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THE HUMAN SKELETAL MATERIAL FROM
CHURCH AVENUE, SELBY
(EXCAVATED IN 1996)

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Summary

Twelve in-situ burials (ten adults, one juvenile and one infant) and a number of disarticulated human bone contexts (representing the remains of at least seven adults and eight children under the age of c.12 years) were excavated from Church Lane, Selby, North Yorkshire.

The ten adults from the in-situ burials comprised four males and six females, and there was evidence of at least a further two males in the charnel. The possible bias towards females is undoubtedly a factor of the limited numbers available for examination, and there is no reason to suspect that this population are not demographically normal.

There is no evidence of survival beyond the mid forties and 37% of the group died before the age of eighteen years (with 22.2% dying before reaching 5 years, and 11.1% before the end of their first year).

Stature mean values were broadly similar to those found on other medieval sites with men being slightly taller than average and women slightly shorter.

Full dental remains were available in five individuals and revealed an extremely high percentage for ante-mortem tooth loss (reinforced by examination of the disarticulated jaws).

There was little evidence of pathological processes, disease or trauma.

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A: THE IN-SITU BURIALS

1. Method

Metrical analysis was done following the methods described by Brothwell (1981). Stature estimates have been calculated using formulae developed by Trotter and Gleser (1958). Sexing and ageing techniques used were those described by Brothwell (1981), Krogman (1962), Lovejoy et al. (1985), Meindl et al. (1985), Russell et al. (1993), Schutkowski (1993), Ubelaker (1978) and Webb and Suchey (1985).

2. Condition

The condition of the bones was variable: some previous work in the area had disturbed a number of skeletons causing problems of abrasion, breakage, loss of material and disturbance which at its worst led to some bones being of only fair condition. Eight contexts had suffered disturbance leading to loss/disarticulation of the lower body (below the pelvis) and in a further one the lower legs had been lost. However, where undisturbed the state of the bones was excellent and in many contexts the small bones of the hand and feet were well preserved, together with articular surfaces (which frequently suffer loss and damage). In addition the bones of an infant were found to be in good and easily recognisable condition.

Unfortunately due to previous work in the area (along the line of a gas pipeline) seven skeletons were incomplete as bones were missing/destroyed.

The chemical/physical condition of the bones was also generally very good with little degradation or softening and no problems were encountered in washing and cleaning the bones.

3. Number of individuals

Because this excavation took place over a restricted area (limited by the bounds required by the pipeline) the material removed obviously represents only a small proportion of those individuals originally buried at the site. The (partial) remains of twelve individuals from in-situ burials were examined and the data analysed for this report. In addition there were a number of contexts containing disarticulated bones and these were examined to identify the minimum number of individuals present: this analysis is discussed later in the section on disarticulate material.

4. Demographic analysis

Whilst it is accepted that the total number of individuals examined is small (n=12), limited demographic work relating to sex, age at death and pathological conditions was possible. However, it should be realised that because of damage, abrasion and loss of material the proportions / percentages given for the various conditions may be higher than the values given.

Age at death calculation is most accurate in children/juveniles where dental eruption/development and epiphyseal fusion evidence can be used; these techniques were used to age two individuals in the in-situ burials (one an infant of less than six months, the other c.15/16 years).

Estimation of age in adults is more difficult and factors analysed included degree of molar attrition (Brothwell, 1981), and the development of certain bones: the pubic symphysis (Brothwell, 1981; Krogman, 1962; Meindl et al., 1985), the auricular surface (Lovejoy et al., 1985) and the sternal end of the fourth rib (Icsan and Loth, 1986; Russell et al., 1993). Excellent preservation allowed all four methods to be utilised in one individual, whilst a further four were aged using three techniques. Unfortunately loss of material, in particular the skull/dentition or pelvis (due to disarticulation and damage, usually caused by the previous work relating to the gas pipeline), meant that two individuals were aged using only one technique (the development of the sternal end of the fourth rib). It is accepted that greater accuracy is obtained with the use of more methods, and that ageing by a single criteria is not good practice, but it does allow the range of 'age at death' to be narrowed from simply "adult"

The good preservation and condition of the bones was also appreciated in sexing of individuals: four contexts (one an infant) allowed examination of both pelvis and skull, five of the pelvis alone, and two of the skull. The remaining context was sexed by bony morphology. Morphology of long bones was also examined to determine the degree of muscular development and stature calculations were performed where possible (Trotter and Gleser, 1958).

4.1. Juveniles

Two juvenile skeletons were found among the in-situ material examined: one was aged c. 15/16 years at death, and the other was an infant who died between the 3rd and 6th months of life. All of the other in-situ burials were of people who had survived to at least the early twenties. However this picture of survival is almost certainly biased since excavation at other Medieval cemeteries has found that between 30% and 40% of individuals died before the age of 18 years (Monkwearmouth 35.5%, medieval Jarrow 39.2%, St.Helens, York 30.5%), values which are reinforced when the disarticulate material is taken into account (see second section).

Sex determination in children is notoriously difficult, and some hold that the methods used are highly unreliable. However, data published by Schutkowski (1993) uses the pelvis and mandible to provide tentative sexing methods and these techniques were used to sex the infant (Skeleton 19) as a possible female. The other juvenile was aged c.15/16 years at death and the morphology of pelvis and skull sufficiently developed to indicate a female individual.

4.2. Adults

The remaining ten burials are all of adult individuals: of these, four have been classed as "male" (three definite and one probable) and six as "female" (five definite and one probable).

Sex	Number
Definite male	3
Probable male	1
Definite female	5
Probable female	1

Total 10

If the 'probable' and 'possible' sexing is accepted as such the sexual ratio is 4 males : 6 females (40% : 60%). In a demographically "normal" situation the balance of males to females should be approximately 50:50, and although few medieval sites have these exact proportions some are closer to the norm:-

Site	Males (%)	Females (%)
Selby	40	60
Medieval Jarrow	56	44
Blackfriars	63	37
Darlington	73	27
Guisborough	51	49

The ratio at Selby is unusual in that there are more women than men but this is most probably due to the small number of individuals and not a true bias towards females. With such a limited population it is important not to draw unproven conclusions.

Age at death (in the adults) ranged from the early twenties to the early/mid forties: nine individuals could be aged with a reasonable degree of certainty to within a five year range but one could only be classed as "adult / post early 30's (the skeleton was incomplete with both legs and pelvis missing but the sternal end of clavicle was fused suggesting an age at death of at least the early 30's). There were no molar teeth remaining and the development of severe osteoarthritis probably indicates an older rather than younger age, although this could be associated with a more arduous lifestyle or genetic factors, and may not be age-related. There is no evidence of survival to a greater age (than the mid-forties) in this group.

Age group	Age range	Male	Female
Young adult	18-25	1	0
Y.A.-M.A.	25-35	0	1
Middle aged	35-45	2	5
M.A.-old	45+	0	0
"Adult"	Post mid 30's	1	

Although the number of women is small it is perhaps surprising that only one of them died in the "young adult" range - if, as assumed, childbirth was a major cause of female death one might have expected to find evidence of this. It is *possible* that in this group the women were having children at a later age, but this is supposition.

Conclusions on age at death (from all the in-situ burials) are as follows:

90% of this group survived to the mid-twenties

20% died before the age of 35 years

100% before the late 40's

Although shocking when present day mortality is considered these figures are in line with expected ages for the medieval period, and possibly higher than average as far as the women are concerned, as can be seen below in the table for mean age at death:-

<i>Site</i>	<i>Male</i>	<i>Female</i>
Guisborough	40.3	33.6
Blackfriars	33.9	26.4
Medieval Jarrow	40.2	39.4

Conclusions on sex:

Of the adults (n=10)

Sex	N	%
Male	4	40
Female	6	60

Of the whole group, adults and juveniles (n=12)

Sex	N	%
Male	4	33.3
Female	8	66.7

To overcome the problem of analysis when sex ratios are not 50 : 50 more excavation of complete cemetery sites is necessary. The bias towards women at Selby is most probably related to the fact that the excavation was of a restricted area and it is possible that if the whole burial ground were uncovered the sex ratios would be more 'normal'.

5. Metrical and morphological analysis

5.1. Stature

Among the in-situ burials at Selby complete bones allowing the calculation of in-vivo height were available in all ten adult contexts. Four of these were male/probable male and six were female/probable female.

Sex	Stature range (cm)	Average height (cm)
Male	172 - 175.2	173.8
Female	149.7 - 162.5	157.5

The average male stature of 173.8cm was similar to that found in skeletal material from medieval Blackfriars (173.5cm) and Darlington (174.1cm) but the range at Selby is significantly smaller (i.e. there is a lack of taller and shorter individuals). This is undoubtedly related to the fact that the group is smaller and the individuals all lie closer to the mean height. It is interesting to note that mean height in males obtained from medieval sites in Hartlepool (167.8cm), St Helens, York (169.3cm) and Guisborough (170.6cm) are all shorter - Anderson (1992) found that stature decreases slightly from Saxon to Medieval periods and from south and east to north, and it might be *very tentatively* suggested that this population is possibly of earlier rather than later date, although there is also a

strong genetic factor in stature and it is important not to regard figures obtained from small sets as absolute.

The female mean height of 157.5cm is also similar to that found in some other sites including medieval Jarrow (159cm), St Helens, York (157.6cm) and North Elmham (157.4cm). However the values obtained from Guisborough (162.7cm) and Hartlepool (162.1cm) all indicate a taller female population. The mean figure obtained at Selby perhaps suffers from unrealistic bias in that it was obtained from averaging the stature of only six individuals one of whom is noticeably shorter than the others at 149.7cm: however, even if this woman is discounted the mean height value is only 159cm which is still shorter than found at the latter medieval sites.

5.2. Cranial index

The only skull which was intact enough for full cranial measurements to be taken was from Skeleton 1; unfortunately this individual had an abnormality in premature fusion of the occipital bone which had distorted the growth of the parietals and caused a "bun-shaped" formation at the occiput. It was therefore decided that indices calculated from this skull would be inaccurate.

5.3. Non-metric traits

Few non-metric traits were noted but it must be emphasised that whilst all the bones and fragments were examined with care there remains the possibility that more individuals demonstrated non-metric traits but the evidence was lost in post burial processes and excavation.

- a) Bilateral supra-orbital foramen were present in Sk. 1.
- b) Bilateral lambdoid ossicles were found in Sk. 1 and Sk. 5
- c) A sagittal ossicle was present in Sk. 5.
- d) The right acetabulum of Sk. 7 showed a small crease.

6. Dental analysis

Surviving dental material among the in-situ burials can be summarised as follows:

	Male	Female
Individuals	2	3
Maxillary	2	3
Mandibular	2	3

A total of five individuals have dental remains - two males and three females (one of whom was a juvenile aged 15/16 years at death but she had a full adult dentition and so is considered here). All five have both mandibular and maxillary teeth.

(The skulls of four contexts were in the trench wall beyond the excavation limits, and a further two had no dental remains as the skulls had been disturbed previously).

	Male	Female	Total
Expected	64	96	160
Missing	1	0	1
Observable	63	96	159
PM loss	10	11	21
AM loss	30	20	50
Unerupted/congenital absence	0	4	4
Remaining teeth	23	61	84

6.1. Ante-mortem loss

Loss of teeth during life was noted in all five individuals. This indicates that of the group with dental remains (n=5) 100% lost permanent teeth before they died. This is an extremely high percentage with the men losing considerably more teeth than the women (not unusual in medieval populations).

The percentage tooth loss for the whole group is 31.4% (50 teeth out of a total of 159): by sex the percentage of AM loss is 47.6% in males (30 out of 63) and 20.8% in females (20 out of 96). These extremely high values are mirrored by few other sites, and none within the region for the medieval period:-

Site	% AM loss
Selby	31.4
Blackgate	3.6
Darlington	7.7
Medieval Jarrow	9.1
Guisborough	9.8
North Elmham	11.1
Blackfriars	12.0
St Helens, York	17.5
Hartlepool	18.6

It should be pointed out that these very high percentages may not represent a true value for AM loss: it is possible that some of those individuals with missing dentitions (i.e. those where the skulls were not recovered or had been previously disturbed) may have managed to keep all their teeth in their jaws.. However, it could equally well be true that these values give a very accurate picture of appalling dental health within this population.

Of the fifty teeth lost four are incisors, one a canine, eleven are pre-molars, and thirty four are molar teeth. High loss among the latter is normal in archaeological populations (and also in the present day) presumably because they are at the back of the mouth where it is more difficult to clean effectively leading to an increased risk of infection and caries.

	Molar	Pre-molar	Canine	Incisor	Total
Maxillary loss	14	8	1	2	25
Mandibular loss	20	3	0	2	25

Of the molars lost : in the maxilla 5 are first molars, 4 are second and 5 are third.
In the mandible 7 are first molars, 7 are second and 6 are third

It is also worth pointing out that although most AM tooth loss is due to dental disease (tooth decay, caries, loss due to dental abscess etc.) the two upper incisors lost before death were both medial (one in a male, one in a female) and these were most probably lost through trauma/violence (accidental or deliberate)

The degree of loss is not the same in all individuals and males lost considerably more teeth than females (30 teeth to 20). The reason for this is unclear - it may be that dental hygiene was worse in males, or was possibly associated with eating habits.

Teeth lost	Male	Female
1	0	1
7	0	1
9	1	0
12	0	1
21	1	0

6.2. Caries

Five carious teeth were observed in two females (40% of the group) and affected the mandible more than the maxilla. Skeleton 9 had two in the mandible (left and right first molars) giving a total of 7.7% carious teeth in her mouth. Skeleton 17 had three (maxillary right second and third molars, and mandibular right first molar) meaning that 13.0% of the remaining teeth were carious. This latter individual had also lost seven teeth ante-mortem and may well have had a higher number of carious teeth originally. That caries affect women more than men has been noted on a number of other medieval sites: the reason for this is unclear. Anderson (1994) has suggested that where men live longer they will show a lower incidence of caries having lost teeth earlier in life (due to their being decayed), but in Selby the life expectancy did not appear to vary greatly between the sexes. Both women affected with carious teeth are certainly younger than the late thirties but the male who lost twenty one teeth AM (some of which were almost certainly carious) was only in his early-mid thirties at death.

The caries rate for the whole group is 5.9%, and this must also be given as the percentage of caries in females since no male teeth were found to be carious (see below). This value is comparatively high although on a par with that found at medieval Jarrow

Site	Male (% carious)	Female (% carious)
Selby	0	5.9
Blackgate	1.7	2.6
Medieval Jarrow	2.3	5.7
Guisborough	2.7	4.8
Darlington	4.0	4.6
Blackfriars	6.2	5.6

As stated above, the values given for carious teeth are probably not absolute as it is certain that among the AM losses were a large number of carious teeth, and it is highly unlikely that no males in the population suffered from caries (especially as there are 30 AM losses in the two male dentitions available for examination). This again gives a picture of awful dental health and a great deal of suffering.

6.3. Periodontal disease

Periodontal abscesses were observed in only one individual - Skeleton 17, female - who had an abscess cavity in the maxilla above the left first pre-molar (lost PM). This same woman also suffered from three carious teeth, with a further seven lost AM (see above).

It is worth noting that of the teeth lost AM in other individuals none have the appearance of being associated with abscess development.

6.4. Unerupted teeth / Congenital absence

There were no unerupted teeth evident in those dental remains available for examination.

Skeleton 9 had bilateral congenital absence of both upper and lower third molars (confirmed by X-ray).

6.5. Calculus

Calculus or deposits of tartar were seen in all five individuals:-

Skeleton 1 : minor on lower left 8, massive on lower right 8 (calculus is larger than the tooth crown)

Skeleton 5 : minor on all remaining teeth

Skeleton 9 : minor on lower incisors

Skeleton 17 : minor on lower incisors/canines, and upper molars

Skeleton 20 : minor on two remaining teeth

Some authors think that calculus may be associate with periodontal disease and the development of caries - as all of these individuals suffered from AM tooth loss this might be seen as proof of the hypothesis.

6.6. Enamel hypoplasia

There was no evidence of enamel hypoplasia in any of the teeth remaining in the dentitions from the in-situ burials.

6.7. Dental abnormalities

Four separate dental anomalies were noted in three dentitions from this group:-

a) The upper right lateral incisor (2) in Sk.5 is a peg tooth with a small abnormally shaped crown which is also abnormally positioned in the jaw and deviates towards the canine.

b) This same individual has cusps of Carabelli on both right and left upper first molars (6's)

c) There is malocclusion of the right upper canine (3) which has erupted behind the incisors in Sk.9. The adjacent lateral incisor (2) was lost PM and may have been an abnormal tooth itself as the socket is very shallow

d) There is bilateral abnormality in the upper second and third molars (7's and 8's) in Sk.17 which have short misshapen roots

7. Pathology

7.1. Congenital and other bony abnormalities

Abnormalities were noted in seven skeletons from the in-situ burials, affecting both males and females. These include premature fusion of a skull suture, vertebral anomalies, abnormal morphology of foot bones, and unusual fusion in the scapula.

a) Sk.1 (probable female) shows a condition known as 'bathrocephaly', caused by premature fusion of the lambdoid suture with subsequent growth of the occipital and parietal bones resulting in a "bun-shaped" occiput sticking out at the back of the skull. The effects on the parietal bones are not so obvious but they are not symmetrical, the left bone being larger than the right, and have a slightly 'skewed' appearance. Whilst this skull looks very abnormal it is unlikely that the bony growth caused any problems with cerebral growth and function. The causes of this condition are unknown but it is probably due to a genetic defect; there is also a possibility it may be due to stunted growth associated with poor nutrition (Miles, 1989).

The femora of this skeleton are also markedly bowed antero-posteriorly (bowing forwards). This deformity is possibly due to (healed) rickets (see 7.5.)

b) There are a number of bony abnormalities relating to the vertebrae in this group:

i) Sacralisation of L5 is seen in two individuals (Sk. 6, female, and Sk.8, male)

ii) Two individuals (Sk.5, male, and Sk.17, female) have a foramen instead of a groove for the vertebral artery in a single cervical vertebra each (C7 and C1 respectively)

iii) Sk.21 (female) has a detached neural arch at L5.

iv) Sk.5 (male) has abnormally shaped right articular facets in T11 and 12 which are larger than normal and extended onto the spinal process.

v) Sk.8 (male) has very minor spina bifida occulta affecting L5 (sacralised), S1 and 2.

c) Sk.6 (female) shows a bilateral abnormality in the tarsal bones: there is an anomalous non-bony union between the calcaneus and navicular underneath the talus. The abnormal facets on each bone exactly compliment each other and their perforated surfaces show that in life there was blood flow between the two bones. Abnormalities in the bones of the foot are common and it is unlikely that this individual realised the morphology of her foot was unusual.

d) Sk.7 (female) has abnormalities in the scapulae: in the left bone there is non-union of the acromial epiphysis (which usually fuses between the ages of 17 and 22 years), whilst fusion in the right bone was delayed and only took place relatively close to this individuals death (in her late 30's/early 40's) as the line of fusion is still clearly visible. This condition usually known as 'os acromiale' may be related to occupation as it is possible that repeated traction on the shoulder region could prevent epiphyseal fusion.

7.2. Arthropathies and degenerative disease

As noted in numerous palaeopathological reports the most common pathological condition found in human skeletal material is osteoarthritis affecting the spinal column and other joints; the bones from the in-situ burials at Selby are normal in this respect as all the adults bar one male in his early/mid twenties demonstrate degenerative changes.

Vertebral changes are observed in nine of these people and these are tabulated below showing the levels affected and the severity of the degeneration:-

Context/Sex	Age	Cervical	Thoracic	Lumbar/Sacral
1 (F)	35-40	-	Moderate	-
5 (M)	Late 30's/early 40's	-	Minor	-
6 (F)	25-29	(missing)	-	Moderate
7 (F)	Late 30's/early 40's	Moderate	Moderate	-
10 (F)	Early/mid 40's	(missing)	Moderate	Severe
17 (F)	Mid/late 30's	Severe	Severe	(missing)
18 (M)	post mid 30's	Severe	Severe	(missing)
20 (Prob.M)	Early/mid 30's	Severe	Severe	Severe
21 (F)	Mid/late 30's	(missing)	Minor	Minor

Severe changes: gross derangement of joint with new bone growth around the articular margin, porosity, and eburnation of the bone. Major osteophyte growth around the rim of the vertebral body.

Moderate changes: some new growth of reactive bone around the articular margins ("moderate or marked lipping") with minor porosity of original bone. Moderate osteophytosis of the vertebral body.

Minor changes: minor growth of new bone ("slight lipping") at the vertebral joints and minor osteophytosis of the vertebral body.

