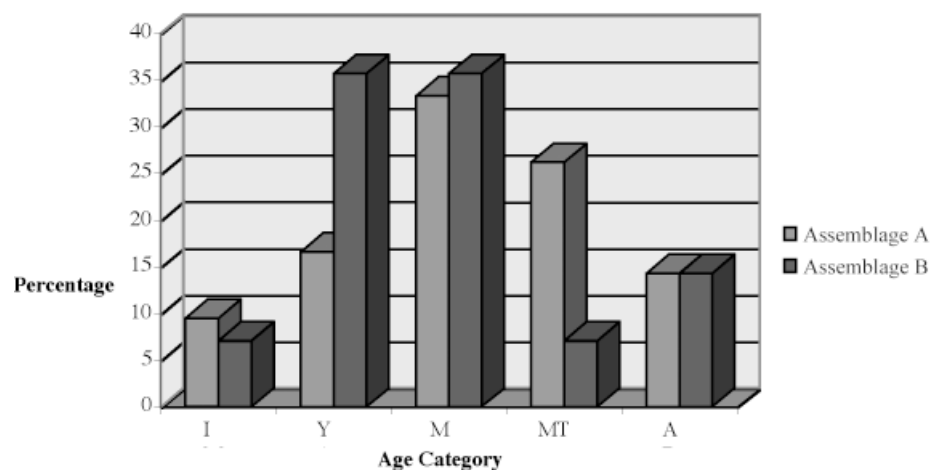


Table 6.1 Age of articulated skeletons.

age	Assemblage A		Assemblage B	
	number	sex	number	sex
7 years $\pm$ 24 months	1	?	1	?
13–15 years	1			
14–17 years	1			
15–18 years	1			
young-adult	7	1 female, 4 male, 2 ?male	5	1 female, 1 ?female, 2 male, 1 ?male
middle-adult	14	1 female, 1 ?female, 10 male, 2 ?male	5	3 male, 1 female, 1 unknown
mature-adult	11	1 female, 10 male	1	1 male
adult	6	1 male, 3 ?male, 2 unknown	2	1 ?male, 1 unknown
total adult	38	3 female, 1 ?female, 25 male, 7 ?male, 2 unknown	13	2 female, 1 ?female, 6 male, 2 ?male, 2 unknown

Table 6.2 Numbers of male and female burials at five medieval sites.

site	reference	number of individuals	number of adults of known sex	
			male	female
Isle of May	Assemblage A	42	32	4
Isle of May	Assemblage B	14	8	3
Whithorn	Cardy 1997	1553	314	356
Logies Lane	Cardy 1993	121	28	24
Kinnoul Street Friary, Perth	Bruce 1985	23	8	9
Carmelite Friary at the Green, Aberdeen	Cardy 1996	86	26	22



Illus 6.1 Percentage of individuals within each age group.

I immature individual
 Y young-adult
 M middle-adult
 MT mature-adult
 A adult

6 Human remains

Nicola Battley, Julie Roberts, and Sarah King

6.1 Introduction

A sample of 56 complete or partial articulated extended inhumations were recovered. The burials were divided into six groups by the excavator based on their morphology and date (*see* Chapter 4). As the numbers of individuals within each group was relatively small, the burials have been divided into two assemblages in order to attempt some comparison of their pathology through time. Assemblage A consists of 42 individuals in burial Groups 1, 2 and 3, broadly dating from the fifth century to the twelfth century. Assemblage B consists of 14 individuals in Burial Groups 4, 5 and 6 and broadly dates from the 12th century to the 17th century. The significance of the following observations must take into consideration the different sizes of these assemblages.

In addition, unarticulated bone was recovered from about 120 contexts. This ranged from single stray bones to large charnel pits containing the remains of several individuals. The unarticulated bone has been catalogued and pathology noted, but is not otherwise integrated into this report. The unarticulated bone contained the only evidence for the presence of infants and neonates. The preservation of bones was generally fair or good. A full and complete burial catalogue is in the Archive.

6.2 Methodology

It was possible to determine the age at death of 48 of the 56 articulated skeletons. The broad age categories used to describe the adult individuals are:

young-adult = 18–24 years
middle-adult = 26–45 years
mature-adult = 45 years +

The term ‘immature’ is used throughout this report when referring to the class of individuals who had not reached adulthood. Immature individuals were divided into children, aged 3 to 10 years, and juveniles, aged 11 to 17 years.

6.3 Palaeodemography

6.3.1 Age at death

It was not possible to produce a demographic profile of the site by means of mortality and survivorship curves, as sample sizes were too small and age ranges too wide. However, a detailed analysis of the data was undertaken

and comparisons with contemporary sites were made. Table 6.1 shows the number and ages of the articulated skeletons. At the most basic level this indicates that individuals of both sexes and all ages were buried in the cemetery. The articulated burials, however, did not include any individuals aged less than 7 years $\pm$ 24 months, this age group only being represented in the unarticulated bone assemblage.

