DC(5) x CW	Coffin	Dark outline to N of SK 62. Coffin remains? Only c 0.76m survived with 5 nails. Assoc layers: 233, 239.	
DF(5)	Coffin	Rectangular square-ended dark outline enclosing lower legs and feet of SK 124. (Remainder of SK 124 beyond W edge of trench). Cut into layer 238. 0.36 x 0.60m. Assoc layer: 271.	
DG(5)	Grave/ coffin	Grave enclosing SK 112 and ?SK 109 which had 11 nails surrounding it. W: 0.44m. L: 2.58m. D: 0.10m. W: (coffin of SK 109) 0.36m. Assoc layer: 253. (Ill 14).	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
DJ(4)	Pit	Rectangular, shallow pit, sealed by slate feature CY. 0.78 x 0.80m. D: 0.36m. Assoc layers: 260, 278. (Ill 14).	coin weight 160
DK(5)	Grave	Rectangular area filled with soft earth and mortar. Grave of SK 118 and SK 120. Cut by W section of trench. Fill contained 21 nails. 0.80 x 0.86m. Assoc layer: 261.	
DL(4)	Pit	Dip or pit cut into natural at N edge of trench. Contained frags of SK 121. 0.28 x 0.54m. D: 0.08m. Assoc layer: 264. (Ill 14).	
DM(4)	Pit/ grave?	Cut into natural, probable grave of SK 125. See CX. SK 51 lay immediately over feature DM. Cut DJ. D: c 0.65m. Assoc layers: 222, 263, 273. (Ill 14).	roof slates 29, 32, copper alloy fitting 111.
DN(5)	Grave	Grave of SK 119. Contained 17 nails around skeleton. 0.54 x 1.84m. D: 0.08m. Assoc layer: 265.	
DR(5)	Grave	Remains of grave of SK 123.	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
		Cut DO. Assoc layer: 267.	
Period 3			
EJ(5)	Tiles	Area of broken tiles S of AC, below cobbles EE. 0.56 x 0.74m. Assoc layers: 334, 340. (Ill 16).	floor tiles 40, 41, 45, peg tiles 76-81, ridge tile 89, lead rectangle 100.
Period 4			
CE(4)	Cobbled surface	Finely constructed cobbled surface, covering entire centre area of Trench 4 outside Building 1. Includes drains (EP, EQ) running to duct CJ in wall CF. Assoc layer: 164. (Ill 17).	
CF(4)	Wall	Roughly constructed wall, bonded with pink clay. Overlay CR (EC) at E end, where building changed to mortar over the clay bonding of EC. S boundary of cobbled surface CE. Duct CJ at S end where drain passed through wall. L: 6m. W: 0.64m. D: 0.73m. Assoc layer: 165. (Ill 17).	
CQ(4)	Wall	Similar construction to CF. At right-angles to CF, joining beycnd W extremity of trench. Possible opening c 1m from S end. L: 5.96m.	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
		D: 0.56m. Assoc layer: 166. (Ill 17).	
CJ(4)	Drain	Drain running through CF at W end. Assoc layer: 173. (Ill 17).	
CU(4)	Wall	Heavily mortared wall, running N-S at right angles to and joining CA. L: 2.94m. W: 0.56m. D: c 0.45m. Assoc layer: 355. (Ill 17).	
DY(4A)	Stones	Group of stones adjacent to EG. 0.52 x 0.50m. Assoc layer: 291.	
DZ(4A)	Stone feature	Portion of stone feature within Building 3 adjacent to S section of Trench 4A. Mortared stones and two roof slates incorporated into structure. Partially excavated only. Overlay EA. Assoc layer: 350.	
EA(4A)	Stone feature	Lying below DZ at S edge of Trench 4A. ?Part of same feature, but mainly outside excavated area. Assoc layer: 349.	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
EE(5)	Cobbled surface	Continuation of cobbled surface CE into Trench 5. S of CA. 0.66 x 1.74m. Assoc layer: 325. (Ill 17).	floor tile 48.
EP(4)	Drain	Drain in cobbled surface CE, sloping down N-S towards duct CJ. Composed of selected stones larger than those of CE set in 2 parallel rows. c 1.70m N of wall CF turned c 140° to meet EQ at CJ. L: 5.80m. W: 0.30m.	
EQ(4)	Drain	Similar to EP, but running E-W across CE. Joined EP immediately N of duct CJ. L: 2.90m. W: c 0.34m.	
Period 5			
CB(4)	Rubble	Stones and mortar, covering cobbled area CE outside Building 1. Demolition material from Building 1. Assoc layers: 151, 162, 163.	architectural fragments 17, 18, 21, roof slate 33, copper alloy pin 121.
CC(4)	Post-hole?	Circular. Cut into natural below disturbed layer 155. Diam: c 0.10m. Modern.	
CD(4)	Post-hole?	As CC.	

Table 2mf (cont)

NO	TYPE	DESCRIPTION	ASSOC POTTERY AND FINDS
EB(4A)	Pit	Modern pit cut into interior of Building 3.	
ES(5)	Wall	Modern wall. (Ill 8, 9, 14, 16, 17).	

Table 3mf. Aberdeen, Hadden Street. Catalogue of features.

Because of the simple stratigraphy of the site, it is not illustrated in this volume. Plans and sections are available in archive. Where measurements are given N-S precedes E-W. D = depth.

Catalogue of features

NO	TYPE	DESCRIPTION
Area A		
Period 1		
AB	Pit?	S ectangular shallow depression, cut into natural, SE corner of area. 0.40 x 0.90m. Assoc layer: 21
AD	Pit	Small pit cut into natural. Up to 0.60 x 0.70m D: c 0.60m. Assoc layer: 23
AE	Pit?	Cut into layer 20, identified only in section. 0.40m E-W D: 0.30m. Assoc layer: 20A
Period 2		
AC	Post-hole?	Against N section. Contained 2 large stones. 0.44 x 0.38m D: 0.08m.
Period 3		
AA	Pit?	Oblong, against N section. D: c 0.20m. Assoc layers : 10, 11, 12.

5.3 LINLITHGOW RADIOCARBON DETERMINATION

A charcoal sample (mainly Quercus, c 5% Corylus) from context 8219, the fill of a Period 1 post-pit 8212, from the site of the Carmelite friary at Linlithgow, W Lothian, was collected 29 April 1984 by S Boyle and submitted by W Lindsay. Species identification by D Robinson, Dept of Botany, University of Glasgow.

GU-1875 (Sample 8012) 5265 ± 55

δ^{13} C: - 24.8‰

NB The above C-14 date is quoted in conventional years bp (before 1950 AD) and is uncalibrated with respect to dendrochronological age. The error is expressed at the ± one sigma level of confidence.

7.2 LINLITHGOW. THE BURIALS W J LINDSAY

INTRODUCTION

Because of the pressure of time the investigation of graves could not be made a prime excavation objective but, even so, 207 definite burial contexts were identified. Excavation was restricted to areas where it was hoped that sufficient stratigraphical relationships would exist between interments and constructional features or occupational deposits to show to which phase or period they belonged. Because of this approach only a small percentage of the total number of burials likely to have been present was excavated.

Burials were located within the pre-friary chapel and the friary church as well as to the N, S, E and W of these buildings (Ill 41). Some disturbance of interments is known to have occurred during the two known earlier investigations of the site (D Hunter, pers comm) but little evidence of this having happened was found. Grave-cuts, often truncated, were found within the church buildings and to the S of them but were seldom identified to the N and E because of the large number of burials present and the homogeneous nature of surrounding soils in these areas. Although the on-going process of burial can hardly be regarded as being a phased activity it did prove possible to relate many of the Linlithgow inhumations to site stratigraphy and as a result to the periods and sometimes phases used in the archaeological section of this publication. Unfortunately, those N and E of the friary church could not be as specifically assigned to phases or periods as many of the others.

With only a few exceptions, graves were orientated E-W, apparently respecting the alignments of the pre-friary chapel and the friary church.

Site numbers were given to readily identifiable skeletons and to disturbed but discrete bone groups. A few bones may therefore have been mistakenly included with other groups during excavation (see Chapter 7.5). At the time of excavation the condition of skeletal remains varied according to the nature of deposits into which the graves had been cut rather than when the burials had been inserted.

7.2 LINLITHGOW. THE BURIALS (cont)

In general, adult bones in graves dug into natural clay were softer and less well preserved than those found in graves dug into soil or rock.

Usually skeletons lay supine with skulls at the W either facing E or upwards, although there were some notable exceptions. Where the evidence survived, arm bones lay in several positions - at the sides, over lower chests, over pelves or with left arms over or at pelves and right arms along sides.

Of necessity the burial evidence has had to be discussed by area rather than by date because it was not possible to assign graves in different locations to phases or periods with the same degrees of certainty.

GRAVES LOCATED WITHIN PRE-FRIARY CHAPEL AND FRIARY NAVE

INTRODUCTION

Graves had been cut into nearly all the useable area within the pre-friary chapel/nave of the friary church, c 21 x 8.40m, but because of modern intrusive features and restricted excavation time, it was only possible to excavate half of the total area completely. Here as elsewhere on the site, it was difficult to identify the upper cuts of graves in the mixed homogeneous soil deposits so a series of spits were removed and burials excavated when isolated. In this way relationships between inhumations were established with four general phases or cycles of interment being identified. Unfortunately, not all the burials could be assigned to these phases with the same degree of certainty.

For stratigraphical reasons three phases of burial, 3, 4 and 5, are likely to relate to the pre-friary Period 2, while the other can only have occurred in the post-friary Period 4, when the friary church lay in decay. A Period 3, Phase 6, spread of mortar fragments (7036), which can only have been deposited within the chapel while it was

being converted into the friary church in the first half of the 15th century, extended, albeit incompletely, through the building sealing many of the Phase 3 - 5 graves. Most of the Period 4 graves had distinctive loosely packed fills having been cut through the Phase 6 mortar horizon as well as some Period 4 destruction deposits.

PERIOD 2, PHASE 3 BURIALS WITHIN CHAPEL

These burials had been cut into sandy soils and/or into natural clay. They were orientated in the normal E-W direction and most were c 0.25m deep although many had been truncated by Period 3 and later activities. Burial sequences within the phase, such as one in the SW corner of the building were established, but further division into meaningful sub-phases did not prove possible.

Burials SK 121, 124, 127, 129 and 134 lay in the SE corner of the chapel. At the W end of the building it was less easy to divide burials into discrete phases but the more complete examples SK 146, 148, 150-152, 155, 156, 158, 159, 162-164 and 170 are likely to be of this phase. It is probable that SK 138 and SK 166 are also of this primary grouping although there were insufficient stratigraphical associations to be absolutely certain. Nine disarticulated skulls were found in Phase 3 burials, only one of which (SK 143) may have derived from a 'skull-less' skeleton (163). However, four out of five disturbed skulls (SK 77-80, 102) present in a Phase 5 feature (7048), are likely to have belonged to individuals buried during Phase 3. As two of these skulls may have been associated with Phase 3 skeletons, SK 121 and SK 127, it would appear that approximately thirty persons had been interred within the excavated part of the chapel during Phase 3.

Assuming that the density of burial was similar in the unexcavated area of the building, it would seem that approximately sixty people could have been buried within the chapel during this phase. As it is believed that Phase 3 could have lasted up to a maximum of eighty years in the 13th century, an average of less than

one inhumation per annum seems to have been involved.