The most severe changes are seen in Sk.20 where all the levels of the spine were affected to some degree. In the neck changes are seen from C3 - 6 with porosity, marginal lipping and osteophytosis (of vertebral body and facet joints) becoming worse from upper to lower levels. The left articular facet of C3 is eburnated with major new reactive bone lipping. From T3 - L2 there are extremely marked changes with osteophytosis of the vertebral body and severe porosis which becomes progressively worse from T6 downwards.

Severe changes are also visible in the neck of Sk.18 which extend from C6 - T2 with marginal lipping of the facet joints causing gross changes in shape, and eburnation of the joint surfaces. From T4 - 6 further severe changes are seen affecting the right articular facets with new reactive bone growth and eburnation. The right costal facets of T4 and 5 also show similar changes (also noted at T8 although other lower vertebrae are unaffected).

In Sk.17 the neck and upper back is severely affected by degenerative change visible on the left side of the vertebrae from C3 - T2 (which are grossly misshapen, eburnated and have porotic bone). From T3 - T6 the changes are moderate to minor and there are no degenerative changes in the lower back.

Sk.10 has severe changes visible in the lower spine, notably at L4 and 5 where there is massive marginal lipping and eburnation on the right articular facets. There is also collapse of the vertebral body of L5 which is noticeably lower on the right side (2.2cm to 2.8cm on the left): this woman was in her early/mid 40's and it is possible that she was suffering from post-menopausal osteoporosis. There are also visible changes in the thoracic spine with T8 - 10 showing moderate degeneration in the left costal facets.

Severe changes were seen in Sk.7 affecting the lower back: the costal facets of T10 - 12 showed eburnation, porosity and lipping/grossly altered shape. In the neck (C5 - 7) the changes are more moderate with porosity of the vertebral body.

In Sk.6 there is moderate change visible at L4 and 5 but this is apparently related to the sacralisation of L5 which has caused an abnormal articulation between the two vertebrae. It is possible that had this woman lived longer the effects of this would have affected other vertebrae causing more widespread degenerative changes.

Sk.1 showed moderate change in the thoracic spine (T2 - 10) with the most visible degeneration at T9 and 10 where the osteophytosis of the vertebral body is so marked that the vertebrae are almost fusing together.

It is interesting that severe changes in the spine are seen in as many women as men; frequently males show more degenerative changes than females, usually thought to reflect their more arduous lifestyle. That women demonstrate eburnation, porosity and marginal lipping/osteophytosis here may be due to physically demanding occupations or possibly a genetic factor since it is accepted that arthritic change can be genetically related. This does not necessarily mean there is a familial link between those affected but it is possible the population carried an "arthritis gene".

Degenerative change was also seen in other joints of the skeleton, affecting the shoulder, elbow, wrist, hands, hips and knees with varying severity.

<i>Context/sex</i>	<i>Age at death</i>	<i>Shoulder</i>	<i>Elbow</i>	<i>Wrist/Hands</i>
1 (F)	35-40	Minor	-	-
5 (M)	late 30's/early 40's	Minor	-	-
7 (F)	late 30's/early 40's	Minor	Minor	Severe
10 (F)	early/mid 40's	(missing)	Minor	-
17 ((F)	mid/late 30's	Minor	Minor	(missing)
18 (M)	post mid 30's	Severe	-	Minor
20 (prob.M)	early/mid 30's	Severe	-	(missing)
21 (F)	mid/late 30's	-	-	Minor

(Note: as with the vertebrae this is only a record of *visible* changes. It is extremely difficult to build up an accurate picture of the degree of degenerative change in a skeleton unless it is in good condition and complete. For example, Sk.10 above shows minor changes at the elbow but the shoulder joints were removed by previous work in that area and therefore cannot be assessed)

In the upper limb severe degenerative changes are seen in three individuals - a female and two males. The woman (Sk.7) has extremely severe changes in the bones of the hand, which are worse in the right. There is eburnation in carpals and metacarpals of both hands with a fixed flexion deformity affecting the distal interphalangeal joints of second, third and fourth fingers indicating advanced osteoarthritis. Both males (Sk.18 and 20) show severe changes in the right shoulder with marginal lipping of the glenoid fossa and humeral head, and eburnation at the acromial articulation: the former also has eburnation on the acromial end of the clavicle.

<i>Context/sex</i>	<i>Age at death</i>	<i>Hip</i>	<i>Knee</i>	<i>Ankle</i>
7 (F)	late 30's/early 40's	Minor	Severe	Minor
21 (F)	mid/late 30's	-	Moderate	-

The joints of the lower limb appear to be less severely affected by degenerative change although it must be noted that the legs of a number of skeletons had been previously disturbed and were not available for examination (assessment was possible in seven hip joints, six knees and four ankles/feet). Visible changes were noted in only two individuals, both of whom are women. Sk.7 has minor changes at hip and ankle but severe degeneration at the right knee (the left is missing) with eburnation and porosity of the lateral femoral condyle and marked marginal lipping of tibia and femur. The pattern of eburnation is slightly unusual in that it is found only on the anterior margin of the lateral condyle but it is extremely severe with grooving of the bone. It is possible that this degeneration is secondary to a knee injury, perhaps involving a fractured patella but that bone is unfortunately missing so this remains supposition. (This same woman also suffered from severe arthritic changes in the hands and moderate degeneration of the spine)

Sk 21 has moderate changes of both knees typical of early osteoarthritis and involving marked marginal lipping of femoral and tibial articular margins but no eburnation or porosity.

7.3. Trauma

a) Schmorl's nodes are visible in four individuals affecting the thoracic and lumbar vertebrae. These are traumatic lesions formed in adolescence whereby the intervertebral disc is subjected to stress (i.e. carrying a heavy load) and ruptures such that the nucleus pulposus protrudes and presses against adjacent vertebral bodies. As the bone is still plastic in adolescence it yields to the pressure and forms a small pit in the vertebral body known as a Schmorl's node (Knowles, 1983). Their presence probably indicates a heavy workload commencing early in life.

<i>Context/Sex</i>	<i>Age at death</i>	<i>Vertebrae affected</i>
1 (F)	35-40	T7 and 8
5 (M)	late 30's/early 40's	T7
10 (F)	early/mid 40's	T9 and 10
20 (prob.M)	early/mid 30's	T6-12, L1 and 2

That as many women as men are affected by these lesions is further evidence that (at least some of) the females of this population did not have an easy life.

Other indications of trauma are minor:

- i) Two individuals (Sk.20, male, and Sk.9, female) show loss of upper medial incisors; since this tooth is right at the front of the mouth its loss is rarely associated with poor dental health and is more usually related to traumatic avulsion (either accidental as in a fall, or deliberate as in a punch to the mouth)
- ii) Sk.7 has evidence of a fractured rib: among the fragments from the right side are two (possibly 9th?) with abnormal tapering ends that appear to result from an unhealed fracture c.2.5cm from the vertebral articulation.
- iii) Sk.5 has an abnormal distal phalanx which is flattened and enlarged with a 'double waisted' appearance. This may be due to an injury to the finger end such as a crush fracture caused by trapping in masonry blocks or hitting with a hammer.

7.4. Cribra orbitalia

Cribra orbitalia is a condition related to dietary iron deficiency where bone (primarily in the skull) responds by proliferating in an attempt to increase the red blood cell count and hence the iron levels.

It is visible as strainer like perforations in the orbits. There is no evidence of it affecting any of this group from Selby.

7.5. Evidence of disease

Two skeletons have signs which suggest possible disease. Sk.1 has markedly bowed femora which may be due to rickets. This disease is caused by abnormal calcification of bone due to lack of Vitamin D (either from an inferior diet or lack of sunshine). Developing bones are weak and become bowed due to an inability to withstand muscular action and weight-bearing. However, since the femora in this individual have a normal cortical/bone structure, and no other bones are affected, it can be assumed that if rickets was the cause of the bowed shape then the disease process was resolved later in life (with subsequent normal bone formation). This skeleton also has a bathrocephalic skull (see 7.1.) and it is possible that diet/malnutrition was involved in abnormal growth of that bone.

Sk.20 has abnormal erosive lesions along the anterior edge of the lower thoracic and lumbar. These are possibly due to early spinal tuberculosis, which can spread to T11 from the lungs. Alternatively they could be related to intervertebral osteochondrosis, a condition associated with degeneration of the intervertebral disc causing changes in the mechanical relationship of the vertebral bodies and leading to crescent shaped erosive lesions on the anterior body (Miles, 1989).

8. Summary and discussion

The incompleteness of this group made palaeopathological assessment and analysis difficult, and in some cases impossible, but useful data was obtained. No bodies were complete and the bones represent the partial remains of 12 individuals (1 infant, 1 juvenile and 16 adults).

Sex ratios are not normal as the group contains more women than men. It was possible to sex all the adult individuals (three male, one probable male, five females and one probable female) giving sex ratios of 40% male and 60% female. The juvenile skeleton has definite female morphological traits, and tentative sexing of the infant following the criteria of Schutkowski (1993) suggests that it was also female. If this sexing of immature individuals is accepted the sex ratios for the complete group become 33% male and 67% female. These values are probably not an indication of a demographically abnormal population and most probably relate to the small number of burials under consideration. Alternatively they may be a reflection of bias caused by current sexing techniques.

Age at death ranged from c.3-6 months to the early/mid forties; it was possible to estimate an age at death to within a 5 year range in all except one individual who was at least in his mid-thirties at death. 25% died before the age of 25 years, but 58.3% survived to at least the mid-thirties. This picture of low infant/child mortality is undoubtedly not realistic as a number of younger bones were found in the disarticulate material, and this is discussed more fully in the next section.

Stature calculations indicate that this population was in line with the expected values and ranges for in-vivo height. There were no particularly tall or short individuals and the ranges are small. The mean male height is 173.8cm and the mean female stature is 157.5cm.

Five individuals had permanent teeth remaining; the juvenile female is included in this group as she had a full adult dentition. Ante-mortem tooth loss occurred all five, while caries were found in two females. Only one woman was unfortunate enough to have a dental abscess, whilst all individuals demonstrated some degree of calculus. Malocclusions, peg teeth, Carabelli cusps and abnormal root formation were noted within the group.

Degenerative changes were found in all levels of the spine and were severe in four individuals (two males and two females). Four individuals (two men and two women) had Schmorl's nodes in the thoracic/lumbar vertebrae implying a hard lifestyle which started early, but that women did not have an easy time would seem to be indicated by the changes visible in both vertebrae and other joints. Both men and women had evidence of degenerative change at the elbow and shoulder, but only one woman had visible change at the hip and this is perhaps surprising as this large weight-bearing joint is frequently affected in men.

There is evidence of trauma in two individuals - one suffered a fractured right rib (which had healed prior to death but with non-union of the two fracture ends) and the other an injury to a distal phalanx (exact position unknown since there was some mixing of the hand bones and phalanges are extremely difficult to place accurately). Traumatic avulsion of upper medial incisors (accidental or deliberate) is probable in two individuals.

There is evidence of possible (but unproven) healed rickets and tuberculosis (each occurring in separate individuals).

As stated before the above points are made following careful examination of the skeletal material. The lack of evidence of conditions, disease and pathology does not mean that they were absent in this population, merely that there is no proof they were present.

B : THE DISARTICULATE MATERIAL

A large number of disarticulated bones were also excavated in Selby, some apparently related to in-situ burials, but most in discrete contexts. The main aim of a study of disarticulate material is to provide an estimate of the minimum number of individuals (MNI) present, and hence a more accurate assessment of the number of people originally buried at the site. This is most usually done by a "long bone end count" whereby the proximal and distal ends of the long bones of upper and lower limb are counted and tabulated - the highest number being the MNI. However, when skeletal material is present as incomplete in-situ burials and disarticulate bone it should be obvious that there is a possibility that some of the charnel probably comes from the burials, and hence it is necessary to 'adjust' figures to take account of this. The numbers of long bone ends present in Selby are tabulated below:-

Adult bones:

	<i>In charnel</i>	<i>Missing elements in articulating contexts</i>	<i>Difference</i>
Right humerus - proximal	4	0	4
distal	6	0	6
Left humerus - proximal	1	2	-1
distal	7	5	2
Right radius - proximal	5	1	4
distal	2	3	-1
Left radius - proximal	6	3	3
distal	5	4	1
Right ulna - proximal	6	2	4
distal	1	3	-2
Left ulna - proximal	2	2	0
distal	1	3	-2
Right femur - proximal	1	4	-3
distal	4	5	-1
Left femur - proximal	4	3	1
distal	2	3	-1
Right tibia - proximal	3	6	-3
distal	2	7	-5
Left tibia - proximal	2	7	-5
distal	2	8	-6
Right fibula - proximal	0	6	-6
distal	0	6	-6
Left fibula - proximal	2	6	-4
distal	0	6	-6

Conclusions from long bone end count:

There are no "missing" right humeri among the in-situ burials but there are six distal right humeri in the charnel which indicates a MINIMUM of six additional adult burials which have been previously disturbed and disarticulated.

The size and morphology of the charnel bones indicates the presence of both male and female individuals. In particular, two large right distal humeri are almost certain to belong to males who are not among the in-situ individuals (thus increasing the ratio of males to females)

It is interesting to note that there are more upper limb bones than lower among the charnel (and more of the latter missing from in-situ burials). Since other burials and a nineteenth century pit had

disturbed the lower limbs of six skeletons (8,9,10,17,18 and 20) it is possible that the disarticulated bones were removed at that time and reburied elsewhere - this would certainly explain the apparent lack of leg bones, and although it is unproven there are some anomalies in the charnel. For example, the distal humerus is a strong compact bone and is frequently found in larger numbers in charnel contexts (as was found here) but this also applies to the proximal and distal femur, distal tibia and distal fibula - at Selby there is a noticeable lack of these elements.

As noted above there is a likelihood that some of the disarticulate material belongs to in-situ skeletons. Obviously one is rarely able to "reconstruct" bodies from charnel but where possible measurements were made and these compared with bones unilaterally present in skeletal contexts. Using this method it was possible to *tentatively* link some of the loose bones with incomplete in-situ burials:-

Left distal humerus, epicondylar breadth 5.8cm *possibly* comes from Sk.17 (female, epicondylar breadth in right 5.9cm)
 Left distal humerus, epicondylar breadth 6.8cm, *possibly* comes from Sk.18 (male, epicondylar breadth in right 6.75cm)
 Complete left radius (23.15cm) almost certainly comes from Sk.1 (female, right bone is fragmented but morphology similar)
 Complete left radius (23.9cm) is *possibly* from Sk.20 (stature calculations, and morphology of in-situ right distal right radius)
 Right distal femur (bicondylar breadth >8cm) *possibly* from Sk.20
 Right proximal femur (head diameter 4.2cm) *possibly* from Sk.9
 Left proximal femur (head diameter 4.9cm) *possibly* from Sk.18
 Left proximal femur (head diameter 4.5cm) *possibly* from Sk.17
 The right and left proximal tibiae (a definite pair) are very large and could belong to Sk.8 or Sk.20

As dental remains often prove to be well preserved it is also important to examine these as they may provide a deeper/different insight into the MNI. Disarticulate dental remains were found in eight charnel contexts:

- i) Near to Sk.18: Maxillar fragment, left -- 6 5 4 -
 Wear on the remaining molar tooth consistent with age at death of 25-35 years
- ii) 2014: Mandible, complete, edentulous
 Mandible, complete L X 7 6 5 4 3 2 1 1 2 3 4 e 6 7 8 R
 Molar wear consistent with age at death of 25-35 years. There is retention of the right second deciduous molar within the permanent teeth and no evidence of a (5), although this could be deep within the alveolar bone as the jaw was not X-rayed.
 Mandibular fragment, right / 6 //
 Wear on the remaining molar tooth consistent with age at death of 25-35 years
- iii) 2016: Maxillar fragment - no teeth in-situ and left (3) to right (5) lost post mortem. This fragment is possibly from the same jaw as that noted near to Sk.18 (see (i) above).
- iv) 2024: Mandible, complete L 8 7 X 5 4 / 2 X // 3 // X 7 8 R
 C C C
 Molar wear consistent with age at death of 33-45 years
- v) 2031: Maxillar fragment, right side, no teeth in-situ and (1) to (5) lost PM
 Mandibular fragment, right / 6 X -
 Wear on remaining molar tooth consistent with age at death of 25-35 years
- vi) 2032: Mandibular fragment X X // X X
- vii) 2058: Mandibular fragment, right side - no teeth in-situ and very abraded - unable to assess loss
 Mandibular fragment, right // 4 5 // ? ?
 It is unclear whether this jaw ever had second and third molars - there is no evidence of AM loss and the space between the socket of the first molar and the ramus is very short.
- viii) 2060: Mandibular fragment, right, no teeth in-situ and (5) to (8) lost PM.
 Maxilla, complete, edentulous but with a supernumerary tooth in the anterior left hard palate and bilateral unerupted (4's) or (5's) visible in the buccal side of the alveolar bone.

Examination of the disarticulate dental remains provided the following data:-

<i>Age at death</i>	<i>Maxilla</i>		<i>Mandible</i>	
	<i>L</i>	<i>R</i>	<i>L</i>	<i>R</i>
25-35	1	0	1	3
35-45	0	0	1	1
Unknown	1	3	1	5
Total	2	3	3	9

If the in-situ burials are examined it is found that two have "missing dentitions" in that the skull was disturbed during previous work and therefore the remains *might* be present in the charnel.

Sk.7, female, late 30's/early 40's: the small robust complete mandible from Context 2024 or the 'age unknown' fragments may possibly come from this individual.

Sk.18, mid 30's or older,: any of the 'age unknown' fragments may come from this skeleton - as he was a tall individual it is unlikely that the small complete mandible belongs here.

Conclusions on the dental remains in the charnel:

After adjustment (for remains possibly belonging to in-situ burials) the dental remains give an MNI of at least 7 individuals.

From a complete mandible with in-situ teeth one of these was aged c.25-35 years at death.

A further two right mandibular remains unfortunately only have one remaining molar tooth present in each: ageing from wear patterns on a single tooth is not good practice but wear on these teeth is consistent with what might be seen in a context who died aged 25-35 years and it could tentatively be suggested that a further two individuals represented in the charnel were of this age.

From a total of 100 examinable positions 39 teeth were lost AM (39%) - this very high figure reinforces the high value calculated for AM loss in the in-situ burials and indicates poor dental health was present in the population.

Pelvic remains are also frequently well preserved and their examination useful when considering charnel assemblages; in the material from Selby pelvic remains were found in six contexts.

<i>Age at death</i>	<i>Left pelvis</i>	<i>Right pelvis</i>
<25	0	0
25-35	1	0
35-45	1	1
Unknown	4	3 (possibly 4)
Total:	6	4 (?5)

Conclusions on the pelvic remains in the charnel:

The figure for the right pelvic remains is uncertain since two fragments could have come from the same innominate bone - it is therefore most accurate to state that there are remains of at least 4 and possibly 5 right pelves.

When the in-situ burials are examined it is found that seven individuals have missing pelvic elements (six from the left and four from the right). From the charnel elements it is obvious that none belong to Sk.7 (female, 15/16 years, whose right pelvis is incomplete) as none have the same state of epiphyseal fusion. However, the bones from the remaining five could all be present in those found in the charnel, suggesting that only one left pelvic fragment is from a disarticulated individual. In addition, since all the bones where age at death is indicated could have come from the in-situ burials it is not possible to suggest a possible age at death for the proposed disarticulated skeleton.

Conclusions from adult bones found in the charnel contexts:

Long bones, dental and pelvic remains were examined and found to represent the remains of at least a further seven adult individuals (in addition to the ten in the in-situ burials). This value is an adjusted figure and takes into account disarticulated bones which could have been disturbed from the in-situ individuals.

Of the seven additional persons one was aged c.25-35 years at death and it is possible that a further two were of the same age. The others were all adults but it is not possible to give more accurate estimates.

At least two of the individuals represented in the charnel were definitely male (from very large bone morphology). It is possible that there were also other males but they may have been of more average stature as no other bones (which could not have been disturbed from the in-situ burials) stand out as being distinctly masculine.

Pathology:

There is very little evidence of disease and pathological processes in the disarticulated bones apart from minor degenerative marginal lipping in a proximal tibia; severe degenerative changes (including eburnation and porosity) in a cervical and a lumbar vertebra; a periosteal reaction affecting a pair of tibiae (extending up the shaft from the medial malleolus); a possible incidence of osteochondritis dissecans in distal right tibia; and a fractured rib.