6.3.2 Sex

Both male and female adults were present in both burial groups, but Group 1 was a concentration of 14 exclusively male burials located within the cemetery.

In Assemblage A as a whole, a total number of 32 males/?males, and 4 females/?females were present, a ratio of 8:1. Amongst Assemblage B burials of known sex, 8 were male/?male and 3 were female/?female, a ratio of almost 3:1. These figures, particularly in Assemblage A, are less balanced than those seen at other contemporary sites where numbers of males and females were approximately equal (*see* Table 6.2).

6.3.3 Age

Two main differences were apparent: a proportionally greater number of young-adults in Assemblage B and a proportionally greater number of mature-adults in Assemblage A.

Broadly contemporary Scottish sites were chosen for comparison of age distribution (Bruce 1985; Cardy 1993; Cardy 1996; Cardy 1997). Comparison with these other sites was difficult as ageing categories varied, and the raw data was not always available. For example, at Kinnoul Street, Perth, the percentage of young-adults may have been inflated by the inclusion of those aged 25 to 30 years, who would have been assigned to the middle-adult category in the Isle of May data. For the purposes of comparison, middle-adults were taken to equate with ‘early middle age’ and ‘middle age’, as categorised by Cardy and Bruce. Mature-adults were taken to equate with their ‘late middle age’ and ‘old age’ categories.

Immatures

Prior to modern medicine it was usual for approximately one-third of any cemetery to be immatures, particularly perinatal individuals (Chamberlain 1994; Cardy 1997). The percentage of immature burials on the Isle of May was significantly low. The immature individuals from both assemblages were either children (aged 5–11 years)

or adolescents (aged 12–18 years). This is not simply a reflection of poor preservation, (as the presence of infant bones in the unarticulated assemblage shows), but perhaps more due to selective burial practices whereby the neonates were buried elsewhere.

Young-adults

In all, 16.6 per cent of Assemblage A burials and 35.7 per cent of Assemblage B burials were young-adults. A low mortality rate amongst this age group is normal, except in periods of war, plague, or social change such as mass migration. The higher percentage in Assemblage B may be related to changes in the function of the priory during its later history, that is its possible development as a healing cult related to pilgrimage. This theory may be supported by the high frequency of pathological conditions (the majority of which indicated chronic illness) observed on the young-adult skeletal remains. The number of young-adults from Assemblage A was similar to that from the other sites (with the exception of Kinnoul Street), but the proportion of young-adults present in Assemblage B was considerably higher.

Middle-adults

Of Assemblage A burials 33.3 per cent were middle-adults and of Assemblage B burials 35.7 per cent. In modern terms this is considered to be a relatively safe time of life, but in archaeological populations it often displays one of the highest mortality rates. This may be due to shorter life expectancies in the medieval period, or to a tendency to underestimate the age of older adults (Boddington 1987). Both Whithorn and the Carmelite Friary at the Green showed similar results to the May.

Mature-adults

A total of 26.2 per cent of Assemblage A burials and 7.1 per cent of Assemblage B burials were mature-adults. The majority of these mature individuals were located in the group of males in the cemetery trench (Group 1) and it is possible that these burials represent part of an early monastic community. The percentage of mature-adults in Assemblage A is significantly higher than that recorded at the three other sites; the figure from Assemblage B compares well.

6.3.4 Distribution of burials

The distribution of the burials was examined in order to determine whether there were any age- or sex-specific areas in the cemetery (see Illus 6.2 and 6.3). Males predominated in most areas. Females were spread throughout the site and mixed in with male burials within cists. This suggests that they were not given any different treatment in death, except 1033, a middle-adult female, in the single cist burial from Assemblage B.

Assemblage A

Group 1 contained only males and possible males. These were all middle or mature-adults, except two: one adult, the other sub-adult. This may indicate that the area was used exclusively at this time for the burial of members of the religious community. Group 2 showed the greatest diversity in terms of age and sex distribution, perhaps partly because this group comprised the largest number of individuals. The largest age category was middle-adults ($n=7$), then young-adults ($n=5$) and mature-adults ($n=3$). Two individuals could only be identified as adult. This contrasts with the predominantly middle to mature age distribution seen in Group 1. Group 3 contained four males and one individual of unknown sex. Although the sample size is small, this could be an additional area for burials of members of the religious community, dating to a slightly later period than Group 1.

Assemblage B

Due to small sample sizes few meaningful conclusions can be reached about the age and sex distribution of this assemblage.

6.4 Metric data and non-metric traits

6.4.1 Stature

Stature was calculable for 32 adults from Assemblage A, and 12 adults from Assemblage B. The mean statures (in cm) for each age group and sex are summarised in the Tables 6.3 and 6.4. Numbers in brackets denote the number of individuals in each sample.