The age range represented by the Phase 3 grouping varies between an infant (SK 154), represented by a skull and vertebrae, and two old adults, (SK 158, 165), represented by a skeleton and a skull respectively. Of the eleven sexable skeletons and skulls it is notable that only one skull (SK 144) has been positively identified as being that of a male. Assuming that the burial of males was not concentrated in unexcavated parts of the chapel, it would appear that the 10:1 proportion of female and ?female: male skeletal remains is considerably more unequal than might have been expected. One possible explanation of this apparent anomaly may be concerned with the dedication of the chapel. As it is likely to have been dedicated to the Virgin Mary in the 13th century, as it clearly was in 1401 when it was gifted to the Carmelites, the burial of females and young persons, with whom Mary is closely associated, may have been given a higher priority than that of men. Further evidence of preferential burial within the confines of the chapel was found in Phase 4 when only youngsters were interred in the area.

It is also worthy of note that burial near one's spouse in a family grouping does not appear to have been the custom within the chapel at this time.

The only definite evidence of a coffin having been employed for burial within the chapel consisted of a square-ended grave associated with an adult skeleton (SK 121) and nails that were recovered from the grave-fill. The location of the interment, in the presumably prestigious SE corner of the chapel, together with the use of a coffin probably signifies that the person involved had been wealthier and of greater standing than the others buried at this time. There was no evidence of shrouds having been used during this phase. Where arm bones survived their positions varied considerably but with no apparent regard for age, sex or religious standing. There was even a

suggestion hat some of the arm alignments may have resulted accidently. Should bodies have been put into graves from the N, this could have thrown left arms over pelves and right arms to the side, which was one of the more common positions.

Burials: SK 77-80, SK 102, SK 121, SL 124, SK 127, SK 129, SK 134, SK 138, SK 143, SK 144, SK 146, SK 148, SK 150-152, SK 154, SK 155, SK 156, SK 158, SK 159, SK 162-166, SK 170.

Associated finds: Copper alloy ring 231.

PERIOD 2, PHASE 4 BURIALS WITHIN CHAPEL

The most obvious difference between the Phase 3 and Phase 4 inhumations is that only youngsters appear to have been buried within the chapel during the later phase. The interments were aligned E-W as before but where identifiable only parts of thirteen, c 0.15m deep, grave-cuts and a grave-like feature (7056) were isolated.

Although some stratigraphical relationships existed among graves and skeletons it was not possible to sub-categorise the Phase 4 burials. Of the thirteen inhumations (SK 73, 82, 104, 105, 107, 109, 110, 122, 123, 125, 126, 130, 133) present in the SE area of the chapel all but two (SK 104, 105) were seen to overlie or cut Phase 3 interments SK 124 and SK 134. Similarly eleven of the twelve (SK 135-137, 140-142, 145, 147, 149, 157, 168, 207), at the W end of the building definitely overlay or had been dug into burials of the previous phase. There was some doubt whether or not SK 73, SK 135 and SK 207, which lay alongside the N face of the S wall, were of this phase or had been inserted during Period 4. However, as associated soils and, with regard to SK 73, the grave-fill, were more akin to the fills of Period 2, Phase 4 graves than those of Period 4, the three inhumations have been included in this section. A grave-shaped feature (7056) which measured 1 x 0.60 x 0.20m did not contain an articulated skeleton. It may have been a grave which, for some unknown reason, had not been used or alternatively it may have been dug to recover human remains for burial elsewhere; either explanation

seems to be equally likely.

From Phase 4 contexts, twenty-five skeletons were recovered and, had the whole area within the chapel been excavated, then approximately double this number might have been expected to be present, should the density of burial have been the same throughout the building. As Phase 4 is believed to have been between fifty and 100 years long, ending at the start of the fourth quarter of the 14th century, the hypothetical total number of burials does not appear excessive should the interments have been inserted at regular intervals throughout the phase rather than during a short time-span within the phase. The intercutting sequence of interments identified in the SE area of the chapel would appear to argue against the latter possibility so it is therefore somewhat unlikely that the Phase 4 graves had to be dug following a major disaster such as an epidemic.

The estimated number of Phase 4 inhumations may not be too surprising but the age range of individuals interred during this time is unusual. Only youngsters varying in age between a foetus of 6 - 8 months (SK 104) and a child of 4 - 6 years (SK 133) are represented. It has already been suggested that, as only a single male was identified in the Phase 3 grouping, there will have been some preference for the burial of females and young persons at that time, probably because of the chapel's dedication to the Virgin. The burial of only youngsters during Phase 4 would seem to be an even clearer indication of the chapel's association with Mary and possibly of the respect in which she was held. Whether this regard extended as far as cult worship similar to that of the Mother of Mercy or Mother of Succour can only be speculated.

Had premature births and young babies alone been interred within the building during Phase 4, a case could have been made for the chapel having become redundant and its interior having been used for the burial of unbaptised youngsters. However, the presence of a

number of individuals within the 2 - 12 years age range who presumably would have been christened, appears to argue strongly against such a possibility. Yet, it is possible that baptism was not regarded as being essential for burial within the chapel because it is questionable whether or not all the younger examples would have been born alive.

It is believed that there may have been as many as sixty inhumations within the chapel prior to Phase 4 and it is possible that they may have began to cause considerable subsidence to flooring. It may therefore have been decided that because of this and because of the limited useable space within the building, the burial of adults should be banned and that only youngsters be allowed the privilege of burial in this area during Phase 4 because of their special association with Mary.

There was no evidence of coffins having been used during this phase but the dominant burial position of lower arms being slightly inclined towards or over pelves could be regarded as being indicative that many bodies may have been firmly wrapped in shrouds. Some additional suggestion for such a mode of burial is perhaps provided by SK 82 and SK 122, who had been buried with the head at the E end of the grave and face-down respectively.

Burials: SK 73, SK 82, SK 104, SK 105, SK 107, SK 109, SK 110, SK 122, SK 123, SK 125, SK 126, SK 130, SK 133, SK 135-137, SK 140-142, SK 145, SK 147, SK 149, SK 157.

PERIOD 2, PHASE 5 BURIALS WITHIN CHAPEL

The only evidence of a third burial sequence within the chapel lay in the SE corner. Initially skeletal remains appeared to be confined to a single roughly rectangular cut feature (7048) which measured c 2 x 1.50 x 0.50m. It had been cut through the Phase 4 soil (7054) and had a distinctive grey brown sandy clay fill containing gravel and mortar inclusions. In spite of the apparent uniformity of fill, irregular

cuts at a low level along the W end of the feature and the positions of four articulated skeletons one to another showed that a series of intercutting burials was involved in the complex.

The remains consisted of four skeletons (SK 75, 76, 106, 108) which were aligned E-W in the normal fashion, together with disturbed bones and five skulls (SK 77-80, 102). One of the disarticulated skulls (SK 80) might be that of SK 106 and two others (SK 78, 102) those of Phase 3 SK 121 and SK 127. A possible total of six burials may therefore have been involved which, at the time of excavation, seemed to accord with the total number of bones present. The probable interment sequence appeared to be as follows: two burials, represented by some of the redeposited bones and SK 77 and SK 79 (skulls only), which were overlain by SK 106 and SK 108, which in turn were overlain by SK 76 and SK 75 respectively. Obviously the earliest two may have been disturbed Phase 3 inhumations but the other four can only have been interred during Phase 5.

Because of their burial in the prestigious SE corner of the chapel, SK 106, SK 108, SK 75 and SK 76 are probably those of influential people. More specifically, they could even be those of a family that patronised the chapel. The intensity of burial within the small area and the ages of the individuals involved (all were adults) would appear to give some additional substantiation for such a possibility. For stratigraphical reasons the burial group is likely to date to the later 14th century and as the chapel lay within the gift of James Douglas of Dalkeith in 1401 it is tempting to suggest that the Phase 5 graves were those of his or his wife's ancestors. However, as it is not known whether James inherited or bought the property, the burials could be of an unrelated family. At the time of excavation it was considered that the remains may have been those of Carmelites who had been allowed use of the chapel prior to it being officially given to the order in the early 15th century. However, as SK 75 and the disarticulated skull SK 79 are believed to be of females

this would not now seem to be possible.

Although nails were recovered from the feature (7048) it is believed that they had been disturbed from the underlying Phase 3 burial SK 121 and perhaps others, rather than being directly associated with any of the Phase 5 ones. The presence of three lace-ends in the fill (see Chapter 9.1, 9.5) suggests that at least one of the bodies may have been bound or sewn into some type of burial covering or shroud. This is the earliest occurrence of finds of this type in a grave-fill and it could be argued that they could have been deposited by accident. Nevertheless, as many others were found in grave-soils and Period 3 graves, it is possible that their presence in the Period 2, Phase 5 feature is indicative of some kind of an shrouded burial. The slightly slumped attitude of SK 76 and the positions of the arms across the chest are perhaps suggestive that it is the most likely of the four relatively complete skeletons to have been buried within a shroud.

The Phase 5 graves are the last indications of pre-friary use of the chapel. Although the building was to become the nave of the friary church in Period 3, Phase 6 and as such is believed to have been used as a church, probably by a confraternity, during the friary period it is noteable that no burials assignable to this later period were found within its confines. The reason for this is not known although the area may merely have been regarded as being too crowded to take more graves. There may even have been some verbal understanding with the Carmelites that the Period 2 inhumations within the old chapel should not be disturbed.
Burials: SK 75, SK 76, SK 77-80, SK 102, SK 106, SK 108.

PERIOD 4 BURIALS WITHIN NAVE OF FRIARY CHURCH
Although the pre-friary chapel, which became the nave of the friary church, was not used for burial during the friary period, a few inhumations were inserted during Period 4 when the building lay in

decay and in the case of SK 35 while part of the S wall foundation was being robbed of stone.

As has already been discussed it is possible though unlikely that inhumations SK 73, SK 135 and SK 207 are of Period 4 rather than of Period 2, Phase 4 date. However there was no doubt that SK 74, SK 81, SK 101 and SK 103 are of Period 4 date because either they were seen to have been cut through decay and primary destruction levels or were located during the removal of these deposits. The c 0.11 - 0.25m deep graves were orientated in the usual E-W direction and one (SK 81) had been roughly covered by a few broken flooring slabs which had been gathered together from the Period 4 rubble.

The four skeletons are of youngsters and the oldest appears to have been only aged 16 months at the most. Their burials and others of this period shows that the friary site is likely to have continued to be regarded as a holy place during the later 16th and early 17th centuries.

There was no indication from finds or the positions of skeletons and arms that the four youngsters had been buried in coffins or shrouds.

SK 35, that of a young adult male, lay E-W in a Period 4 robbing cut of the S foundation walling of the nave. The skeleton was articulated and complete apart from most of the skull although a few cheek bone fragments were recovered. There was no sign that force had been used to remove the skull and its absence cannot be satisfactorily explained. Even the presence of a skeleton in a feature of this kind cannot be accounted for adequately. Just conceivably, it could be argued that the skeleton may have been found in a tomb or a grave built into the S wall while the building was being demolished although no evidence of features of this type were located during the excavation. The skull may have fallen off, been smashed and lost

before the other remains were identified, which would explain its absence in the robbing trench but not the articulated condition and position of the skeleton unless the body was still relatively sound and was still securely wrapped within a shroud when it was reburied. Unfortunately, there was no clear evidence that the skeleton had been shrouded and its presence in the robbing cut remains unresolved. This find may be compared with the discovery of SK 13 in the backfill of a ditch at Perth (see Chapter 6.2).
Burials: SK 35, SK 73, SK 74, SK 81, SK 101, SK 103, SK 105, SK 207.