The juvenile bones in the charnel:

When considering immature bones from charnel assemblages a long bone count is not the most useful or accurate method of determining the minimum number of individuals present: it is important to consider the size/age of individuals represented by each bone. For this reason when the bones were examined and catalogued they were compared with reference material of known age and classified accordingly as infant, child or juvenile, within given age ranges. Whilst it is accepted that the bones of a small child might be placed with those of a 'younger' individual, this method is comparative and therefore gives a better picture of how many children are probably present. When the bones are analysed it is found that the minimum number of immature/juvenile individuals is at least eight children under the age of c.12 years, who can be classified more accurately as (at least):-

Two infants - (a) by dental remains one was aged under 3 months at death

(b) The bones of the other are so small that Bass (1987) suggests they are foetal and therefore belong to a premature baby, or one who was extremely small and died shortly after birth (if at full term). Pelvic morphology suggests this individual may have been female.

Two children aged c.2-3 years (one of whom was possibly female by pelvic morphology)

One child aged c.4 years (possibly male by pelvic morphology)

Two children aged c.6-8 years (dental remains from the larger individual suggesting that he/she was closer to 8 years)

One juvenile of c.10-12 years.

A full list of the bones for each proposed individual and the contexts they were derived from is given at Appendix A.

C : CONCLUSIONS ON THE IN-SITU AND DISARTICULATE MATERIAL FROM SELBY:

If the in-situ and disarticulate human bones are accepted as coming from the same population the minimum number of individuals present is as follows:-

	<i>Adult</i>	<i>Juvenile (10-18 yrs)</i>	<i>Children (1-10 yrs)</i>	<i>Infants (< 1yr)</i>
In-situ	10	1	0	1
Disarticulate	7	1	5	2
Total: (n=27)	17	2	5	3

The sex of the adults is as follows:

	<i>Male</i>	<i>Female</i>	<i>Unknown</i>
In-situ	4	6	0
Disarticulate (n=17)	2	-	5

These figures indicate that of the individuals who can be sexed with any degree of certainty the male: female ratio becomes a demographically normal 50 : 50 (n=10). However, it must be noted that apart from two very large humeri (which are almost certainly male) it was not possible to suggest sex of individuals represented in the charnel.

Unfortunately this is also true of age at death, where it was only possible to estimate age at death in one disarticulated mandible:

	<i>18-25yrs</i>	<i>25-35yrs</i>	<i>35-45yrs</i>	<i>Adult</i>
In-situ	1	2	7	-
Disarticulate	-	1	-	6
Total: (n=17)	1	3	7	6

When the juveniles and children are considered tentative sexing is as follows:-

	<i>Males</i>	<i>Females</i>	<i>Unknown</i>
In-situ	0	2	0
Disarticulate	1	2	5
Total: (n=10)	1	4	5

This apparent bias towards sexing as female is possibly a reflection of the technique used. Many hold that sexing of immature bones is so unreliable it should not be attempted; however in the bones from Selby the pelvic morphology did agree exactly with Schutkowski's criteria and the findings have therefore been included.

It was possible to suggest an age at death for all individuals (although in some cases this was done by comparative bone morphology and development and unfortunately not by dental eruption)

	<i>10-18years</i>	<i>6-8years</i>	<i>4years</i>	<i>2-3years</i>	<i>0-6months</i>
In-situ	1	0	0	0	1
Disarticulate	1	2	1	2	2
Total: (n=10)	2	2	1	2	3

If both in-situ burials and disarticulated individuals are considered the picture of infant and child mortality is closer to that expected for a medieval population and whilst 59.3% lived at least until the mid-twenties 37% died before the age of 18 years

29.6% died before the age of 10 years

22.2% died before the age of 5 years

11.1% died before the age of 1 year

It is interesting to note that in the disarticulate material the number of children is apparently greater than the number of adults (at least 8 children to at least 7 adults) whilst in the in-situ burials the number of adults greatly exceeds that of the children (8 adults to 2 juveniles/children). There may be a number of reasons for this but perhaps the most likely is an epidemic illness which children were less fit to survive leading to higher mortality rates.

CATALOGUE OF HUMAN SKELETAL MATERIAL EXCAVATED FROM SELBY, 1996

Notation used in dental recording:

L	Left
R	Right
8,7,etc.	Permanent tooth present in jaw
a,b,etc.	Deciduous tooth present in jaw
/	Post-mortem loss of tooth
X	Ante-mortem loss of tooth
-	Jaw/tooth missing
C	Caries
A	Abscess
U	Unerupted tooth

Other abbreviations in text:

Vertebrae:-

C	Cervical
T	Thoracic
L	Lumbar
S	Sacral

Measurements of bone dimensions and stature are given in centimetres (cm)

Skeleton 1

- Right arm : Humerus - complete 31.7cm (greatest diameter of head 4.3cm; epicondylar br.6.4cm)
Radius - fragmented distal end, shaft and head 22cm+. Lytic areas/small holes in tuberosity with lipping around border of tuberosity ? muscle tear
Ulna - complete 25.4cm
Scapula - fragmented/abraded (glenoid 3.9 x 2.6cm)
Clavicle - complete 13.9cm. Pathological erosion of bone both medially and laterally
Hand: metacarpals 2-5, phalanges x5 (? 3x proximal and 2x intermediate) only
- Left arm : Humerus - distal end and shaft. Fragments of head and shaft also identified
Radius - proximal and distal ends only
Ulna - complete - 25.6cm
Scapula - fragmented (glenoid 3.8 x 2.7cm)
Clavicle - complete 14.3cm. Pathological erosion both ends more noticeable at lateral/acromial end
Hand - metacarpals 1 and 2 (*3 and 4 found in disarticulate material around this skeleton), phalanges x5 (4x proximal and 1x intermediate)
- Right leg : Femur - complete 41.5cm (greatest diameter of head 5.0cm; bicondylar breadth 7.0cm)
Tibia - complete 34.2cm (plateau breadth 7.2cm) Bone thin laterally - midshaft mediolateral breadth 2cm
Fibula - distal end, shaft and fragmented proximal end 31.5cm+
Patella (not in-situ but found among bones close by and match for left patella)
Foot - tarsals (talus, calcaneus, navicular, cuboid medial and intermediate cuneiforms)
Metatarsals 1-4
- Left leg : Femur - complete 41.8cm (greatest diameter of head 4.9cm; lateral condyle abraded)
Tibia - distal end, shaft and fragmented proximal end (Tibial plateau found among bones around this skeleton - matches right tibial plateau)
Patella - abraded
Foot - tarsals (calcaneus, talus, medial and intermediate cuneiforms. *Navicular. Cuboid and lateral cuneiform found in bones around this skeleton), metatarsals - 1st only, phalanges - distal 1st only
- Pelvis : Left - ilium and fragment of ischio-pubic ramus. Part of auricular surface
Right - virtually complete: ambiguous features - sciatic notch wider, ilium flatter but crest strong S curve. And acetabular diameter large (6.4 x 6.2cm).
- Vertebrae : Cervical - C1-7 present. Complete apart from left side of C2. No abnormalities.
Thoracic - T1-12 present - some abrasion of processes and facets
Lumbar - L1-5 present - some minor abrasion
Sacral - sacrum fragmented
- Ribs : fragmented. No sternal ends. Some very minor lipping of vertebral facets.
- Skull : virtually complete. Bilateral supra-orbital foramen. Sutures fused but not obliterated. Multiple wormian bones in lambdoid suture (left and right). Occiput deformed due to premature fusion of sutures.
- Features more female - brow vertical, eminences marked, mandible parabolic (although ramus is more upright and strongly muscled)
- Dentition:
- | | | | |
|----------|---|---------------------------------|---|
| Maxilla | L | X X X X X / / / / 3 / X X X | R |
| Mandible | L | 8 X X 5 4 3 2 1 / 2 3 4 5 X X 8 | R |
- Points:
- Left and right lower 5's are rotating into spaces left by 6's (indicates latter lost considerable time prior to death)
 - Right lower 8 has massive calculus, especially on lingual side which obscures crown and neck. In contrast left lower 8 has tiny rim of very minor calculus
 - Right lower premolars are more worn than left (chewing more on right due to more teeth remaining on that side).
 - Right lower 4 is present as root only ? destruction of crown by caries.
 - Attrition of remaining teeth severe -e.g. right maxillary 3 worn flat with pulp exposure

Pathology:

- 1) Femoral shafts have marked antero-postero bowing most obvious proximally and more marked in left. Angle of neck to shaft small c.90°; this is held by some to be a more female feature (smaller angle) but both femora also have very strongly marked linea aspera (more usually associated with males)
- 2) New bone growth/activity around acetabulums especially superior rim (? associated with additional abnormal pressures due to bowing of femora)
- 3) ?Healed rib fracture - fragment with abnormal thickened area. Level unknown.
- 4) Vertebral pathology. Cervical - no abnormalities detected. Thoracic - osteophytosis of body minor T3/4, affecting spine between T7 and T11 and most severe T9-11 (osteophytes between bodies of 9 and 10 must have been almost fusing). Facet joints affected throughout thoracic spine with minor lipping but more severe changes T3-5 where superior and inferior facets show porosity, lipping and changed shape (more marked on the right side). Lumbar - very minor lipping of facets only. There are also Schmorl's nodes present in T7 and 8.
- 5) The skull show abnormal morphology due to premature fusion of the lambdoid suture resulting in a protuberant occiput. This would have been noticeable but would not have caused any mental abnormality

Conclusions:

Sex: probable female (some ambiguity with pelvic morphology but cranial features are more female)
Age at death : c.35 - 40 years (pubic symphysis and auricular surface)
Stature : problematic. 159.6cm (calculated from humerus, femur and tibia which Trotter and Gleser (1958) consider most accurate)
Pathology: marked antero-postero bowing of both femora (possible healed rickets), premature fusion of lambdoid suture in skull, degenerative changes in spine, most severe in the lower thoracic (T9-11), Schmorl's nodes (T7 and 8), and a possible well healed rib fracture.

Skeleton 5

- Right arm : Humerus - complete 32.1cm (greatest diameter of head 4.6cm; epicondylar br. 6.4cm)
Radius - complete 24.7cm
Ulna - complete 26.7cm
Scapula - part of wing missing, minor lipping around glenoid fossa
Clavicle - complete 14.8cm. Minor ?lytic process at acromial end - holes in bone
Hand : Carpals - hamate, lunate, scaphoid, capitate and pisiform; Metacarpals - all present;
Phalanges - proximal - all; intermediate - all; distal - 1st and ?2nd and 3rd
- Left arm : Humerus - complete 32.6cm (greatest diameter of head 4.6cm; epicondylar breadth 6.4cm)
Radius - complete 24.7cm
Ulna - complete 26.6cm
Scapula - wing fragmented, otherwise complete
Clavicle - 15.5cm. Noticeably longer than and no 'lytic' area at acromial end
Hand : Carpals - all; Metacarpals - all; Phalanges - proximal -all; intermediate - all; distal - 1st and ?2nd - 4th
- Right leg : Femur - complete 46.5cm (greatest diameter of head 4.9cm; bicondylar breadth 7.9cm)
Tibia - proximal end and shaft fragment (plateau breadth 7.8cm)
Fibula - shaft fragment only, no articular surfaces
Patella - tendon insertion well ossified but no degeneration of articular surface
- Left leg : Femur - complete 46.3cm (greatest diameter of head 4.9cm; bicondylar breadth 8.0cm)
Tibia - proximal end and shaft fragment (plateau breadth 7.8cm)
Fibula - fragment of proximal end only
Patella - ossified tendon insertion
- Pelvis : Right side - slight abrasion but virtually complete
Left side - fragmented along crest and broken across acetabulum
Male features - narrow sub-pubic angle, form of ilium (?sciatic notch - quite wide for male)
- Vertebrae : Cervical - C1-7
Thoracic - T1-12
Lumbar - L1-5
Sacral - S1-5 + coccyx (sacrum has male characteristics)

Left leg : Femur - complete 40.6cm
 Tibia - complete 33.5cm
 Fibula - complete 32.4cm
 Patella - complete (4.05 x 4.1cm)
 Feet : Tarsals - all present. Metatarsals - all (1-5). Phalanges : proximal 1-5, intermediate 2-5, distal 1st and one other
 Pelvis : Right side - complete. Female characteristics
 Left side - complete. Auricular surface on both bones has odd morphology - long, thin and almost divided into two parts (upper and lower)
 Vertebrae : Thoracic T 11 and 12
 Lumbar L1-4
 Sacral S1-5 plus sacralisation of L5
 Ribs : Right side - small fragments only
 Left side - small fragments only

Pathology:

- 1) Bilateral non-bony union between calcaneus and navicular - forms an additional 'joint' surface across both bones under the talus. There is evidence of blood/nutrient flow between the two bones but no development of an articular surface.
- 2) Sacralisation of L5 - the position of L4 on top of L5 is abnormal and has caused an odd articulation where the inferior body of L4 has suffered degenerative change.

Conclusions:

Sex : female (pelvic morphology, shorter stature, small bones)
 Age at death : c.25-29 years but difficult to assess accurately. The pubic symphyseal face suggests an age of 25-29 years. However, the auricular surface has very little development and is youthful in appearance (c.20-24 years). This apparent difference may be due to abnormal development of the auricular surface relating to its unusual shape. It could be argued that the pubic symphysis might possibly be demonstrating a greater 'age' due to the effects of pregnancy and childbirth (women are frequently 'over-aged' when pelvic development is considered) but the fact that the bones of the sacrum are well fused indicates the older age group (25-29 years)
 Stature : 155.6cm
 Pathology : sacralisation of L5, bilateral abnormal development of two tarsal bones (calcaneus and navicular)

Skeleton 7

Right arm : Humerus - complete 29.7cm (greatest diameter head - 4.2cm; epicondylar br. 5.9cm)
 Very minor lipping around trochlea
 Radius - complete 22.1cm
 Ulna - complete 24.2cm. very minor lipping proximally
 Scapula - virtually complete, coracoid absent
 Clavicle - sternal end and part shaft only (fragment = 7.1cm)
 Hands : Carpals - all present. Metacarpals - all (1-5). Phalanges - proximal 1-5; intermediate x3 (? Exact position), distal first and three others
 Left arm : Humerus - complete 29.3cm (greatest diameter head 4.2cm; epicondylar breadth 6.0cm)
 Radius - proximal end and shaft (fragment = 18.1cm)
 Ulna - proximal end and shaft (fragment = 19.5cm)
 Scapula - virtually complete but coracoid abraded. Glenoid 3.7 x 2.5cm
 Clavicle - complete 13.2cm
 Hands : Carpals - all present. Metacarpals - 1st, 4th and 5th. Phalanges x6 only (none distal)
 Right leg: Femur - complete 43.0cm (greatest diameter head 4.4cm; bicondylar breadth 7.4cm)
 Tibia - complete 33.7cm (plateau 7.1 x 4.5cm - medial side)
 Fibula - complete 33.0cm
 Feet : talus only
 Left leg : Femur - head and shaft to just above condyles (fragment = 38.0cm)
 Fibula - shaft only (fragment = 25.2cm) (*No tibia present)
 Feet : talus only

Pelvis : Right innominate - pubic symphysis has not survived and the acetabulum is severely abraded.
 Wide sciatic notch and acetabulum more antero-lateral
 Left innominate - acetabulum, ischium and small area of ilium only (rest absent). Acetabular diameter 4.8 x 4.9cm
 Vertebrae : Cervical - C3 - 7
 Thoracic - T1 - 12
 Lumbar - L1 - 5
 Sacrum complete S1 - 5 (11.3cm breadth, 9.8cm length). Narrow body of S1 but curvature more female
 Ribs - fragments of all ribs present (including vertebral ends). Left ribs better preserved than right (more complete, larger fragments)
 Sternum and manubrium : very fragmented

Pathology:-

- 1) Lateral condyle right femur - area of eburnation, grooving and small porotic holes on anterior surface, (extending to anterior margin of articular surface). Moderate lipping around articular margins - marked on lateral margin. ? cause - possibly due to patellar injury but patella not present. The right tibia has moderate lipping along the lateral margin of the articular surface but this is not as marked/severe as in the distal femur and there is no eburnation or porosity of bone. The proximal right femur and distal right tibia show only very minor degenerative changes, whilst in the left leg neither the femoral condyles/knee joint or the tibia have survived. It is therefore impossible to say whether there was bilateral changes in the knee joints.
- 2) Severe osteoarthritis in both hands with fixed flexion deformities in the distal interphalangeal (IP) joints of the right hand (left does not survive). Both left and right first metacarpals have eburnation of the proximal and distal articular surfaces, with adjacent eburnation on the base of the proximal first phalanx. In the right hand there is also eburnation on articular surfaces of the scaphoid, trapezoid, trapezium, triquetral and pisiform, whilst in the left hand the trapezium and lunate are similarly affected
- 3) Minor lipping of both acetabular margins - more evident on right side but still only minor
- 4) Cervical vertebrae - articular facets on left side enlarged and moderate lipping C3 - 5. There is also marked porosity on the right side of vertebral bodies C5 - 7 (? Why porosity on right side and not across whole body - reason unknown)
- 5) Thoracic vertebrae - minor lipping right adjacent articular facets T4 and 5, with minor lipping also visible on right costal articular facet of same vertebrae.
 T10 - 12 costal articular facets (left and right) show marked change with altered shape, porosity, lipping and eburnation (on right side of T11). There is minor osteophytosis of the vertebral body at T11 and 12 but no articular facets (apart from those noted) show any changes.
- 6) Lumbar vertebrae - very minor lipping of articular facets and minor osteophytosis of superior rims of bodies of L4 and 5 only.
- 7) ? 9th right rib (possibly 8th) - unhealed fracture c.2.5cm from vertebral articulation - bone ends taper and are both rounded off (long term non-union)
- 8) Left scapula - the epiphysis on the end of the acromion is unfused. Small holes in the adjacent bony surfaces indicate a blood supply to the epiphysis, and its size shows that it has grown at the same rate as the rest of the bone although no fusion has taken place. In the right scapula the epiphysis has fused but a line is still visible suggesting fusion occurred only a relatively short time before death. This epiphysis is usually fully fused by the early twenties.
- 9) Right acetabulum - superior articular surface - crease

Conclusions:

Sex : female (pelvic and bone morphology)
 Age at death : late 30's/early 40's (auricular surface 40 - 44years, sternal end of 4th rib late 30's/early 40's)
 Stature 159.4cm (from humerus, femur and tibia)
 Pathology : minor degeneration of joint surfaces at right elbow, left and right hip. Severe changes in right knee (femoral eburnation) which are possibly related to a patellar injury. Severe changes characteristic of advanced osteoarthritis are also seen in both hands (eburnation of joint surfaces and fixed flexion deformities of the distal IP joints). Degenerative changes also visible in the lower neck,

upper and lower back. There is evidence of an unhealed fracture of the right ninth rib and abnormality in the epiphyseal fusion of both left and right scapular acromions.

Skeleton 8

Right arm : Radius - distal end and fragment of shaft

Ulna - distal end and fragment of shaft

Hand : Carpals - all; Metacarpals - all; Phalanges : proximal - all, intermediate - 3,4 and 5, distal - 3, 4 and 5

Left arm : Ulna - distal end and fragment of shaft

Hand : Carpals - all; Metacarpals - all; Phalanges : proximal - all, intermediate - all, distal - all

Right leg : Femur - proximal and distal ends but shaft fragmented (not able to reconstruct). Greatest diameter head 4.9cm, bicondylar breadth 8.5cm

Left leg : Femur - complete 47cm. Greatest diameter of head 4.8cm. bicondylar breadth 8.4cm

Pelvis - Left side : complete - all male features

Right side - complete

Vertebrae : Sacral - S1-5 plus sacralisation of L5

Pathology:

1) Very minor spina bifida occulta - bone edges virtually meet over spinal canal but fusion is not complete

Conclusions:

Sex : male (pelvis morphology)

Age at death : early to mid 20's (pubic symphysis, auricular surface. Also recent fusion of sacrum)

Stature : 174.6cm

Pathology : very minor spina bifida occulta.

Skeleton 9

Right arm : Humerus - complete 28.6cm (greatest diameter of head 3.9cm; epicondylar breadth 5.7cm; humeral head epiphysis present but unfused)

Radius - complete 20.5cm (proximal end recently fused, distal end unfused - epiphysis present)

Ulna - distal end unfused, epiphysis lost, length 22cm+

Clavicle - complete 12.0cm (both ends unfused)

Scapula - complete - (coracoid recently fused, glenoid fusing, acromion, inferior angle and vertebral border of wing unfused)

Hand - carpals all present; metacarpals all present (heads unfused); phalanges - proximal all present (base of first is fused, 2-5 are unfused), intermediate x3 (?2-4 : one is fused at base, others unfused), distal first and x3 (?2-4)

Left arm : Humerus - unfused head only (no shaft, no forearm or hand)

Clavicle - complete 12.2cm (unfused)

Scapula - virtually complete, acromion unfused, glenoid fusing

(** left radius and ulna found among the charnel close to this body almost certainly belong to this individual)

(*A left femur was associated with this skeleton - it was not in-situ and was lying in the position of the left forearm. However, from the size of the bone and skeletal development it would appear to belong to this body having been previously disturbed and rotated out of position)

Left leg : femur - complete 40.2cm (greatest diameter of head 4.2cm; bicondylar breadth 7.0cm. Very recent fusion of head, condyles and trochanters)

(No right leg bones are present)

Pelvis : right side only - complete. Female features (acetabulum antero-lateral, acetabular diameter 5cm x 5.1cm, wide sub-pubic angle, wide sciatic notch, ventral arc visible). Ischial tuberosity just fusing, iliac crest unfused but parts of crest present, auricular surface and pubic symphysis undeveloped.

