
Proceedings of the Cambridge Antiquarian Society

(incorporating the Cambs and Hunts Archaeological Society)

Volume XCIII
for 2004



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**Volume XCIII
for 2004**

Editor Alison Taylor

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Editorial

The first thing you will notice about these Proceedings is our leap (as a belated welcome to the 21st century) into colour, for our cover and a number of plates. This is not really an innovation: CAS had beautiful colour plates in 1883 and a few other 19th century volumes. At last this is affordable again, and the water colour drawings and photographs we wanted to show seemed to fully merit some extra expense. In future, we will look carefully at illustrations that would benefit from such reproduction and would be particularly keen to include fine examples of artefacts.

This volume contains some very substantial reports on archaeological work, for we are one of the few outlets available for full publication of excavations. It is refreshing to see that these all relate to recent work, not the backlogs that once were a feature of British archaeology. A quick look at the 'Fieldwork in Cambridgeshire 2003' section however reminds us what a small proportion of current work can be made available in this way. Of course, reports on all sites are produced and can be purchased from the relevant units or consulted in the county archaeological office. In future, these will also be added to a national data base known as OASIS, run by the Archaeology Data Service, so accessing this huge amount of data will eventually be much simpler. We aim to keep you abreast with such advances through our own website, www.camantsoc.org.

It was a great pleasure to be asked by the Cambridgeshire Local History Society to publish a short note on their superb photographic project, a worthy successor to CAS' similar project in the early part of the 20th century, now a much valued part of the Cambridgeshire Collection. This voluntary effort will likewise be used by those involved with the historic environment in years to come. The same Society asked us to include the list of recent additions to the Cambridgeshire Collection, compiled by Chris Jakes. This list used to be included in *Conduit* and has been much missed. It reminds us that our local historians are not far behind local archaeologists in their labours, a tribute to the floods of new data from an ever-active antiquarian community.

'Fieldwork', 'Reviews', 'Spring Conference report' and 'Conduit' are regular items we have managed to maintain – and which add to another substantial volume. This year, 'Conduit' was compiled at short notice by our redoubtable President, Tony Kirby, to whom we owe many thanks. In the nature of things this has to be done at the last moment, and even so many societies do not have a complete programme for the following year at the time we need it. We would therefore like to have a Supplement later in the year, as with original *Conduit*, but currently this is beyond our means. Perhaps we will have better news next year.

It remains to offer further thanks to our retiring President. Tony has taken the Society safely through two quite difficult years, and this October hands over to Nicholas James. Our Secretaries carry an even larger burden of work for the Society, of which organising nine lectures, often by speakers of national repute, is only one part. We are therefore extremely grateful to our retiring Secretary, Liz Allan, and to Janet Morris, who has now taken on the challenge. We must say a sorry farewell too to Don Fage, who has had the tough job of Registrar. It may also be noticed that we still have vacancies for Excursions Officer and for Editor of *Conduit*, so do contact us if you are interested in volunteering.

Alison Taylor
Editor

A Roman Cemetery in Jesus Lane, Cambridge

Mary Alexander, Natasha Dodwell and Christopher Evans
with contributions by Andrew Hall and Gwladys Monteil

The excavation of a later Roman inhumation cemetery revealed a total of 32 skeletons, six being accompanied by modest grave goods and three decapitated (with heads placed lower down beside the body). Seventeen males, nine females and two juveniles were identified. Most of them lay supine with their heads to the southwest, and most appeared to have been buried in shrouds although there were possible coffin nails in some graves. Grave goods included two copper alloy rings with one woman, a bracelet on another, hobnails from boots that had been placed alongside three bodies, a small Nene Valley pot with one juvenile and a pottery flask with an older woman. Analysis indicates a predominantly mature population exhibiting pathologies associated with heavy work and old age. Cut marks on the vertebrae of the decapitated males were consistent with sword blows.

Earlier, 2nd–3rd century AD features relate to extra-mural/suburban settlement within the lower Roman town, and wasters occurring amongst the site's substantial Roman pottery assemblage would confirm earlier proposals of industrial activity within the area. Previous observations, including other burials, are reviewed. In addition, the results from a recent small-scale intervention at Nos. 11 Park Street, where further Roman cemetery evidence was also forthcoming, are outlined. Finally the implications of the various lower town findings concerning the layout and scale of the Roman Cambridge are discussed.

In 2001 the Cambridge University's Archaeological Unit (CAU) excavated a Roman cemetery in the basements of Jesus College's student accommodation at Nos. 35–37 Jesus Lane, Cambridge during the course of refurbishment (Fig. 1). Its discovery was entirely unexpected and the co-operation of the College was exemplary (their sponsorship of the fieldwork being entirely voluntary).¹ Aside from excavation throughout the cellars of the three conjoining Victorian properties, drainage trenches dug in their backyards allowed further recording of deposits and the excavation of another skeleton (Fig. 2).

After removal of the old floor covering by the contractors within the standing buildings the rooms were cleaned and base-planned. All burials revealed by this process were fully excavated and recorded. Where

part of a grave ran below the load-bearing walls, it was often not possible to excavate the inhumation in its entirety without jeopardising the stability of the buildings. In these cases part of the burial was left *in situ* until the contractors hand-dug the underpinning pits, whereupon the remainder was excavated with whatever recording could be achieved. This methodology also applied to graves which lay entirely below the building walls, and which were themselves only discovered during the underpinning operations.

Other features such as ditches and pits were sample-excavated (Fig. 3). Many later pits had disturbed the burials and were found to contain disarticulated burials; every attempt was made to recover all human bone encountered during the underpinning process.

The cellar level had truncated the top of the natural terrace gravels and no horizontal strata survived. It was only during the subsequent monitoring of drainage trenches in the backyard of the three houses that a full soil profile/sequence was exposed (Fig. 2). 2–2.20m deep in total, it was generally undistinguished; below recent garden soil make-up were a series of loamy dump horizons of probable medieval date ([191], [198] & [199]). The latter overlay a lighter-hued buried soil that probably attests to later Saxon/earlier medieval agricultural activity ([190]). This in turn sealed a dark brown gravelly sandy silt horizon ([196]) that bedded upon the basal natural gravels, [196] being the old ground surface into which the Roman features were dug (and sealed/truncated by [190]). Aside from various later features observed in the upper section, two Roman ditches were present within these trenches (F. 1 & 2; see below). In addition two graves were exposed, one being left unexcavated as it was sufficiently deep that the groundworks would not disturb it ([187]) with the other being excavated (Sk [201]).

Settlement Features

The site was traversed by two converging ditches, F. 1 and F. 2, which crossed within the back room of No. 37 (figs. 2 & 3). Both contained 2nd/3rd century pottery, but were not contemporary; F. 2 was later than F. 1 and cut across it. F. 1 ran diagonally across the floor space of No. 37 in a NNE-SSW alignment. It had been