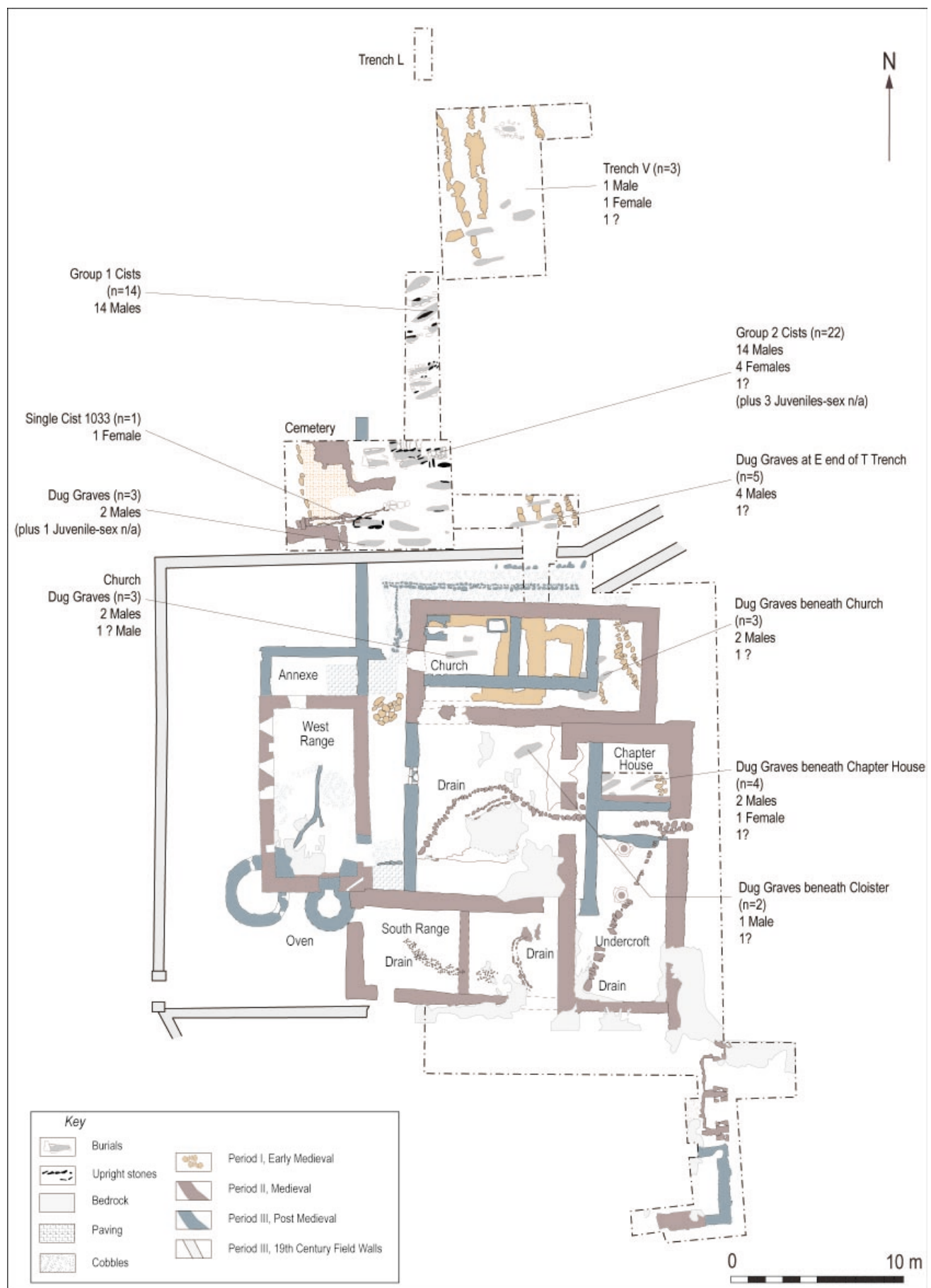
Table 6.3 *Assemblage A statures.*

	male	?male	female	?female
young-adult	170.4 (4)	164 (2)	159 (1)	0
middle-adult	171.9 (8)	168.2 (2)	0	158
mature-adult	172.5 (9)	0	160.5 (1)	0
adult	173 (1)	173 (3)	0	0
average	171.95	168.4	159.5	158