Vertebrae: Cervical - C1-7 present. C1 is unfused posteriorly - this could be due to delayed fusion or an open arch (failure to fuse). C5-7 have non-symmetrical foramen (smaller on the right than the left). In C3-7 the vertebral bodies (rim) is just fusing
 Thoracic - T1-7 present. T1 has just commenced fusion of the body rim, T2-7 have unfused bodies.
 Ribs : right side only. Vertebral ends are unfused. Both ends of first rib are unfused.
 Manubrium - abraded
 Skull : mandible and maxilla only (rest of skull removed by previous work at the site)

Dentition:

Maxilla	L	7 6 5 4 3 2 X 1 / 3 4 5 6 7	R
Mandible	L	7 6 5 4 3 2 1 1 2 3 4 5 6 7	R
		C C	

Points:

- There is congenital absence of 8's upper and lower
- Upper left 1 lost early (probably traumatic) - socket is well healed and the 2 moving across
- Malocclusion in right maxilla - 3 has erupted behind 1 and 2. The socket of 2 (lost PM) appears shallow and this tooth may not have been of normal form
- Left and right mandibular 6's both affected by severe caries - crown on left has been completely destroyed and remains as roots only. On right crown is completely destroyed on buccal side
- Minor calculus on lower incisors, more on buccal side
- Attrition - smoothing of cusps on 6's but 7's still sharp.

Conclusions:

Sex : female

Age at death : mid-late teens probably c.15-16 years. This age is in line with the recent fusion in the femur, radius and scapula although the unfused metacarpal heads might indicate a slightly earlier age.

Unfortunately, dental development is complete and cannot be used to give a more accurate value
 Stature : c.152 -153.5cm (*skeletal development not complete but height probably at maximum as long bones are fusing)

There is evidence of ante-mortem loss, malocclusion and caries in the teeth.

Skeleton 10

Right arm : Humerus - distal end and shaft fragment (epicondylar breadth 5.9cm)

Radius - complete 21.7cm

Ulna - complete 23.7cm. Some lipping around olecranon with small osteophyte forming at superior rim

Hand : Carpals - all except lunate; Metacarpals 1-5; Phalanges - all proximal, all intermediate and three distal

Scapula - fragments of wing only

Left arm : Humerus - distal end only (epicondylar breadth 5.8cm)

Radius - complete 21.8cm

Ulna - complete but some abrasion of olecranon 23.6cm

Hand : Carpals - all present; Metacarpals - all; Phalanges - all

Right leg : Femur - fragmented head and trochanters only

Left leg : Femur - proximal end and part of shaft. Greatest diameter of head 4.4cm

(*Left tibia close to this skeleton is too large to belong to the same body)

Pelvis : Right side - complete but pubic symphysis fragmented

Left side - virtually complete but some abrasion of crest. Female features - wide sub-pubic angle, wide sciatic notch, form of ilium and obturator foramen

Vertebrae : Thoracic - T6-12 (6,7 and 8 present as bodies only - no processes or spines)

Lumbar - L1-5 (1 and 2 are fragmented)

Sacral - S1-5 complete (female curve and small body S1)

Ribs : fragmented. Right side - 5-12,; left side 6-12

Sternum : very fragmented

(Skull and upper trunk previously removed by earlier work at the site)

(* manubrium, rib fragments and part of right glenoid fossa recovered in disarticulated material probably belong to this body)

Pathology:

- a) Minor degenerative changes seen at right elbow (slight lipping, small osteophyte on proximal ulna)
- b) Minor lipping on superior and inferior articular facets of thoracic and upper lumbar vertebrae.
Lower lumbar L4 and 5 show severe changes on right side with massive new bone growth, lipping and eburnation on adjacent facets. L5 has collapse of the vertebral body on right side (depth 2.2cm to 2.8cm on left).
- c) Vertebral articular facets on right and left ribs show degenerative changes, especially (probable) 7 and 8 which have marked lipping and osteophyte formation. T8 and 9 also show porosity and new reactive bone growth around the costal articular facet.
- d) T9 and 10 have small Schmorl's nodes.

Conclusions:

Sex : female (pelvic morphology, small bones)

Age at death : early/mid 40's (pubic symphysis and auricular surface)

Stature : 158cm

Pathology : Minor degenerative changes at right elbow and mid back, with more severe changes in lower lumbar spine.

Skeleton 17

Right arm : Humerus - complete 31.1cm (greatest diameter of head 4.3cm; epicondylar br.5.9cm).

Minor lipping around trochlea, and reactive bone growth at proximal end around lesser and greater tuberosities

Radius - proximal end only

Scapula - complete. Very minor lipping around glenoid fossa

Clavicle - complete 14.6cm. Very strong muscular attachments

Left arm : Clavicle - complete 14.6cm. Muscular marking well defined as in right clavicle

Sternum - length 8.4cm. Unusual distal rib articulation - large on left and small on right (? Reason)

Manubrium - some abrasion

Ribs : Right - first complete and fragments of ten others

Left - first complete and fragments of five others

Vertebrae : Cervical - C1-7

Thoracic - T1-6

Skull : virtually complete but left maxilla, left zygomatic bone and foramen magnum are fragmented.

Sutures are fused and almost obliterated. Female features - vertical forehead, small mastoid process, smooth nuchal region (plus parabolic dental arch and rounded chin). Broad skull - max. Breadth 14.8cm, orbits 4.2 x 3.4cm. Left and right supra-orbital foramina

Dentition:

		A										C C						
Maxilla	L	8	7	6	5	3	1	1	2	3	4	5	X	7	8	R		
Mandible	L	X	X	X	5	4	3	2	X	1	2	3	4	5	6	X	X	R
												C						

Points:

- a) Upper left and right 7's and 8's have abnormal short misshapen roots
- b) There are three carious teeth: Upper right 7 (large, distal, at junction of neck and crown); upper right 8 (large, mesial and buccal, at junction of neck and crown); lower right 6 (small, distal, top of crown)
- c) Seven teeth were lost AM - six from the mandible and one from the maxilla.
- d) There is an abscess cavity above upper left 4.
- e) Calculus - minor on lower incisors and canines and upper molars.
- f) The upper molar teeth show very little attrition suggesting that the lower molars were lost comparatively early in life, but there is pulp exposure on lower and upper 5's, and both remaining 6's (upper left and lower right)

Pathology:

- 1) Severe degenerative changes in left cervical spine C3-7. Articular facets show new reactive bone causing gross alteration of shape, marginal osteophytes, porosity of bone and eburnation of the surface. The vertebral bodies of C6 and 7 also have moderate osteophytosis and severe porosity of

bone. In the thoracic spine there are similar changes in T1 which become less marked in T2, and minor by T3 (both in articular facets and vertebral body)

Conclusions:

Sex : female

Age at death : more difficult to assess. The development of the sternal end of the 4th rib indicates an age of early to mid 30's. Due to AM loss the degree of dental attrition is unlikely to provide an accurate value (although the wear on the remaining first molar teeth is consistent with an age at death of 33-45 years)

Stature : c. 162.5cm

Pathology : severe degenerative changes in the left side of the neck, and minor changes in the right shoulder and elbow. Severe AM loss of teeth (seven out of thirty two) and evidence of caries and a dental abscess.

Skeleton 18

Right arm : Humerus - complete 33.6cm (greatest diameter head 4.65cm; epicondylar br. 6.75cm)

Very strongly muscled with cragginess around biceps groove and osteophyte on medial side.

Scapula - complete, glenoid fossa (4.3 x 3.45cm) has moderate lipping and acromial facet with eburnation, erosion, porosity and reactive new bone growth

Clavicle - acromial end (erosion/porosity, reactive new bone and small area of eburnation) and separate sternal end with eburnation of articular surface

Left arm : Scapula - fragments only. Glenoid fossa not as lipped as on right side and acromion less 'developed' (less craggy, smaller articular area and less degenerative change)

Hands : first and second metacarpals - moderate lipping of articular surfaces

Vertebrae : Cervical - C6 and 7

Thoracic - T1-9

Ribs : Right side - fragmented - ten vertebral ends, six with pronounced lipping of facet, one with eburnation

Left side - fragmented - six vertebral ends, one with eburnation of facet. Two sternal ends

Sternum - fragment only

Pathology:

1) Vertebral degenerative change: cervical - C6 has osteophytosis of body, but more severe change in right facets of C7 which have eburnation, porosity and gross changes in morphology

Thoracic - T1 shows most severe change with eburnation, porosity and gross changes on both left and right superior facets. In T2 there is only minor lipping, slightly worse on left. T4-6 show moderate osteophytosis of body, major changes of right inferior facets and right costal facets (lipping, porosity and eburnation) - the left facets have only minor changes. In T7-9 there is only very minor lipping of vertebral facets but the right costal facets have severe lipping and porotic changes.

2) Severe changes at right shoulder including eburnation at acromial articulation and moderate lipping of glenoid fossa

Conclusions:

Sex : male (large well muscled bones, tall stature)

Age at death : adult. Sternal end of rib (? Level and possibly not 4th) suggests at least mid 30's but fragments are abraded

Stature : 175.2cm

Pathology : severe degenerative changes at right shoulder and in lower neck/upper and mid back, which are also visible in the vertebral ends of the ribs. There are also moderate osteoarthritic changes in the bones of the right hand.

(*Also found in loose bones which are not articulated with Skeleton 18:

Left humeral head - matches right side but with less articular change

Left proximal ulna and fragment of shaft - possibly from Sk. 18

Vertebra - T11 - probably from Sk. 18 - minor changes of facets

Left clavicle - sternal end - abraded but similar form to right side and probably from Sk. 18. There is eburnation of the articular surface.

Hand bones : right capitate, left scaphoid and left 4th metacarpal - possibly Sk. 18 - all show minor or moderate lipping.

Left maxillar fragment - in-situ 4,5,6. No AM loss 1-7. Wear on 6 is consistent with age at death age 25-35 years. Bone very possibly from Sk. 18?)

Skeleton 19

Right arm : Humerus - complete 7.0cm

Radius - complete 5.5cm

Ulna - complete 6.2cm

Scapula - complete (length - superior border to base of wing 3.6cm)

Clavicle - complete 4.6cm

Left arm : Humerus - complete 7.05cm

Radius - complete 5.45cm

Ulna - complete 6.1cm

Scapula - acromion abraded but otherwise complete

Clavicle - complete 4.6cm

Right leg : Femur - complete 8.5cm

Tibia - proximal end and shaft fragment

Left leg : Femur - complete 8.4cm

Tibia - proximal end and shaft fragment

Pelvis : Right - ilium only (complete)

Left - ilium, ischium and pubis

Vertebrae : Cervical - C1 and fragments of ?C3

12 vertebral bodies (thoracic and lumbar by size and morphology) and 16 pairs of vertebral arches (14 still in two halves but 2 are fused to form left and right processes - lumbar by morphology)

Ribs : Right - 1st and ten others

Left - 1st and ten others

Skull : fragmented but apparently complete - recognisable orbits (right with supra-orbital foramen), sphenoid, occiput, left and right mastoid processes/EAM, occipital condyles/foramen magnum (but no basi-occiput)

Dentition:

*

Maxilla L / / c b a - b - - - R

Mandible L e d c b a a b / d ? R

Points:

1) Right maxilla not preserved/recovered

2) Lower right (e) is problematic: there was no sign of a tooth crown in the socket although this was very carefully excavated. The crown of the lower left (e) is developed with obvious cusps (c.3mm at highest)

3) *The upper right (b) was found loose amongst the skull bones

Conclusions:

Sex : Possible female (by pelvic morphology, shape of dental arcade and mandibular form)

Age at death : less than 6 months (but development of (d) and (e) suggests more than new-born)

Skeleton 20

Right arm : Humerus - complete 32.5cm (greatest diameter of head 4.3cm; epicondylar br. 6.0cm)

Marked lipping around proximal articular margins and loss of articular surface near to biceps groove. ?Lytic lesions around greater tuberosity - loss of bone/small holes and reactive new bone growth

Radius - proximal end and fragment of shaft

Ulna - proximal end and fragment of shaft

Scapula - area of eburnation on acromion and surrounding new reactive bone growth - probably due to impingement by humeral head. Minor lipping around glenoid fossa

Clavicle - complete 15cm. Minor reactive bone growth at acromial end

Left arm : Scapula - acromion and fragments of wing only. No degenerative changes

Clavicle - fragment of shaft and abraded, detached ends

Left leg : Femur - fragments of condyles and shaft only (*This bone may not belong to this body)

Vertebrae : Cervical C1-7

Thoracic T1-12

Lumbar L1 and 2

Ribs : Right - fragmented but vertebral ends of all 12 and sternal ends of 5

Left - fragmented but vertebral ends of 3rd to 11th and sternal ends of 2 (? Level)

Some vertebral facets show minor lipping and a fragment of first rib has eburnation and erosion at the articulation. These ribs are wide and show comparatively strong muscle attachments.

Skull : maxilla, zygomatic bones, and anterior frontal bone. Palate is more U-shaped than parabolic and the mandible is large and wide (although the ramus is more backward-angled ?female trait)

Dentition:

Maxilla	L	XXXXXX / / X / XXXXX	R
Mandible	L	XXXX / / - X / 3 4 XXXX	R

Points:

- Very severe AM loss - 21 teeth lost before death.
- There is (perhaps surprisingly) no sign of dental abscesses in these jaws, which might have accounted in part for the awful lack of teeth.
- In the two remaining teeth (lower right 3 and 4) there is minor calculus on labial and buccal sides.
- Attrition is worse on the 3 where it is very asymmetrical with pulp exposure.

Pathology:

1) Degenerative changes at the right shoulder involving the scapula, clavicle and humeral head with eburnation of the former and reactive new bone growth in both the latter suggestive of bony impingement at the shoulder joint.

2) Severe degenerative changes in spine. At cervical level C3-6 are involved: the vertebral bodies show gross porosis and osteophytosis (milder in C6 and very minor in C7), and the left and right inferior and superior articular facets show new reactive bony lipping, porosis of the surface and eburnation in C3 and 4.

In the thoracic spine the vertebral bodies of T6-9 are affected by minor osteophytosis, more evident on the right, whilst the bone of T3-12 (vertebral bodies) is severely affected by porosis. In addition the costal facets of T6-8 show marked lipping. The porotic changes and osteophytosis continue in L 1 and 2.

The lower thoracic and lumbar vertebral bodies have an abnormal crescent shaped erosive lesion inside the rim of the anterior body: this could be due to early spinal tuberculosis or intervertebral osteochondrosis.

3) The thoracic and lumbar vertebrae show Schmorl's nodes from T3 - L1; the depressions are marked and tend to be more severe on the inferior surface of the body.

Conclusions:

Sex : Probable male. The palate is more U-shaped and the ribs are large and have strongly defined muscle attachments on them. The humerus also has well defined muscle attachments and insertions.
Age at death : problematic. Due to severe AM loss of teeth no molars remain for assessment of dental attrition. Incompleteness of the skeleton means that no pubic symphysis or auricular surface are available. However, the sternal end of the (probable) 4th rib shows development suggestive of an age at death in the late 20's / early 30's. Since the sternal end of the clavicle is fused this value must fall in at least the early thirties (this epiphysis is the last to fuse in the body but has been found fused in 100% of bodies aged 30 years or more). Given the severe dental problems/AM loss and the severe degenerative changes seen in the spine it would seem possible/probable that this individual was older than this at death (although age of onset and progression of disease obviously remains unknown). An accurate estimate of age at death remains impossible beyond post-30 years / early 30's.
Stature : (if male) 172cm

Skeleton 21

Right arm : Humerus - distal end and fragment of shaft (epicondylar breadth 5.6cm)

Radius - distal end and fragment of shaft

Ulna - complete 23.1cm. Minor lipping around proximal articular surface

Hand : Carpals (hamate, scaphoid, capitate, trapezium, triquetral and pisiform); Metacarpals 1-5;

Phalanges - proximal 1-5; intermediate 2-5; distal - first only

Left arm : Humerus - virtually complete but some abrasion. Length c.28.5cm

Radius - Proximal end absent

Ulna - complete 22.9cm

Scapula - complete (glenoid surface 3.4 x 2.4cm)

Hand : Carpals (scaphoid, capitate and triquetral); Metacarpals 2-5; Phalanges - proximal 1-5; intermediate 2-4; distal first only

Right leg : Femur - complete 38.7cm (greatest diameter of head 4.1cm; bicondylar breadth 6.8cm).

Marked lipping around articular margins

Tibia - complete 30.7cm (plateau breadth 6.4cm). Lipping around proximal articular surface

Fibula - complete 30.0cm

Patella - marked marginal lipping

Left leg : Femur - distal end and fragments of shaft. Marked lipping of articular margins.

Tibia - complete 30.8cm. Marked lipping of proximal articular margins.

Fibula - complete 30.1cm

Patella - marked marginal lipping

Pelvis : Right side - virtually complete, female morphology (wide sciatic notch and sub-pubic angle, small acetabulum)

Left side - fragment of auricular surface only

Vertebrae : Thoracic : T3-12

Lumbar : L1-5

Sacral - S1-5 . Coccyx fused to S5

Ribs : Right - better preserved and parts of all 12

Left - fragments of at least 7

Pathology:

1) Marked lipping on both left and right distal femur, proximal tibia and patella - moderate changes associated with osteoarthritis of knee (no eburnation or porosity seen)

2) Small area of lytic lesions on superior articular surface (just inside rim) of right acetabulum - cause unknown

3) Minor marginal lipping on all articular facets of lumbar vertebrae. Very minor lipping seen in thoracic vertebrae.

4) Congenital abnormalities in spine : (a) detached neural arch in L5 : (b) shortened processes in T11 and 12.

Conclusions:

Sex : female

Age at death : mid/late 30's (pubic symphysis 36-40 years; auricular surface 35-39 years; sternal end 4th rib mid/late thirties)

Stature : 149.7cm (femur and tibia)

Pathology : marked changes due to osteoarthritis in left and right knees, and minor changes in spine.

Detached neural arch at L5.

Disarticulate material recovered with articulating skeletal material

The charnel is listed by context area/number. To aid analysis bones are categorised as infant (less than one year at death), child (2-8 years), juvenile (10 years to teens) or adult. With the immature bones an age has been assigned by comparing the material with bones in a reference collection which have been accurately aged. Whilst it is accepted that a small 5 year old might be mistakenly placed in the "4 year old" category it is thought that this method of classifying children is useful in demographic analysis.

Loose skull from extension (? Location)

Frontal bone and small unidentified skull fragments. Left orbit missing.

Sex : possibly female (small breadth and no brow ridge development)

With Skeleton 5

JUVENILE : Left tibia, proximal and distal epiphyses - unfused.

Phalanx x1 unfused proximal end

> age c.10-12 years

Close to Sk.5

CHILD : right side of C2 - unfused

Skull fragments x2

Phalanges x2

> age c. 4 years

ADULT : Left femur - proximal end and shaft. Linea aspera very craggy appearance, especially at top. Greater trochanter also very rugged. Greatest diameter of head 4.3cm (comparatively small of ambiguous sex or possible female)

Left humerus - distal end and shaft fragment

C1 - moderate lipping of facets and eburnation at C2 articulation

Left patella - moderate lipping and very craggy over tendon attachment

Around Sk.5,6 and 7

ADULT : Left humerus - distal end (epicondylar breadth 6.5cm)

Left calcaneus

abraded lumbar and mid thoracic vertebral bodies (x3)

Rib fragments x4

Skull fragments x2

With Skeleton 6

INFANT : Fragments of vertebral body and vertebral arches

JUVENILE : Left tibia - proximal fragment only - unfused surface

> age c.10-12 years

Beneath Sk.6

CHILD : Skull fragments including right temporal

Right arch of C2

Rib fragments

Phalanges x3

> age c.2-3 years

ADULT : Rib fragments x2

Near Sk.7

CHILD : Left and right distal femoral epiphyses

Left humerus - complete 11.1cm (epicondylar breadth 2.7cm)

Left scapula - abraded wing

Vertebral fragments - C1,2 and 3 (no fusion)

Rib fragments x11
Skull fragments including basal condyles (unfused at both ends), basi-occiput, frontal bone,
left zygomatic process,
> age c.2-3 years

CHILD : Skull fragments including left frontal and orbit, left and right temporal, right parietal,
occipital, part of ethmoid
Basi-occiput unfused
> age c.4 years

CHILD : Right radius - complete, 13.9cm
Right femur - proximal end and part of shaft plus greater trochanter epiphysis
Hands/feet - phalanges x10 plus 6 unfused phalangeal bases
Left metatarsals 2-5 plus 4 unfused metatarsal heads
> age c.6-8 years

ADULT : left fibula - proximal end
Rib fragments x2
Skull fragment x1
Phalanges x2

Between Sk. 7 and Sk. 8

CHILD: Left femur - proximal end and shaft fragment plus epiphyses for head and greater
trochanter
Left tibia - proximal end and shaft fragment - unfused end
Left ischium and pubis (unfused at acetabulum and ramus)
Right pubis
Phalanges (x7) - unfused proximally
> age c.6-8 years.