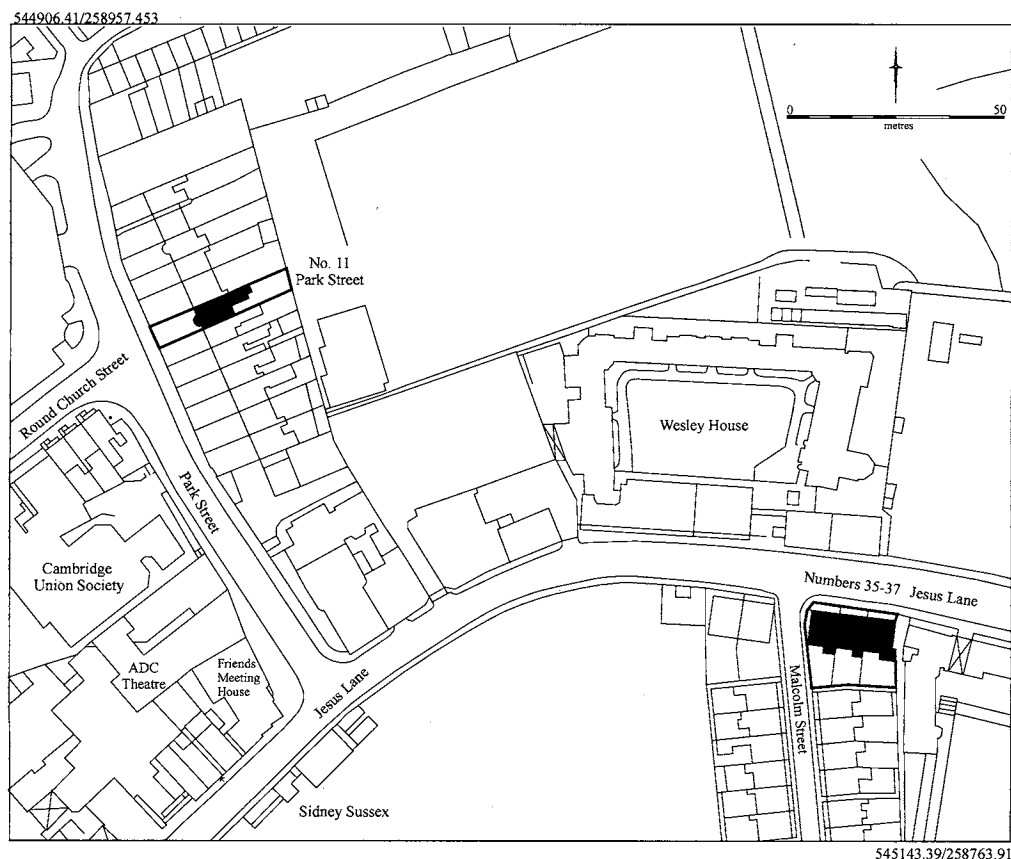


Figure 1. Site location.

truncated by the basements of the building, but survived to a depth of 0.35–50m, deepening towards the south. Approximately 1m wide, grey-brown sandy silt filled the upper part of the ditch and overlay a basal fill of silt and eroded gravels. Nearby occupation is suggested by the moderate quantity of charcoal fragments, animal bone and pottery within the fill. The ditch had been cut by three, or possibly four, graves. Although silted up before the interments took place, the ditch may have still been visible as a hollow but, with burials dug to either side, it evidently did not define a limit to the cemetery (though see *Discussion* below).

F. 2 was a sinuous ditch aligned east-west across the excavation area, but curving off slightly to the north as it ran below the western wall of No. 35, and towards the south at its eastern extent, where its alignment was recorded in the drainage works trench in the backyard of No. 37 (Fig. 2). The cut was steep sided, approximately 1m wide at the top with a maximum recorded depth of c. 0.50m, although its dimensions before truncation may have been considerably greater. The grey-brown sandy fill with redeposited natural gravels contained animal bone, fragments of disarticulated human bone, 2nd/3rd century pottery and a copper alloy coin of mid 2nd century date.

The third feature assigned to the Roman period was pit [125]. This was extensively truncated by an interior wall to the building, a medieval pit and two burials (Sks [052] and [059]). The pit was at least 1.8m across from north to south and more than 0.80m wide. Its surviving edges would suggest a grave, but proximity to the standing wall of the building did not permit its full exposure and excavation ceased at a depth of 1m. The fill was sterile apart from a disarticulated human left fibula.

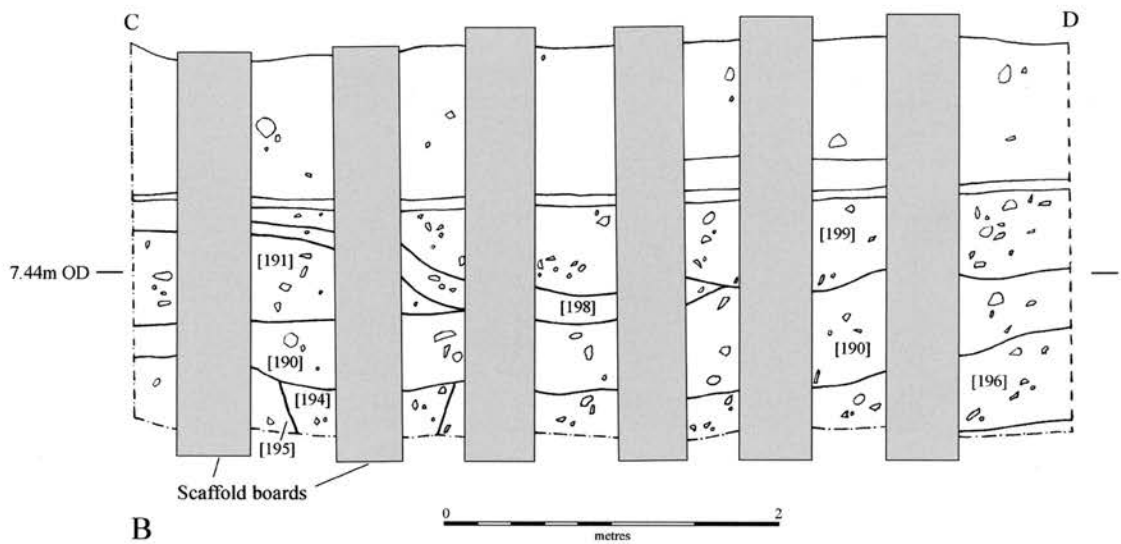
The Roman cemetery

Dating of the pottery associated with the burials suggests this is a late Roman cemetery. Of the 32 individuals recovered, 22 lay wholly or partially within the basement rooms; nine were found beneath the walls during underpinning or as residual bone in later pits, and a single burial was recovered in the backyard of the properties (figs. 2 & 3). The burials varied in depth from just below the basement floors at c. 6.80m OD to c. 6.15m OD, approximately 1.90m below modern pavement level.

The most densely clustered burials lay below the northern room of the middle property (No. 36), with a thinning out of graves towards the northeast and southwest. However, distribution of the surviving



A



B

Figure 2. Site layout and soil profile exposed within drainage trenches.

