APPENDIX 1 THE HUMAN BONES

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A.1.1 Background

The assemblage consisted of the remains of 95 individuals. The articulated human bones were analysed in accordance with guidelines by English Heritage (2002), Historic Scotland (1997) and BABAO/IFA (Brickley & McKinley 2004). Full details of the methodology (summarised below) and a full osteological report can be found in the archive report in the National Record of the Historic Environment of Scotland. The disarticulated material was screened but contained no material that could contribute additional information and therefore was not analysed further.

The assemblage of articulated remains was compared with findings reported from other local and regional, broadly contemporary, groups to identify any patterns – osteological or funerary. These included previous excavations at St Giles' (Collard et al 2006); burgh sites at Perth (Bowler 2004; Fyles et al 2005), Glasgow (Driscoll 2002), Dundee (Brown & Roberts 2000) and Aberdeen (Cameron & Stones 2001), and Scottish monastic sites at Aberdeen, Linlithgow and Perth (Stones 1989a), Newbattle Abbey (Gooder 2004) and Whithorn (Cardy 1997). Northern English sites were also considered: St Andrew's, Fishergate, York (Stroud & Kemp 1993) and the parish church of St Helen-on-the-Walls, Aldwark, York (Dawes & Magilton 1980).

The Parliament House material underwent a comparable isotopic study with the St Giles' material. The purpose of the study was to compare the two populations in terms of diet and origins.

A.1.2 Summary of methodology

The articulated human bones were analysed in accordance with recommendations by English Heritage (2002), Historic Scotland (1997) and the IFA (Brickley & McKinley 2004). For each skeleton the results of the analysis were entered into an Access 2000 database. The following methodology was employed.

A.1.2.1 Inventory

A full skeletal inventory was created using a visual inventory and numerical scoring system. The numerical system records which bone was present in addition to which portion of the bone survives. For example, for the scapula the following elements were scored as present (1) or absent (0); glenoid, coracoid, acromion and infra-spinous area. The element was scored as present if it was represented by at least 50%. This is then represented as a 4-digit code. A full list of those elements scored can be found on the recording sheets, which can be consulted in the site archive.

A.1.2.2 Preservation and completeness

The degree of bone preservation was classed using the following criteria (Connell & Rauxloh 2003; Powers 2007):

1 = Bone surface is in good condition with no erosion; fine surface detail such as coarse woven bone deposition would be clearly visible (if present) to the naked eye.

2 = Bone surface is in moderate condition with some post-mortem erosion on long bone shafts but the margins of articular surfaces are eroded and some prominences are eroded.

3 = Bone surface is in poor condition with extensive post-mortem erosion resulting in pitted and eroded cortical surfaces and long bones with articular surfaces missing or severely eroded.

Skeletal completeness was determined according to Connell & Rauxloh (2003) and Powers (2007) on the basis that the skull equated to 20% of the skeleton, the upper limbs 20%, the torso 40%, and the lower limbs 20%.

A.1.2.3 Age estimation

Osteological methods to determine age-at-death rely on developmental and degenerative changes which affect the skeleton over the lifecourse. As these changes occur sequentially they can be roughly equated with chronological age. However, as biological changes can occur at different rates in different individuals, it is often not possible to

Table 2 Approximate age categories used in the analysis of human remains

Age category (approximate)	Age range
0	No data
1	Foetal/neonate
2	1–6 months
3	7–11 months
4	1–5 years
5	6–11 years
6	12–17 years
7	18–25 years
8	26–35 years
9	36–45 years
10	46+ years
11	Adult
12	Sub-adult

provide an exact age in years and therefore age-at-death estimates are presented in broad age categories (Table 2).

Sub-adult (to age 17) age-at-death estimation was dependent on the sequential mineralisation and eruption of the deciduous and permanent dentition (Moorrees et al 1963; Ubelaker 1978) and the maturation (state of epiphyseal fusion) and size of various skeletal elements (Scheuer & Black 2000). For epiphyseal fusion each fusion site was scored as unfused, fusing or fused for both the metaphysis and epiphysis.