With Sk. 8

CHILD : Right tibia - proximal end and shaft fragment
Right pubis and ischium
Vertebra - S1 - unfused
First rib
Feet : right - calcaneus, cuboid, lateral and intermediate cuneiforms, 1st metatarsal
Left 1st metatarsal
> age c.6-8 years

ADULT : part right patella
Sacral and thoracic vertebral fragments (x5)
Rib fragments

Associated with Sk. 9

ADULT : Right humerus - distal end and shaft fragment (epicondylar breadth 6.3cm)
Right radius - head only (articular surface 2.3 x 2.1cm)
Left radius - complete 20.9cm (proximal articular surface 2.0 x 1.9cm, distal 2.8 x 1.9cm)
Right femur - distal end, large (bicondylar breadth >8cm)
Right femur - medial condyle only, small
Right femur - proximal end (greatest diameter of head 4.2cm)
Vertebrae - C7, T1, T4, T7 or 8, S1
Rib fragments x5

Near Sk.10

INFANT/YOUNG CHILD : skull fragments x2

JUVENILE : Rib fragments (x2)

ADULT : Right hand - trapezium (small, almost certainly female)
Left clavicle - acromial end, abraded
Left foot - calcaneus and 1st metatarsal (small, probably female)
Rib fragments x5
Vertebra - T11, part of C1

Between Sk.10 and Sk.17

- (a) INFANT - Right radius - complete 4.6cm
Left radius - distal end
Right ulna - proximal end
Left ulna - proximal end
Right tibia - complete 5.6cm
Left tibia - complete 5.6cm
Skull fragments (x12)- bone very thin and underdeveloped
Rib fragments (x15)
➤ ?premature or very small full term baby who died at birth
- (b) JUVENILE : Left radius complete - 19.4cm ** probably from Sk.9
Left ulna - complete 21.4cm (distal end unfused in both bones suggesting an age at death of the early - mid teens) **probably from Sk.9
Rib fragments (x6) unfused vertebral end
Proximal phalanx x1 unfused proximal end
4th metacarpal unfused distal end
Vertebrae - L5, T10 or 11, and T5,6,or 7 - all unfused bodies. Lower thoracic has Schmorl's node
> age c.mid teens
- (c) ADULT : Right scapula (glenoid fossa 3.6 x 2.4cm)
Right ulna - proximal end only
Phalanges - proximal x1, distal x1
Rib fragments (x21) - two from older individual as osteophytes noted in pit at sternal end
Vertebrae - C7 and C4 or 5 - latter has bipartite foramen on right (divided by thin spar of bone)

Bones above Sk.18

CHILD : Right ulna - proximal end and shaft fragment
Right radius - proximal end
Right femur - distal end
Rib fragments
Shaft fragment ?right radius
> age c.6-8 years

JUVENILE: Right ilium with unfused crest and acetabulum
Sacral fragment
> age c.10-12 years

Disarticulated skull above Sk.18

Fragmented but = one adult

Bones identified:- left and right parietals, left and right temporals, occipital, parts of left frontal, basal condyles, ethmoid, left mandibular condyle, loose teeth (upper 7 and 8)

Sex : probable male (craggy mastoid processes, line of zygomatic process above EAM, large features)

Age at death : the wear on the upper molar teeth is consistent with an age at death of 25-35 years but it should be noted that this estimate is based on only two teeth and may not be accurate.

*This skull could very possibly come from Sk.18 but there is no way of being certain of this.

Close to Sk.19

ADULT : Vertebral fragment - C7 or T1

Close to Sk. 20

JUVENILE : proximal right tibial epiphysis
> age c.10-12 years

ADULT : Right radius - proximal end and fragment of shaft. Small articular surface, probably female
Rib fragments x4
Phalange fragments x2

Above Sk. 21

CHILD : Vertebral fragments - bodies and arches (x7)
Rib fragments x5
Skull fragments x10
Left maxilla with teeth a,b,c,d,e in situ.
> Development indicates age at death of c.2-3 years

ADULT : right tibia - distal end (?osteochondritis dissecans - small lesion in articular surface). Bone has periosteal reaction over medial malleolus and up shaft
Foot bones - left 2nd metatarsal, medial cuneiform and part calcaneus, right talus,
Pisiform (? Side)
Rib fragment (x1)

Loam / extension - No number or reference

CHILD : Right pelvis - ilium, part auricular surface, (possible female from morphology)
Skull fragments x3 including part right temporal, tooth (e, ?upper)
Rib fragments x3
> age c.2-3 years

ADULT : Left tibia - distal end and shaft fragment
Feet - right navicular and left talus
Skull fragment x1
Rib fragments x2

NUMBERED DISARTICULATED CONTEXTS

2003

CHILD : right humerus - complete 10.25cm
Right femur - distal end
Rib fragments x2
> age c.2-3 years

CHILD : left femur - proximal and distal ends
Right femur - shaft only
> age c. 6-8 years

ADULT : Hands / feet - left talus, left 5th metacarpal
Rib fragment x1

2014 (from lime layer)

JUVENILE : fragment left ilium with unfused acetabulum
> age c. 10-12 years

ADULT : Dental remains -
a) edentulous mandible, no evidence of abscesses, more parabolic, smaller ramus - probable female

2026 (close to Sk.1)

ADULT : Right radius - proximal end and shaft fragment

Left radius - proximal end and shaft fragment (probably same individual)

Right clavicle - acromial end and shaft, small, abraded (?female or juvenile)

Vertebral fragments x2 - upper/mid thoracic - gross changes left inferior facet (porosity, lipping and eburnation)

2029

CHILD/JUVENILE : skull fragments x2

ADULT : Right humerus - distal end, large

Right humerus - distal end only

Left pelvis - fragment of pubis and acetabulum - large (diameter > 6.2cm)

Skull fragments (x13) - recognisable fragments include (parts of) occipital, left parietal, left temporal, right parietal, occipital condyles, right zygomatic arch

> Bone adult in structure but very little fusion (in lambdoid or sagittal). Small features -

> probably female

Rib fragment x1

Vertebral body fragment x1

Foot : left calcaneus and right talus (latter is very large)

2030

ADULT : right humerus - distal end and shaft fragment (abraded)

Right tibial shaft - mild periosteal reaction

Rib fragments x2

2031

JUVENILE : right humerus, proximal and part of shaft

> age c. 10-12 years

ADULT : Left humerus - distal end and shaft fragment (epicondylar breadth 5.8cm)

Left radius - complete 23.15cm (proximal articular surface 2.1 x 2.15cm; distal 3.1 x 2.1cm)

Left pelvis - part ilium, part acetabulum - auricular surface mid 40's, pubic symphysis 40-45 years. (Sex unknown)

Rib fragments x8 (incl. sternal end c. Mid 30's vertebral end with moderate lipping of facet)

Skull fragments x8 (incl. 2x left zygomatic processes - smaller and larger)

Dental remains:

Left maxillar fragment (1-5 lost PM)

Right mandible fragment L ----- / 6 X - R

Wear on remaining tooth consistent with death at 25-35 years

Hands / feet : right calcaneus, right 2nd and 5th metacarpals, left 3rd metatarsal, phalanges x2

2032 (north of Sk.21)

INFANT : Right scapula (2.6 x 2.6cm)

Left ilium (2.8 x 2.3), possible female

Vertebral arch

Skull fragment

> ? premature or very small full term baby who died at birth (or very shortly after)

INFANT : Right humerus distal end

Left humerus distal end (epicondylar breadth 1.9cm)

Right radius complete 5.7cm

Skull fragments including basi-occiput

> age c.0-3 months

CHILD: Right scapula (length 4.9cm)

Right scapula

Left ulna - proximal

Right femur - distal

> age c. 2-3 years

CHILD : Left scapula

Left ulna - complete 12.0cm

Left radius - proximal end

Vertebra - probable C7

Rib fragments x8

Skull fragments x4 (including left and right basal condyles)

Right mandible fragment - only teeth in situ (e) and unerupted (6) with very little crown development

Loose teeth - upper (d) or (e) with severe caries, and crown of developing molar (7)

> age c.4 years

CHILD : Right ulna - proximal end and shaft fragment (?separate distal end)

Left humerus - distal end and shaft (epicondylar breadth 3.8cm)

Right scapula

Right clavicle - abraded

Right femur - distal end plus epiphysis

Right tibia - proximal end plus proximal and distal epiphyses

Right fibula - complete shaft 19.3cm plus fibular head epiphysis

Left femur - distal end plus epiphysis

Left tibia - proximal end plus proximal and distal epiphyses

Left fibula - virtually complete

Feet : Right - calcaneus, talus, lateral cuneiform

Left - calcaneus, talus, cuboid, lateral, intermediate and medial cuneiforms, metatarsals 2-5

Rib fragments x4

Vertebral fragments x3

> age c.6-8 years

JUVENILE : Vertebrae - S1, L5 - unfused bodies

Metacarpals/metatarsals (abraded) - unfused heads

Skull fragments including basi-occiput and condyles

> age c.10-12 years

ADULT : Right radius - distal end and shaft

Right ulna - distal end and shaft (same arm as above)

Left humerus - distal end (epicondylar breadth 6.8cm)

Left humerus - proximal end and shaft, large (head diameter 4.8cm)

Left humerus - fragment of distal end

Left radius - distal end

Left ulna - distal end (same arm as above ** not same individual as right arm bones - smaller)

Left ulna - proximal end and shaft, strong musculature

Left ulna - proximal end and shaft, large bone

Right tibia - proximal end, large with minor lipping (plateau breadth >7.8cm)

Right patella - abraded

Left femur - proximal end and shaft, male (head diameter 4.9cm)

Left patella - complete 4.4 x 4.7cm

Left patella - complete 4.6 x 4.7cm

Hands / feet - right 4th M/C, right trapezoid, left 1st M/C, left scaphoid (x2), hamate, right 5th M/T, right talus and cuboid, left 2nd to 5th M/T left navicular, phalanges x3

Vertebra, C1, C3 or 4, C6 and 7 (eburnation on left body of latter), T2 and 3, L1 or 2, L5 (gross changes - lipping, porosity)

Skull fragments x3

L

-----XX//XX

R

CHILD : Right clavicle - acromial end and shaft

> age c. 4 years

L

U76ed/-----c-----

R

UJ4

U3

> age c.8 years

ADULT : Right humerus - proximal end (greatest diameter of head 4.2cm)

Right radius - proximal end

Right ulna - proximal end and shaft

Right ulna - proximal end and shaft

Right scapula - fragmented

Right clavicle - acromial end and shaft

Left radius - head only (articular surface 2.3 x 2.4cm)

Left radius - proximal end and shaft

Left clavicle - sternal end and shaft

Left clavicle - complete 15.5cm. Fused sternal end/post 30 years

Left scapula - fragment of coracoid

Right tibia - proximal end and shaft

Right tibia - proximal end and shaft

Left tibia - proximal end and shaft (matches above and both have strongly marked striations on shaft especially posteriorly - periostitis - also noted on fibular shaft of unknown side)

Pelvis - fragments of right ilium, ischium and acetabulum,

right ischium and part acetabulum

left ischium and acetabulum

left ischium and acetabulum (diameter 5.5 x 5.3cm)

Vertebral fragments x11

Rib fragments x44 (two sternal ends with large osteophytes ?50/55+ years)

Skull fragments x3

Hands / feet : right lunate, left hamate, right medial cuneiform and cuboid, left navicular and medial cuneiform, Phalanges x9

JUVENILE : fragment left pelvis - crest and auricular surface

> age ? early/mid teens. This fragment is apparently of larger size than a 13 year old in the reference material but the unfused crest and undeveloped auricular surface suggest an individual of less than c.18 years. This bone possibly comes from Sk.19.

ADULT : vertebral fragment x1

Iliac crest fragment

Left capitate

CHILD : rib fragment x2

Right scapula - glenoid, acromion, part wing

> age c. 6-8 years

ADULT : right humerus - proximal and distal ends (abraded)

Right radius - proximal end fragment

Left humerus - distal end (probably same individual as above)

Left scapula - part wing, glenoid and acromion - large (glenoid fossa 4.2 x 3.1cm)

Right femur - distal end

Rib fragments x6

Skull fragments x10 (including left frontal)

Right mandible - very abraded and no teeth in-situ

Right mandible fragment L ----- // 4 5 / ? ? R

The space between the sockets for (6) and the ramus is very short indeed and there is no indication that (7) and (8) were lost ante-mortem (or even that only (7) was: it would seem possible that this individual never had second and third molars

2059

JUVENILE : phalanx

ADULT : Left radius - complete 23.9cm (proximal articular surface 2.05 x 1.9cm; distal 2.9x 1.9cm)

Clavicle ?R - sternal end - large, male

Part of right pelvis (ischium and fragment of acetabulum)

Vertebral fragments - C1, mid-cervical and three others

2060

INFANT : right tibia - complete 7.3cm

> age birth - 3 months

CHILD : left pubis

Right ilium - possible male

> age c.4 years

CHILD : Left proximal radius

Metacarpal/metatarsal ?which (unfused)

Rib fragments x2

Right mandibular condyle

Skull fragments x3

> age c.6-8 years

ADULT : Right humerus - distal end and shaft (epicondylar breadth 6.4cm)

Right humerus - part of distal end, large bone

Right clavicle - acromial end and shaft - large bone

Right clavicle - sternal end (unfused) and shaft - small, female/juvenile (<30 years)

Left radius - distal end (articular surface 3.1 x 1.9cm) and fragment of shaft

Right femur - distal end (bicondylar breadth 7.8cm)

Left femur - fragment of distal end (small ? female)

Left femoral head (diameter 4.5cm)

Left femoral head - abraded

Left fibula - proximal end and shaft

Hands / feet : right 3rd M/C, left 2nd and 3rd M/C, right 3rd and 5th M/T, right talus, phalanges x2

Pelvis - fragment of left ilium and acetabulum

left pubis and part acetabulum (male, c. 25-29 years)

right pubis and part acetabulum

Vertebra - lumbar body with Schmorl's node and minor osteophytosis

Rib fragments x16

Skull fragments x9

Left mandibular condyle - large, probably male

Mandibular fragment L ----- /// R

(5,6,7 and 8 all lost PM)

Maxilla - edentulate (?right 3 lost PM or shortly before death as socket shallow but still visible)

*supernumerary tooth in left hard palate behind right 2/3

* unerupted teeth above 4/5 visible in abraded buccal alveolar bone

2074

ADULT :Right humerus - distal and proximal ends (head diameter 3.9cm; epicondylar breadth 5.8cm female)

Left humerus - distal end and shaft (larger than right bone)

Left clavicle - acromial end and shaft fragment

Left femur - distal end and shaft

Rib fragment x1

Appendix A :

Listing of the immature bones from the disarticulate material, Church Lane, Selby (1996)

i) A very young and small infant (possibly a premature baby as the bones are tiny)

Right radius - complete 4.6cm
Left radius - distal end
Right ulna - proximal end
Left ulna - proximal end
Right scapula
Right tibia - complete 5.6cm
Left tibia - complete 5.6cm
Left ilium (possibly female from morphology according to Schutkowski, 1993)
Skull and rib fragments

(these bones came from two contexts - between Sk.10 and 17, and 2032)

ii) An infant aged under three months at death

Right humerus - distal end
Left humerus - distal end
Right radius - complete 5.7cm
Right tibia - complete 7.3cm
Skull fragments (including basi-occiput)

(these bones came from two contexts - 2032 and 2060)

iii) Two children aged c.2-3 years

Right humerus - complete 10.2cm
Left humerus - complete 11.1cm
Left ulna - proximal end
Left and right scapulae (pair)
Right scapula
2 x right femur - distal end
Right and left distal femoral epiphyses
Right tibia - proximal end
Right ilium (possibly female)
Left maxilla (dental development c.2 years)
Vertebral fragments (including 2 x C2)
Skull and rib fragments

(these bones came from seven contexts - beneath Sk.6, near to Sk.7, above Sk.21, in the loam/extension (no number), 2003, 2025 and 2032)

iv) One child of c.4 years

Left ulna - complete 12.0cm
Left radius - proximal end
Left scapula
Right clavicle (abraded)
Left pubis
Right ilium (possibly male)
Right mandible
Skull and vertebral fragments (including C2, ?C7 and S1)

(these bones came from five contexts - near Sk.5, near Sk.7, 2032, 2044 and 2060)

v) Two children of c.6-8 years

Right radius - complete 13.9cm
Right radius - proximal end
Left radius - proximal end
2 x right ulna - proximal end
Right clavicle
2 x right scapulae
Left humerus - distal end

Right femur - proximal end
 2 x right femur - distal end
 2 x left femur - proximal end
 2 x left femur - distal end
 2 x right tibia - proximal end
 Right tibia - distal epiphysis
 2 x left tibia - proximal end
 Left tibia - distal epiphysis
 Right fibula - complete 19.3cm
 Left fibula - complete 19.3cm
 Feet - duplication of right talus and calcaneus, metatarsals
 Right ischium and pubis
 Right pubis
 Left ischium and pubis
 Maxilla (dental development c.8 years)

(these bones come from ten contexts - near Sk.7, between Sk.7 and 8, close to Sk.8, above Sk.18,
 2003, 2016, 2032, 2044, 2058 and 2060)

vi) A juvenile of c. 10-12 years

Right humerus - proximal end
 Right tibia - proximal epiphysis
 Left tibia - proximal end and epiphysis
 Right ilium (part)
 Left ilium (part)
 Skull and vertebral fragments (including S1 and L5)

(these bones come from seven contexts - near Sk.5, near Sk.6, above Sk.18, close to Sk.20, 2014, 2031
 and 2032)

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The Leather

by Tim Padley

Introduction

Some 93 pieces of leather were recovered from the excavations at Selby in the 1995 and 1996 seasons. As the 1995 season only produced one leather item, both seasons are considered together. As can be seen from Table 1, there were three main types recovered, shoes and shoe parts, offcuts and fragments, which each provided about a third of the total.

Table 1 – The leather arranged by context and type

Context		Type of leather recovered						Total
		Shoes and shoe parts	Strips	Offcuts	Unidentified objects	Pieces	Fragments	
Micklegate	H5	1						1
	C1	3						3
	C2	3		17			6	26
	C9	7	1			1		9
	C11	2		3			1	6
	C13	1						1
	C16	1						1
	C18	1						1
	C26						4	4
	C38	4		8			16	28
	C39	1					1	2
	C40	1						1
	C42	2					1	3
Finkle Street	C48	1						1
	C49	1						1
Market Place	S1	3					1	4
Abbey Yard					1			1
Total		32	1	28	1	1	30	93

Shoes and shoe parts

The shoes and shoe parts consist of fragments of upper, an insole, soles, rand fragments and clump repairs. They were recovered from all contexts that produced leather in Micklegate, except C26. They were also recovered from Finkle Street and the Market Place. The most common shoe component recovered was soles, of which 14 were recovered (Table 2).

There are the remains of two different upper components. The most complete is a heel stiffener (Catalogue number 2) which can be recognised by its characteristic triangular shape and stitching. The heel stiffener was placed at the back of the upper on the inside to strengthen the heel of the upper and was used flesh side towards the foot. The bottom edge was caught into the turnshoe seam between the upper and the sole, while the top edges were sewn to the back of the upper with a binding stitch. Both these types of stitching are visible on this stiffener. The through stitching is spaced with 8 holes per 50mm, which

Table 2 – The shoe parts arranged by context and type

Context		Type of Shoe part					Total
		Upper	Insole	Sole	Rand	Clump	
Micklegate	H5			1			1
	C1	1		1		1	3
	C2	1	1	1			3
	C9	4		2	1		7
	C11			1		1	2
	C13				1		1
	C16					1	1
	C18			1			1
	C38			4			4
	C39				1		1
	C40					1	1
	C42	1			1		2
Finkle Street	C48			1			1
	C49			1			1
Market Place	S1			2	1		3
Total		7	1	14	5	4	32

matches the edge/flesh stitching from soles such as Catalogue number 7, but not that from context C1.