GRAVES WITHIN CHANCEL OF FRIARY CHURCH

INTRODUCTION

Graves, mostly cut into natural clay to depths between c 0.20 and 0.49m, were located throughout the area enclosed by the chancel of the friary church. However, excavation was not complete because some of the stone flooring slabs were left undisturbed and because weather conditions together with the pressure of time dictated that two skeletons could not be fully investigated or removed.

PERIOD 2 BURIALS WITHIN CHANCEL OF FRIARY CHURCH

In this area only a line of three burials (SK 53, 100, 131) an adult, an old juvenile and a young adul ?male respectively, can be attributed to Period 2 with some confidence. These were either overlain by or, in the case of SK 100, lay under the line of a Period 3, Phase 6 N-S cross-wall (5045) near the W end of the chancel. The clearly squared ends of the three E-W graves and the presence of iron nails in two fills (SK 100, 131) indicate that they, like the Period 2, Phase 3 one (SK 121) within the chapel are likely to have been coffined inhumations. Part of a copper pin, from the fill of the grave of SK 53, is probably best regarded as being a fortuitous find rather than as being evidence of a shroud having been employed.

DISCUSSION

These burials make up three of the total four inhumations outwith the

chapel demonstrably of Period 2 date. It is perhaps unlikely that the ground E of the pre-friary chapel was much used for burial during this time because no other graves were overlain by or had been cut by Period 3, Phase 6 constructional activities. In addition, few redeposited bones, compared with other areas, were recovered from Period 3 burials within the chancel. From general site stratigraphy it would appear that the three interments were undertaken sometime between the mid 13th century and the end of the 14th century. Burials: SK 53, 100, 131.

PERIOD 3 BURIALS WITHIN CHANCEL OF FRIARY CHURCH

Fourteen chancel graves (SK 1, 41, 42, 54, 58, 59, 62, 64, 65, 83, 84, 91, 113, 115) are believed to be of Period 3 date. Although the grave of SK 64 was seen to have been cut through the grave of SK 91 both appear, along with SK 113, because of other stratigraphical reasons, to be early Period 3 interments. They could even be of Period 2 date but the lack of sufficient relationships between them and the chapel precludes their inclusion in that grouping. Other early inhumations are SK 59 and SK 84 which had been cut by later Period 3 graves. Burial SK 54 is likely to have been dug prior to Period 3, Phase 10 because it appeared to have been overlain by a N-S wooden partition of this phase, although the presence of the latter was only indicated by a Period 4 robbing cut (5059). All the graves were aligned E-W respecting the orientation of the building and the positions of the nine later Period 3 burials (SK 1, 41, 42, 54, 58, 62, 65, 83, 115) which seemed to form part of an organised and planned pattern of burial consistent with what might be expected within the chancel of a friary church.

It would appear that only approximately twenty persons are likely to have been buried within the chancel during Period 3. The total is relatively small considering that the period is likely to have spanned c 140 years during the 15th and 16th centuries. It is therefore probable that inhumation within the chancel of the friary church was

reserved for those who were highly esteemed or who patronised the friary in some manner (see Chapter 7.1). Burial SK 1, that of a young adult female, was located N of the altar and was the only interment present within the presbytery. She must have been especially regarded to be buried in such a prestigious position.

The Period 3 chancel inhumations vary in age between a foetus of 5-9 months (SK 42) and two young adults (SK 41, 65) and a middle aged adult (SK 83). Seven out of eight adult skeletons were sexable; there were five males, (SK 41, 54, 65, 83, 84) and two females (SK 1, 58). Only a child (SK 62) had been laid out with its arms at its sides. Of the eight others, where the positions of arms were readily discernible, seven (SK 1, 54, 58, 59, 64, 65, 115) had at least one arm laid over the pelvis and one had both of his positioned over the lower chest. There was no evidence suggestive of coffined or shrouded burial. A grave-like, though elongated, E-W feature (5161) was found not to contain a skeleton. Either one had been removed for burial elsewhere or the grave had never been used.

DISCUSSION

The main impression given by most of the Period 3 chancel burials is that they had been positioned with some care, which contrasts markedly with inhumations in other areas of the site. However, this planned organisation does not appear to have extended to the burial of husbands and wives close to one another. The proportion of five male to two female inhumations in this area does not appear to be significant because of the small total involved.

Burials: SK 1, SK 41, SK 42, SK 54, SK 58, SK 59, SK 62, SK 64, SK 65, SK 83, SK 84, SK 91, SK 113, SK 115.

PERIOD 4 BURIALS WITHIN CHANCEL OF FRIARY CHURCH

Only three graves within the chancel area (SK 34, 39, 40) can be assigned to the post-friary Period 4. Broken roofing slabs and pieces of mortar in the grave-fills of SK 39 and SK 40 and the location of SK

34, above the S wall remnants (5030), together with the level at which it was identified, show that the three graves had been dug after the friary had been much destroyed. Nevertheless, sufficient of the building is likely to have existed at this time to allow the graves to be properly orientated. It is therefore likely that they date to between 1559 and 1624.

The three burials consist of a baby (SK 34), a sub-adult male (SK 39) and a young adult female (SK 40). SK 40 had been interred with her arms at her sides in the normal E-W fashion but the sub-adult male had been buried supine with his arms over his pelvis and with his head at the E end of the grave, the reverse of the normal position.

DISCUSSION

At the time of excavation it was thought possible that burials with heads at the E ends of graves might signify that ecclesiastics, such as friars, could be involved; the idea being that they would sit up to face the laity on the day of judgement. However, this theory no longer seems credible because two skeletons laid out in this direction have been identified as female. The only other apparently feasible explanation for the unusual burial position of SK 39 is based on the presence of five lace-ends in the grave-fill. Should these have been used in the binding of the body in a shroud and it was then transported some distance for burial then the positions of head and feet may have been difficult to determine. This could have resulted in such an abnormal burial position. It may therefore not be fortuitous that lace-ends and wire twists were also found in association with two of the other reversed burials.
Burials: SK 34, SK 39, SK 40.

GRAVES N OF FRIARY CHURCH

Although it was obvious that all the machined area N of the friary church had been intensively used as a graveyard, only a small part c 11 x 1.80m could be investigated in the time available. At excavation

an identifiable total of thirty-two skeletal groupings (SK 36, 37, 63, 66-72, 85-90, 92-99, 111, 112, 114, 117-120, 132) were found but only thirteen of these were relatively complete with a baby, two children and ten adults being represented. Only two grave-cuts were identified in the well mixed cemetery soils and both contained adult skeletons (SK 66, 70). The age range varied between infants and adults with a high proportion of immature individuals being present. Only nine of the total could be sexed with some degree of certainty. Three males (SK 70, 112, 117), one ?male (SK 98), two females (SK 37, 68) and one ?female (SK 66) were identified. Two articulated skeletons of a sub adult female (SK 37) and an old juvenile (SK 85) had been laid with their heads at the E ends of graves similar to SK 39. Where discernible, the positions of arms were mostly over pelves.

DISCUSSION

The intensity of burial outwith the friary church compared with inside it indicates that the N chancel wall was being respected so it is therefore likely that most of the graves in this area are of Period 3 date, early 15th to mid 16th century. Because of the general lack of stratigraphy some could even post-date the friary period should the graveyard have continued in use after the Reformation.

A number of lace-ends and wire twists were found during the removal of one of the soil spits (5125) and their locations suggest that they could relate to SK 36, SK 37, SK 86 and SK 99. As has been discussed above in the section dealing with Period 4 chancel graves, it is thought that these types of objects may have been used to bind bodies into shrouds.

Burials: SK 36, SK 37, SK 63, SK 65-72, SK 85-90, SK 92-99, SK 111, SK 112, SK 114, SK 117-120, SK 132.

Associated finds: Twisted wire rings 219, 221.

GRAVES E OF FRIARY CHURCH

The limited area investigated to the E of the church was without doubt

part of the same graveyard sampled to the N of the building. The burial area clearly extended further N and E beyond the excavation but seemed to end roughly in line with the S wall of the church. Forty-seven skeletal groupings, (SK 2-33, 43-52, 55-57, 60, 61) were identified during the removal of c 0.35m of basal soils. The intensity of burial was such in the c 5 x 2.40m area that only the remains of thirteen individuals, a baby, two children and ten adults were reasonably complete. Just part of a single grave-cut (5121) associated with burial SK 61 was located. The age range represented was similar to that of the N area, with most examples falling within the foetus to young adult range. Only three (SK 7, 15, 26) definitely survived into middle age. Of the twelve sexable individuals, nine females (SK 4-7, 10, 17, 19, 32, 60), one ?female (SK 15) and two males (SK 26, 27) have been identified. Some preference may therefore have been given to the burial of women and youngsters in this part of the cemetery, although the area excavated was too small to be certain of the possibility. The skeletal remains were too disturbed to ascertain whether or not there was a dominant arm position.

DISCUSSION

Most of the graves E of the friary church are likely to be of Period 3 date for the same reasons given for those located N of the building. Here too the absence of significant stratigraphy means that a few may be of Period 4 date (see also above Discussion of Graves N of friary church).

Although no reverse burials were located in the E area, three (SK 4, 7, 19), all females, had been interred in prone positions. One, SK 19, may have died in a fire (see Chapter 7.5, Ill 82). These unusual burial positions may again have resulted from the use of shrouds. It may not be coincidental that again numbers of lace-ends and wire twists were recovered from the graveyard soil and that seven of these objects were believed, at the time of excavation, to be associated with SK 7 and one with SK 3.

Burials: SK 2-33, SK 43-52, SK 55-57, SK 60, SK 61.
Associated finds: Twisted wire ring 220.

GRAVES ASSOCIATED WITH E RANGE

PRE-PHASE 10 BURIALS ASSOCIATED WITH E RANGE

S of the chancel four c 0.30m deep grave-like features were excavated. All pre-dated the construction of the E range of buildings in Phase 10 and three underlay the range itself. Part of a child skeleton (SK 116) lay within a rock-cut grave. A similar feature (6250) was mostly overlain by a Phase 10 wall which was not removed. As a result it is not known whether or not 6250 contained a skeleton, although its size and E-W alignment are suggestive that it may have. Another grave-like feature (6189) had been dug until bed-rock had been reached at an average depth of c 0.31m. No skeletal remains were present and it is possible that the digging of the feature may have been abandoned because of the difficulty of continuing further into rock or alternatively because the leg bones of SK 116 had been encountered. Only the legs and feet of the other E-W burial (SK 173), an adult, survived, as its W end had been destroyed during the construction of the E wall of the Phase 10 building. No significant finds were recovered from the four features.

DISCUSSION

Little can be said of these burials except that they are likely to be medieval rather than earlier in date and that they had been dug prior to the third quarter of the 15th century when the building was constructed.

Burials: SK 116, SK 173.

PERIOD 4 BURIAL ASSOCIATED WITH E RANGE

The grave of SK 38 had been cut into Period 4 E range demolition deposits in the SE corner of Room 2, the sacristy, to a depth of c 0.20m, so it clearly post-dates the destruction of the building. Because the walls are likely to have still stood to some height for

the grave to have been positioned so accurately, the burial is likely to date to between 1559 and 1624, like some others of Period 4 date located within the church (see above).