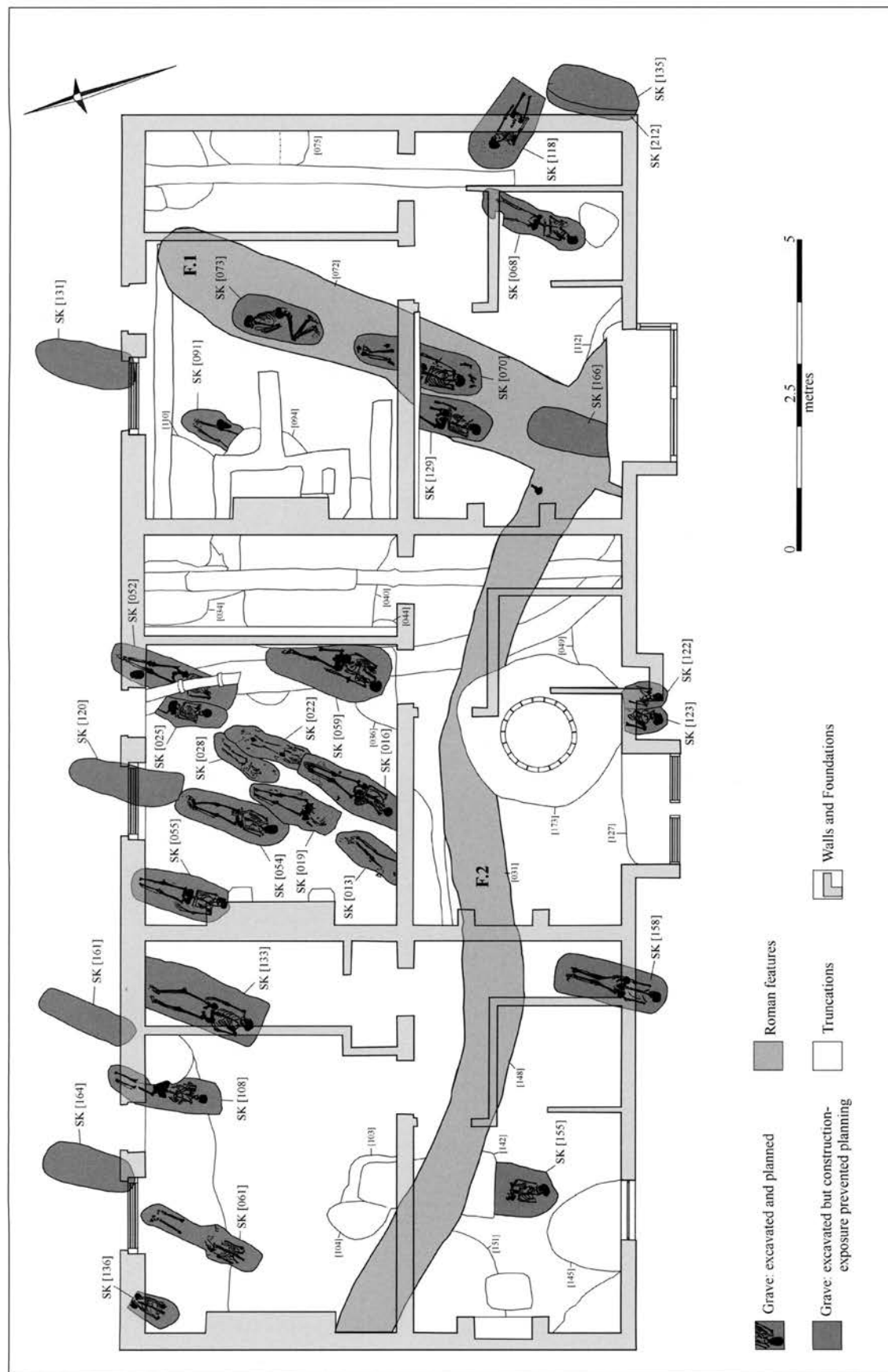


Figure 3. Base-plan within cellar interior of houses Nos. 35-37.

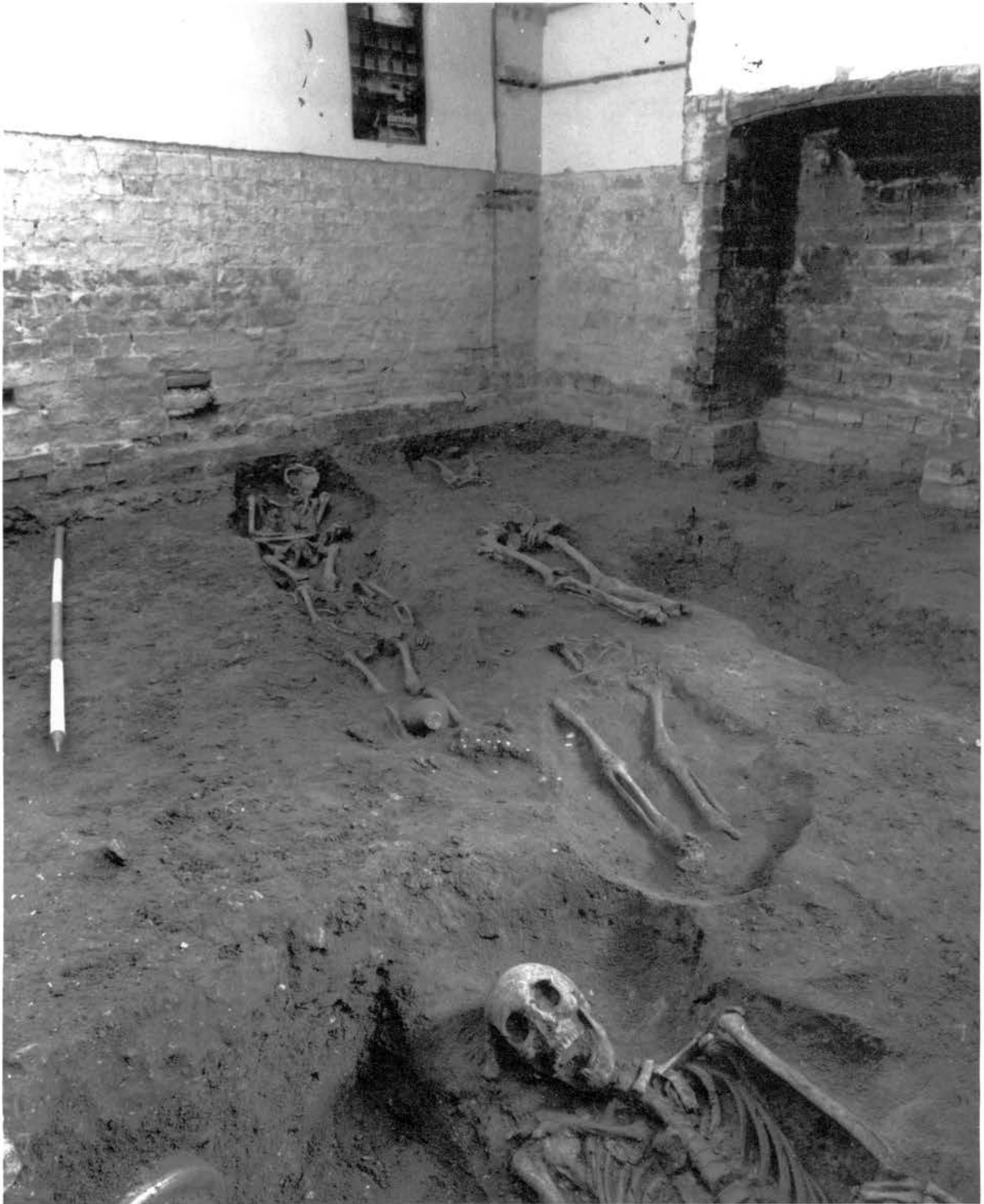


Figure 4. North Room, No. 36 Jesus Lane, looking south with Skeleton [025] in foreground and with Skeletons [013], [019], [022], [028] and [054] behind (photograph: G Owen).



Figure 5. Detail of Figure 4, with Nene Valley vessel set between legs of Skeleton [022] (white dots indicate position of hobnails; photograph: G Owen)

graves is partly determined by the incidence of later deep-cut features, the largest of which was the well in the south room of No. 36 that had severely truncated two burials and possibly destroyed others. Survival of the inhumations may also have been affected by the depth of burial; many of the shallower inhumations had been severely truncated and damaged by the floors and walls of the 19th century basements.

The majority of burials were supine and oriented on a SSW-NNE alignment with the head to the south. Each lay within its own grave cut, though there were some cases of intercutting burials where later interments had truncated or disturbed earlier graves. Four burials were found within ditch F. 1, also aligned NNE-SSW; three of these were cut into its backfill (Sks [070], [703], [129]; as outlined in Note 1, the fourth, Sk [166], was unearthed prior to the main excavation and its detailed stratigraphic relationship with the feature was not determined).

The position of the limbs of some of the individuals could suggest shroud burials. Nails were recovered from some grave fills, possibly indicating coffins. The most positive indication of a coffin came from Skeleton [118] where nails were found at roughly spaced intervals around the head and shoulders. The unusually large and square grave cut for Skeleton [133] may also attest to coffin burial.

There were three examples of shoes either on or

buried beside the body as indicated by surviving hobnails (Sks [016], [022] & [073]; Figs. 5 & 6); two of these were adult males, with the other a juvenile. The juvenile skeleton [022] also had a small complete Nene Valley colour-coated pottery vessel placed between the ankles (Figs. 5 & 6); the refitting fragments of another vessel associated with Skeleton [068] were identified during post-excavation processing and it may also have been deliberately placed in the grave (see Monteil below). Jewellery accompanied two individuals, both mature females: two copper alloy rings on the right hand of Skeleton [054], and a bracelet on the left wrist of Skeleton [129] (see Hall below; Fig. 10).

Although the majority of the burials conformed to the general layout, there were notable exceptions. One did not follow the expected alignment, and was oriented northwest-southeast (Sk [118]). Equally one of the ditch burials, while conforming to the general alignment, was arranged in a crouched position with the head towards the north (Sk [073]). Three other burials, which in all other respects were unremarkable, had been deliberately decapitated with their heads laid alongside the body (Sk [052], [091] & [161]).

Very few grave cuts had escaped some later truncation and general assumptions about the intended size and shape of the grave cut cannot be made.