Adult (age 18 and older) age-at-death was based on degenerative changes to the morphology of the pubic symphysis (Brooks & Suchey 1990), the auricular surface of the ilium (Lovejoy et al 1985) and dental attrition (Brothwell 1981). An age estimation was established using as many methods as were applicable.

A.1.2.4 Sex estimation

Estimation of sex is based on the morphology of secondary sex characteristics which develop during puberty. As a result, it is extremely difficult to determine the sex of non-adult skeletons without the use of destructive bimolecular analyses.

Surviving morphological features of the pelvis (Phenice 1969; Buikstra & Ubelaker 1994), and the skull (Acsádi & Nemeskéri 1970) were used to estimate the sex of adult individuals. A holistic approach was adopted, whereby the sex of the individual was based on as many features as applicable. From this an overall biological sex was assigned to the individual. Individuals were classed into one of the following categories:

0 = undetermined sex

1 = female

2 = probable female

3 = indeterminate

4 = probable male

5 = male

Undetermined sex was allocated where no osteological sex indicators were present. Individuals were classed as indeterminate where the sex determination was ambiguous and could not be defined as male or female.

A.1.2.5 Metric and non-metric data (normal variation)

Skeletal metric data are recorded to calculate stature, to aid in sex determination, and to identify secular trends and ethnicity. The following measurements were taken following the definitions of Howells (1973) and Brothwell (1981):

- Greatest cranial length
- Maximum cranial breadth
- Basion to bregma height
- Maximum clavicle length
- Maximum glenoid length
- Maximum humeral length
- Maximum diameter of the humeral shaft
- Maximum radial length
- Maximum ulna length
- Maximum femoral length
- Subtrochanteric antero-posterior diameter of the femur
- Subtrochanteric transverse diameter of the femur
- Maximum femoral head diameter

- Maximum tibial length
- Maximum antero-posterior diameter of the tibia
- Projective transverse diameter of tibia

Maximum achieved adult stature was calculated using the formulae of Trotter (1970) and Trotter & Gleser (1952, 1958 & 1977). The bone present with the lowest standard error was used for the calculation. Where applicable the following were calculated: cranial capacity, cephalic index, platymeric index and platycnemic index.

Non-metric traits are normal variations in skeletal morphology, whose development is influenced by interactions between genetic predisposition and environmental conditions. When studied, it is thought they can identify the 'biodistance' of one group from another as well as interrelatedness of individuals within a population. The following non-metric traits were recorded following Brothwell (1981), Berry & Berry (1967) and Finnigan (1978): metopism, coronal wormian bones, sagittal wormian bones, ossicles at lambda, os inca, ossicles in lambdoid suture, maxillary torus, mandibular torus, os acromiale, distal septal aperture, supracondylar process, vastus notch and the type of calcaneal facet.

A.1.2.6 Pathology

Pathological changes on the bones and teeth were recorded following IFA/BABAO guidelines (Brickley & McKinley 2004) as well as standard osteological references (Brothwell 1981; Rogers & Waldron 1995; Hillson 1996; Aufderheide & Rodríguez-Martín 1998; Waldron 2001; Ortner 2003).

A.1.3 Preservation and completeness

The majority (59) of the skeletons were in a moderate state of preservation (62.1% as Grade 2); 16 skeletons (16.8%) were in a poor state of preservation (Grade 3) and 23 skeletons (24.2%) displayed good preservation (Grade 1). A total of 72 skeletons (75.8%) were incomplete due to truncation. The high level of intercutting and truncation was reflected in the completeness of the skeletons, with 48.4% of individuals 50% complete or less.

A.1.4 Age determination

The age-at-death distribution can be found in Table 3. The sample consisted of 55 adults (57.9%) and 40 sub-adults (42.1%). The overall proportion of sub-adults was relatively large, perhaps suggesting poor nutrition or recurrent epidemics.