The E-W inhumation was of a foetus or very young infant who had been buried with the head at the E end of the grave. Whether it had been wrapped at burial or whether it was felt that the S and E walls would afford some kind of protection to the head positioned in this direction can only be speculated.
Burials: SK 38.

GRAVES WITHIN CLAUSTRAL AREA

INTRODUCTION

Burials excavated within the claustral area lay between the church and the line of gulley 6670. They became visible as spits, mainly of clayey subsoils, were removed. Many grave-cuts were quite shallow and may have been dug from higher levels than identified. Some had been cut into natural clay and some into bedrock. As the fills of the latter contained considerable quantities of broken doleritic stone these may have been recognised earlier in the excavation than those with less distinctive fills. The total number excavated can only be regarded as being a sample because other unexcavated graves were identified towards the W side of the claustral area. It is impossible to be certain but four main burial cycles appear to be involved.

PRE-PHASE 8 GRAVES WITHIN CLAUSTRAL AREA

Many of the earliest grouping of twelve inhumations (SK 185-189, 192, 194-197, 202, 204) were overlain or cut by claustral features considered to be possibly of Phase 8 date. Some doubt exists as to whether these intrusive features are of Phase 8 or earlier date so this burial cycle cannot be accurately dated (see Chapter 5.2). Some individuals may even have been buried during the chapel Period 2.

The graves, which were aligned in the usual E-W direction,

survived to depths between c 0.10 and 0.54m. Mostly juveniles and young adults were found but an infant of 1 - 2 years (SK 187) and a middle aged adult (SK 204) have also been identified. All three sexable individuals are female (SK 185, 192, 197). One young adult female (SK 192) had been interred with her head at the E end of the grave (see Period 4 burials within chancel for discussion of this type of inhumation). All the skeletons were supine and clearly six had been laid out with arms over pelves, similar to many Period 3 examples elsewhere. No finds of significance were recovered from grave-fills.
Burials: SK 185-189, SK 192, SK 194-197, SK 202, SK 204.

PERIOD 3, PHASE 9 - 12 GRAVES WITHIN CLAUSTRAL AREA
Ten burials (SK 179, 180-184, 190, 198, 199, 201) can be assigned to Phases 9 - 12. They have not been more specifically phased because such small numbers are involved. All clearly pre-date the construction of the W range and associated walk in Phase 13 so the graves are therefore likely to date to the later 15th century.

Like the pre-Phase 8 examples, these burials had been cut into natural clay and rock. They too were approximately aligned E-W although two of them (SK 190, 201) were much less accurately orientated than normally. The unusual alignments of these rock-dug graves probably resulted from the cuts following the natural break-lines within the basalt.

The age range involved varied between an infant of 6-12 months (SK 179) and an old adult (SK 182). Of the four sexable examples, two have been identified as male (SK 182, 199) and two female (SK 181, 183). Where the evidence was clear, four (SK 182-184, 199) had their arms by their sides and two (SK 181, 201) had their arms laid across their chests. No significant finds were recovered from grave fills.

7.2 LINLITHGOW. THE BURIALS (cont)

DISCUSSION

Although burial within the claustral area was much less intense than in the main graveyard N and E of the church, there was no evidence of preferential or selective interment on grounds of sex or age in the former location during this or other Period 3 phases. Inhumation within the claustral area may have been more desirable than in the cemetery, but may have been more dependent on wealth or social standing rather than other factors.

Burials: SK 179, SK 180-184, SK 190, SK 198, SK 199, SK 201.

LATER PERIOD 3 AND PERIOD 4 GRAVES WITHIN CLAUSTRAL AREA

This small group of burials could not be precisely phased. The main difference between the five graves included in this section (SK 171, 174-177) and the Phase 9 - 12 examples was that their grave-cuts were isolated at a higher level than those previously discussed. The more readily distinguishable grave-fills of some may have assisted their earlier identification than elsewhere so it is feasible that these could be more or less contemporary with the Phase 9 - 12 ones. Because of the lack of securely sealed stratigraphical deposits it is even possible that some may post-date the friary occupation of the site and be of Period 4 date. Therefore, it would appear that the inhumations could date from the later 15th to the early 17th centuries.

Like the earlier interments in this area the five graves were orientated E-W and had been dug into natural clay and rock. They have been identified as the burials of two young juveniles (SK 171, 174), an old juvenile (SK 177), a middle-aged adult male (SK 175) and a young adult female (SK 176). Three (SK 174, 175, 177) appeared to have been interred with arms over pelves while one (SK 176) had hers placed over the lower chest. No finds of interest were recovered.

Burials: SK 171, SK 174-177.

MODERN SKELETAL GROUPS WITHIN CLAUSTRAL AREA

Within the claustral area only two skeletal groupings in pits appeared

to have resulted from the reburial of human remains disturbed in relatively modern times. One (SK 178) contained the skull of an old juvenile and the other (SK 203) a group of skulls and assorted limb bones. The second grouping is likely to represent parts of skeletons found during the digging of a field drain which lay just N of the pit. No finds of interest were recovered from the two features.
Burials: SK 178, SK 203.

BURIALS W OF CHURCH

Only two burials W of the church were excavated, although others existed N of Building 2. The earlier (SK 205) is likely to be of pre-Phase 3 Period 2 date because it was sealed by later Period 2 and Period 3 flooring horizons. The grave, which was roughly aligned E-W, was c 0.25 m deep, contained the skeletal remains of a child aged 3 - 5 years. The skeleton lay supine with the arms laid at its sides. The only find of any interest was a lace-end.

The other burial (SK 206) is likely to be of post-friary date, Period 4, because it had been inserted over the foundation of the N wall of Building 2. No definite grave-cut was found but the supine skeleton was orientated in the usual E-W direction. The remains have been identified as being those of a 4 - 8 year old child. No significant finds were recovered.

DISCUSSION

The major absence of burials directly W of the church is not surprising because for much of Periods 2 and 3 the area was occupied by Buildings 1 and 2.
Burials: SK 205, SK 206.

CONCLUSIONS

There can be no doubt that most of the Linlithgow burials are of individuals who had lived locally. However, some considerable doubt exists as to whether the human remains are a truly representative

cross-section of the inhabitants of the burgh and its immediate surrounding, especially with regard to Period 2.

As has already been discussed, the presence of such a large proportion of female and youngster burials within the pre-friary chapel during Phases 3 and 4 strongly suggests that the chapel catered for the religious needs of a particular group of the local population. In an age when infant mortality would have been high a religious establishment associated with the Virgin Mary would have held a special attraction for younger females desirous of children, especially if they had already suffered the loss of offspring. Many such individuals are likely to have belonged to the poorer and less well nourished section of the local community. The major lack of grave goods during Period 2, apart from a copper alloy ring on a disarticulated finger bone (232), together with the use of only four coffins appears to provide some substantiation for these burials belonging to such a group of people. However, it must be remembered that no succeeding Period 3 friary burials were found to be coffined.

It is not known whether or not the same section of the local populace would have been allowed continued use of the chapel when it was given to the Carmelites in the early 15th century. However, it is probable that when the building was extended and converted into the friary church the friars would have had ample space for their religious ceremonies in the chancel leaving the nave free for the use of such a group of laity. With the church continuing to be dedicated to the Virgin, on-going use may have indeed been permitted to laymen.

7.4 PERTH. THE COFFINS AND OTHER WOOD SAMPLES W E BOYD

SUMMARY OF SAMPLES

Samples were submitted from the following ten contexts.

15 - top timber, possibly modern

41 - demolition material from outside Building 1, possibly coffin, Period 3

77 - associated with SK 7. Period 4

90 - coffin. SK 7. Period 4

108 - backfill of 107 robber trench of E wall of Building 3. Period 4

136 - demolition material overlying Building 1. Period 3

142 - backfill of drainage ditch 141. Period 3

146 - dump layer of clay between floor layers. Building 3. Period 2

169 - coffin. SK 10. Period 1

207 - coffin Building 1. SK 20. Period 1

METHODS

The identification of wood species was undertaken by examination of the internal anatomy of the wood sampled, viewed under low-to medium-power binocular microscopes (x16 to x250 magnification) and, if possible and/or necessary, in thin section under ordinary light at x130 to x300 magnification. Identification is by reference to keys and illustrative material in Phillips (1948), Greguss (1959) and Schweingruber (1982), and to a collection of reference material held in the Department of Botany, University of Glasgow.

THE COFFIN SAMPLES

90. This consists of three subsamples of wood fragments.

Coffin slats. There are over 100 small fragments and around twenty larger ones, the largest measuring 45 x 20 x 3mm. These are thin radial slivers which are generally in a poor state of preservation, and hence identification is difficult, although all are probably Quercus (oak). The wood tends to be distorted and, in some cases, partially carbonised.

Coffin sides. These are similar fragments, the largest being 45 x 10 x 2mm in size. Again they are radial slivers of a dicotyledonous wood, probably Quercus, and the wood is distorted and partially

carbonised.

Coffin lid. This subsample is quite different to those above. There are around twenty small fragments and four large ones, the largest being 130 x 35 x 5mm in size. The outer parts of the wood are darkened to a medium brown, but there appears to be no distortion of the wood structure. The inner parts have retained the original light colour and a fresh 'woody' smell. These are tangential slices of Pinus sylvestris group wood (includes Scots pine; for discussion of wood species identification, see below).

169. The wood from this coffin caused some difficulties in identification. Many of the fragments are partially carbonised, dry and distorted radial slivers, identified either as dicotyledonous wood or cf. Quercus. There are three larger fragments which are quite different. These measure 450 x 50 x 12mm, 215 x 125 x 22mm and 195 x 145 x 19mm. The latter two resemble the ends of thin planks. They are all tangential slices of wood, identified as Pinus sylvestris group. The wood is in a very fresh and undistorted state, although occasionally with slight darkening in the outer parts. They all have, however, an outer layer of quite different material, which in places entirely surrounds the fresh wood. This material has a woody structure, but is carbonised, possibly in places mineralised, and severely distorted. It has all the appearance of metamorphosed (in the geological sense) wood. Further identification is not possible. The radial components of this wood run at right angles to those of the internal fresh wood, and the material entirely envelops (or did) the fresh wood. This may explain the obvious freshness of the Pinus wood. It is not possible to determine whether the outer material is some form of treated Pinus wood (heat hardened?, chemically treated?, tarred?...) or is a separate substance, perhaps being treated bark or veneer wood. This problem recurs below (samples 142 and 146) where similar material is identified as Pinus sp. and P. sylvestris group. It may, therefore, be suggested that the material in sample 169 represents the outer parts of Pinus wood boards which have been subjected to some form of treatment sufficient

to alter the fabric of the wood.

207. This coffin (Ill 52, 53mf) was recovered almost entirely intact, and most of the major constructional components can be identified (six bottom boards, two sideboards and one endboard) as Quercus wood. The boards are radially-split, being typically wider along one edge than the other. The numerous fragments of the lid differ from the rest in that they are considerably thinner, and also by being partially carbonised. They are also radially-split boards of Quercus.