Nevertheless, most appear to have been dug to accommodate the size of the buried individual, with rounded head ends, slightly tapering towards the feet. Exceptions to this appear to be the rectangular shape of the grave cut for Skeleton [133], and the crouched burial Skeleton [073] that fitted tightly into an oval cut with the feet set at an angle against the side of the cut.

Human Remains

Natasha Dodwell

The following information is given for each inhumation: a) details of the skeleton, with comments on sex, age, preservation, pathology and position; b) grave orientation, dimensions and shape; and c) associated finds.² Unless otherwise stated, all the bodies were buried in a supine position with their heads to the southwest.

Skeleton [013] Adult, ht. 1.66–1.69m (Fig. 6)

A partition wall has truncated the upper body and only the legs and elements of the hands and feet survive; these bones are all in good condition. The grave cut was shallow and subrectangular, measuring 1.08 x 0.52 x 0.15m.

Marginal osteophytes and an area of eburnation, changes

characteristic of osteoarthritis, were recorded on the anterior facet of the right calcaneus. Smears of a white chalk-like substance were identified below the legs.

Skeleton [016] Younger mature adult male, ht. 1.67m (5' 5 1/2"; Fig. 6)

The skeleton is in excellent condition although being so close to the surface much of the face is crushed or missing. The left upper arm lay slightly behind the body and the right arm crossed the body so that the hand clasped around the left lower arm. His knees were tight together and his left foot rested over his right. The grave cut was long and sub-rectangular with a squared northern end, measuring 1.78 x 0.53 x 0.22m.

Changes characteristic of osteoarthritis, including osteophytes, an increase in porosity and eburnation were recorded in the spine, particularly in the cervical and upper thoracic vertebrae. Similar changes were recorded in the left hand and in the left and right wrists. Multiple, smooth margined erosive lesions on the medial sides of the left and right 1st metatarsal heads could be indicative of *hallux valgus* or bunions (Rogers & Waldron 1995, 82–85). These can be hereditary and/or result from tight-fitting shoes. Additional facets on the right inferior transverse process of the 5th lumbar and on the right wing of the sacrum indicate the commencement of partial sacralisation. *Osteochondritis dessicans*

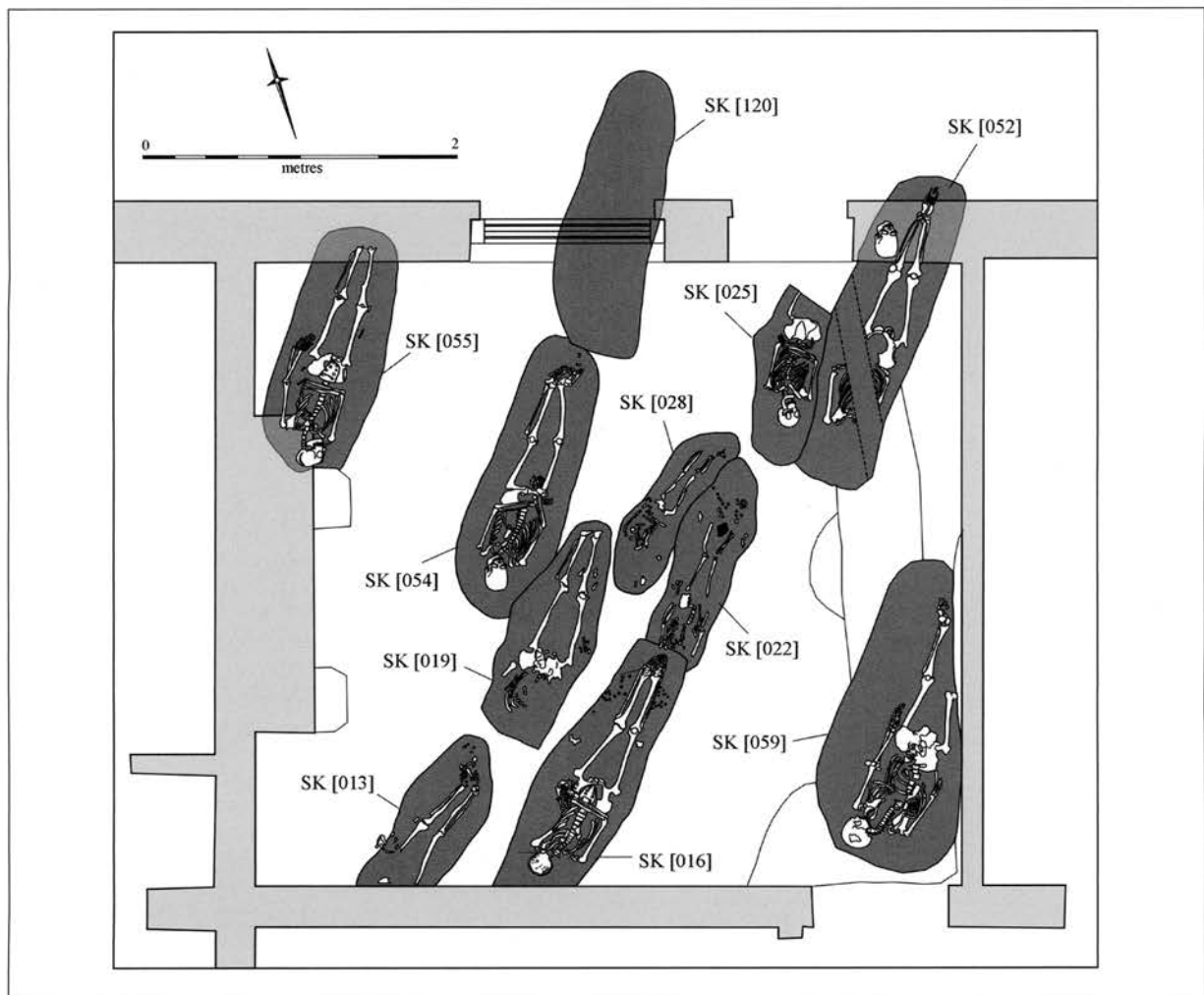


Figure 6. Detailed plan of interments within the north room of No. 36.

on inferior facet of the left talus. No dentition survived to be examined but at least four teeth were lost prior to death.

Hobnails were recovered from either side of the lower legs. Fragments of juvenile bone, probably from Skeleton [022], an earlier burial, were recovered from the grave fill.

Skeleton [019] Adult male, ht. 1.77m (5' 9 1/2"; Fig. 6)

Again the body was very close to the ground surface and much of it had been truncated by the basement floor. Except for fragments of the left elbow joint, elements from the hands and a few left ribs, all the body above the sacrum is missing. Many of the surviving bones have post-mortem breaks. The legs were extended; the knees and ankles were tight together. The grave cut was subrectangular, indistinguishable in the south because of truncation, and measured 1.40 x 0.50 x 0.09m. Three well-healed fractures were recorded on the lower legs. The left tibia has two fractures on the distal end. One is an oblique fracture where the distal end has been displaced upwards on the lateral side of the shaft (the bone is foreshortened by approximately 5mm). An intra-articular fracture was recorded on the tibia base diagonally crossing the articular surface from behind the medial malleolus. Unfortunately the foot bones had been truncated and so any damage to them could not be recorded. A large, smooth callous with vascularity had formed over the fracture site on the shaft and there is some evidence of infection and current or active periostitis on both the tibia and fibula shafts. Soft tissue involvement has resulted in ankylosis (fusion) of the left tibia and fibula at both the proximal and distal ends. There is a well-healed, oblique fracture on the distal quarter of the right fibula. The overlying callous is comprised of smooth and striated lamellar bone. Like the fracture on the left tibia the realignment of the bone is good. Pale grey woven new bone, indicative of an infection active at death, and striated lamellar bone was recorded along the shaft. The bony spicules on the long bones, particularly on the distal end of the linea aspra of the left femur, could well be myostis ossificans and the result of muscle and other soft tissue trauma. Despite some post-mortem damage it can be seen that the left sacroiliac joint would have been fused in life which again suggests soft tissue trauma. The fractures are likely to have occurred at the same time, perhaps in an incident where the man fell or jumped heavily onto his feet and then twisted sharply. The bony spurs on the right lesser trochanter and the marginal osteophytes on the right knee joint might suggest that after the incident the man would have favoured his right leg. Marginal osteophytes and a small area of eburnation were recorded at the 1st metacarpophalangeal joint of the right hand.