Age-at-death could be determined for the majority (32) of sub-adults, with a peak occurring at *c* 1–5 years and *c* 6–11 years. There were no individuals aged *c* 1–6 months and only one individual aged *c* 7–11 months. The prevalence of neonate or foetal deaths was 3.2% when expressed as a percentage of the total sample or 7.5% of the sub-adult sample. The relative lack of neonates and infants does not reflect the expected mortality profile for an assemblage of this period, prior to improvements in hygiene, nutrition and medical provision (Waldron 2001). This may indicate that differential treatment of neonates and infants took place at Parliament House. At Whithorn (Cardy 1997) and Raunds (Boddington 1987) certain areas of the cemetery appear to have been reserved for the burials of children and it is possible that some

Table 3 Demographic profile of the Parliament House skeletons

Sex	Age category													Total
	0	1	2	3	4	5	6	7	8	9	10	11	12	
Male	0	0	0	0	0	0	0	4	5	8	2	0	0	19
Female	0	0	0	0	0	0	0	1	4	4	2	0	0	11
Intermediate	0	0	0	0	0	0	0	0	1	1	0	0	0	2
Undetermined	0	3	0	1	12	10	6	2	1	4	3	13	8	63
Total	0	3	0	1	12	10	6	7	11	17	7	13	8	95

Table 4 Mortality profile of the adult assemblage from Parliament House

Age category	Male		Female		Total	
	no.	%	no.	%	no.	%
7 (18–25 years)	4	13.3	1	3.3	5	16.6
8 (26–35 years)	5	16.7	4	13.3	9	30.0
9 (36–45 years)	8	26.7	4	13.3	12	40.0
10 (46+ years)	2	6.7	2	6.7	4	13.4
Total	19	63.4	11	36.6	30	100.0

degree of cemetery management was also practised at Parliament House.

For the adult individuals, estimated age-at-death is presented by sex (Table 4). This suggests that there was a peak in adult mortality between *c* 26 and 45 years of age which affected both males and females.

A.1.5 Sex assessment

Sex was estimated for all adult skeletons who possessed pelves and crania. Due to the varied levels of preservation and completeness a large number of adult individuals (25) could not be sexed. This equates to 45.5% of the adult sample and corresponds to the high degree of truncation on site. The assemblage consisted of 19 males or probable males and 11 females or probable females. This produced a sex ratio of 1.7:1 in favour of males, although the difference was not statistically significant. An approximate 1:1 ratio is to be expected in any 'normal' population where sex is governed by genetic factors, though most archaeological populations contain slightly more males than females, due to differential preservation rates.

A.1.6 Dental health

A.1.6.1 Ante-mortem tooth loss

Ante-mortem tooth loss (AMTL) is generally the result of periodontal disease or dental caries. The 30 adult skeletons for which sex could be estimated had lost 32 teeth between them, a true prevalence of 4.4% (calculated from the number of observable sockets). The left mandibular third molar was lost most frequently (20.8%), followed by the right mandibular first molar (15.4%). AMTL increased with age-at-death, from 0% in the *c* 18–25 years age category to 12.6% in those aged *c* 46+ years. The true prevalence of AMTL was 1.9% for males and 5.8% for females, a difference which was statistically significant (X^2 = 5.97, p = 0.02).

A.1.6.2 Periapical abscesses

The presence or absence of periapical abscesses could be scored for 720 tooth positions in the identifiable adult males and females. These were recognised as circular, smooth-walled apertures which form around the roots of affected teeth in response to a build-up of exudate from pus-forming bacteria. Evidence of periapical abscesses was detected in 25 tooth positions; a total prevalence of 3.5%. Periapical abscesses were only found in two of 322 maxillary teeth (0.6%): in the right second (5.3%) and third molar (6.3%). Periapical abscesses were only found in individuals in the *c* 36–45 years age category (0.7% of sites) and only in males (0.5% of sites).