Possible coffin wood

41. This sample comprises three large board fragments, of maximum dimensions 410 x 155 x 21mm, 480 x 160 x 25mm and 560 x 205 x 27mm (length x width x thickness). These are all identified as Quercus, and are tangential boards, showing radiating rays in cross section. They are probably sawn rather than split boards. They also have bevelled edges, with the slopes at either edge lying toward opposite surfaces. One fragment has two almost circular peg holes which taper slightly and have sloping margins on one surface. These fragments are thicker than most of the 207 coffin boards, although of similar size to the 169 coffin wood. They are defined as fragments of board or thin board (Crone and Barber 1981, fig 2) and following Crone and Barber's functional classification of timber (1981, fig 3) are likely to have been used as sheeting, wall panels, joinery etc. rather than as structural planking, flooring etc.

MISCELLANEOUS SAMPLES

15 - top timber possibly modern. This sample is composed of one large fragment plus sixteen medium-sized fragments, all being, probably, parts of one original fragment. The main fragment is a tangential slice of Pinus sylvestris group, securely identified as P. sylvestris (Scots pine; see below). The largest fragment is 302mm long, being 70 x 30mm in cross section. Following Crone and Barber (1981) this is defined as a strip, used as a small, general purpose timber. It is clear that this has been used, there being six nail

holes, all containing the remains of nails and, except one, having been driven through from one side. The nail shanks are rectangular in section. The nails were all originally longer than the thickness of the wood (maximum 32mm). One small fragment has a nail inserted into its end.

Three of the medium-sized fragments, sampled separately at the excavation from the rest, were also identified. These are hard fragments, preserved due to iron oxide (rust) contamination of the wood, with all three having nails emplaced through the wood in a radial direction. One may also have a second nail emplaced horizontally. The fragment sizes are 43 x 41 x 25mm, 47 x c 45 x 15mm and 70 x 30 x 22mm. The wood was difficult to identify, but is Pinus sp., probably P. sylvestris group.

77 - associated with SK 7. One straight branch fragment was recovered. This is 320mm long, with a maximum diameter of 40mm, but generally being c 35mm in diameter. One end may be sharpened, with two long (160 and 165mm) high-angle cuts on opposite sides defining a moderately sharp edge (rather than point) at this end. The other end may also be worked, with two squared incisions c 8mm wide by 14mm deep being cut into the outer wood. The inner wood has decayed away, thus not allowing it to be seen whether the two incisions originally formed a squared cleft across the top of the fragment. The wood is identified as Prunus avium (wild cherry), and this branch fragment may have formed some type of small stake or peg.

108 - backfill of robber trench of E wall of Building 3. This sample consists of two small branch fragments which display the characteristics of growth within a hedge. The fragments are twisted and distorted, and there are compression indentations caused by the nearby growth of other branches (Boyd 1984). The fragment dimensions are 110 x 19mm diameter, and 100 x 13mm diameter, and there is no evidence for cut marks. Bark is present, and there may be three growth rings, although this is unclear. The wood is identified as that of Crataegus (hawthorn), and is probably derived from a nearby

hawthorn hedge.

136 - layer of demolition material overlying Building 1. This is one fragment of wood, 69 x 23 x 12mm in size, which survives since it is knotwood. Identification is Taxus baccata (yew). This is interesting, since Taxus has a strong tendancy to be associated with religious sites, and was certainly planted during medieval times (Godwin 1975, 117). However, as a fossil whether or not asscciated with archaeological sites, it is recorded by neither Godwin (1975) nor Coles et al (1978) in Scotland. Perring and Walters' (1976) distribution map of its natural occurence indicates its relative scarcity in Scotland, and it is therefore probable that the fossil recorded in this sample represents a planted yew tree in the church grounds (cf Hulne (Hope 1890, 117) and Muckross, Kerry (Leask 1960, fig 38)).

142 - backfill of drainage ditch 141. This sample consists of a large quantity of medium-sized wood fragments, some of which may be wood-working off-cuts. A small sub-sample of these was examined, and are best discussed under species headings.

Pinus. Three fragments are identified as Pinus. One fragment, 140 x 40 x 15mm, is wood of P. sylvestris group, whereas for a second, identification is less certain, being Pinus cf. sylvestris group. Neither of these fragments has any indication of working, although the latter, 90mm long by 46 x 16mm in section, may represent lath or slatings, being small general-purpose timber (Crone and Barber 1981). This fragment is a semi-tangential slice. There are at least seven rings, and the curvature of these indicates a minimum value of the original wood radius of around 80 - 100mm, and at least twenty rings being present in the original wood.

The third fragment is quite different, and could only be identified as Pinus sp. This fragment, 215mm long by 55 x 13mm in section, is partially carbonised, the outer parts being almost entirely carbonised and the inner parts with fine-textured tissue

also being carbonised. In contrast the other two fragments are uncarbonised. The wood structure is distorted, and appears to have been sheared. This bears a strong resemblance to the Pinus wood in sample 169 (see above) although in this case (142) it is possible to see that all the wood is Pinus and is clearly one original fragment. Examination of this fragment raised the possibility that the shearing which causes the severely distorted wood may be related in the manner in which the original fragment was cut, although it is not felt that an adequate explanation has been found yet.

Quercus. Two fragments are identified as Quercus. One, 35 x 25 x 10mm in size, has no indication of wood-working, whereas the other, 50mm long by 75 x 12 - 25mm in section is a radial slice with one possible cut end and a cut running across one face, inserted to about half the width of the fragment.

Fraxinus. Three fragments are identified as Fraxinus (ash). One is a tangential slice, 90mm long by 38 x 15mm in section, with a possible cut surface sharpening off one end. Eleven rings are present, and the curvature of these indicates a minimum value for the original branch radius of around 50mm, with at least thirty-five rings being present. The second fragment, 87mm long by 35 x 8mm in section, also has a probable cut end, and the third fragment, a radial slice 74mm long by 56 x 8mm in section, has a cut incised into about half the fragment thickness, which runs diagonally across one face.

The Quercus and Fraxinus fragments probably represent wood-working off-cuts, and given the presence of Pinus wood in this sample which is in a similar state to some of the coffin wood, the Pinus wood in this sample may also represent wood-working waste.

Prunus. One very distorted fragment was difficult to identify, but is probably Prunus padus or spinosa (bird cherry or blackthorn). This fragment may come from the base of a branch on the original tree and exhibits no indication of wood-working.

7.4 PERTH. THE COFFINS AND OTHER WOOD SAMPLES (cont)

146 - dump layer of clay between floor layers. Building 3. This sample comprises the remains of four original fragments, all of which are of Pinus wood. One fragment, 61 x 27 x 7mm in size, exhibits many of the features of the 'sheared' Pinus wood described above for samples 169 and 142. In this case, as well as distortion of the original structures of the wood clusters of shear tears are present, these resembling the echelon-shaped cracks which develop in certain materials subjected to shear stress. Consequently, identification is difficult. The wood is certainly a conifer, strongly resembling P. sylvestris group wood. The remaining three fragments are not distorted in this way, and in shape bear a resemblance to each other. They are all elongate fragments, slightly elliptical or semi-elliptical in section. Although one fragment is readily identifiable as P. sylvestris group, the anatomical characters of the others are less clear, and identification to Pinus cf. sylvestris group only is possible.

SUMMARY AND NOTES ON WOOD IDENTIFICATIONS

The identifications are summarised in Table 4mf.

Wood of the two native British Crataegus species cannot be differentiated. However, on the basis of the phytogeographical distributions of the two species, it is highly probable that Crataegus monogyna Jacq. (hedgerow hawthorn) is represented in sample 108 (Rackham 1980; Clapham et al 1981).

Fraxinus excelsior L. (ash) has distinctive wood anatomy characters, and is the only species of Fraxinus in Britain.

The wood of the conifer species Pinus can cause some difficulties in identification. There are seven groups of Pinus wood types, which include the wood of Pinus species worldwide (Phillips 1948). The Pinus sylvestris group includes several species, the wood of which may be differentiated on the basis of certain fine anatomical detail (Greguss 1959), although in practice, this is not always possible. Of interest here is the presence, within this group, of P. sylvestris L.

7.4 PERTH. THE COFFINS AND OTHER WOOD SAMPLES (cont)

(Scots pine), P. resinosa Ait. (the North American Canadian red pine) and P. nigra Arnold (the southern European Corsican pine). Of these, P. sylvestris is the only native British pine, and it is highly probable that this is represented in the samples from the Perth friary site. Indeed, the wood in sample 15 is sufficiently well preserved to allow a firm identification to P. sylvestris. North American wood can be drifted across the Atlantic, and has been shown to be used in the past in British prehistoric sites, especially coastal ones. However, consideration of the North Sea currents indicates that such wood is unlikely to occur along the central and S parts of the E seaboard of Scotland (Graham 1952). Wood of P. nigra and, for that matter, of the many other European pines, is unlikely to be drifted to Britain. However, trading imports must be considered. The most likely wood in the P. sylvestris group to be imported into E Scotland is P. sylvestris itself, which grows abundantly in Scandinavia and around the Baltic shores (more abundantly than in Scotland), but is absent along most of the S shores of the North Sea (Jalas & Suominen 1973). Unless trade with the Mediterranean countries occurred, the import, on the other hand, of wood of P. nigra is unlikely.

The wood of Prunus species is often difficult to differentiate, and although in this case Prunus avium L. (wild cherry) has been identified with a high degree of certainty in sample 77, the sample 142 wood identification must remain slightly uncertain, since it was not possible to examine the fibre tissue components adequately (Schweingruber 1982, 135). This latter wood is either of P. padus L. (bird cherry) or P. spinosa L. (blackthorn). All three Prunus species are native to Scotland.

The wood of Quercus robur L. (pedunculate oak) and Q. petraea (Mattuschka) Liebl. (sessile oak), the two native oak species in Britain, cannot be separately identified, and the wood of one or both species may be represented here.

The wood of the conifer Taxus baccata L. (yew) is highly distinctive, and provides no uncertainty of identification. T.

7.4 PERTH. THE COFFINS AND OTHER WOOD SAMPLES (cont)

baccata is one of three native British conifer species, and is the only species in its genus (Phillips 1948). It grows throughout N and central Europe, as well as, to a limited extent, in Scotland. Its wood may have been imported, and its archaeological record in Britain indicates its use for non-constructional artifacts (Godwin 1975, 116-117; Hall 1982). However, Taxus has a strong tendency to be aassociated with religious places, and given the context of the Perth friary samples, the Taxus wood recorded here is highly probably to have been from a tree or trees growing in the friary grounds.

Table 4mf. Summary of wood identifications (+ indicates presence).

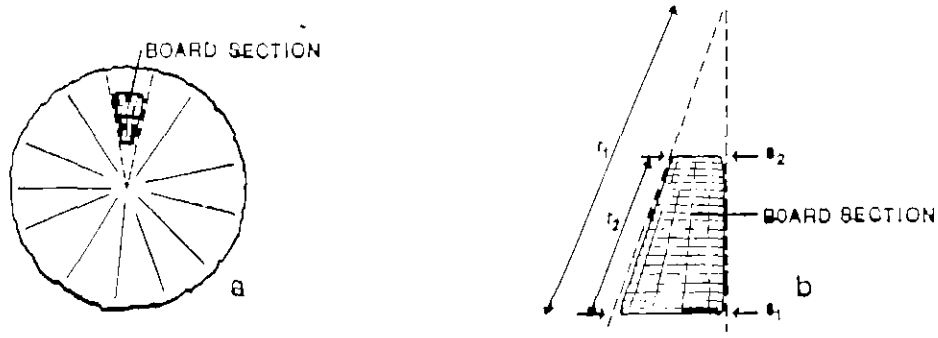
	COFFINS			POSSIBLE COFFIN WOOD	MISCELLANEOUS				
	90	169	207	41	15	108	136	142	146
Crataegus					+				
Fraxinus excelsior								+	
Pinus								+	
P. sylvestris						+			
P. sylvestris group	+	+						+	+
P. cf. sylvestris group						+		+	+
Prunus avium	+								
P. padus/spinosa								+	
Quercus	+	+	+	+				+	
cf. Quercus		+							
Taxus baccata							+		

Table 5mf. Coffin 207. Maximum dimensions of boards. The base boards are in order of relative position. All measurements are in cm.