Smears of a white chalk-like substance were identified below the pelvis and where the vertebrae should have been.

Skeleton [022] Juvenile, c. 6 years old (Figs. 4, 5 & 6)

Moderately preserved skeleton; the surfaces of the surviving bone are very abraded, many of the epiphyseal ends are damaged and few of the loose epiphyses survive. The head was truncated by a later burial, Skeleton [016], and so the dentition could not be recorded. A maxillary incisor was recovered from the fill of the later burial and it undoubtedly belongs to this juvenile. Both the arms and legs were extended. The grave cut was shallow and subrectangular, measuring 1.35 x 0.37 x 0.09m. No pathology was observed.

Hobnails were recovered from around both feet, and a small Nene Valley colour-coated flask had been placed between the ankles (Fig. 9.2). Two iron nails were recovered

(points upwards) either side of the ankles, and could represent a coffin.

Skeleton [025] Mature adult (Fig. 4 & 6)

The skeleton was in good condition although many of the surviving long bones had recent post-mortem breaks, presumably caused by the laying of the service pipe, which rested over the body. The pipe had also truncated the right leg and the left leg from the mid femur down (the femur was recovered from the back fill). Both the skull and the pelvis exhibited male and female traits and this was the only near-complete skeleton for which estimating a sex was impossible. Both arms were tight against the body, flexed at the elbows, the right hand resting on the left elbow, the left on the right pelvis. The body was tilted to its right side, slumping into the earlier grave for Skeleton [052]. The grave cut was subrectangular, measuring 1.38 (min.) x 0.52 x 0.25m.

The surfaces of both pubic symphyses exhibited increased porosity, there was a billowing of osteophytes around the margins and approximately one third of both joint surfaces was eburnated. The degree of eburnation indicates that the cartilage was damaged which resulted in bone rubbing directly on bone. The cartilage could have been damaged by trauma or infection or simply old age. A heavy, jolting impact injury to the pelvis whilst, for example horse riding may have torn the cartilage. If this individual is female the cartilage may have ruptured during childbirth; the pelvic outlet is extremely narrow. Osteoarthritic changes were recorded in the upper cervical, the lower thoracic and lumbar vertebrae, and on the sacrum (both where it articulates with the spine and with the pelves). Porosity on the left mandibular condyle is indicative of incipient joint disease. Seven teeth had been lost ante-mortem, one tooth survived only as a root and a large caries was recorded on the distal aspect of the 2nd left maxillary molar. Deposits of calculus, ranging in severity from slight on the surviving maxillary dentition to heavy on the mandibular were recorded on the roots of the surviving dentition. Exposure of the roots caused by resorption of the alveolar bone is characteristic of periodontal disease.

The skeleton is gracile with pronounced muscle attachments at the deltoid tuberosities and enthesopathies on the pelvic rim.

Skeleton [028] Juvenile, c. 7 years old (Fig. 6)

The preservation of the skeleton is poor; the head, the right side of the thorax and the left upper arm are missing and this presumably occurred during the building of the property. Several of the surviving bones have been disturbed but the legs and the left arm were extended and the right arm was flexed and crossed the body. The grave cut was subrectangular and shallow, measuring 1.20 x 0.38 x 0.09m. No pathology was observed.

Skeleton [052] Middle adult male, ht. 1.68m (5' 6"; Fig. 6)

The skeleton was in excellent condition despite lying directly below the service pipe. The lower body extended c. 0.5m under and beyond the northern wall and the head, which had been decapitated, was placed beside the left foot. Both arms were tight against the body, flexed at the elbows so that the hands (truncated) would have rested close to the elbows. The grave cut was subrectangular, measuring 2.00 x 0.60 x 0.60m.

The three uppermost vertebrae were recovered with the

skull but *no* cut marks were observed on them. Unfortunately the lower cervical and upper thoracic vertebrae (C4–T3) had been disturbed by the service pipe and were missing/damaged. The highest *in situ* vertebra was T4. Scraps of vertebrae were recovered from the disturbed fill; one thoracic vertebra shows a sharp blade wound clipping the left superior articulating facet and the surviving fragment of body. A cut mark measuring *c.* 28mm in length and *c.* 2mm deep was recorded on the right parietal bone *c.* 20mm above the lambdoidal suture and 20mm from the sagittal suture. The angle of the cut suggests that if the head was face down, the blow, from a sharp blade (probably a sword) was struck from the right side of the body and from above.

Several developmental defects were recorded in the spine. The posterior arch of the atlas is bifurcated; this is not uncommon and is generally asymptomatic. There is partial lumbarisation of the 1st sacral body and the neural arches of two of the lumbar vertebrae (L3 and L5) are not present; this could be a congenital absence or spondylolysis. A compression fracture in the body of L5 and the lack of its neural arch have led to eburnation and porosity on the superior articulating facets of L5 and the inferior facets of L4 where they articulate with the sacrum. These changes are likely to have led to lower back pain. Schmorl's nodes, increased porosity and marginal osteophytes were recorded on the vertebral bodies of T5–L5. Flecks of calculus were recorded on the buccal aspects of the maxillary dentition and one tooth, the left maxillary 2nd incisor, was lost prior to death. Heavier deposits of calculus were recorded on the retained deciduous right, maxillary 2nd incisor.

A large iron boss or stud was found within the grave, between the pipe and the skeleton, with its head lying directly above the left ilium (Fig. 10.6).

Skeleton [054] Mature adult female, ht. 1.55m (5' 1"; Fig. 6)

The skeleton was moderately preserved although the surfaces of some of the bones are abraded. The upper arms were tight against the body and flexed at the elbow, the left hand was clenched and rested on the ilium, and went below the right wrist. The legs were extended with the feet together. The grave cut was subrectangular, measuring 1.86 x 0.57 x 0.46m.

A well-healed spiral fracture was recorded on the proximal end of the right fibula *c.* 4cm below the styloid process. The realignment was good with the superior portion of the shaft having twisted only slightly medially to the distal part; no fracture or periosteal reaction was observed on the tibia. The sacrum is angulated in its mid portion anteriorly between the 3rd and 4th sacral body; although this is normal this woman may have experienced difficulty during childbirth, as the pelvic inlet is narrow. The vertebrae and the pelvic girdle are extremely lightweight which could suggest osteoporosis although taphonomic variables can affect bone weight. Where the anterior portions of several of the vertebral bodies are damaged one can see that the trabecular bone has an open structure, indicative of osteoporosis.

There is unilateral spondylolysis of L5 with non-union on the right side between the right superior articular facet and the lamina. Porosity, eburnation and osteophytes were recorded on the inferior facets of L4 and on the lamina of L5 where they articulate. Osteoarthritic changes were recorded in the right mandible at the condylar process and the mandibular fossa (porosity and osteophytes around the margins and on the joint surface). A total of nine teeth were lost prior to death and there were five caries lesions, four of which

were at the junction of the enamel and root.

The woman was wearing two copper alloy rings on her right 4th metacarpal/proximal phalange or the ring-finger (Fig. 10.3 & 10.4).

Skeleton [055] Older subadult/young adult female, ht. 1.63 (5' 4"; Fig. 6)

The skeleton is in excellent condition. Both arms were tight against the body, the left was extended and the right was flexed, crossing the body. The lower legs extended beyond the northern wall of Room A and were recovered by the workmen. The grave cut was deep and subrectangular, measuring 1.40 (min) x 0.60 x 0.62m. Slight to moderate deposits of calculus were recorded on the buccal aspects of the mandibular anterior dentition and the right maxillary premolars and molars.

An iron nail, possibly indicating the presence of a coffin, was recovered from beside the right femur.

Skeleton [059] Younger middle adult male, ht. 1.71m (5' 7"; Fig. 6)

The skeleton is well preserved although a later pit had truncated the lower right arm and hand and the lower right leg and foot and several bones in the lower spine had been displaced. Both arms are extended and lay tight against the body. The grave cut was deep and subrectangular, measuring 1.90 x 0.70 x 0.80m.