A.1.6.3 Dental caries

Dental caries is the most common dental disease. Women tend to be affected by the disease more than men both clinically and in archaeological contexts (Hillson 1986). Dental caries is uncommon in prehistoric material but increases in frequency in later periods, reaching a peak in modern times (Waldron 2001). Dental caries was identified in 23 teeth; a prevalence of 3.8%. The most common tooth for dental caries was the left maxillary third molar (18.2%) followed by the right maxillary first

molar (16.7%). The prevalence of dental caries was highest in the *c* 36–45 years age category. There was no difference in the prevalence rates of dental caries between the sexes: 0.4% in males and 0.4% in the females.

A.1.6.4 Enamel hypoplasia

Enamel hypoplasia was not present in any of the Parliament House skeletons.

A.1.7 Pathology

A.1.7.1 Osteoarthritis

Osteoarthritis (OA) is one of the most common pathologies observed in archaeological assemblages and is characterised by the degenerative breakdown of the cartilaginous surfaces of a joint, exposing and polishing the underlying bone as it grinds together during movement. OA is multifactorial in its aetiology; it is related to increasing age, genetic predisposition, obesity, activity/lifestyle and environmental factors (Roberts & Manchester 1995). OA may also be caused by secondary factors such as trauma or disease. It is believed that the distribution of joints affected can serve as an indicator of lifestyle and occupation (Waldron 2001).

The distribution of arthritic changes to the extra-spinal skeleton of the adults was recorded according to Rogers & Waldron (1995) and tabulated by joint for each age category; this can be found in the site archive. OA affected 0.9% (the true prevalence rate) of all extra-spinous joints observed among the Parliament House adults. The most commonly affected site was the right acromioclavicular joint of the clavicle, with a true prevalence of 8.3%. This was followed by the right sternoclavicular joint of the clavicle (7.7%), the left acetabulum (6.5%) and the left femoral head (6.1%). Osteoarthritic changes were recorded most frequently in the *c* 36–45 years age category (1.9%). There was no osteoarthritis in the sub-adults.

Among the adults for whom sex could be estimated the true prevalence of OA was the same for females and males (1.1%). However, the distribution of joints affected by OA differed between the sexes. For males the most commonly affected joint was the right sternoclavicular joint of the clavicle (true prevalence of 16.7%) followed by the right distal radioulnar joint of the ulna, the right radiocarpal joints of the scaphoid and lunate; all 12.5%. The most commonly affected joint for females was the right acetabulum (true prevalence rate of 14.3%) followed by the right and left femoral head and the left acetabulum (all 12.5%). This difference in the location of OA may indicate a difference in activity between the sexes. However, as only one joint was affected by OA at each of the sites listed above, the sex differences were not statistically significant.

A.1.7.2 Vertebral pathology

The most common site for vertebral OA for the adults was C4 (the fourth cervical vertebra) (11.1%), followed by L4 (the fourth lumbar vertebra) (10.5%) and C3 (10%). Vertebral OA was recorded in the 36–45 years age category and the 46+ years age category but did not affect any younger individuals. The prevalence of vertebral OA was higher in females (5.6%) than males (3.8%) and the pattern varied between the sexes. In males the most commonly affected site was C7 (20%) followed by C6 (16.7%) and C5 (11.1%). In females the most commonly affected site was C4 (16.7%) followed by the C3, L3 and L4; all 14.3%.

The prevalence of intervertebral disc disease (IVD) for each vertebra was recorded in the adults. The most commonly affected site was L5 (47.6%), followed by L4 (44.4%) and L3 (31.3%). The frequency of IVD increased with age after 18–25 years and varied between the sexes, with a prevalence of 18.8% in the males and 13% in the females. In the males the most commonly affected site was T6 (the sixth thoracic vertebra) (66.7%) followed by L4 (50%) and L5 (36.4%). In the females the most commonly affected site was L5 (50%) followed by S1 (the first sacral vertebra) (42.9%), L3 and T10; both 25%.