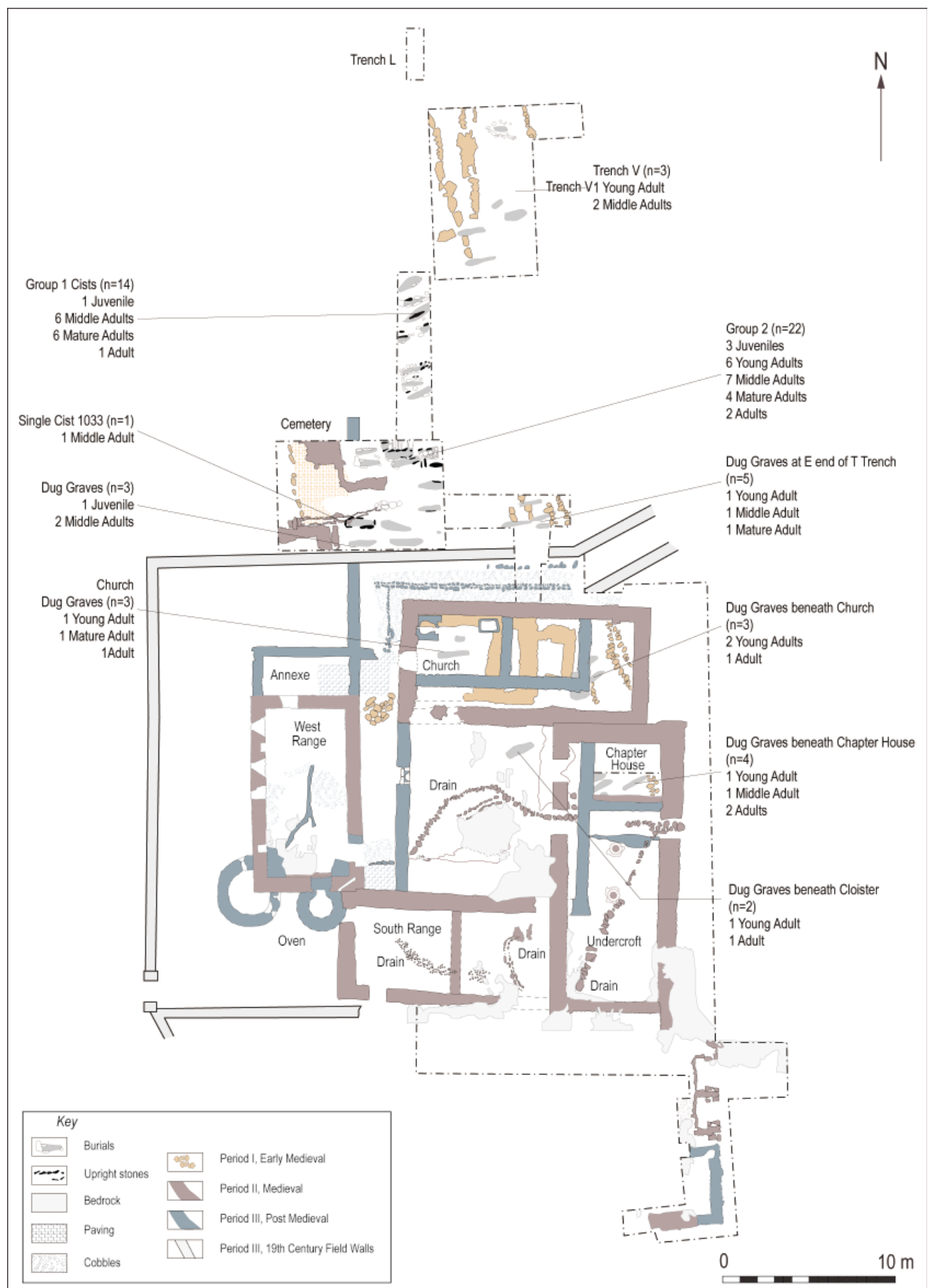
The average male/?male height was 170.4cm (5ft 7in) and female/?female height was 159.1cm (5ft 2½in).

Table 6.4 *Assemblage B statures.*

	male	?male	female	?female	unknown
young-adult	173 (2)	173 (1)	166.5 (1)	155 (1)	0
middle-adult	176 (3)	0	162 (1)	0	159.8 (1)
mature-adult	166.6 (1)	0	0	0	0
adult	0	180 (1)	0	0	0
average	171.86	176.5	164.3	155	159.8



Illus 6.2 Plan of site showing distribution of sexes.



Illus 6.3 Plan of site showing distribution of ages.

Table 6.5 Comparison of stature (in cm) with skeletons from other sites.

site	period	male	number	female	number
Isle of May	5th–17th century	171.8	37	160.2	6
Whithorn	6th–7th century	176	5	<i>na</i>	0
Whithorn	15th–16th century	169	128	155	140
Glasgow Cathedral	13th–16th century	174.1	22	156.5	14
Kinnoul St, Perth	medieval	170	4	153	2
Carmelite Friary on the Green	13th–16th century	170	47	158	28
Dunbar (DB09 and DB10)	Early Christian	171	?	157	?
Logies Lane, St Andrews	15th–16th century	169	14	156	4
Ensay	16th–20th century	166.2	86	155.2	100

The average male/?male height was 173.72cm (5ft 7in), range 160cm (5ft 3in) to 188cm (6ft 2in). Female/?female average height was 161.2cm (5ft 3in), range 155cm (5ft 1in) to 166.5cm (5ft 5in).