Base Boards	LENGTH	WIDTH (Max)	WIDTH OF GAP	THICKNESS min	THICKNESS max
m	47.6	8.8		0.4	1.5
			9.5		
l	45.0	7.4		0.8	1.9
			10.0		
f	43.4	6.9		0.8	0.9
			13.5		
c	40.2	7.8		0.6	1.3
			13.0		
d	35.7	7.8		0.5	0.5
			16.5		
e	36.8	9.1		0.4	1.2
to end			17.5		
Sides					
a	>128.5	16.0		0.8	2.0
b	>131.0	17.0		0.5	1.3
End					
k	28.0	15.0		0.5	1.2

Table 6mf. Coffin 207. Data used and results of calculations of dimension of the original tree trunks from which boards were split. Measurements are in cm. See Ill 53mf for basis of calculations.

	BOARD DIMENSIONS thickness (max) s1	thickness (min) s2	width (max) r2	no. of rings per cm	ORIGINAL TREE TRUNK DIMENSIONS radius (min) r2	approx no of rings (min)
side boards						
a	2.0	0.8	16.0	4.8	26.7	127
b	1.3	0.6	15.8	6.3	29.3	183
base boards						
m	1.5	0.4	8.8	3.8	12.0	46
l	1.9	0.8	7.4	3.3	12.8	45
f	0.7	0.35	6.9	5.2	13.8	71
c	1.3	0.6	7.8	6.1	14.5	89
d	0.65	0.35	7.8	4.4	16.9	74
e	1.2	0.4	7.9	5.9	11.9	70
end board						
k	1.2	0.5	12.8	4.1	21.9	90



Ill 53mf Perth. Wooden coffins. Coffin 207. Calculation parameters for establishing minimum values of original tree trunk dimensions: (a) position of board section in relation to the original trunk or branch (b) measured parameters r_2, s_1 and s_2. r_1 is calculated from the equation $r_1 = s_1 r_2/(s_1 - s_2)$. Results of the calculations are given in Table 6mf.

7.6 THE SKELETAL REMAINS J F CROSS

DESCRIPTION OF MICROFICHE CONTENTS

The catalogues of the human skeletal remains from the three Carmelite friary sites are found on the following pages, together with the metric and non-metric data resulting from the skeletal analyses.

Each site has been presented separately in the following order: Aberdeen, Linlithgow, Perth. The information for each site has been divided into six sections namely: (1) the catalogue, (2) the minimum element count, (3) age and sex profiles, (4) the metric, (5) the non-metric data and (6) pathological conditions.

SECTION 1: CATALOGUE

Each catalogue consists of:

1.1 A record sheet for each 'SK' specimen

1.2 A list of matched bones

1.3 A list of disarticulated maxillae and mandibles

SECTION 1.1: Record sheets for the SK specimens

A record sheet has been completed for the specimens designated by an SK number during the course of the excavation. An SK number may be given to a complete or partially-complete articulated skeleton, to a disarticulated skull, or to an assemblage of commingled bones which may represent more than one individual.

An example of a blank SK record sheet depicting the main parts of the skeleton is shown in Ill 83mf.

Section 1.1.1: Record sheet diagram

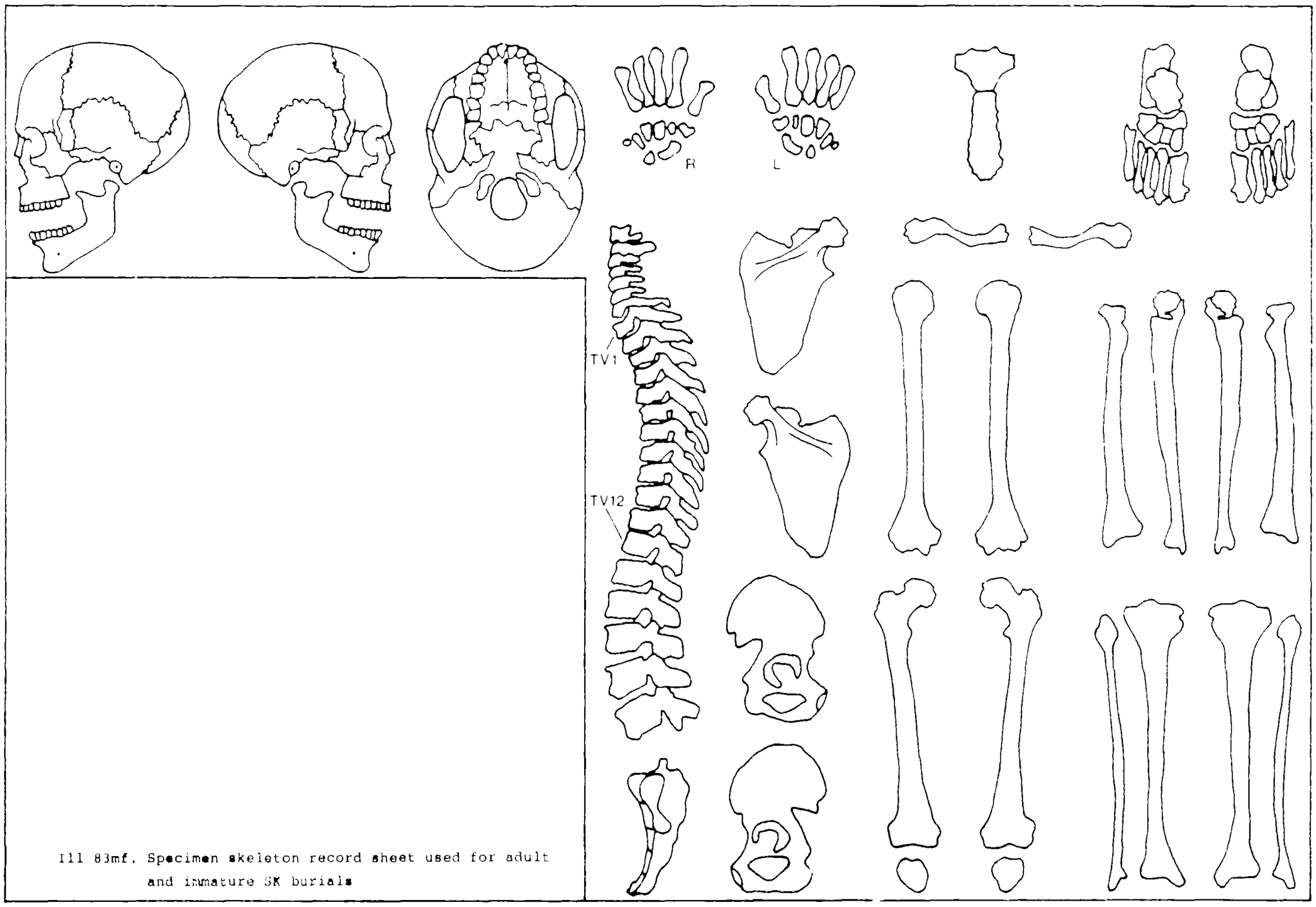
Ill 83mf shows a blank SK record sheet depicting the main parts of the skeleton. The appendicular elements are shown in the standard anatomical position, that is, the right-hand side of the skeleton is on the left-hand side of the diagram as one looks at it.

The parts of the SK specimen which have been identified and sided are represented by the white areas. There was no attempt to distinguish between broken or intact bones. If the bone or parts of bone were present, they were filled in. Missing parts of a damaged bone were left blank. Where skeletal elements are in a fragmentary condition (eg cranial vault, vertebral bodies, blade of the scapula or innominate), only readily identifiable features, such as the vertebral arch or scapular spine, have been filled in. It should be noted that other fragments may occasionally be present.

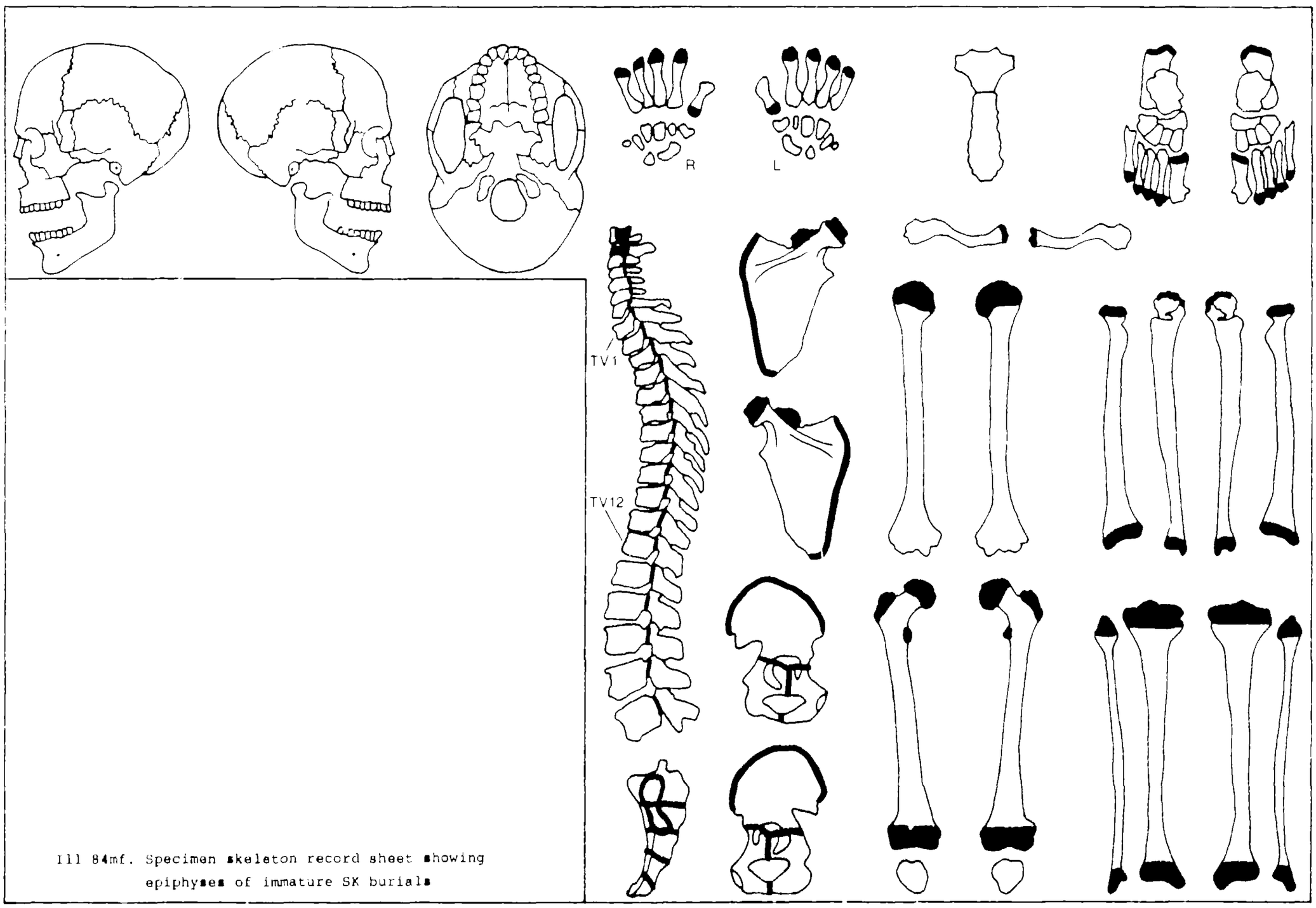
The orbits and teeth have been left blank on all the SK record sheets. The dental formula has been denoted in the record sheet text (see Section 1.1.3).