Five of the other upper fragments are from inserts. Medieval shoes had uppers of wraparound construction, and this led to gaps when the shoes were assembled that were filled with inserts to make the uppers look and function correctly. These were attached to each other and to the main part of the upper by binding stitches. As the spacing of the stitches is different on the two inserts from context C9 (Catalogue numbers 10 and 11), it is possible that they came from different shoes.

The last of the upper fragments (Catalogue number 9) is the only one that gives any idea of the shape of the shoe from which it came. It is a fragment from the vamp of the shoe, and shows that it had a rounded toe. Again the through stitches along one edge are spaced 8 per 50mm and can be matched with the edge/flesh stitching on soles from the same context, Catalogue numbers 12 and 13.

There is only one insole present, Catalogue number 6. This, as is explained in the catalogue, comes from a welted shoe. This is the only one found in the whole collection and is later than the rest of the shoes recovered.

There are 14 soles and sole fragments from the site. Where the shoes can be recognised as left or right, they are equally divided with three lefts and two rights. However, the majority (nine examples) cannot be assigned to either left or right shoes. This is because the size of the pieces does not allow it. All the soles come from shoes made by the turnshoe method. Here the upper is attached to the sole by a single row of edge/flesh stitches in the sole and through stitches in the lasting margin of the upper. There may or may not be a rand inserted between the two to improve waterproofing. This is done with the shoe inside out and then it is turned. The stitching present around the edge of the soles varies from 6 stitches per 50mm to 15 stitches per 50 mm, but the most common spacing is 8 stitches per 50mm. This latter is found on half the examples.

Two of the soles also some idea of the shape of the shoes. As was noted above, one of the pieces of upper (Catalogue number 9) came from a shoe with a rounded toe. None of the

soles can be matched to this. The two where the front of the sole survives (Catalogue numbers 12 and 28) each have pointed toes with a slight extension beyond the position of the great toe of the foot. This type of extension was common in the medieval period, and could become very exaggerated. Here, however, it is quite mild. In London, pointed shoe styles date to the late fourteenth century (Grew and de Neergaard 1988, 29), with the less elaborate ones being found with the more workaday types. June Swann, when discussing shoe fashions, states that pointed toes start in the reign of William 'Rufus' (1087-1100). The toe then began to curve outward and this pointed style remained until the middle of the thirteenth century (1973, 19). In the middle of the fourteenth century, this starts to lengthen and can become very long by the later part of the century (*ibid*, 19).

As for size of shoe represented, only one sole (Catalogue number 13) survives for enough of its length to say what size it was. It is a child's shoe of size 1 or size 2. The only other shoe which can be given an accurate size is the post-1500 welted shoe insole (Catalogue number 6).

There are five pieces of rand present. Rands are narrow strips of leather, either triangular or rectangular in cross-section, with a single row of through stitch holes, that were inserted between the sole and the upper when the shoes were made in order to improve the waterproofing of the construction. They were introduced by the end of the twelfth century in the shoes which have been recovered from excavations in London (Grew and de Neergaard 1988, 47). The examples recovered here have stitch holes spaced at the same number of holes per 50mm that the soles have and so come from the same shoes, even though some of them were recovered from contexts which did not produce soles.

The final type of shoe part to be considered is the clump. This is a piece of leather that is attached to the sole of a shoe to repair it, usually when a hole has worn through the sole. They are usually attached by tunnel stitches, so that the thread is not exposed on the surface that is in contact with the ground and is therefore protected from wear. The only unusual piece here is Catalogue number 15 where there is evidence of *Hallux rigidus* or 'hammertoe'. This condition causes the great toe to be rigid at the joint, rather than flexible and so causes increased wear on the sole (and upper where present), leaving a characteristic oval hole that echoes the shape of the toe.

To conclude, there are 32 shoes and shoe parts from the site. There is not enough evidence to say how many different shoes are represented, but there were probably at least 16. None of the sole fragments join, and so they probably come from different shoes. The upper fragment has a different toe shape from the soles where enough survives to determine their toe shape. The insole comes from a different, and later, type of shoe and so must again be from a different shoe. The rands and the rest of the upper fragments may belong to the 16 shoes already mentioned, as may the clumps.

Strips

The single strip (Catalogue number 33), which comes from context C9, could belong to a number of things. It is suggested that the compressed and shiny area near the knot originally held a buckle, and that the knot is a repair. It could be that it is a fastening from a shoe, but it could equally have come from a bag.

Offcuts

The offcuts can be divided into two types, primary and secondary. There are four primary offcuts. These are the pieces left when the item to be cut from the leather has been cut from

the skin, and characteristically show evidence of the presence of the original edge of the skin. The secondary offcuts are those where there is no evidence of the edge of the skin, and so are the pieces left when the objects are cut from a piece of leather where the primary shaping has already taken place. They can be further divided into triangular ones, where large items have been cut out and narrow trimming pieces where the final shaping of pieces has taken place. Primary offcuts are only represented by five examples. The majority of the secondary offcuts are those from trimming, 11 examples, but there is an equal division between triangular ones and those of other shapes, with six examples of each.

Unidentified object

There is one unidentified object from the assemblage, Catalogue number 62. As discussed in the catalogue, it is an elaborate piece with evidence for an embroidered pattern. However, not enough survives to say exactly what it came from.

Pieces and Fragments

Pieces differ from fragments in that they have more than one original edge. This is a somewhat subjective and arbitrary division. Equally, some of the fragments may indeed be offcuts, but there is not enough surviving to be certain. They are the remainder of the leather pieces, and are included for completeness.

Conclusions

This leather assemblage probably comes from cobbling. The presence of damaged shoe parts could indicate either general refuse or that from repairing shoes. The offcuts could come from either making or repairing shoes. However, it is unlikely that the damaged and discarded shoe parts would be found where shoes were made and no repair was taking place. The fragments and pieces could be found either where shoes were made or where they were repaired. Taken together, it is likely that the material comes from a place where shoes were repaired.

The dating of the assemblage is difficult. The welted shoe, Catalogue number 6, shows that some of it must date to after AD 1500. The rest of the shoes are not closely dateable, and could come from the late twelfth century through to the late fourteenth.

Catalogue

Selby 95

Shoes and shoe parts

1. Shoe: Sole

Possibly from a right foot. The sole survives from rear of seat to tread, with a hole at the outside? edge of seat. Part of the outside edge of tread missing. Row of edge/flesh stitching around edge, spaced 8 per 50mm.

L. 180mm+ Tread W. 69mm+ Waist W. 58mm Seat W. 68mm
Micklegate H5 LT 86

Selby 96

Shoes and shoe parts

2. Shoe: Heel stiffener

Triangular piece, one end missing. Used grain side away from the foot. Bottom edge has through stitch holes, spaced 8 per 50mm. The other two sides are attached by a binding stitch, with 5 stitches per 50mm, giving a characteristic 'scalloped' edge.

W. 117mm+ Ht. 57mm Th. 2mm
Micklegate C1 LT 3

3. Shoe: Sole? (Fragment)

Roughly rectangular piece with two original edges. One is a straight cut edge, while the other has a row of edge/flesh stitches, spaced 10 per 50mm. This coupled with the thickness of the piece suggests a piece of shoe sole. However, if this is so, the other original edge does not fit with a normally shaped sole. Also, the diagonal edge has possible edge/flesh stitches along it. If it came from a sole, it probably came from the waist.

L. 35mm W. 73mm Th. 3mm
Micklegate C1 LT 2

4. Shoe: Clump?

Roughly triangular piece with no surviving grain surface. The diagonal has a concave curve and is cut. The two sides at right angles to one another have rough through (possibly originally tunnel) stitch-holes along them. The end of one edge is torn. Tear begins at a stitch hole.

W. 73mm Ht. 102mm Th. 3mm
Micklegate C1 LT 1

5. Shoe: upper?

Fragment with three fairly straight edges but no stitching. Other edge torn and degraded. Fairly thin leather suggests shoe upper.

L. 55mm W. 34mm
Micklegate C2 LT 5

6. Shoe: Insole

Left foot, used grain side up. Long narrow shape with blunt square toe. On the flesh side is a raised ridge, about 4mm from the edge at the waist and tread, but at the edge at the seat. There is a corresponding groove on the grain surface. Paired stitches are found, one on each side of the ridge. These are spaced 5 per 50mm.

This is indicative of a welted construction, and so is post 1500

Size is Adult 5 (Continental 38)

L. 255mm Tread W. 77mm Waist W. 51mm Seat W. 58mm

Micklegate C2 LT 7

7. Shoe: Sole

Fragment from forepart of turnshoe sole. Rear edge probably cut, front broken away. From in front of the tread of a left shoe. Edge/flesh stitching visible along both original edges, with 8 stitches per 50mm.

L. 52mm Tread W. 84mm+

Micklegate C2 LT 4

8. Shoe: Upper – Insert?

Triangular piece. A right-angled triangle. Two apexes (the non-right-angled ones) missing. Hypotenuse has stitch holes from binding stitch present, spaced 7 per 50mm. Base W. 68mm Ht. 70mm+

Micklegate C9 LT 32

9. Shoe: Upper

The remains of one original edge with through stitching present. The stitches are spaced 8 per 50mm. Rounded toe. Probably a vamp fragment.

L. 69mm+

Micklegate C9 LT 34

10. Shoe: Upper - Insert?

Two original edges roughly at right-angles to one another. Others torn. One of these has the remains of a binding seam visible – edge/flesh stitch holes and characteristic scalloped edge made by thread impressions. Stitches spaced 10 per 50mm. Other edge plain.

L. 42mm Ht. 59mm

Micklegate C9 LT 35

11. Shoe: Upper - Insert?

Two original edges at slightly less than right-angles to one another. Remains of binding seam visible along each edge. The stitches are spaced about 12 per 50mm.

L. 50mm Ht. 70mm

Micklegate C9 LT 36

12. Shoe: Sole

Right foot. Sole survives from waist to almost the front, with point torn away. There is a row of edge/flesh stitches around the edge, spaced 8 per 50mm. Turnshoe construction. The toe curves out to a point, which goes towards the outside of the shoe. A short 'poulaine' ahead of natural foot.

L. 191mm+ Tread W. 92mm Waist W. 48mm

Micklegate C9 LT 30

13. Shoe: Sole?

The rear of the seat is missing. The sole survives from almost the rear of the seat to the rear of the tread. Edge/flesh stitching along original edges spaced 8 per 50mm. Not the same shoe as Catalogue number 12 as it is much smaller.

Child's shoe, possibly size 1 or 2.

L. 89mm+ Tread W. 64mm+ Waist W. 38mm Seat W. 41mm

Micklegate C9 LT 31

14. Shoe: Rand fragment

A narrow strip which tapers towards one end. The wider end is torn. It has grain/flesh stitch holes through it, spaced 6 per 50mm.

L. 78mm W. 7mm Th. 3mm
Micklegate C9 LT 37

15. Fragment: Shoe?

Roughly pentagonal piece with one, possibly two, original edges. One has the remains of edge/flesh stitches in it, spaced 10 per 50mm. It may not be sole as the grain surface survives, but the leather is too thick for upper.

L. 37mm W. 41mm Th. 5mm
Micklegate C11 LT 40

16. Shoe: Clump

Left foot. Clump repair to forepart. The extreme front is missing, as is part of the rear. No grain surface survives

L. 125mm+ Tread W. 98mm.
Micklegate C11 LT 39

It is not a sole as there is no edge/flesh stitching, but it is a clump sole as there is a row of tunnel stitches along each of the original sides. The most notable point is a large oval hole worn in the inside of the front. This is probably caused by *Hallux rigidus* ('hammertoe'). The feature is more usually found on soles rather than clumps.

17. Shoe: Rand

A triangular-sectioned strip with a row of edge/flesh stitching along it. The stitching is spaced 6 per 50mm. Both ends of the rand appear to be original, which means that more than one would have been needed to go round the shoe. Probably ran from side of seat to joint.

L. 157mm W. 8mm (max) Th. 5mm (max)
Micklegate C13 LT 45

18. Shoe: Sole – reused as a clump

The piece comes from the forepart of a shoe. The edges are all cut, except for two of them. One is an original turnshoe edge with edge/flesh stitch holes, which are spaced 10 per 50mm. However, there are also two tunnel stitches which have worn through. The shape is deliberate as the edges are cut, but the original turnshoe edge is not in the position that would be expected from the shape. This taken with the tunnel stitching suggests a sole reused as a clump repair for a shoe.

L. 108mm+ Tread W. 80mm+
Micklegate C16 LT 46

19. Shoe: Sole

Uncertain which foot, but one side of the seat is more worn than the other, as is the tread. Assuming a 'normal' wear pattern, then the shoe comes from a left, as the outside would be more worn than the inside.

The sole survives from almost the rear of the seat to the tread. The turnshoe is missing. Much of the edge/flesh seam has pulled away. The stitches are spaced 6 per 50mm.

L. 179mm+ Tread W. 89mm+ Waist W. 42mm Seat W. 48mm+
Micklegate C18 LT 47

20. Shoe: Sole – fragment.

Uncertain which foot. An irregular piece with one original edge that has edge/flesh stitching. Stitches spaced around 15 per 50mm. This may be an overestimate as only 10mm survive with 3 stitch holes present.

L. 41mm W. 34mm
Micklegate C38 LT 56

21. Shoe: Sole - fragment

Uncertain which foot. Roughly trapezoidal piece with one original edge that has edge/flesh stitching. The stitches are spaced 8 per 50mm. One other edge may be cut.

L. 45mm W. 32mm

Micklegate C38

LT 59

22. Shoe: Sole - fragment

Uncertain which foot, but wear suggests left. Part of the seat survives. Originally a row of edge/flesh stitching around the edge of the shoe. Stitches spaced 8 per 50mm.

L. 69mm+ Seat W. 48mm+

Micklegate C38

LT 70

23. Shoe: Sole

Probably a left. The shoe survives from the front of the seat to the tread. A row of edge/flesh stitches around the edge, spaced at 8 per 50mm. The shoe has been repaired, as there is an irregular double row of through stitches along the rear of the tread. There is also an irregular row across the front of the waist, probably for the attachment of clumps. The edge row of stitching has been ripped in places.

L. 141mm+ Tread W. 90mm+ Waist W. 41mm Seat W. 43mm+

Micklegate C38

LT 79

24. Shoe: Rand - fragment

A triangular-sectioned rand piece, which is broken at each end with a row of edge/flesh stitches through it. These are spaced 8 per 50mm.

L. 114mm W. 5mm (max) Th. 7mm (max)

Micklegate C39

LT 81

25. Shoe: Clump - fragment

An irregular strip of leather which has two tunnel stitches through it. Probably the remains of a clump sole.

L. 85mm W. 19mm (max)

Micklegate C40

LT 82

26. Shoe: Upper - fragment

A small fragment of shoe upper, possibly from the vamp. A row of through stitch holes along the edge, spaced 8 per 50mm.

L. 78mm W. 33mm

Micklegate C42

LT 84

27. Shoe: Rand - fragment

Broken at each end. A short length of rectangular-sectioned strip which has a row of grain/flesh stitches spaced 10 per 50mm.

L. 25mm W. 6mm (max) Th. 2mm

Micklegate C42

LT 83

28. Shoe: Sole

Right foot. Part of the rear of the seat has worn away, and a hole has been worn under the tread. Edge/flesh stitching spaced 7 per 50mm. The front is pointed and turns towards the outside of the foot.

L. 272mm+ Tread W. 97mm

Waist W. 35mm

Seat W. 54mm

Finkle Street C48

LT 93

29. Shoe: Sole - fragment

Fragment from seat of sole. Edge/flesh stitching spaced 10 per 50mm. Part of the rear of the seat has worn away and part of one edge has been torn away.

L. 80mm Seat W. 50mm+

Finkle Street C49 LT 92

30. Shoe: Sole - fragment

Irregular fragment with very short length of edge/flesh stitching surviving, probably spaced 8-10 per 50mm. Not certain where on shoe it comes from.

L. 60mm W. 40mm

Market Place S1 LT 88

31. Shoe: Sole - fragment

An irregular fragment. Uncertain where it came from. Probably from the same shoe as Catalogue number 30. Edge/flesh stitching spaced 10 per 50mm.

L. 75mm W. 41mm

Market Place S1 LT 89

32. Shoe: Rand - fragment.

Broken at each end. A short length of rectangular-sectioned shoe rand with a row of grain/flesh stitch holes, spaced 8 per 50mm.

L. 45mm W. 7mm Th. 4mm (max)

Market Place S1 LT 87

Strips

33. Strip

Broken at each end? (the two pieces in the bag joined originally). A narrow strip of leather that has been knotted with a single simple overhand knot. There are two small holes through the leather. The strip is compressed and shiny nearer the knot. This probably indicates that it was the position for a buckle. The knot is likely to be a repair when the buckle failed.

L. 70mm W. 7mm Th. 4mm

Micklegate C9 LT 38

Offcuts

34. Offcut

Probably a primary offcut as part of skin is stretched. One end torn.

L. 108mm W. 35mm (max)

Micklegate C2 LT 16

35. Offcut

Sliver from trimming, broken at one end.

L. 76mm W. 5mm Th. 3mm

Micklegate C2 LT 6

36. Offcut?

Two original edges. Others torn.

L. 38mm W. 38mm

Micklegate C2 LT 9

37. Offcut?

Roughly triangular. Two cut edges, one torn.

Base W. 64mm Ht. 27mm
Micklegate C2 LT 10

38. Offcut?

Roughly triangular. Torn at one corner. Thick and delaminating.
Base W. 56mm Ht. 34mm Th. 3mm
Micklegate C2 LT 11

39. Offcut

Trimming piece. Torn at one end.
L. 77mm W. 7mm Th. 3mm
Micklegate C2 LT 12

40. Offcut

Trimming piece (could be strap fragment). Torn at each end.
L. 60mm W. 12mm Th. 6mm (max)
Micklegate C2 LT 13

41. Offcut

Trimming piece. Similar to Catalogue number 39. Torn at each end.
L. 57mm W. 6mm Th. 3mm
Micklegate C2 LT 14

42. Offcut

Trimming piece, torn at each end.
L. 61mm W. 9mm (max) Th. 5mm
Micklegate C2 LT 15

43. Offcut

Trimming offcut as Catalogue number 39. Delaminating.
L. 29mm W. 5mm
Micklegate C2 LT 18

44. Offcut

Trimming piece.
L. 75mm W. 3mm
Micklegate C2 LT 19

45. Offcut

Trimming piece as Catalogue number 39. One end torn and comes to a point.
L. 107mm W. 7mm (max) Th. 3mm
Micklegate C2 LT 20

46. Offcut

Roughly crescent-shaped. One end torn.
L. 70mm W. 20mm (max) Th. 4mm
Micklegate C2 LT 21

47. Offcut

Trapezoidal
L. 70mm W. 16mm Th. 4mm
Micklegate C2 LT 23

48. Offcut

Three original cut edges

L. 96mm W. 50mm

Micklegate C2

LT 25

49. Offcut

Two pieces of trimming offcut. Ends torn.

1) L. 66mm W. 6mm Th. 5mm

2) L. 65mm W. 5mm Th. 3mm

Micklegate C2

LT 26

50. Offcut

Triangular.

Base W. 96mm Ht. 33mm

Micklegate C2

LT 27

51. Offcut

Primary

L. 105mm W. 60mm

Th. 3mm

Micklegate C11

LT 42

52. Offcut

A roughly trapezoidal piece with four cut edges and one torn one. No evidence of stitching present.

L. 89mm W. 72mm

Micklegate C11

LT 41

53. Offcut

Roughly triangular piece. Two edges torn.

L. 100mm W. 36mm

Micklegate C11

LT 43

54. Offcut.

Primary offcut. Roughly triangular. Two hide edges, base is cut, one end is broken/torn.

Base W. 120mm Ht. 79mm

Micklegate C38

LT 52

55. Offcut

Primary offcut. Irregularly shaped piece.

L. 113mm W. 59mm

Micklegate C38

LT55

56. Offcut

Primary offcut

Roughly rectangular piece. One skin edge and one cut edge. Ends torn.

L. 72mm W. 30mm (max)

Micklegate C38

LT 61

57. Offcut

Trimming piece. Roughly triangular with two cut edges and one torn one.

Base W. 19mm Ht. 50mm

Micklegate C38

LT 58

58. Offcut

Trimming piece. Narrow crescent shaped offcut of thick leather.