Table 6.5 compares stature from the Isle of May with average male and female heights from other sites.

The average stature of the male individuals from the Isle of May was almost equal to the mean male stature from all the sites combined (170.7cm) and exactly equal to the ‘average British Medieval male stature’ of 171.8cm cited by Roberts and Manchester (1997, 27). The females, however, were considerably taller than average. This may be because the females buried on the island were of relatively high status and well nourished during their formative years (although two show signs of nutritional deficiency), or that the figure is skewed due to the small sample size of six, and the presence of one tall female, at 166.5cm.

6.4.2 Metric and non-metric traits and anomalies

Examination of the metric traits and non-metric traits and anomalies was undertaken, but with no significant results apart from the level of metopism which was particularly high in Assemblage A (*see* Archive). Metopism is where the frontal bones of the skull do not properly fuse.

Table 6.6 The incidence of metopism from sites in Scotland.

site	crania observed	percentage with metopism
Dunbar (DB09 and DB10)	?	0
Isle of May, Assemblage A	16	25
Isle of May, Assemblage B	11	0
Glasgow Cathedral	33	3
Ensay, 1800 to present day	39	5
Ensay, 1500–1800	126	24.9
Whithorn, medieval	563	11
Carmelite Friary, Aberdeen	149	16
Logies Lane, St Andrews	44	27.3
Kinnoul St Friary, Perth	11	64

6.5 Health and disease

6.5.1 Trauma

Three main groups of traumatic conditions were identified in the Isle of May skeletons: fractures, cut marks and soft tissue injuries.

Fifteen examples of traumatic injury, affecting ten individuals from Assemblage A (23.8 per cent of the

Table 6.7 Pathology.

* ‘Other’ includes inflammatory joint disease, defects of the articular surface (DAS), and diffuse idiopathic skeletal hyperostosis (DISH). Spinal joint disease (SJD) includes Schmorl’s nodes.

pathology	Assemblage A			Assemblage B		
	number of individuals	number affected	%	number of individuals	number affected	%
trauma	42	9	23.8	14	4	42.9
infection	42	15	35.7	14	4	28.6
degenerative joint disease	42	27	64.3	14	4	28.6
spinal joint disease	32	29	90.6	9	8	88.9
metabolic disorder	39	4	10.3	13	4	30.8
circulatory disorder	42	1	2.4	14	1	7.1
dental	28	27	96.4	11	8	72.7
congenital	42	7	16.6	14	4	28.6
other*	42	9	21.4	14	5	35.7

population), were identified. Ten of these were fractures, two were the specific condition *os acromiale*, and three were enthesopathies. In Assemblage B, nine examples affecting six individuals were identified (42.9 per cent), three were cut marks (affecting the same individual), two were fractures, and four were enthesopathies (two affecting the same person).

6.5.1.1 Fractures

Table 6.8 *Assemblage A fractures*.

context	sex	age	fracture type
1025	M	YA	compression fractures of thoracic vertebrae
995	?M	Y–MA	compression fracture of thoracic vertebra
868	M	MTA	fractured right scapula (fossa), ?compression fractures of thoracic and lumbar vertebrae
888	M	MA	healed oblique fracture of right 3rd metacarpal
981	F	MTA	healed, malaligned fracture of left 4th metacarpal
959	M	MTA	unhealed fractured skull
1022	M	YA	fractured maxillary second molar, with subsequent arrested growth of tooth and large cystic area
967	M	MTA	compression fracture of lumbar vertebra, healed fractured rib

Table 6.9 *Assemblage B fractures*.

context	sex	age	fracture type
1138	?F	YA	fractured nose – deviated nasal septum
386	M	YA	fractured nose – deviated nasal septum

The overall percentage of fractures identified was 23.8 per cent in Assemblage A, and 14.3 per cent in Assemblage B. The figure from Assemblage A is considerably higher than the rates observed at Logies Lane (10.7 per cent), Whithorn (6.7 per cent) and Glasgow Cathedral (11.6 per cent).

Only one of the injuries was thought to represent interpersonal violence. The unnaturally straight fracture lines located above the left orbit of skeleton 959 (Group 2) had the appearance of being deliberately cut, rather than broken. There was no evidence of remodelling around the edges of the break, suggesting that this had happened shortly before or at the time of death. The nature and location of the injury suggest that it may have been caused by a sharp sword, wielded by a right-handed person. If this were the case, the severity of the injury and the absence of any healing probably indicates that this was the cause of death.

Three other fractures *may* have been the result of interpersonal violence. The two fractured noses from Assemblage B and the fractured molar from Assemblage A. The latter is likely to have been caused by a sharp

blow to the lower jaw, or possibly a fall. The injury killed the tooth and caused a dental cyst (Kerr, archive).

The fractured scapula observed in skeleton 868 (Group 1) was well-healed but had been quite severe, 'almost breaking the blade of the scapula in half' (King 1995). The individual also suffered from kyphosis of the spine, due to compression fractures of four lower vertebrae. These may have occurred during the same incident, perhaps a fall, which resulted in the fractured scapula.