Schmorl's nodes were recorded on the bodies of the two lowest thoracic and the lumbar vertebrae. Slight deposits of calculus were recorded on the dentition. The deltoid tuberosities on the humeri were pronounced, suggesting heavy work.

A disarticulated left adult calcaneus was recovered from the grave fill, and an iron object was recovered below the left elbow.

Skeleton [061] Mature adult ?male

The skeleton lies almost on the ground surface and has been disturbed and severely truncated by the basement floor and a later ?ditch. The skull, the upper cervical vertebrae and both femora are missing. The pelvis is fragmentary and the surviving long bones have suffered post-mortem breaks. The upper arms were tight against the body and the legs extended.

This individual exhibits the classic bony lesions associated with DISH (diffuse idiopathic skeletal hyperostosis). The lower seven thoracic vertebrae are ankylosed (fused) by massive, flowing osteophytes focused on the anterior and right or left sides of the bodies. The lowest lumbar vertebra is similarly fused to the sacrum. Large, drip-like osteophytes were also observed on the intervening lumbar vertebrae and although the anterior portions of the bodies have been damaged the freshly broken surfaces on the osteophytes suggest that they too were fused in life (ie there are no 'skip lesions'). Similarly the large, freshly broken osteophytes on the bodies of T3 and T4 suggest ankylosis. The osteophytes are fused on the anterior and/or the right and left sides of the vertebrae. In addition the ribs have fused to T8 and T12. The fusion of the vertebral column, from the sacrum all the way up to T6 or possibly even T4 has led to kyphosis or the bending of the spine. Enthesopathies were recorded on the distal end of the fibula. These lesions are characteristic of DISH. Involvement of the sacro iliac joints is also characteristic of this disease. Unfortunately only a fragment of one of these joints survived but there is a freshly broken enthesopathy on

the superior part of the left retroauricular area which may indicate fusion in life.

Osteoarthritic changes were recorded on the wrist and hand, with eburnation recorded over the whole of the proximal joint surface of the left 1st metacarpal and on the corresponding facet of the trapezium. There is some increased porosity on the joints with osteophytes around the margins, and the joint morphology is altered. There is also eburnation and porosity on the left lunate. On the left radius the ulna notch is greatly enlarged and deepened and the altered joint is eburnated and grooved from where it has rubbed against the head and styloid process of the ulna. Both of these features have eburnated surfaces with porosity and osteophytes. Similar changes were recorded on the right distal ulna and radius although the carpal and metacarpal bones were unaffected. Increased porosity on the sternal ends of the clavicles and fragments of ossified cartilage are characteristic of old age.

Three nails, possibly representing a coffin, were recovered from below the shoulder with more identified down the left side of the body.

Skeleton [068] Mature adult female, ht. 1.52m (5')

A well-preserved skeleton whose left foot was truncated by a party wall. The arms were tight against the body and were flexed so that the right hand clasped the left humerus just above the elbow and the left forearm crossed the lumbar vertebrae. The legs were slightly splayed. The grave cut was subrectangular, measuring 1.80 x 0.45 x 0.15m.

Changes indicative of osteoarthritis were observed in the spine; marginal osteophytes and increased porosity were recorded on the bodies of two of the lower cervical vertebrae (C5 and C6) and Schmorl's nodes were recorded on the bodies of two of the lower thoracic vertebrae (T8 and T9). At least six teeth had been lost prior to death and moderate deposits of grey/green subgingival calculus were recorded on the surviving mandibular dentition/roots. The maxillary premolar survived only as a root and three caries were recorded in the upper jaw.

Nails were found in the fill and beside the right foot and refitting fragments of a small, pottery flask were identified during post-excavation processing and may well have been a grave good (Fig. 9.1).

Skeleton [070] Older middle adult male, ht. 1.78m (5' 10"); Fig. 7)

A robust, well-preserved skeleton, cut into a ditch fill. A party wall lay directly on top of the pelvis. A single hobnail fused onto the 7th right rib. The humeri were tight against the body, the right arm was extended and the left flexed with the hand resting on the right elbow. The right leg was flexed medially at the knee. The grave cut was subrectangular, measuring 1.74 x 0.54 x 0.37m.

Two of the left ribs have transverse fractures approximately mid way along the shafts. They are well-healed as evidenced by good realignment and the raised callous of smooth lamellar bone. An oblique fracture was recorded on the proximal end of the right fibula. A raised callous of new bone, some of it striated suggesting that remodelling was still in progress, was recorded over the proximal quarter of the shaft. Periostitis along the shaft and raised spicules of bone on the distal end of the fibula and on the tibia around the fibula notch suggest soft tissue and ligament involvement and damage.

Osteoarthritic changes including osteophytes, increased

porosity and Schmorl's nodes were observed in the cervical, lower thoracic and lumbar vertebrae. In addition to these degenerative changes, two well-defined, aggressive lesions were noted on two of the lumbar bodies. On the anterior of the superior vertebral body of L3, a depression measuring 35 x 12mm and 8mm deep was recorded. The base of the cavity is irregular and pitted but the annular (rim-) epiphysis is intact. A similar lesion was recorded on the superior body of L4 although this rim was incomplete. Both lesions were associated with an increase in porosity on the bodies and marginal osteophytes. These lesions to the endplates may be the result of avulsion injuries or of herniation of the disc material into the end plate. Endplate injuries from avulsion can be caused by relatively minor accidents such as falls, horse riding accidents, blunt abdominal traumas and hits from bars (Maat & Mastwijk 2000). In the light of the other traumatic injuries this individual had sustained it is



A



B

Figure 7. A) Skeleton [070] extending between two rooms of No. 37; B) upper torso (photograph: M Alexander)

interesting to note that healed extraspinal fractures in other body parts were also recorded in individuals with healed endplate avulsions (*ibid.*, 146). Approximately half of the right acetabulum is eburnated and exhibits increased porosity and osteophytes inside the socket and around the margins. The anterior half of the femoral head has an eburnated surface with overlying porosity and there are osteophytes on the other half of the joint surface and around the margins and neck of the femur. The fractured right fibula combined with the joint disease in the hip suggests that this man would have had a limp. Marginal osteophytes and a small patch of eburnation on the head of the 1st right metatarsal is characteristic of osteoarthritis. The increased porosity and marginal osteophytes at both of the sternoclavicular joints and at the clavicular surfaces of the scapulas is indicative of degenerative joint disease.

A total of seven teeth had been lost ante-mortem, the dentine was exposed on all the surviving dentition, and a large caries was recorded on the occlusal aspect of the left maxillary canine. Flecks to moderate deposits of calculus were recorded on the surviving dentition.

Skeleton [073] Mature adult male, ht. 1.65m (5' 5")

This well-preserved skeleton was buried in a crouched position, lying on its right side with his head to the north. The arms were flexed, with the hands close to the chin. The grave cut into ditch fill [071] and measured 1.50 x 0.65 x 0.18m.

Well-healed fractures were observed on the 2nd and 3rd metacarpals in the right hand. The fractures are transverse, angled across the mid shafts, and may have been caused by punching something hard. The fractures have healed although small cloacae in the calluses of lamellar bone suggest osteomyelitis or infection of the bone, resulting from the trauma. The fractures have resulted in some deformity to the bones; the distal ends of both metacarpals, but particularly the 2nd, are curved towards the palm and in comparison to the bones in the left hand are foreshortened by c. 7.4mm and 3.0mm respectively. Transverse fractures were recorded on three ribs; both the 8th and 9th left ribs had been broken c. 30mm from their sternal ends and two fractures were recorded on an unsided rib c. 20 and 50mm from the sternal end. The calluses of new bone which have formed over the fractures are a mix of lamellar and woven bone indicating that the bone was still in the process of healing at death. Ribs are fractured as a result of a fall or a direct blow to the rib cage. Marginal osteophytes and increased porosity on the bodies of the lumbar vertebrae are characteristic of osteoarthritis. Eburnation and an increase in porosity indicative of osteoarthritis were also recorded at the right sternoclavicular joint and the right clavicular surface of the scapula. Both hips and the left knee exhibited lesions indicative of osteoarthritis. Gross osteophytes were recorded on the superior margin of the right acetabulum, with porosity and eburnation affecting c. one third of the socket. The femur head has similarly prolific marginal osteophytes, porosity and eburnation with additional osteophytes on the head itself and new bone formation extending down the anterior neck and proximal shaft. The lesions affecting the left hip and knee joints are visually less severe, marginal osteophytes were recorded on both joints and patches of eburnation measuring c. 15mm on the femur head and lateral epicondyles of the femur and tibia and in the acetabulum. Although there is some post-mortem damage to the right innominate, a cloaca (29 x 7 x 18mm deep) with smooth remodelled edges was recorded medial to the acetabulum above the ischial tuberosity. This