A.1.8 Traumatic conditions

Traumatic conditions are defined as any bodily wound or injury, including fractures, abnormal placement or dislocation of a bone and the disruption in a nerve and/or blood supply (Roberts & Manchester 1995).

Two individuals had evidence of ante-mortem fractures, a crude prevalence rate of 2.1% (no. 95). Skeleton 66, a probable female aged *c* 36–45 years, had a mid-shaft fracture of the right clavicle. This is the most common fracture site of the clavicle and is generally caused by falls onto the shoulder or an outstretched hand (Crawford Adams 1987). Skeleton 90, a male aged *c* 26–35 years, had fractured second and third left metatarsals (MT2 and MT3). The fracture to MT2 affected the midshaft and had united with plantar displacement of the distal fragment at a *c* 120° angle. MT3 was fractured just below the head and had also resulted in plantar displacement of the distal fragment. Extensive remodelling was visible with new bone on the joint surfaces of metatarsals 2 to 5. This probably resulted from the force which caused the fractures also tearing the joint capsules, causing bleeding into the joint which then ossified. Most metatarsal fractures are caused by direct force from a heavy object; other causes are a twisting injury or repetitive stress (Crawford Adams 1987). This individual also had periosteal new bone formation on both tibiae (see below). There was no evidence for secondary infection in either of these individuals. This may suggest that the fractures were closed (had not broken the skin) or that some form of treatment had been administered.

Myositis ossificans traumatica was present in two individuals. This condition is caused by avulsions of tendinous and/or muscle attachments to bone generating a haematoma, which then becomes calcified or ossified (Aufderheide & Rodríguez-Martín 1998). Skeleton 20, a male aged *c* 18–25 years, had a small protrusion of new bone on the posterior-lateral aspect of the proximal portion of the right shaft of the tibia. Skeleton 91, an adult, had a spur of bone on the posterior-lateral aspect of the proximal portion of the left shaft of the tibia.

Skeleton 86, a sub-adult aged *c* 6–11 years, had a small (12mm diameter) circular, erosive lesion on the medial condyle of the right femur. This is indicative of osteochondritis dissecans, a condition which occurs when lack of blood supply causes an area of subchondral bone to die and detach from the rest of the articular surface. The medial condyle of the femur is the most commonly affected joint in modern populations, followed by the radiohumeral joint and the ankle joint (Rogers 2000).

A.1.9 Infectious disease

Infections which affect the skeleton may be specific, ie caused by a known organism such as leprosy or tuberculosis, or non-specific, ie caused by a variety of organisms or traumatic injuries (Roberts & Manchester 1995). Both specific and non-specific infections/trauma elicit an inflammatory response which results in periostitis (inflammation of the periosteum), osteitis (inflammation of the cortex), or osteomyelitis (inflammation of the medullary cavity). It is the type and distribution of lesions across the skeleton which are used to determine the cause.

There were five individuals with periostitis at Parliament House; a crude prevalence rate of 5.3% (n=95). This is relatively common in skeletal assemblages, and is recognised by 'fine pitting, longitudinal striation and sequentially plaque-like new bone formation on the original cortical surfaces' (Roberts & Manchester 1995). Periostitis was observed on the distal portion of the shaft of the right humerus and the proximal epiphysis and shaft of the right ulna of Skeleton 62, a probable female aged *c* 36–45 years. Skeleton 90, a male aged *c* 26–35 years, had periostitis on the shafts of the left and right tibiae and fibulae. Skeleton 12, a probable male aged *c* 36–45 years, had periostitis on the distal epiphysis of the left tibia. Skeleton 7, an adult of unidentified sex, had periostitis on the superior surface of the mid-shaft of the left fibula. Skeleton 23, an individual of unidentified sex aged *c* 36–45 years, had periostitis on the distal shaft of the right fibula.