Compression fractures of one or more vertebrae accounted for 40 per cent of the fractures in Assemblage A; quite why the incidence was so high is unclear.

6.5.1.2 Cut marks

Three sets of cut marks were found on skeleton 1211, a young-adult male from Assemblage B. The first two were shallow cut marks found on the surfaces of the right trochlea and the left lateral femoral condyle. They may represent some superficial minor injury, or even *post mortem* damage. The third cut mark located just above the right supra orbital ridge/glabella was certainly *ante mortem*, having evidence of healing. It was 15.3mm long and 3.5mm wide, and may have been the result of either a deliberate blow, or an accidental knock to the head. Again, the injury was fairly superficial.

6.5.1.3 Soft tissue injuries

There did appear to be a clear distinction in the types of traumatic injuries seen in the two burial groups. Assemblage A had a significantly higher proportion of fractures than Assemblage B (66.6 per cent of all traumatic injuries compared to 2 per cent), and Assemblage B had a greater percentage of soft tissue damage (44.4 per cent compared to 22.2 per cent). Overall the rates of traumatic injury were high, particularly in Assemblage B, when compared to other sites.

Six individuals displayed enthesopathies (the result of repeated trauma to the point where a ligament or a tendon attaches to a bone), three from Assemblage A (7.1 per cent of the total population) and three from Assemblage B (21.4 per cent). Perhaps the most interesting was skeleton 1137 (Group 5), a robust middle-adult male, of tall stature (188cm). The large bilateral enthesopathies on the scapulae at the insertion of the costo-clavicular ligament may indicate repeated protraction and retraction of the shoulders. This individual also suffered from bilateral degenerative joint disease of the acromial ends of the scapulae and distal humeri. He suffered from moderate to severe degenerative changes in the thoracic spine and also had enthesopathies on both ischial tuberosities. The latter is sometimes termed 'weaver's bottom', associated with long periods of sitting (Kennedy 1989). Taken together, it may be permissible to suggest that this individual could have been accustomed to performing actions similar to those of rowing a small boat.

Os acromiale was observed in the left scapula of skeleton 1025, a young-adult male, and in skeleton 995,

a young–middle-adult ?male, both from Group 2. The condition is caused by continued and heavy stress at the shoulder joint. It has been associated with use of the English long-bow by military archers (Kennedy 1989), though other stresses would produce the same result.

6.5.2 Circulatory

Osteochondritis dissecans was the only condition identified which might be included in this category, although it might also be described as a traumatic condition (Forrester and Brown 1987) and included in the category above. Two cases of osteochondritis dissecans were identified.

6.5.3 Degenerative joint disease

The most common type of joint disease found in any archaeological population is osteoarthritis, which, together with osteophytosis, is often termed degenerative joint disease. Tables of frequency rates can be found in the archive. Twenty-seven of the 42 (64.3 per cent) Assemblage A individuals suffered from degenerative joint disease of varying severity (consistent with around two thirds, observed at Logies Lane, and 61 per cent at Glasgow Cathedral). The sexes were equally affected.

Six out of the 14 (42.9 per cent) individuals from Assemblage B suffered from some form of degenerative joint disease other than spinal. It appears that females were more frequently affected than males, although the sample was small and therefore may be biased. The prevalence of the disease in the ankles was in marked contrast to the Assemblage A individuals, where they were the least frequently affected joints. The prevalence amongst Assemblage B was considerably lower, than Assemblage A and the other sites. This is probably due to differences in the age structure of the two samples, where Assemblage A had a greater percentage of mature-adults and Assemblage B had a greater percentage of young-adults.

6.5.4 Spinal joint disease

Assemblage A

A total of 90 per cent (29 out of 32) of the adult individuals from Assemblage A suffered from spinal joint disease. The prevalence of spinal joint disease in general increased with age.

The type and severity of the disease varied between the age groups. In the young-adults it was characterised almost entirely by Schmorl's nodes in the thoracic region, suggesting that trauma may have been a primary cause. This pattern was also reported at Glasgow Cathedral (King 1994). In the older categories, degenerative changes in the spine were fairly evenly spread and changes were generally moderate, suggesting that they were the result of generalised wear and tear, rather than of trauma, or a specific activity.

Assemblage B

A total of 88.9 per cent (eight of nine) of the adult individuals from Group B, suffered from spinal joint disease. In 37.5 per cent of cases this was either slight or represented by Schmorl's nodes only.

In both the young-and middle-adult age categories, females suffered from more spinal joint disease than males. This may be related to sample bias, or reflect greater differences between the lifestyles of males and females in Assemblage B. There was an overall tendency for the disease to increase in frequency with age. In the middle-adult category, degenerative change was slight or slight to moderate, with the exception of skeleton 1137 (Group 5). In combination with degenerative disease of the other joints and enthesopathies identified, the spinal joint disease in this individual may be related to occupation (*see* 6.5.1 Trauma).