L 132mm W. 16mm Th. 6mm
Micklegate C38 LT 60

59. Offcut

Irregularly shaped offcut of thin leather. One original cut edge.

L. 77mm W. 65mm
Micklegate C38 LT 69

60. Offcut

An irregularly shaped piece with one cut edge.

L. 113mm W. 65mm
Micklegate C38 LT 76

61. Offcut

Triangular offcut

Base W. 71mm Ht. 34mm
Micklegate C38 LT 78

Unidentified objects

62. Object

A piece of fine leather that has been decorated. Four original edges survive, a curved 'top' edge, and three edges at 90 degrees to one another on the left. The top edge is a cut edge with no stitching. The longer of the left hand edges has the stitch holes with a continuous thread impression on the flesh surface and at right angles to the edge (where visible) on the grain surface. This suggests the use of two threads and a butt-seam but using flesh/grain rather than edge/flesh stitching. The seam would have been a fine one with 18 stitches per 50mm. The short edge, at 90 degrees to the long one, has two rows of through stitching, parallel to it. There is continuous thread impression on the grain surface of both rows. The stitches are spaced 4 per cm. The short edge at the end of the two rows has no stitching along it.

The grain surface is decorated with two lines of paired tunnel stitches, probably forming the basis for an embroidered strip, perhaps using plait stitch. The tunnels are at 90 degrees to the raised line. They are about 1mm long and spaced 24-26 per 50mm. One line goes around the top edge and the other diagonally from one end of the first line to the junction of the two edges at 90 degrees to one another.

Finally, there are two parallel lines running across the bottom, above the torn edge. Possibly part of a shoe. If so, then it comes from the quarters. If it is not part of a shoe then it is uncertain what it comes from. It is possible that it comes from clothing

L. 127mm W. 56mm
Abbey Yard LT 91

Pieces

63. Piece

Irregular piece which has possibly one original edge. The remains of two slits 15mm long, one complete and one runs into edge. They are parallel to each other and 21mm apart.

L. 60mm W. 60mm
Micklegate C9 LT 33

Fragments

64. Fragment

No original edges

L. 29mm W. 24mm
Micklegate C2 LT 8

65. Fragment

One original cut edge
L. 28mm W. 20mm
Micklegate C2 LT 17

66. Fragment

One original cut edge.
L. 114mm W. 48mm
Micklegate C2 LT 22

67. Fragment

One original edge
L. 102mm W. 66mm
Micklegate C2 LT 24

68. Fragment

One original edge
L. 28mm W. 32mm
Micklegate C2 LT 28

69. Fragment

No original edges.
L. 32mm W. 19mm
Micklegate C2 LT 29

70. Fragment

Possibly part of offcut Catalogue number 52.
L. 34mm W. 25mm Th. 3mm
Micklegate C11 LT 44

71. Fragment

Roughly triangular piece with two original cut edges set at right-angles to one another and a third making it trapezoidal.
Base W. 31mm Ht. 26mm
Micklegate C26 LT 48

72. Fragment

Roughly trapezoidal piece with three cut edges. Other is torn.
L. 39mm Ht. 32mm
Micklegate C26 LT 49

73. Fragment

Irregularly shaped with two cut edges, rest torn.
L. 65mm W. 59mm
Micklegate C26 LT 50

74. Fragment

Irregularly shaped piece with possibly one original edge, rest torn.
L. 22mm W. 18mm
Micklegate C26 LT 51

Note: Catalogue numbers 71 to 74 could all be part of same fragment

75. Fragment

Irregular shape. One cut edge, rest torn.

L. 114mm W. 42mm

Micklegate C38 LT 53

76. Fragment (or possibly offcut)

Irregularly shaped piece with one possible original edge, which may be skin edge.

L. 82mm W. 37mm

Micklegate C38 LT 54

77. Fragment.

Thin leather with no original edges surviving.

L. 126mm W. 40mm

Micklegate C38 LT 57

78. Fragment

Thin leather with no original edges.

L. 56mm W. 39mm

Micklegate C38 LT 62

79. Fragment

Folded piece of thin leather with no original edges.

L. 80mm W. 33mm

Micklegate C38 LT 63

80. Fragment

Fragment of thin leather with no original edges.

L. 46mm W. 26mm

Micklegate C38 LT 64

81. Fragment

Roughly rectangular fragment of thin leather with no original edges.

L. 41mm W. 20mm

Micklegate C38 LT 65

82. Fragment

Small roughly triangular piece of thick leather with no original edges. Probably originally shoe sole.

L. 17mm W. 13mm (max) Th. 3mm

Micklegate C38 LT 66

83. Fragment

Thin leather, no original edges. Roughly trapezoidal in shape.

L. 45mm W. 16mm (max)

Micklegate C38 LT 67

84. Fragment

Irregularly shaped fragment with no original edges.

L. 59mm W. 32mm

Micklegate C38 LT 68

85. Fragment

Irregularly shaped fragment of leather with one possible cut edge.

L. 105mm W. 137mm

Micklegate C38 LT 71

86. Fragment

Small irregularly shaped fragment with no original edges.

L. 46mm W. 17mm

Micklegate C38 LT 72

87. Fragment

Small irregularly shaped fragment with no original edges.

L. 59mm W. 16mm

Micklegate C38 LT 73

88. Fragment

Small irregularly shaped fragment with no original edges.

L. 65mm W. 37mm

Micklegate C38 LT 74

89. Fragment

Small irregularly shaped fragment in two pieces with no original edges.

L. 25mm W. 21mm

Micklegate C38 LT 75

90. Fragment

Large fragment of hide edge.

L. 100 mm W. 47mm

Micklegate C38 LT 77

91. Fragment

An irregularly shaped fragment with no original edges.

L. 38mm W. 22mm

Micklegate C39 LT 80

92. Fragment

Irregular fragment with possibly one original straight edge.

L. 71mm W. 50mm

Micklegate C42 LT 85

93. Fragment with iron concretion

L. 30mm (of concretion) W. 20mm (of concretion)

L. 23mm (of visible leather) W. 10mm (of visible leather)

Market Place S1 LT 90

Appendix 1 – summary of methodology

1. The leather was supplied unwashed and bagged by context.
2. Each context was washed separately under running tap water and each piece bagged separately.
3. Each piece was numbered in a single running sequence, from LT1 to LT 93.
4. Each piece was examined and a manuscript catalogue was written in the order of the LT numbers.
5. The material was listed by LT number, by type and by four digit code supplied by the excavator.
6. A catalogue was written in the following order: season, shoes and shoe fragments, strips, offcuts, unidentified objects, pieces and fragments.
7. A discussion of the different types was written. This was arranged in the same order as the catalogue.

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Tim Padley
11.8.1998

POTTERY ASSESSMENT

By Mark Stephens, MAP Archaeological Consultancy Ltd.

Catalogue

Context	Fabrics	Date range	Date
1005('95 H5)	HW, PGL	C15/16 th	C16 th
1026('95 H6)	HW, REW, K/Fst.	C15-17 th	C17 th
1056('95 T1)	BEV2, HW, REW, ?med	C14-17 th	C17 th
1060('95 C4)	REW	C16/17 th	C17 th
2003(T1)	PGL, HW, BW, REW,MM, Stsl., NT, C19st, WGL	C16-19 th	C19 th
2007(T1)	REW, WGL, C19st.	C17-19 th	C19 th
2015(T1)	S/Lst, REW, BW, WGL,C19st	C15-19 th	C19 th
2016+2013(T1)	REW, BW, Stsl., WGL, C19st	C16-19 th	C19 th
2016(T1)	REW, BW	C16-18 th	C18 th
2020(T1)	PGL, REW, Rsi, MM, BW	C16-18 th	C18 th
2024(T1)	GW, HW, REW, Rst, Stsl, BW MM, MS, WGL, Plant pot	C12/13-19 th	C19 th
2025(T1)	CT, PGL, REW, BW, WGL, C19st	C16-19 th	C19 th
2026(T1)	GW, REW	C12/13-17 th	?C17 th
2028(T1)	REW, West., NT, STYgl, WGL	C16-19 th	C19 th
2029(T1)	YGL, HW, PGL, REW, BW, NT, WGL, C19st	C12/13-19 th	C19 th
2030(T1)	BEV1, REW, RSL, Stsl, BW, NT, WGL, C19st	C12/13-19 th	C19 th
2031(T1)	BEV2, HW, BW	C13/14-18 th	C18 th
2032(T1)	HW, Stsl	C14/15-18 th	Cearly18 th
2044(T1)	PGL, REW, NT, C19st	C16-19 th	C19 th
2045(T1)	NT	C18 th	Clate18 th
2048(T1)	HW	C14/15 th	C15 th
2049(T1)	HW, REW	C15/17 th	C17 th
2050(T1)	Stsl	Clate17/18 th	Cearly18 th
2060(T1)	WGL	C19 th	C19 th
2061(T1)	BEV2, HW	C14/15 th	C15 th

2068 (T2)	Mn	C18-19 th	C18-19 th
2068 (C1)	HW, REW, Stygl, C19st	C15-19 th	C19 th
2068 (C7)	REW	C16-17 th	C16-17 th
2068 (C11)	HW, PGL, REW	C15-17 th	C16-17 th
2068 (C13)	HW, PGL, Ct	C15-16 th	C16 th
2068 (C17)	REW	C16-17 th	C17 th
2068 (C18)	YGL	C12-13 th	C12-13 th
2068 (C23)	HW	C15-16 th	C15-16 th
2068 (C26)	HW, ?REW	C15-16 th	?C16 th
2068 (C38)	REW, Rst	C15-17 th	C16-17 th
2068 (C49)	Stygl	C17-18 th	C18 th
2069 (C39)	HW, CT, REW, West, RSL, BW, Stygl, WGL	C15-19 th	C19 th
2074 (T1)	PGL	C16 th	?C16 th
2075 (T1)	REW, BW, WGL	C16-19 th	C19 th
2079 ((T4)	GW, BEV1, BEV2, ?med, HW	C12/13-15 th	C15 th
2081 (HB1&2)	REW, BW, WGL	C16/17-19 th	C19 th
2083 (C44)	BEV1, HW, REW, BW, WGL, C19st	C12/13-19 th	C19 th
2084 (C44)	BEV2	C13/14 th	C14 th
2085 (C5)	BEV2, PGL, REW, MM, Stsl, BW, WGL	C13/14-19 th	C19 th
2086 (C3)	GW, ?med	C12/13 th	C12/13 th
2087 (M)	HW, REW, BW, Stygl, Stsl, MM, SGL	C15-19 th	C19 th
2088 (OC3)	HW, PGL, REW	C15-17 th	C17 th
2089 (C19, 30, 42)	HW, ?med, PGL, REW, ?pmed	C15-18 th	?C18 th
2090 (C42)	REW	C16/17 th	C17 th
2091 (OC3)	WGL, C19st	C19 th	C19 th
2092 (C23)	REW	C16/17 th	C17 th
2093 (C9, 18)	HW, PGL, CT, REW, C19st	C16-19 th	C19 th
2095 (C38)	HW	C15 th	C15 th
2096 (C31)	HW, REW, C19st	C15-19 th	C19 th

2101 (S2)	YGL, HW, CT, WGL	C12/13-19 th	C19th
2105 (C)	PGL, REW, BW, MM, WGL	C16-19 th	C19th
2109 (S6)	BEV1, BW	C12/13-18 th	C18th
2127 (M)	PGL, REW, BW, MM, NT, WGL, C19st	C16-19 th	C19th
2128 (M)	WGL	C19th	C19th
2152 (S3)	BEV1, HW, PGL, CT, REW, MM	C12/13-early18th	Cearly18th
2154 (S1)	BEV2, BW	C13/14-16/17 th	C17th
2160 (C52)	REW, NT	C16/17-late18th	Clate18th
2166 (T5)	REW, WGL	C16/17-late18th	Clate18th
2174 (T5)	WGL	C19th	C19th
2180 (T5)	HW, S/Lst, REW, BW, MM, NT, WGL	C15-19 th	C19th
2181 (T5)	CT, S/Lst, REW, Stygl, Stsl, MM, NT	C16-late18th	Clate18th
2197 (CC7)	BW, NT, WGL, Modern	C17/18-modern	Modern
2198 (C48)	REW	C16/17 th	C17th
2199 (C48)	HW, PGL	C15-16 th	C16th
2200 (CC5)	REW, S/Lst, MM, BW, WGL, C19st	C15-19 th	C19th

Fabric Abbreviations

YW = York Ware
TT = Torksey-type
SW = Stamford Ware

GW = Gritty Ware
Spl = Splashed Ware
YGL = York Glazed Ware
ScW = Scarborough Ware
Stax = Staxton Ware
Bev1 = Beverley 1 type Ware
Bev2 = Beverley 2 type Ware
BT = Brandsby type Ware
Ham = Hambleton type Ware
HW = Humber Ware
Sgst = Siegburg Stoneware
R/Lst = Raeren/Langerwehe stoneware

Pgl = Purple-glazed Ware
Ct = Cistercian ware
K/Fst = Koln/Freschen stoneware

BW = Black Ware
REW = Post-medieval Red Ware
Rsl = Red slipware
West = Westerwald stoneware
Stsl = Staffordshire-type slipware
MM = Manganese mottled ware
TG = Tin-glazed earthenware
NT = Nottingham-type stoneware
Mn = Manganese-glazed coarseware
MS = Marbled slipware

WGL = modern white-glazed earthenware
C19st = 19thC stoneware

DISCUSSION

The assemblage consists of 759 sherds: 108 were medieval (14.26% of total), 461 post-medieval (60.85%) and 190 modern, i.e. post 1800 (25.08%).

There is only a small amount of early medieval sherds, with Gritty Ware (4.63% of medieval total) and York Glazed Ware (1.85% of medieval total) represented. There is a significant component of both Beverley 1-type Ware (*.25% of medieval total) and Beverley 2-type Ware (10.12% of medieval total), which will span the late 12th to mid-14th centuries. The bulk of the medieval pottery is Humber Ware (60.12% of medieval total), which is mostly 15th century in date. There is also an appreciable amount of late medieval imported stoneware, with Siegburg/Langerwehe (7.4% of medieval total) and Raeren (1.85% of medieval total) sherds represented.

Of the post medieval pottery, the vast majority of post-medieval Red Ware (62.93% of post-med total), green and brown glazed descendants of Humber Ware, spanning the 16th and 17th centuries, into the 18th century. Contemporary fabrics would be Cistercian sherds (1.6% of post-med total) and later Black Wares (14.34% of post-med total), Purple Glazed Ware (3.69% of post-med total), Koln/Freschen stoneware (0.22% of post-med total) and, later than that, Westerwald stoneware (0.43% of post-med total).

There is also a small amount of Red Slipware (0.65% of post-med total), which is broadly contemporary with the late 17th century Staffordshire-type Yellow (1.52% of post-med total) and Manganese-Mottled Wares (5.86% of post-med total). The late 17th/early 18th century is represented by Staffordshire-type Slipware (3.25% of post-med total) with a tiny amount of mid-18th century Marbled Slipware (0.22% of post-med total). The English salt-glazed stoneware (0.22% of post-med total) is also mid-18th century, with the Nottingham-type stoneware (4.99% of post-med total), and a single sherd of English (?Worcester) porcelain being slightly later.

The modern pottery is composed mainly of various factory-made white-glazed wares including blue transfer ware, Mocha Ware, Sponged Ware and brown stoneware.

It is clear that the bulk of the pottery is post-medieval in date, no doubt because few earlier, medieval deposits were encountered. There are exceptions to this: judging from the pottery, Context 2061 and particularly Context 2079 would appear to be uncontaminated deposits of probable 15th century date. The overall picture is of deposits with broad date ranges of material - factors which point to either recent disturbance or perhaps deposition by dumping of soils from elsewhere.

Recommendations

Although much of the pottery is of limited value because of the broad date range of many of the deposits, the medieval and post-medieval material should be kept as a scientifically recovered assemblage from Selby, which until recently has been lacking in such material. If required a small number of sherds - perhaps a dozen or so - could be illustrated to show a range of fabrics.

The Glass from Selby 1996

Hugh Willmott

The glass from Selby can be broadly assigned to two groups, bottle glass and window glass. All of the material is post-medieval, the majority of it dating from the eighteenth to the early twentieth centuries. A total of twenty eight fragments were found, although none of them joined and, with exception of No.14, represent separate vessels or panes of window glass.

Vessel Type	Minimum Vessel Numbers
Square Bottles	1
Onion Wine Bottles	3
Onion/Mallet Wine Bottles	1
Squat Cylindrical Wine Bottles	4
Tall Cylindrical Wine Bottles	5
Press Moulded Bottles	7
Window	6

One fragment of a small square bottle, No.1, was found. This is a free blown vessel that first occurred in the late sixteenth century and continued in a similar form until the mid-nineteenth century (Charleston 1984: 92). The glass was either blown into a square or rectangular mould, squaring the body, but leaving the shoulder and neck rounded or was blown in the round and then flattened on the marver block. This example has a double applied horizontal trail or cord around the rim to strengthen it. This rim cord, the colour and thickness of the glass would suggest a date of manufacture some time in eighteenth century, although it is not possible to be more specific.

The largest category of vessels are the wine bottles. These are the most common forms of post-medieval glass found, especially on urban sites, and they represent a good range of types from the early seventeenth to the early twentieth centuries. Unfortunately most of the fragments are quite small, so it is often hard to be specific about their dates. However they can be broadly attributed styles and dates.

The earliest are of the 'onion' variety, No.s 2-4. This form of bottle first occurs at the end of the seventeenth century and continues, with minor variations, into the first quarter of the eighteenth (Noël Hume 1961: 99-100). They tend to be thick walled, with short tapering necks, squat rounded bodies and high internal kicks. None of the fragments from Selby are from the upper necks or rims, but these would have been simply sheared off and had an applied angular string cord just below the rim. Fragment No. 5 appears to be a slight variation of the 'onion' bottle known as the 'mallet' with a slightly flattened side, dating to the early eighteenth century (Ibid.)

The next development in the wine bottle can be seen in fragments No.6-9, known as a squat cylindrical bottle. The bulbous sides of the onion bottle are flattened in this form and the main body of the vessel is narrower and slightly taller. However the base still has a large internal kick and the thickness of the walls remains quite great. This form of the wine bottle is generally dated to the middle of the eighteenth century, replacing the earlier onion and mallet forms.

The final type of wine bottle is the taller cylindrical bottle. This evolved out of its squatter forerunner, with the bodies becoming narrower and taller and developing a slimmer more vertical neck. The base of these vessels also gets a progressively more shallow kick, whilst the walls of the vessel become thin, so as to economise on the amount of glass used (Noël Hume 1961: 101). The final form of this vessel, a similar shape to the modern wine bottle, was achieved in the mid nineteenth century and continued in production until the early twentieth, when fully mechanised production took over. Fragment No.s 10-14 represent bottles of this variety, dating from the end of the eighteenth to the late nineteenth or early twentieth centuries.

The final category of bottles are those made by press moulding, No.s 15-21. The first use of semi-automatic mechanisation in England occurred in the 1880's and by the turn of the century the majority of bottles were made by this process (Miller & Sullivan 1991:106). Press moulding had a number of advantages, being quick, economical in labour and being able to easily produce decorated bottles. Fragment No. 15 has the remains of lettering, often relating to retailers and products, whilst the bottle base No.19 has a moulded star motif. Unfortunately none of the fragments are complete enough to determine what contents these bottles might have been. Fragment No. 20 is of a slightly unusual design, being a form known as a 'Cobb' style bottle. These bottles were first produced in the 1870's to hold aerated waters with their patented marble design (Ashurst 1992: 89-90). Cobb bottles, like most of the other heavily mould pressed bottles became unfashionable in the 1920's and 1930's and were replaced with lighter screw topped containers (op. cit. 95).

The final six fragments are all undecorated window glass. It is nearly impossible to assign dates to undecorated window glass, although the clear colour and thinness suggests a post-medieval date. None of the fragments retains an original edge, so it is impossible to determine the size or shape of the original panes.

Ashurst, D 1992 The History of South Yorkshire Glass. Sheffield University Press

Charleston, RJ 1984 English Glass and the Glass Used in England, 400-1940. Unwin & Allen, London.

Miller, GL & Sullivan, C 1991 Machine Made Glass Containers and the End of Production for Mouth Blown Bottles in Approaches to Material Culture Research for Historical Archaeologists ed. Miller, Jones & Ross, 99-112.

Noël Hume, I 1961 The Glass Wine Bottle in Colonial Virginia in Journal of Glass Studies 3, 90-117.