Immature SK specimens have been illustrated in a similar manner. The white areas on the SK record sheet in Ill 84mf represent the epiphyses of the immature SK specimens. If the epiphyses are present and have been identified, they have been filled in. If not, only the diaphyses have been completed. The smaller epiphyses, such as those of the spinous process of the vertebrae and the scale epiphyses of the phalanges, have not been included.

In those immature SK specimens where it was not possible to determine the sequence of vertebrae, metacarpals or metatarsals, no record was made on the record sheet diagram but a list of these elements is given in the 'Also present' part of the record sheet text (see Section 1.1.3).



Ill 83mf. Specimen skeleton record sheet used for adult and immature BK burials



Ill 84mf. Specimen skeleton record sheet showing epiphyses of immature SK burials

Section 1.1.2: Record sheet heading

Details of the site, SK specimen number and the specimen's estimated sex and age are given in the heading of each record sheet. Sex was determined from standard cranial and pelvic criteria (Bass 1987; Brothwell 1981; Krogman, 1962; Stewart, 1979). Where there was a discrepancy between the estimated sex from the cranial and the pelvic remains, greater weight was given to the pelvic evidence. Where the evidence was ambiguous, no sex was assigned although a note of probable sex was made in the record sheet notes (see Section 1.1.3). Sex assessment was attempted only for the sub-adult (18-25 years) and adult (25+ years) specimens.

Age estimation was based on skeletal and dental development in the immature material, and on the degree of degenerative change shown by the skeleton in the adult specimens (Williams and Warwick 1980; Ubelaker 1978). Where possible, SK specimens were assigned to one of ten age categories, shown in Table 17mf.

In cases where the evidence was insufficient to place the material in one of these categories, the SK specimen was allocated to one of two general categories - Immature or Adult.

Section 1.1.3: Record sheet text

This section may consist of up to eight parts, as described below.

A. DENTAL FORMULA

The dental formula has been modified after Brothwell (1981). Definition of the symbols and abbreviations used are listed in Table 18mf.

B. ALSO PRESENT

Under this heading are listed those small bones of the SK specimen which have not been included in the record sheet diagram for the sake of clarity: hyoid bone, ossified thyroid cartilage, ossified trachea cartilage.

coccygeal vertebrae, left first rib and number of left rib heads, right first rib and number of right rib heads, number of proximal and intermediate and distal phalanges of the metacarpals, number of proximal and intermediate and distal phalanges of the metatarsals, number of sesamoid bones.

In the immature SK specimens where it was not possible to determine the sequence of vertebrae, or identify the metacarpals or metatarsals, no record was made on the record sheet diagram. Instead, a list of these elements is given in this part of the record sheet text.

C. MATCHED WITH

This part lists which bones, if any, have been successfully matched with the SK specimen, giving their catalogue numbers and a description of what each bone is. Matching of bones was only attempted once all the remains in the collection had been examined.

Earlier disturbance of the excavation site, as well as close layering of cadavers, resulted in commingling and scattering of the remains. It was therefore necessary to identify and label all the disarticulated material using the following two methods.

Method 1

Disarticulated bones which were part of an assemblage of commingled or scattered remains were labelled in the following manner. The bone, once identified and sided, was given a prefix which was an abbreviation of the name of the bone, followed by a number from one through to infinity. For example, the first disarticulated humerus to be identified was labelled HUM 1, the second HUM 2. The numbering of each type of bone continued sequentially as the bones were examined, irrespective of side or age category, ie immature or adult. The abbreviations used as a prefix for each bone type are shown in Table 19mf.

Method 2

With regard to the disarticulated bones found with, but not belonging to, an SK specimen, those which could be identified and sided were given the prefix AS (for associated) followed by the SK specimen number and a letter from a through to z. Where more than twenty six disarticulated bones were associated with the SK specimen, the letter following the SK specimen number was replaced by a number from one through to infinity. For example, the first twenty six bones associated with, but not belonging to, specimen SK 19 would be labelled AS 19a - AS 19z. The twenty seventh bone would be coded AS 19(1).

Where the disarticulated or associated bones could not be sided, they were not included in the catalogue but were grouped with other unidentifiable fragments and retained with the SK specimen.

Once all the disarticulated material had been examined, and appropriately labelled, attempts were made to match the disarticulated or associated bones with the SK specimens. The criteria for a successful match were rigorous and were as follows:

1. Two parts of a bone fitted convincingly together e g along the line of the break in the case of a broken bone; in the case of the skull, along the suture margins; in the case of an epiphysis and a diaphysis, at the diaphyseo-epiphyseal surface.
2. The dentitions of a maxilla and a mandible formed a matching occlusal relationship.
3. Two closely articulating bones, eg a sequence of vertebrae articulated posteriorly at the vertebral arch; articulation of the auricular surfaces of the sacrum and innominate; two or more adjacent carpal and/or metacarpal bones, two or more adjacent tarsal and/or metatarsal bones.
4. A pathological condition or severe degenerative change affecting two

adjacent bones.

D. ASSOCIATED WITH

This part summarises the disarticulated bones found with, but not belonging to, the SK specimen. They were given the prefix AS (for Associated) followed by the SK specimen number and a letter from a through to z. Where more than twenty six disarticulated bones were associated with an SK specimen, the letter following the SK specimen number was replaced by a number from one through to infinity. For example, the first twenty six bones associated with, but not belonging to, SK 41 would be labelled AS 41a through to AS 41z. The twenty seventh bone would be coded AS 41(1).

The number of disarticulated bones associated with an SK specimen gives an indication of the degree of commingling of the remains. Although this process was time-consuming, it resulted in every identifiable bone being included in the catalogue.

In cases where the SK specimen consisted of an assemblage of commingled remains, priority, for assigning the SK number (in descending order), was given to: a complete skull; a partially complete skull; maxilla; mandible; cranial bone; cranial fragments; tooth; the largest and most complete bone. The remaining disarticulated bones were catalogued as associated bones.

E. AGE RANGE

This part is included in the record sheet text of the immature SK specimens only. It gives the estimated age range of the specimen, based on the degree of dental and skeletal development (Ubelaker 1978; Williams and Warwick 1980). The immature SK specimens were assigned to one of eight age categories outlined above (see Section 1.1.1, Table 17mf). In cases where the cited age range overlapped two age categories, allocation to the younger or older category was dependent upon the availability of the relevant dental and skeletal parts.

F. STATURE ESTIMATE

Stature estimates were made only in those cases where it was possible to assign sex (see Section 1.1.1). Stature was calculated using the regression equation with the smallest standard error of estimate from Trotter (1970).

G. NOTES

This part consists of the probable sex of an individual, where the evidence was not unequivocal, together with points of interest not included in any other part.

H. PATHOLOGY

This part includes congenital or developmental anomalies, indicators of stress, pathology of traumatic or degenerative origin and evidence of infection.

SECTION 1.2: List of matched bones

This section contains a list of the disarticulated or associated bones which have been successfully matched together but have not been matched with an SK specimen. The rigorous criteria for a successful match have been detailed in Section 1.1.3.

Successful matches of two or more adjacent bones were given the prefix MB (for Matched Bone) followed by a number from one through to infinity. The matched bones are listed in the following order: immature skull, vertebral column, left hand, right hand, left foot, right foot and adult skull, vertebral column, left hand, right hand, left foot, right foot. Details of the elements comprising the MB specimen are given in the list.

It must be borne in mind that these MB specimens do not necessarily represent a separate individual. They may be part of an SK specimen or may belong to some of the disarticulated material. They have been kept as separate MB specimens as the criteria for a successful match with an SK specimen or other disarticulated material could not be met (see Section

1.1.3).

This section has been included in the catalogue as sequences of vertebrae or matching maxilla and mandibles can often provide more information than the separate elements.

SECTION 1.3: List of disarticulated maxillae and mandibles

This section lists the disarticulated maxillae and mandibles which have not been matched with an SK specimen or with each other which would result in an MB specimen.

This list includes specimens which may be denoted by the prefices AS, MX or MD (see Section 1.1.3 above). The dental formulae have been included where appropriate. The immature maxillae and mandibles have been listed before the adult specimens.

SECTION 2: MINIMUM ELEMENT COUNT

In order to estimate the minimum number of individuals present in each of the three collections, a count was made of non-replicated skeletal elements. The minimum element count includes all the material from the SK burials, the matched bone specimens and the disarticulated bones.

The top five counts for the immature and adult bones respectively have been included in the minimum element table.

SECTION 3: AGE AND SEX PROFILES

The age-at-death and sex distributions are shown for the SK specimens only. The stated age categories are described in Table 17mf.

SECTION 3.1: Age-at-death profile

This shows the distribution of the SK specimens across the age categories.

SECTION 3.2: Age-at-death by sex profile

This shows the age-at-death distribution of the male and female SK specimens respectively.

SECTION 4: IMMATURE AND ADULT METRIC DATA

SECTION 4.1: Cranial and postcranial metric data

The metric data have been summarised in the form of basic descriptive statistics, ie mean, standard deviation, minimum value, maximum value. The abbreviations used for the recorded measurements, together with a brief definition and a source reference, are listed in Tables 20mf, 21mf, 22mf.

The metric data for the immature specimens which fall into the following age categories have been detailed: foetal, perinatal, infant, child, young juvenile, old juvenile.

The subadult (18-25 years) and adult (25+ years) data have been combined as there was no statistically significant difference between the two age categories in any of the three collections.

Female and male data have been listed separately. Data for all the available adult material, which includes the previously listed female and male data as well as data from the adult specimens of unknown sex, are also shown.

SECTION 4.2: Adult indices

Indices calculated for adult specimens (18+ years) have been summarized in the form of basic descriptive data; mean, standard deviation, minimum value, maximum value.

The formulae (Bass 1987; Brothwell 1981) used to calculate the various indices are listed in Table 23mf together with the abbreviations used in the data tables.

Female and male data have been listed separately. Data for all available adult material, which includes the previously listed female and male data, together with data from the adult specimens of unknown sex, are also shown.

SECTION 5: IMMATURE AND ADULT CRANIAL NON-METRIC DATA

The incidence of non-metric traits was calculated for immature and adult (18+ years) specimens respectively and the results are listed in this section. The table shows the classes of each traits (eg 0 = absent, 1 = present) and the percentage figure of specimens falling within that class. The number in brackets is the total number of specimens observed.

Table 24mf lists the recorded non-metric traits, together with a brief description (Berry and Berry 1967; Brothwell 1981).

SECTION 6: PATHOLOGICAL CONDITIONS DIAGNOSED IN THE BK SPECIMENS

This section lists those BK specimens in which a pathological condition or skeletal anomaly has been diagnosed. A full description of the condition may be found on the BK specimen's record sheet (Section 1.1.3, part H).