could be the result of osteomyelitis, an infection such as tuberculosis or be a septic arthropathy. On the spine there are erosive lesions on two of the thoracic bodies, almost masked by post-mortem damage, which could be indicative of tuberculosis in the spine. The inferior body of the 7th thoracic vertebrae and the superior body of the 8th thoracic vertebrae have lobulated, with destructive cavities and bumps which refit. There is kyphosis of spine; if a diagnosis of TB is correct this deformity of the spine would be called Pott's disease. Lace-like perforations and erosive lesions of unknown aetiology were recorded on the left articulating facets of the lowest three cervical vertebrae. Raised calluses of lamellar and striated bone on the distal and mid shafts of the right tibia and fibula and the proximal shaft of the left fibula are indicative of a non-specific infection. Six teeth were lost prior to death and the 1st maxillary left molar survives only as roots.

Hobnails were found *beside* the left foot.

Skeleton [091] Mature adult male, ht. 1.67m (5' 5 1/2")

This robust skeleton had been decapitated and his head placed beside his right knee upside down. The body had been truncated from the mid femur upwards by [094], a late medieval (14th century) pit, but the surviving skeletal elements are in good condition. The grave cut measured 0.84 (min) x 0.48 x 0.20m. The upper five cervical vertebrae were recovered with the skull. There is post-mortem damage to several of the spinous processes and although no obvious cut mark was observed on C5, a shallow cut, measuring 11mm, was recorded on the 4th cervical vertebrae just beneath the left superior articulating facet. This shallow nick made with a sharp instrument would *not* have separated the head from the body. It suggests that at least two blows were needed to detach the head and that at least this one was struck from the back. In addition to the cut on the vertebra a linear cut mark measuring 37mm was recorded on the left parietal, crossing the coronal suture at an angle, c. 50mm above the temporal bone. The wound is c. 2mm deep and would have been made with a sharp edged weapon. The cut is angled with one surface smooth and polished and the opposite surface flaked and roughened suggesting that the blow would have come from above, either delivered from the front by a right handed person or from behind by a left handed person. There is no evidence of healing. Twelve teeth were lost prior to death and three teeth survive only as roots. A large, externally draining abscess was recorded below the right mandibular canine and premolars; the 1st premolar has a large caries on its distal aspect and the 2nd survives only as a root. This individual has retained his metopic suture.

Disarticulated thoracic vertebrae, ribs and scapula fragments were recovered from the later pit and it is likely that they derive from this skeleton.

Skeleton [108] Mature adult male, 1.76m (5' 9")

Several of the bones have been damaged by later features. The right femur had been truncated by a late medieval pit but was recovered when this was excavated. The lower legs extended beyond the edge of excavation and were retrieved by the workmen. Both arms flexed at the elbows; the right wrist lay under the left humeral mid shaft and the left lower arm rested on the right lower arm with the wrist below the right humeral mid shaft. Both hands were clenched. The grave cut was subrectangular, measuring 1.38 x 0.53 x 0.25m. There were marginal osteophytes around the head of the right femur and approximately half the head exhibited an increase in porosity and was eburnated. Unfortunately the

acetabulum was missing so any corresponding changes in the pelvic portion of the hip joint could not be recorded. Marginal osteophytes on the glenoid cavities, porosity and osteophytes on the sterno clavicular joint are indicative of osteoarthritis. One tooth was lost prior to death and a large caries was recorded on the distal/occlusal aspect of the left maxillary 2nd molar.

Skeleton [118] Older middle adult female, ht. 1.56m (5' 1")

A well-preserved skeleton with its head in the northwest of the grave with the body below the shoulders extending beyond the eastern boundary of the property. The wall was undermined by 0.75m to retrieve as much of the rest of the body as possible; the femora were recovered, but not the lower legs. The grave cut measured 1.60 (min.) x 0.80 x 0.56m. Moderate deposits of calculus were recorded on the lingual aspects of the mandibular dentition with flecks on the buccal aspects of the anterior teeth in both upper and lower jaws. Much of the deposits was on the root suggesting that the gums had receded. Other than the deposits of dental calculus no pathology was recorded. The arachnoid granulations recorded on the inside of the parietals are indicative of increased age, as is the near-total obliteration of the cranial sutures. Nine iron nails were recorded around the head of the individual.

Skeleton [120] Adult

Only fragments of the left lower leg of this skeleton survived as much of it had been previously removed by workmen and it extended northwards beyond the property. No cut dimensions were recorded. No pathology was observed.

Skeleton [122] Mature adult male, ht. 1.61m (5' 3")

This skeleton and Skeleton [123] were identified by workmen whilst underpinning the wall at the rear of the property. The bodies lay immediately below the wall and extended beyond it. This and their proximity to each other meant that their stratigraphic relationship was uncertain, although on site it was thought that Skeleton [122] was later than Skeleton [123]. The lower legs had been truncated by the well but the surviving bones were in good condition. The grave dimensions were approximately 0.90 (min) x 0.50 x 0.25m. Osteophytes, a dramatic increase in porosity and eburnation were recorded on many of the surviving vertebral bodies and articulating facets, and several of the ribs exhibited similar changes on their costal facets. Osteophytes and increased porosity were noted on the sternal end of the clavicle. These changes are characteristic of osteoarthritis. Three cervical vertebrae (C2–C4) were had fused together at their articular processes and at their arches. This type of block vertebrae is probably congenital. Only the mandible could be recorded and at least ten teeth had been lost prior to death.

Skeleton [123] Mature adult male, ht. 1.73m (5' 8")

This skeleton was identified by workmen whilst underpinning the wall at the rear of the property. The body lay immediately below the wall and extended beyond it. The lower legs were truncated by the well but most bones were retrieved and their condition was generally good. The individual's relationship with Skeleton [122] is discussed above. The grave dimensions were approximately 0.90 (min) x 0.50 x 0.25m. Changes characteristic of osteoarthritis, such as marginal osteophytes, porosity, Schmorl's nodes and eburnation were recorded in several of the thoracic vertebrae. Marginal osteophytes were recorded on the right femoral head and

acetabulum. At least five teeth had been lost ante-mortem and four teeth survived only as roots. Moderate deposits of calculus were recorded on the buccal and lingual aspects of the surviving dentition. A weathered, disarticulated infant humerus was also recovered from the grave fill.

Skeleton [129] Mature adult female

The skeleton was identified by the workmen whilst underpinning an internal wall. Many of the long bones have post-mortem breaks and most of the lower legs are missing. The right arm was extended and the left arm was flexed, with the hand touching the left lower arm. The grave cut was subrectangular, measuring 1.68 (min) x 0.57 x 0.18m. A well-healed Colles fracture just below the mid shaft of the left radius has resulted in an 18mm foreshortening of the bone in comparison to the right. No fracture was observed on the ulna. Fractures to the radius may be the result of falling on the outstretched hand. Three teeth had been lost prior to death, four mandibular teeth had rotten and survived only as roots and large caries were recorded on the buccal aspects of three teeth. An external draining abscess was recorded below the left 2nd mandibular molar. Arachnoid granulations recorded on the interior of the skull are indicative of increasing age. The deltoid tuberosities on the humeri are robust.

A copper alloy bracelet was worn on the left wrist (Fig. 10.2).

Skeleton [131] Adult

This skeleton was identified whilst underpinning at the front of the building. No dimensions of the cut were taken. The head and cervical vertebrae were missing, presumably truncated by the wall as the body lay immediately below it. Although the wall was undermined to underpin and to retrieve bone only the left shoulder and upper arm, the right lower arm, vertebrae T1–L2 and ribs could be collected. The arms would have been slightly flexed so that the hands would have rested in the pelvic region. A slight increase in porosity and marginal osteophytes on the bodies of some of the thoracic vertebra (T12–T5) are indicative of osteoarthritis.