Skeleton 54, an individual aged *c* 46+ years of undetermined sex, had an erosive lesion on the olecranon of the right ulna (Illus 21 & 22). The area was remodelled on the proximal and medial aspect. The lesion formed an irregular groove running the width of the olecranon which was *c* 6mm wide. The condition appears to be chronic as the lesion was not very active with little remodelling. This pathology is thought to be due to either a low-grade chronic infection or tuberculosis.

Illus 21 Anterior view of right ulna (© AOC Archaeology Group)

Illus 22 Posterior view of right ulna (© AOC Archaeology Group)

A.1.10 Miscellaneous conditions

There was no evidence of neoplastic disease, circulatory disorders, or congenital abnormalities in the assemblage. Several other conditions were, however, observed. Skeleton 4, a juvenile aged *c* 8–13 years, had microporosity present in the left orbit, indicative of cribra orbitalia. This condition is thought to be an osseous sign of haemolytic or megaloblastic anaemia, caused by a deficiency of vitamin B^{12} (Walker et al 2009), and has been used more generally as a sign of poor sanitary conditions and nutritional stress. Infants and children typically display higher rates of cribra orbitalia than adults and the lesions are generally considered to form during infancy and heal with age. At Parliament House bilateral cribra orbitalia was also seen in Skeleton 57, a probable male aged *c* 36–45 years.

Skeleton 36, a female aged *c* 26–35 years, had a small smooth lesion (12mm anterior-posterior) on the internal surface of the right mandibular ramus. This appeared to be a non-inflammatory, soft-tissue lesion.

The majority of carpals were fused in the right hand of Skeleton 42; a male aged *c* 36–45 years (Illus 23). Osteophytes were present on the articular facets of the hamate and subchondral cysts were present on the articular facets of the capitate. The distal epiphyses of the right radius had microporosity and osteophytes. The proximal epiphyses of the right second and third metacarpal were remodelled bone, with new bone and subchondral cysts. The cause of this carpal fusion with little proliferation of bone is not known. A possible diagnosis is tuberculosis or trauma. Extra-spinal tuberculosis often only occurs at one site.

A.1.11 Demographic analysis

A.1.11.1 Ratio of sub-adults to adults

The assemblage from Parliament House consisted of 55 (57.9%) adults and 40 (42.1%) sub-adults. The proportion of sub-adults is high when compared with other parish assemblages, with only St John's Kirk, Perth (78.8%) and Linlithgow (59.2%) having a higher proportion of sub-adult burials (Table 5).

Illus 23 Carpal fusion with subsequent changes to the distal articular surfaces of the metacarpals (© AOC Archaeology Group)

Table 5 Comparison of adult vs sub-adult mortality with other parish assemblages

Assemblage	Adults		Sub-adults	
	no.	%	no.	%
St John's Kirk, Perth	–	21.2	–	78.8
Linlithgow Carmelite Friary	82	40.8	119	59.2
Parliament House, Edinburgh	55	57.9	40	42.1
Aberdeen Carmelite Friary	77	64.2	43	35.8
Whithorn	1093	68.1	512	31.9
St Giles' Cathedral, Edinburgh	79	69.9	32	28.3
Nethergate, Dundee	48	71.6	19	28.4
St Helen-on-the-Walls, York	–	73.0	–	27.0
Newbattle Abbey	90	75.6	29	24.4
Fishergate, York	312	77.6	90	22.4
Glasgow Cathedral	64	81.0	15	19.0
Perth Carmelite Friary	21	100.0	0	0.0

A.1.11.2 The sub-adult mortality profile

Although there was a large proportion of sub-adults at Parliament House, the younger age categories were poorly represented with peak mortality occurring at *c* 1–5 years and *c* 6–11 years. Only three foetal/neonate skeletons were identified in the assemblage, 3.2% of the total sample and 7.5% of the sub-adult sample. This is comparable to the mortality profile of St Helen-on-the-Walls, York (Dawes & Magilton 1980), where the highest proportion of sub-adult deaths occurred between *c* 6–10 years, with an incredibly small proportion of infants recovered. Whithorn also had higher numbers of children in the older age categories (Cardy 1997), and at Newbattle Abbey, sub-adult mortality peaked at *c* 14–21 years (Gooder 2004).