Catalogue

Square bottles

1) 1 fragment of rim, neck and shoulder of a square bottle. The neck is short with a heavy applied double rim cord. The shoulder is flattened and sharply curves down to the side. Light green with little weathering or iridescence. Rim diameter 2cm, body \approx 5x5 cm. 18th century. *2016 + 2003*

Wine bottles

2) 1 fragment of lower side and upper base of a wine bottle. The body is thick and rounded, broken off just above the base. Olive green with heavy weathering and iridescence. Late 17th or early 18th century. *Church Ave 2030.*

3) 1 small fragment of base of wine bottle. From the upper portion of quite a thick push-in and slight pontil mark. Dark green, with heavy weathering and iridescence. 18th century. *Micklegate C5 2085.*

4) 1 fragment of base of a wine bottle. Part of the internal push-in, broad and high with pontil marking. Olive green with heavy weathering and iridescence. 1st half 18th century. *S3 2152.*

5) 1 fragment of lower side of a wine bottle. The side is convex and curving, broken just above the base. Olive green with medium weathering and some iridescence. 1st half 18th century. *S3 2152.*

6) 1 fragment of shoulder of a wine bottle. Shoulder is curved leading to a near vertical side. Olive green with heavy weathering and iridescence. 1st half 18th century. *Church Ave 2197.*

7) 1 fragment of base and lower side of wine bottle. Base is pushed in, with vertical sides and slight lower bulge. Dark green with some weathering and iridescence. Base diameter 9.5cm. Mid 18th century. *2016 + 2003.*

8) 1 fragment of base and lower side of wine bottle. Pushed in base, near vertical slides and a lower bulge. Olive green, quite heavy weathering and iridescence. Mid 18th century *Church Ave 2015.*

9) 1 fragment of base of a wine bottle. Base is thick with a low push-in and slight pontil mark. Dark green, heavy weathering and iridescence. 2nd half eighteenth century. *Church Ave 2024.*

10) 1 large fragment of base of wine bottle. Base has a low push-in and pontil scar and slightly concave sides. Olive green with quite heavy weathering and iridescence. Base diameter 9cm. 2nd half 18th century. *2016 + 2003.*

11) 1 large fragment of side of wine bottle. Side is quite thick, curved and vertical. Olive green with quite heavy weathering and iridescence. 2nd half 18th to early 19th century. *Micklegate C44 2083.*

12) 1 small fragment of side of a wine bottle. Evenly thick and quite thin. Olive green with heavy weathering and iridescence. 18th to 19th century. *Church Ave 2030.*

13) 1 fragment of lower neck and upper shoulder probably from a wine bottle. Neck is near vertical with a slopping shoulder. Dark olive green with heavy external weathering but no iridescence. 18th to 19th century. *Church Ave 2025.*

14) 2 fragments, not joining, of side of a wine bottle. Both are thin and vertical, but quite undiagnostic. Light green with some weathering and iridescence. 19th to early 20th century. *Church Ave 2058.*

Press moulded bottles

15) 1 small fragment of press moulded bottle. Remains of the letter 'T' set vertically down the side. Clear glass very little weathering or iridescence. Late 19th early 20th century. *Church Ave 2030.*

16) 1 small fragment of base and lower side of a press moulded bottle. Base is slightly indented, the side upright with a vertical running seam. Blue/green with some weathering and medium iridescence. Late 19th to early 20th century. *Church Ave 2058.*

17) 1 fragment of side of a press moulded bottle. Side is vertical and curved with part of the seam. Blue/green, some weathering and iridescence. Late 19th to early 20th century. *Church Ave 2024.*

18) 1 complete base from a press moulded bottle. Base is slightly indented and tick leading to vertical side with two opposing mould seams. Blue/green, base diameter 6cm. Late 19th to early 20th century. *Abbey Place w. of S4 2024.*

19) 1 large fragment of a complete base and lower side of a three part press moulded bottle. Base is slightly indented with a raised radiating six pointed star impression. Side is vertical with one faint mould seam. Blue/green with some weathering and iridescence. Base diameter 5.8cm. Late 19th to early 20th century. *Micklegate C44 2082, 2083?*

20) 1 fragment of neck from a 'Cobb' style bottle. Neck tapers outwards, broken just below rim, with the internal upper portion strengthened with an applied internal collar. Part of a pushed in side depression, to hold the marble. Clear green glass, no weathering or iridescence. last quarter 19th to first quarter 20th century. *Church Ave 2003.*

21) 1 fragment of upper side of a possible beer bottle. Side is vertical and quite thick. Dark brown/green with no weathering or iridescence. 20th century. *Micklegate OC3 2091.*

Window glass

22) 1 tiny fragment of window glass. Thin, green clear. Some weathering and iridescence. Post-medieval. *Micklegate C5 2085*

23) 1 tiny fragment of window glass. Thin green clear. Some weathering and iridescence. Post-Medieval. *S3 2152.*

24) 1 fragment of window glass. Thin, clear with heavy weathering and iridescence. Post-Medieval. *Micklegate T 2069.*
T2, 105

25) 1 fragment of window glass. Very thin, clear with heavy weathering and iridescence. Post-Medieval. *Abbey yard 2025 w. of S4.*

26) 1 fragment of window glass. Thin, clear with heavy weathering and iridescence. Post-Medieval. *Black silt, 55-90, 2181.*

27) 1 fragment of window glass. Thin, clear with heavy weathering and iridescence. Post-Medieval. *Micklegate C7 2087.*

SELBY 1996
IRON OBJECTS
By Ian Goodall

1. Sickle blade fragment. L.57mm, D.29mm tapering to 17mm.
Context 2015
2. Tapering bar, rectangular in section, perhaps a punch. L.105mm,
W.13x12mm tapering to 13x12mm.
Context 2024
3. Spike, square in section. L.179mm, W.9mm max.
Context 2024
- 4-13. Timber nails. 4-9 have flat, rounded rectangular heads and
complete examples are 90 and 105mm long. 10-12 have flat square
heads, complete examples being 41 and 46mm long. 13 has a raised
lozenge-shaped head, 13mm across, 72mm long.
Contexts: 4-2024; 5-2025; 6-2029; 7-2030; 8-2032; 9-2052; 10-2024;
11-2029; 12-2068; 13-2029.
14. Bolt, with flat round head, from clench bolt. L.85mm, head Diam
25mm.
Context 2030.
15. Spoon handle, curved in cross section, broken, enamelled in dark
blue. L.81mm, W.25mm.
Context 2058.
16. Knife blade, broken. L.113mm, D.17mm tapering to 15mm.
Context 2068.
17. Punch, square in section, swollen below the head. L.88mm, W.12mm
max.
Context 2068.
18. Wire. L.122mm, Diam.4mm.
Context 2095
19. Lock bolt with a pair of projecting teeth on the underside which
were engaged by turning a key and a stop on the upper side to
restrain the tumbler. A lock from Winchester indicates how the bolt
functioned. (Ian Goodall in Martin Biddle, *Object and Economy in
Medieval Winchester, Winchester Studies 7.ii. Artefacts from
Medieval Winchester* (Oxford, 1990).
Context 2152.
20. D-shaped buckle frame. W.22mm, L.28mm.
Context 2152.

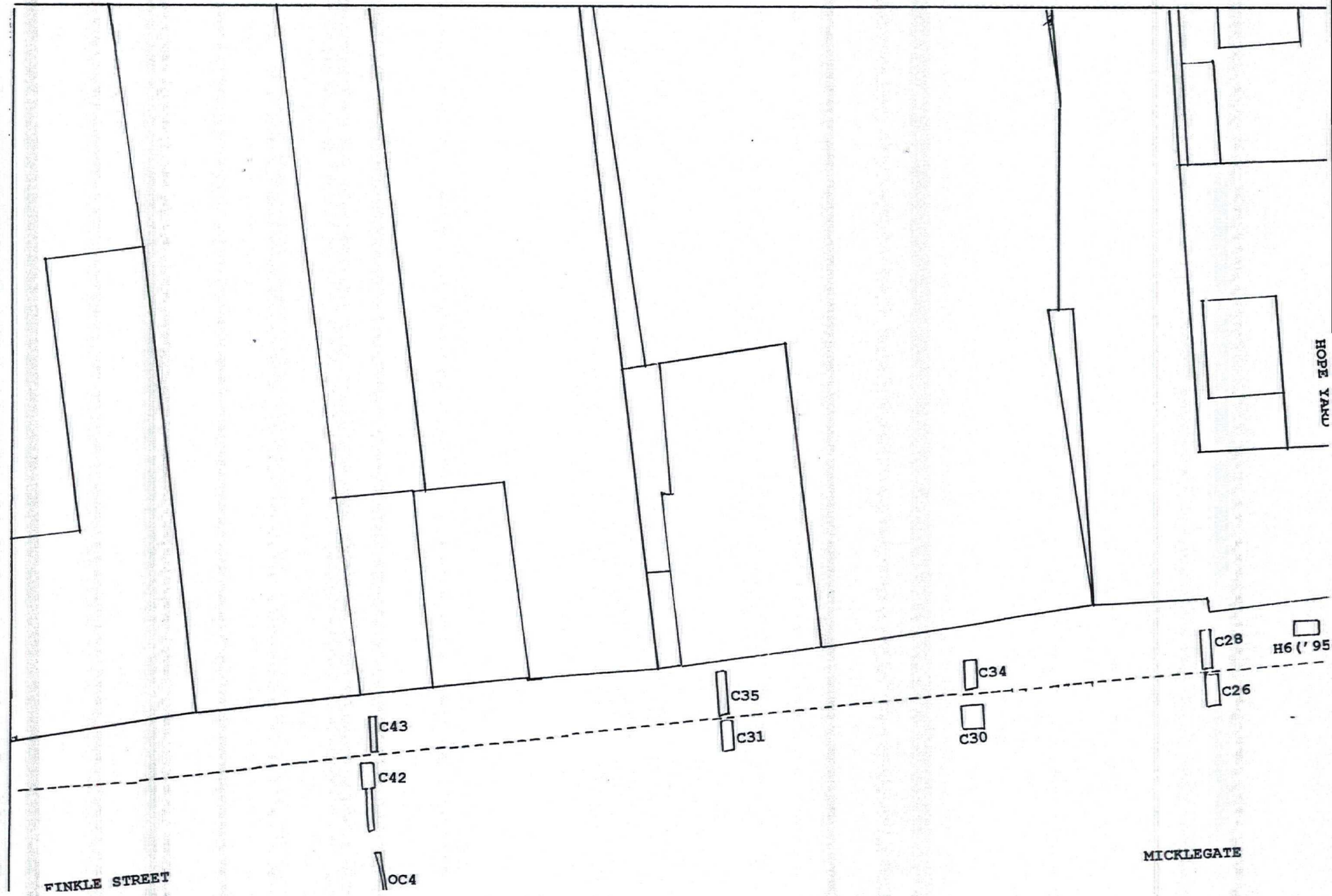
NON-FERROUS OBJECTS

By Alison Goodall

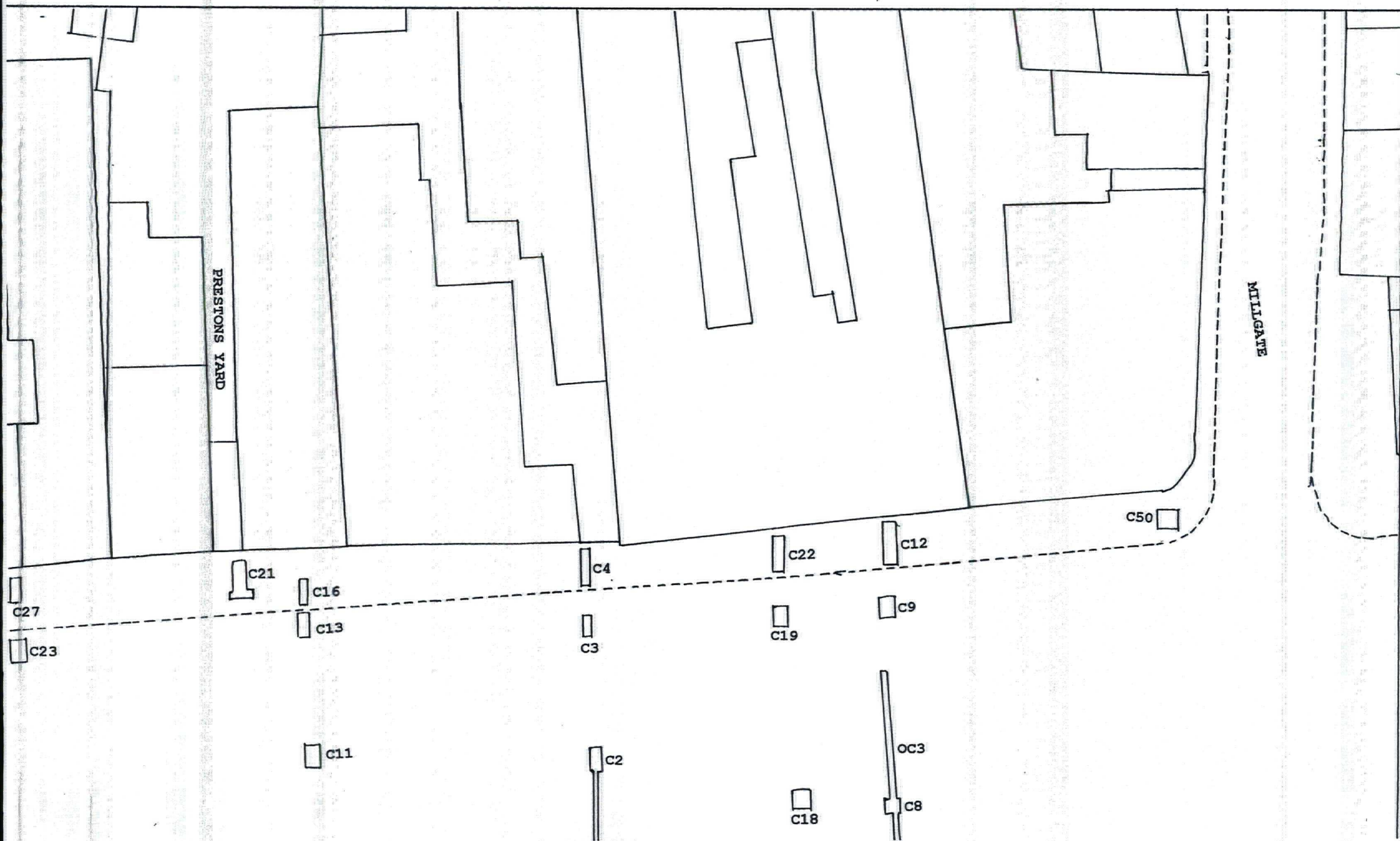
All the objects, where it is possible to assign them to an approximate date, are from the post-medieval period. They appear to represent casual losses, as in the case of the coins and jetton, and domestic refuse.

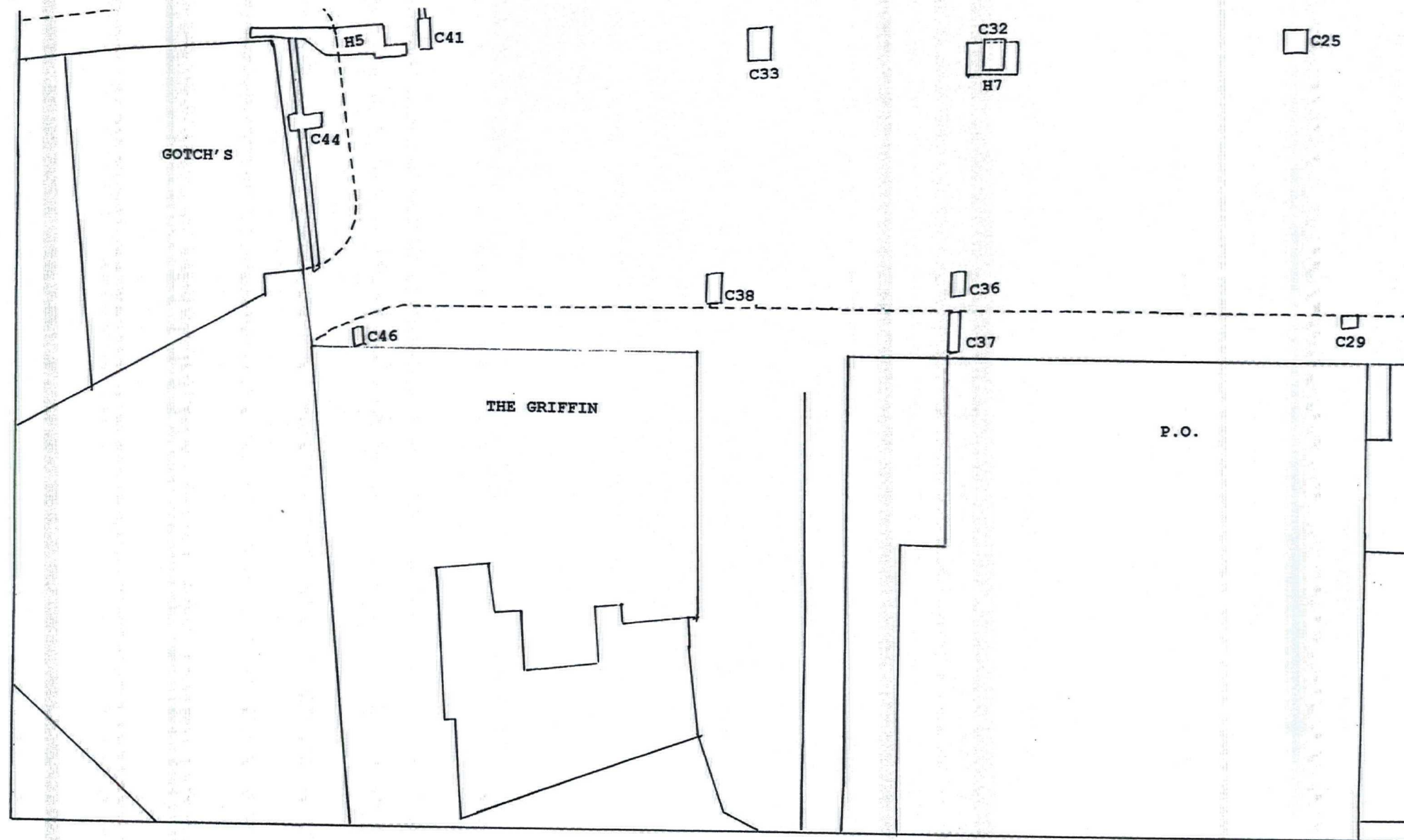
1. Penny of Queen Victoria, dated 1899.
Context 2024, Abbey Place
2. Fragment of wood with two rows of small dome-headed studs, some represented just by the pin-hole surrounded by a round area of cuprous staining. Plain dome-headed studs are known from both later medieval and post-medieval sites and could have had a variety of functional or decorative uses, for instance on stud-decorated, leather covered chests.
Context 2030, Church Avenue
3. Ferrule? Slightly tapering cylinder, now flattened, with possible screw-threading at the narrower end. This end is bound by a grooved binding strip. The wider end may also have had a binding or decorative moulding round it. A plain strip partially binds the middle section of the object and may have been attached by rivets. There are patches of white metal plating and, additionally, there may be solder from the attachment of the bindings. Post-medieval or modern.
Context 2030, Church Avenue
4. Copper alloy sheet offcut.
Context 2030, Church Avenue
5. Coin (penny?) of George III, dated 1806.
Context 2044, Church Avenue
6. Lead fragment, probably an off-cut.
Context 2057, Church Avenue
7. Knife handle scale of bone, with asymmetrical splay at the end. A row of copper alloy rivets would have secured it to the iron scale-tang of the knife. Post-medieval.
Context 2069 Micklegate T2.
8. Cast brass object, incomplete. It has an oval knob at one end; the other is broken through an opening which is angular on one side and rounded on the other. Probably post-medieval.
Context 2075, Abbey Place
9. Length of broad lead window came with slight mouldings along its length and edges, made by drawing through a mill.
Context 2075, Abbey Place
10. Copper alloy jetton, dated 1621. On one side are three *fleurs de lis* and the legend 'DOVBLE TOVRNOIS' (?) The other side bears the legend 'MARIE SOVVER DEDOMBE...' (?)
Context 2081, Abbey Yard HB1
11. Fragment, probably from lead window came, angled at one end; Possibly from a diamond paned window.
Context 2093, Micklegate C9

SNY 11982 1 of 4 Topket
V02



SNY 11982 20th Top right
VOL 2





PLAN 13 MICKLEGATE - C & H TR

VOL 2 SN 411982 3 of 4
bottom left

C24

H6

C10

C1

C14

C7

H3

C39

C17

C5

H5 ('95)

C20

C6

C40

C45

WATER LANE

LIBRARY

WREN LANE



Scale 1:250

ICES

VOL 2 SNY 11482
left bottom right.