6.5.5 Metabolic disorders

Cribra orbitalia, porotic hyperostosis, and possible healed rickets were identified.

Cribra orbitalia was identified in a total of seven skeletons: four out of 15 Assemblage A burials with sufficiently intact frontal bones (26.6 per cent), and three out of ten Assemblage B burials (30 per cent). Porotic hyperostosis was identified in one Assemblage B burial, 1120 (Group 6). No other metabolic disorders were identified, although skeleton 1023 (Group 2), a female middle-adult, may possibly have had childhood rickets.

Table 6.10 shows the age and sex of those affected by *cribra orbitalia*, and the severity of the condition based on the grading system devised by Stuart Macadam, where type one is the least severe manifestation (Stuart Macadam 1992).

Table 6.10 *Age and sex of those affected by cribra orbitalia.*

Assemblage	context	age	sex	severity
A	997	14–17 years	?F	Type 3, more prolific in right orbit
A	957	YA	?M	Type 3 right orbit, type 4 left orbit
A	971	YA	?M	Type 2 right orbit, type 3 left orbit
A	999	AD	M	Type 3 both orbits
B	386	YA	M	Type 2 left orbit, right orbit not present
B	1138	YA	?F	Type 3–4 both orbits
B	1137	MA	M	Type 3 left orbit, right orbit not present

There appeared to be a tendency for more young-adults to be affected by the condition, a sign of anaemia, which may reflect the fact that those individuals who died at an early age had suffered from general ill-health during their

childhood. Two of the individuals from Assemblage B, skeletons 386 and 1138, and three of the individuals from Assemblage A, 997, 957 and 971, also suffered from infections which may have contributed to, or caused, the iron-deficiency anaemia. This is particularly likely in skeleton 997 (Group 2), who suffered from long-standing osteomyelitis of the tibia, and skeleton 971 (Group 2), who was a sickly individual with associated congenital abnormalities. These two skeletons also displayed prominent dental enamel hypoplasia which represented severe stress, probably infection, in infancy.

Table 6.11 *Prevalence of cribra orbitalia in comparable sites.*

site	% individuals with <i>cribra orbitalia</i>
Isle of May, Assemblage A	26.6
Isle of May, Assemblage B	30
Kinnoul St Friary, Perth	41.6
Logies Lane, St Andrews	40
Whithorn	30.3
Glasgow Cathedral	1.3
Dunbar	0

The rates observed in Assemblages A and B are broadly comparable with those seen at Whithorn, and slightly lower than those seen at Kinnoul Street and Logies Lane. The difference between these sites and Dunbar and Glasgow Cathedral, might be explained by poor preservation at the former, and differences in the socio-economic status of those buried in the latter (King 1994).

6.5.6 Infection

Bone infections may be specific (caused by a known micro-organism, such as TB or leprosy), or non-specific. A total of 15 (35.7 per cent) of the individuals in Assemblage A and four (28.6 per cent) from Assemblage B displayed evidence of bone infection.

Skeleton 997 (Group 2), a juvenile ?female, suffered from diffuse periostitis affecting the ilia, left ischium, the sacrum, the inner surface of the mandible, the right clavicle, and four of the ribs. This was thought to be the result of haematogenous spread (infection spread via the blood) from an osteomyelitic tibia. The individual may have lived with this infection for many years. The diffuse periostitis, however, was relatively recent and certainly active at the time of death. For skeleton 972 (Group 4) an eight-year-old child, the nature and distribution of the infection suggests a short-lived aggressive, destructive condition, where the pathogens were spread via the subclavian artery (M Bruce pers comm). In both 997 and 972, the infection was almost certainly the cause of death.

An unusual pattern of lamellar periostitis was observed on skeleton 980 (Group 2), a young-adult male. It encompassed a clearly defined, large circular area, on

the crown of the cranium. No corresponding signs of infection were detected on the endocranial surface, so this may have been the result of a severe scalp infection.

Skeleton 1138 (Group 5), a young-adult ?female, showed evidence of woven periosteal new bone on the inner surfaces of three left and two right ribs. This is indicative of a chest infection, active at the time of death.

In addition to this direct evidence of infection, the dental report identified bands of dental enamel hypoplasia (which indicates a period of physiological stress, probably infection) in several dentitions. Skeletons 997 and 1138 showed bands at three- and four-years-old, respectively, 971 and 972 both showed two distinct bands at two and four and skeleton 1030 (Group 2) displayed evidence of three episodes of severe stress between the ages of three and six years and was likely to have been a 'sickly child'. The fact that a number of the individuals had apparently survived several periods of probable infection during childhood may be an indication that they were well cared for and came from relatively high-status families.