At St John's Kirk, Perth sub-adult mortality peaked at *c* 3–12 months (Bowler 2004), while at Glasgow Cathedral the majority of sub-adults (67%) died in the younger age groups, *c* 0–1 year and *c* 2–5 years (Driscoll 2002). These assemblages reflect the expected mortality profiles for medieval skeletal assemblages and it is possible that those with low numbers of infants practised some form of cemetery management, with specific areas reserved for the burial of infants. This was suggested as the reason for the under-representation of the youngest age categories at Whithorn (Cardy 1997) and is thought to be responsible for the low numbers of young children recovered from Parliament House.

A.1.11.3 The adult mortality profile

The adult mortality profile for Parliament House suggested that most individuals were dying between approximately 26 and 45 years. This pattern was broadly similar for both males and females. This is comparable with findings from Newbattle Abbey, where a peak in mortality was observed between *c* 36–49 years for both males and females (Gooder 2004). At Dundee and the Carmelite friaries of Perth, Linlithgow and Aberdeen males appeared to reach old age more often than females (Stones 1989a; Brown & Roberts 2000), and at St Helen-on-the-Walls, York the majority of females (56%) had died by *c* 35 years of age compared with only 35.8% of men (Dawes & Magilton 1980).

A.1.11.4 Ratio of males to females

The assemblage from Parliament House consisted of 19 males or probable males (63.3%) and 11

Table 6 Comparison of sex ratio with other medieval assemblages

Assemblage	Males		Females		Total
	no.	%	no.	%	
Fishergate, York	220	71.2	89	28.8	309
Parliament House, Edinburgh	19	63.3	11	36.7	30
Glasgow Cathedral	35	57.4	26	42.6	61
St Giles' Cathedral, Edinburgh	44	55.0	36	45.0	80
Nethergate, Dundee	34	49.3	35	50.7	69
St Helen-on-the-Walls, York	221	48.0	239	52.0	460
Whithorn	314	46.9	356	53.1	670

females or probable females (36.7%); a sex ratio of 1.7:1 in favour of males. Other medieval assemblages demonstrate broadly similar proportions of males and females, with the only considerable male bias occurring at Fishergate, York (Table 6). This assemblage was associated with St Andrew's Gilbertine Priory and it was believed that the high number of males reflected the burial of monks within the cemetery (Stroud & Kemp 1993). At Parliament House, sex could not be estimated for 25 adults as the relevant areas of the skeleton were not preserved. It is possible that this has caused the perceived sex bias in favour of males at the site.

A.1.11.5 Metric data analysis

At Parliament House the mean maximum achieved stature was 167.8cm (5ft 5in) for males and 150.3cm (4ft 9in) for females. When compared to other medieval assemblages (Table 7), the Parliament House females appear shorter than their contemporaries, and while the males are lacking in any particularly tall individuals, the mean stature is broadly comparable with males from other sites. That the stature means from Parliament House are most comparable with those of the St Giles' individuals suggests that the population of Edinburgh experienced broadly similar living conditions in the medieval period.

Table 7 Stature comparison with other medieval assemblages

Assemblage	Male		Female	
	Range (cm)	Mean (cm)	Range (cm)	Mean (cm)
Parliament House, Edinburgh	161–171	167.8	145–161	150.3
St John's Kirk, Perth	169–170	169.5	149–163	153.5
St Giles' Cathedral, Edinburgh	155–180	167.7	149–167	155.9
Linlithgow	159–179	170.0	147–165	156.0
Whithorn	158–183	170.0	139–169	156.0
Glasgow Cathedral	160–186	172.2	147–163	156.7
St Helen-on-the-Walls, York	154–184	169.0	145–173	157.4
Newbattle Abbey	163–172	168.8	150–166	157.6
Nethergate, Dundee	161–181	169.6	147–163	158.4
Fishergate, York	155–190	171.5	145–170	158.8
Aberdeen	163–179	168.0	147–169	160.0