The pathological or anomalous conditions have been classified under the following headings; fractures, degenerative joint disease, Schmorl's nodes, spondylolysis, osteochondritis dissecans, cribra orbitalia, Harris lines, metopic sutures, "buns", inca bones, enamel hypoplasia, non-specific infections, specific infections, tumours, sacral spina bifida occulta.

Table 17mf: Age categories and age ranges.

Age Category	Age Range
Foetal	0-7 months intra-uterine
Perinatal	birth +/- 2 months
Infant	2 months - 2 years
Child	2 - 6 years
Young Juvenile	6 - 12 years
Old Juvenile	12 - 18 years
Subadult	18 - 25 years
Young adult	Skeletal and dental maturity reached. No degenerative change.
Middle-aged Adult	Some degenerative change
Old Adult	Severe degenerative change

Table 18mf: Definitions of the symbols and abbreviations used to describe the dental formula.

Right half maxilla	Left half maxilla
Right half mandible	Left half mandible

a	deciduous medial incisor
b	deciduous lateral incisor
c	deciduous canine
d	deciduous first molar
e	deciduous second molar
1	permanent medial incisor
2	permanent lateral incisor
3	permanent canine
4	permanent first pre-molar
5	permanent second pre-molar
6	permanent first molar
7	permanent second molar
8	permanent third molar
①	tooth present but not yet erupted
[1]	tooth erupting but not in occlusion
⅄	tooth missing but socket present
+	tooth present but socket missing
ȼ	tooth has a caries cavity
⅄	tooth has an apical abcess
X	tooth lost ante-mortem
-	area missing

Table 19af: Abbreviations used as a prefix for each bone type when labelling the disarticulated bones.

Bone Type	Prefix
Maxilla	MX
Mandible	MD
All other cranial bones (including hyoid)	CR
Cervical vertebra	CV
Thoracic vertebra	TV
Lumbar vertebra	LV
Sacral vertebra	SV
Coccygeal vertebra	COV
Rib	R
Sternum	ST
Scapula	SCAP
Clavicle	CLAV
Humerus	HUM
Ulna	ULN
Radius	RAD
Lunate	LUN
Scaphoid	SC
Trapezium	TM
Trapizoid	TD
Capitate	CA
Hamate	HA
Triquetral	TQ
Pisiform	PIS
Metacarpal	MC
Proximal phalanx of MC	PC

Table 19mf (continued)

Intermediate phalanx of MC	IC
Distal phalanx of MC	DC
Innominate	INN
Femur	FEM
Patella	PAT
Tibia	TIB
Fibula	FIB
Talus	TAL
Calcaneus	CALC
Navicular	NAV
Medial cuneiform	MCU
Intermediate cuneiform	ICU
Lateral cuneiform	LCU
Cuboid	CUB
Metatarsal	MT
Proximal phalanx of MT	PT
Intermediate phalanx of MT	IT
Distal phalanx of MT	DT
Sesamoid	SES

Table 20mf: Immature and adult cranial measurements.

Abbreviation	Definition	Reference
GLA-OCC	Length from glabella to most posterior part of occipital	Brothwell (1981)
BAS-NAS	Height from basion to nasion	Brothwell (1981)
BAS-ALV	Height from bacion to alveolare	Brothwell (1981)
BAS-BREG	Height from basion to bregma	Brothwell (1981)
ALV-NAS	Height from alveolare to nasion	Brothwell (1981)
MAX B	Bi-parietal breadth	Brothwell (1981)
MIN B	Minimum frontal breadth	Bass (1987)
BI-EC	Bi-ectocondylar breadth	Bass (1987)
BI-ZYG	Bi-zygomatic breadth	Brothwell (1981)
BI-MAX	Bi-maxillary breadth	Brothwell (1981)
BI-DA	Bi-dacryon breadth	Bass (1987)
OH	Orbital height	Brothwell (1981)
OB	Orbital breadth	Brothwell (1981)
NH	Nasal height from nasion to left nariale. Right nariale used if other side damaged.	Brothwell (1981)
NB	Nasal breadth	Brothwell (1981)
PL	External palate length	Brothwell (1981)
PB	External palate breadth	Brothwell (1981)
FL	Foramen magnum length	Brothwell (1981)
FB	Foramen magnum breadth	Brothwell (1981)
MAND L	Mandible length	Brothwell (1981)
BI-COND	Bicondylar breadth	Brothwell (1981)
BI-GON	Bigonial breadth	Brothwell (1981)
COR	Coranoid process height	Brothwell (1981)
RB	Minimum ramus breadth	Brothwell (1981)

Table 20mf (continued)

INF-GNA	Height from infradentale to gnathion	Brothwell (1981)
BI-MF	Breadth between the two mental foramina	Brothwell (1981)

Table 21mf: Immature postcranial measurements.

Abbreviation	Definition
CLAV L	Maximum diaphyseal length
HUM L	Maximum diaphyseal length
ULN L	Maximum diaphyseal length
RAD L	Maximum diaphyseal length
ILIUM H	Maximum height of iliac blade from the most inferior point on the acetabular surface to the most superior point on the iliac crest.
ILIUM B	Maximum breadth of iliac blade
FEM L	Maximum diaphyseal length
TIB L	Maximum diaphyseal length
FIB L	Maximum diaphyseal length

Table 22mf: Adult postcranial measurements.

Abbreviation	Definition	Reference
CLAV L	Maximum length	Bass (1987)
HUM L	Maximum length	Trotter (1970)
HUM MHD	Maximum head diameter	Bass (1987)
ULN L	Maximum length	Trotter (1951)
RAD L	Maximum length	Trotter (1970)
SYM-ACET L	Length between pubic symphyseal surface and furthermost point on the margin of the acetabulum	MacLaughlin & Bruce (1985)
ACET B	Maximum breadth of acetabulum, from furthermost point on acetabulum, as defined above, to most medial point of lunate margin	MacLaughlin & Bruce (1985)
FEM L	Maximum length	Trotter (1970)
FEM MHD	Maximum head diameter	Brothwell (1981)
FEM MAP	Maximum antero-posterior diameter	MacLaughlin & Bruce (1985)
FEM AP(SUB)	Maximum antero-posterior diameter taken below the lesser trochanter	Brothwell (1981)
FEM ML(SUB)	Medio-lateral diameter taken at right angles to FEM AP(SUB)	Brothwell (1981)
FEM AP(MAX)	Antero-posterior diameter taken at right angles to FEM ML(MAX)	MacLaughlin & Bruce (1983)
FEM ML(MAX)	Maximum medio-lateral diameter, taken along the shaft below the lesser trochanter and above the point at which the linea aspera divides into the lateral and medial supracondylar lines	MacLaughlin & Bruce (1983)
FEM BEW	Bi-epicondylar width	Brothwell (1981)
TIB L	Maximum length, modified by taking it with the tibia lying on its anterior surface	Trotter (1970)
TIB NFL	Nutrient foramen length, taken with the tibia in the same position as TIB L	Cross & Bruce (1985)

Table 22mf (continued)

TIB MHD	Maximum head diameter, taken from the posterior aspect	
TIB AP(NF)	Maximum antero-posterior diameter of nutrient foramen	Brothwell (1981)
TIB ML(NF)	Medio-lateral diameter taken at right angles to TIB AP(NF)	Brothwell (1981)
TIB AP(1/3)	Antero-posterior diameter taken at the proximal one third level along length of shaft	Cross & Bruce (1985)
TIB ML(1/3)	Medio-lateral diameter taken at right angles to TIB AP(1/3)	Cross & Bruce (1985)
FIB L	Maximum fibula length	Trotter (1970)

Table 23af: Abbreviations and formulae of skeletal indices calculated for the adult material.

Abbreviation	Formula
CRANIAL	$\frac{\text{Bi-Parietal Breadth} \times 100}{\text{Glabella-Occipital Length}}$
HEIGHT	$\frac{\text{Basion-Bregma Height} \times 100}{\text{Bi-Parietal Breadth}}$
FRONTAL	$\frac{\text{Minimum Frontal Breadth} \times 100}{\text{Bi-Parietal Breadth}}$
FACIAL	$\frac{\text{Alveolare-Nasion Height} \times 100}{\text{Bi-zygomatic Breadth}}$
ORBITAL	$\frac{\text{Orbital Height} \times 100}{\text{Orbital Breadth}}$
NASAL	$\frac{\text{Nasal Breadth} \times 100}{\text{Nasal Height}}$
PALATAL	$\frac{\text{Palate Breadth} \times 100}{\text{Palate Length}}$
INNOMINATE	$\frac{(\text{Pubic Symphysis Length} - \text{Acetabular Breadth}) \times 100}{\text{Acetabulum Breadth}}$
MENIC	$\frac{\text{Antero-posterior Diameter (AVB)} \times 100}{\text{Medio-lateral Diameter (MVB)}}$
PILUM	$\frac{\text{Antero-posterior Diameter (MAX)} \times 100}{\text{Medio-lateral Diameter (MAX)}}$
CNEMIC	$\frac{\text{Medio-lateral Diameter (MP)} \times 100}{\text{Antero-posterior Diameter (MP)}}$
TIBIA	$\frac{\text{Medio-lateral Diameter (1/3)} \times 100}{\text{Antero-posterior Diameter (1/3)}}$
HUMERAL	$\frac{\text{Radius Length} \times 100}{\text{Humerus Length}}$
CRURAL	$\frac{\text{Tibial Length} \times 100}{\text{Femur Length}}$
INTERMEMB	$\frac{(\text{Radius Length} + \text{Humerus Length}) \times 100}{\text{Tibia Length} + \text{Femur Length}}$

Table 24mf: Cranial non-metric traits

Unilateral Traits	
Metopic Suture	Persistent suture between the two frontal bones. Recorded as being present in individuals over six years of age.
Bregma C[illegible]e	Ossicle at junction of the sagittal and coronal sutures.
Sagittal Ossicle	Number of ossicles present along the sagittal suture was recorded.
Lambdoid Ossicle	Ossicle at junction of sagittal and lambdoid sutures.
Bilateral Traits	
Epipteric Ossicle	Ossicle at pterion.
Parietal Ossicle	Ossicle at junction of parietal temporal and occipital bones.
Wormian Ossicle	Number of ossicles present along the lambdoid suture (excluding the lambdoid ossicle).
Supra-orbital Foramen	Notches were recorded as absent.
Infra-orbital Suture	Suture leading from floor of the orbit to the superior margin of the infra-orbital foramen.
Accessory Infra-orbital Foramen	Number of accessory foramina was recorded.
Zygofacial Foramen	Number of foramina present on the zygoma was recorded.
Parietal Foramen	Foramen on parietal bones lying near the sagittal suture.
Pterion Shape	Shape of the articulation of frontal, parietal, sphenoid and temporal bones at pterion.
Mastoid Foramen	Large foramen on or near mastoid part of temporal bone.
Mastoid Foramen Position	Foramen recorded as lying on tempero-occipital suture or not.
Huschke Foramen	Foramen on inferior aspect of tympanic part of temporal bone. Recorded as present in specimens over 8 years of age.

Table 24mf (continued)

Anterior Condylar Canal	Recorded as being single, double or triple.
Posterior Condylar Canal	Recorded as being present if patent.
Mental Foramen	Number of foramina recorded.