The percentages of individuals with evidence of infectious disease in Assemblages A and B were not significantly different, and both are high when compared to other sites. Only 9.7 per cent of the individuals at Whithorn displayed evidence of periostitis, and 1 per cent had osteomyelitis. At Glasgow Cathedral only 7 per cent of the population showed signs of infection, and at Kinnoul Street, just one individual had periostitis of the fibula. As at the May, the ribs and the lower limbs were amongst the most commonly affected bones.

6.5.7 Congenital abnormalities

A congenital abnormality is one that is present at or before birth. In Assemblage A seven individuals (16.6 per cent), and in Assemblage B four individuals (28.6 per cent), suffered from one or more congenital disorder. With the exception of one skeleton from Assemblage A, 971, all had only minor skeletal malformations of the spine or ribs, which would almost certainly have been asymptomatic.

Spinal abnormalities

Spinal abnormalities identified consisted of three examples of *spina bifida occulta* (980, 971 and 888), two of a sacralised fifth lumbar vertebra (985, 837), one of lumbarisation of S1 (814), two individuals with twisted and/or fused spinous processes (980, 1120) and one unfused neural arch of the atlas (971). The individuals affected by *spina bifida* were all from Assemblage A and all male. *Spina bifida* was seen in one individual at Kinnoul Street, Perth (4.3 per cent of the population), and in 16 individuals at Whithorn (1 per cent).

One individual, 971 (Group 2), suffered from a number of congenital abnormalities, including complete sacral *spina bifida occulta*, an unfused neural arch of C1 and an enlarged cranium described as of 'infant-like'

appearance. In addition, the mandible was elongated with a protruding square chin. In the left foot the calcaneus and navicular were completely fused, whilst in the right foot fusion was approximately 25 per cent complete. Some extra metatarsals and metacarpals were recorded with the skeleton. It is possible that all these abnormalities together constituted some type of acrocephalopolysyndactyly (Aufderheide and Rodriguez-Martin 1998, 55), such as Apert's, Carpenter's or Noack's syndromes. These syndromes (which are rare, approximately one per 65,000 births) sometimes result in mental deficiencies and recurring ear infections, leading to deafness, are common. In addition, there are often breathing difficulties, loss of sight and the hands and feet can have duplicated and/or fused digits.

6.5.8 Other

6.5.8.1 *Inflammatory joint disease*

A possible example of rheumatoid arthritis was identified in the bones of 982 (leg bones in Group 2), a ?male adult. A second individual, skeleton 1211 (Group 3), a young-adult male, was also identified as having an erosive lesion at the distal articular surface of a proximal foot phalanx.

6.5.8.2 *Gout*

A possible example of this condition was identified in some disarticulated phalanges associated with an young adult male (cist burial 980, Group 2).

6.5.8.3 *Diffuse idiopathic skeletal hyperostosis (DISH)*

One individual in the Isle of May skeletal collection, a mature-adult male from Assemblage A, was found to be suffering from diffuse idiopathic skeletal hyperostosis (2.8 per cent). No examples of DISH were identified in Assemblage B.

6.5.8.4 *Other*

Two additional pathological conditions were identified, both affecting individuals from Assemblage A. A button osteoma, measuring 11mm maximum diameter, was

observed on the left parietal of skeleton 959, a mature-adult male. This is a benign tumour, commonly found on the cranial vault.

A calcified object, was found in association with skeleton 993 (Group 2), a middle-adult female. The closest comparison identified was to a hydatid cyst found on Ensay (Miles, 1989). This type of cyst is caused by a parasitic infestation which commonly affects the liver, where it can cause extensive necrosis of the tissue.

6.6 Summary

Both sexes were represented in the cemetery, with males predominating at a ratio of approximately 8:1 in Assemblage A and 3:1 in Assemblage B. Individuals of all ages were present above the age of 7 years $\pm$ 24 months (although infant bones were noted among the unarticulated bone). The highest mortality rate was in the middle-adult age category in both groups. There were differences in the age structure of the two populations, with Assemblage A having a higher percentage of mature-adults and Assemblage B having a higher percentage of young-adults. The increase in the percentage of females in Assemblage B, together with the higher percentage of young-adults, may be an indication of the changing role of the site through time, from a primarily monastic community to a centre of pilgrimage and healing.

The greater percentage of degenerative joint disease in Assemblage A probably related to the fact that they were in general an 'older' population, and higher rates of congenital abnormalities, metabolic disorders and traumatic injury in Assemblage B may be evidence to support the theory that one of the functions of the priory was as a centre of healing, although further comparison with other medieval populations would be necessary to state this conclusively. The fact that there were so many bony manifestations of disease, in particular infectious disease, is indicative that those affected were chronically rather than acutely ill, that is their conditions were of a long-term nature. Within the category of 'traumatic injury', fractures were more common in Assemblage A, and soft tissue injuries were more common in Assemblage B. The rate of infectious disease was only slightly higher in Assemblage A.