A.1.11.6 Dental health

The true prevalence rate for ante-mortem tooth loss at Parliament House was 4.4%. At Newbattle Abbey the prevalence was 6%. At Aberdeen this was 4% and 9% at Linlithgow. For Fishergate the prevalence for the earlier assemblage was 3.2% and 11.4% for the later assemblage. At St Helen's this was much higher at 17.5%.

For Parliament House dental abscesses were present in 0.3% of individuals. This compares with St Helen's (1.2%) and the early Fishergate sample (1.9%). At Whithorn the true prevalence rate was 2%. The total true prevalence rate for dental abscesses in this period from the survey by Roberts and Cox is 3.1% (Roberts & Cox 2003). The low prevalence at Parliament House may be indicative of diet or dental hygiene.

At Parliament House the true prevalence rate for dental caries was 3.8%. A similar level was seen at Nethergate, Dundee (3.7%). At St John's Kirk, Perth, the figure was very low at only 1.7%. The true prevalence rate for caries was 5% at Aberdeen and 8% at Linlithgow. The true prevalence rate for the Whithorn assemblage was higher at 6.4% and Newbattle Abbey (11%). The prevalence was also higher at St Helen's (6.1%) and Fishergate (4.3% and 12.1%). The true prevalence rate in the late medieval period for dental caries was 5.5% (Roberts & Cox 2003). Parliament House was relatively low in comparison, again possibly indicative of diet or dental hygiene.

A.1.11.7 Pathology

Two individuals at Parliament House had evidence of fractures; a crude prevalence rate of 2.1% (n=95). The St Giles' assemblage had 13 individuals with evidence of fractures (crude prevalence rate of 11.5%). At Glasgow fractures were seen in six individuals (7.6%) and at Whithorn in 4.7%. At Fishergate the prevalence of fractures was high at 16.2%.

At Parliament House there were five instances of periostitis; a crude prevalence rate of 5.3% (n=95). Periostitis was much higher in the St Giles' assemblage with a crude prevalence rate of 18.6%. At Glasgow periostitis was seen in two individuals; a rate of 2.5%. At Whithorn this was more frequent (9.7%). The total crude prevalence rate for periostitis in this period from the survey by Roberts and Cox is 14.1% (Roberts & Cox 2003). Parliament House was well below this level, which may be indicative of the health of the population.

A.1.12 Conclusions

This assemblage represented a cross-section of the lay population buried at the Parliament House churchyard extension during the late medieval period in Edinburgh. At this time Edinburgh saw an influx of people as it became a trading centre and emerged as the capital of Scotland.

The evaluation provided, however, an incomplete representation of the cemetery as a whole, and the skeletal assemblage may therefore be biased. The assemblage from Parliament House consisted of 55 (57.9%) adults and 40 (42.1%) sub-adults. When compared to other parish assemblages the proportion of sub-adults is high. The reason for the high frequency of juveniles is not known but could be due to an epidemic. While a large number of juveniles were represented in the Parliament House mortality profile the younger age categories were poorly represented. The relatively low number of younger juveniles has been attributed to a possible difference in burial practice for very young children. The slightly higher numbers of males to females (1.7:1) at Parliament House may be due to bias caused by small sample sizes or may represent a real difference in the sexes due to socio-economic factors.

When compared to other broadly contemporary groups, the Parliament House females appear shorter than their contemporaries, though the males are not particularly different to contemporary populations; the stature means are most comparable with those of the St Giles' individuals. While this might be indicative of diet and status, the osteological remains demonstrated better health and dental hygiene than other populations of similar date.

A number of pathologies were identified in the assemblage including fractures and possible tuberculosis. These were the normal range of pathologies for a cemetery of this nature.