Skeleton [133] Mature adult male, ht. 1.71m (5' 7")

A well-preserved skeleton with the right arm extended, the left arm slightly flexed with the hand over the pelvis, the left leg extended and the right leg slightly splayed. The grave cut was wide, deep and rectangular, measuring 2.20 x 0.80 x 0.60m. This man suffered from scoliosis and kyphosis of the spine; scoliosis is the lateral deviation (curvature) in the normally straight vertical line of the spine and kyphosis is the deformity of the spine characterised by extensive forward curvature (flexion), especially in the thoracic region. The spinous process of T1–4 are deflected to the left (the concavity), the vertebral column straightens to the mid line, then from T7 it bends to the left until T10 and then back to the right through the lumbar vertebrae. Scoliosis, with or without a significant kyphotic component, often starts in childhood and progresses throughout the growing age and early adult life. The changes are to a large extent the result of altered growth and remodelling under abnormally directed static and dynamic stresses (Ortner and Putschar, 1985, 323–4). In addition to these deformities and perhaps as a result of them much of the spine exhibited changes characteristic of osteoarthritis. All of the bodies except for T3–5 exhibited marginal osteophytes and an increase in porosity. In addition, eburnation and Schmorl's nodes were also observed on many of the

bodies and sharp edged voids were recorded on the inferior body of L2 and superior body of L3. The right transverse processes of T3–T6 and T11–L1 were similarly affected. Slight osteophytic lipping was recorded around the margins of the acetabulums, particularly the right where there was also a small area of eburnation. Marginal osteophytes, an increase in porosity and eburnation were recorded in the 1st metacarpal phalangeal joint of the left hand and on the left glenoid cavity. The epiphysis of the acromion process of the left scapula is separate (*os acromiale*) which might suggest heavy work. The muscle attachments on the upper arms are robust and enthesophytes were recorded on the iliac crests of the pelves in the region of the muscle attachments for the abductors and extensors of the hip. A total of seven teeth have been lost ante-mortem and a further three teeth survive only as roots. The dentine is exposed on all of the anterior dentition. Flecks of calculus were recorded on all the surviving dentition but heavy deposits were recorded on the lingual aspects on the right mandibular dentition and even on the occlusal surfaces of the 2nd and 3rd molars where the opposing tooth had been lost prior to death. This man had retained his metopic suture.

Skeleton [135] Mature adult male, ht. 1.61m (5' 3")

This skeleton was identified during underpinning an external wall and was lifted under rescue conditions; skeletal elements belonging to an earlier interment were identified whilst lifting the body and these have been allocated context [212]. The left lower leg was not retrieved, as were many of the foot and hand bones; some of those that were recovered may in fact belong to Skeleton [212]. No cut dimensions were recorded. The bodies of the lower thoracic and lumbar vertebrae exhibit marginal osteophytes, an increase in porosity and Schmorl's nodes; the costal facets of the ribs are porous. In addition to the osteoarthritic changes in the spine degenerative changes were observed at the knees, right shoulder and sternum; slight osteophytic lipping was recorded around the margins of the both femoral epicondyles, around the right glenoid cavity and humeral head (where there was also porosity) and an increase in porosity was recorded on clavicular end of the left and sternal ends of both clavicles. The lesser tubercle on the left humerus is robust and very pronounced. A total of nine teeth had been lost prior to death and a further three survived only as roots. Two large caries were recorded on the occlusal surfaces of the right mandibular 2nd incisor and canine and an external draining abscess was recorded above the latter tooth. Flecks of calculus were recorded on the surviving teeth.

Skeleton [136] Younger middle adult female, ht. 1.56m (5' 1")

This skeleton's head has been truncated by a later ditch and its lower legs and feet, which extended beyond the front of the property, could not be retrieved. Her arms were tight against the body, her hands in the pelvic region. The grave cut was subrectangular, measuring 1.20 (min) x 0.45 x 0.18m. Developmental defects were recorded in the vertebral column; the neural arch of T1 is bifurcated and there is lumbarisation of the 1st sacral segment.

Skeleton [155] Middle adult male, ht 1.67m (5' 6")

A well-preserved skeleton which was truncated by pit [142] below the pelvis; most of the elements of the lower body were recovered from the ditch fill. The arms were flexed and crossed the torso, the right hand resting on the left pelvis, the left arm going below the right with the hand resting on the

lower right ribs. The grave cut was wide and subrectangular, measuring 0.92 x 0.82 x 0.24m. Osteoarthritic changes were recorded in the spine and hips. The bodies of several of the lower thoracic and lumbar vertebrae exhibited an increase in porosity and Schmorl's nodes. Severe osteophytic lipping around both femoral heads has altered the morphology of the joints so that they have a slight mushroom head appearance. The distal and proximal ends of both clavicles exhibited increased porosity. Seven teeth had been lost prior to death and three teeth survived only as roots. Moderate to heavy deposits of calculus were recorded on the surviving dentition and on several of the roots. Calculus is the major predisposing factor in the development of periodontal disease, which was evident in both the jaws of this individual. The disease manifested itself as inflammatory pitting and resorption of the alveolar bone to the extent that the roots of the surviving dentition were exposed. An abscess was recorded in the maxilla above the right premolars; it had two external cloacae and an internal one into the roof of the mouth all of which had sharp edges indicating that they were active at death. A large caries was recorded on the distal/lingual aspect of the 2nd right maxillary molar.

Skeleton [158] Mature adult female, ht. 1.57m (5' 2")

All of the body was retrieved although the upper half of the skeleton extended beyond the southern wall of the property. Many of the epiphyseal ends of the long bones are damaged. The arms were tight against the body, with the right hand resting on the right thigh and the left in the pelvic area. The knees and the ankles were also tight together, perhaps suggesting wrapping of the body. The grave cut was subrectangular, measuring 1.58 x 0.70 x 0.44m. Changes characteristic of osteoarthritis were recorded throughout the spine. Marginal osteophytes and a small area of eburnation were recorded at the 1st metacarpophalangeal joint of the right hand. A total of five teeth were lost ante-mortem and a further five survive only as roots. Several muscle attachments were enlarged, particularly in the right arm at the deltoid and also pectoralis major. Iron nails were recovered above and along the left side of the body and may indicate a coffin.

Skeleton [161] Older middle/mature adult male, ht. 1.64m (5' 4"; Fig. 8)

This skeleton was identified whilst underpinning the northern wall of the property and the lower legs and feet could not be retrieved. The body had been truncated from the mid humeri upwards by a later pit [137]. Some human bone recovered from the pit belongs to this individual. Initially the skull was believed to have been truncated by the pit or the wall but in fact it was identified *beneath* the left lower ribs. The left arm was extended and the right was slightly flexed with the hand over the pubic symphysis. The grave cut was subrectangular, measuring 0.85 x 0.50 x 0.20m. The two upper cervical vertebrae were retrieved with the skull. There was a cut mark c. 37mm long on the anterior of the 2nd cervical vertebra c. 7mm beneath the base of the dens. The cut was clean but had ragged edges and penetrated only half way through the body. Another cut mark was recorded on the lower jaw; the inferior c. 4mm of the left mandible between just medial of the mental protuberance and just medial of the mandibular angle had been sliced off. The cut is smooth with a small nick of bone at the dorsal end of the cut. The blow would have been made from the front and high up the neck so that the lower jaw was clipped. A small

area (24 x 8mm) of porosity and eburnation were recorded on the anteriolateral part of the left femur head. In addition marginal osteophytes and a proliferation of new bone on the anterior neck, dripping from the head of the left femur, were recorded. A small area of porosity and eburnation recorded in the acetabulum and a raised area of smooth new bone overlain by porosity was recorded superior to the acetabulum on the dorsal side of the ilium. The changes to the right hip joint are more extreme, with gross alterations in the joint morphology, which would have restricted movement. The femoral head is mushroom shaped with osteophytes flowing from the margin down the neck and porosity, eburnation and osteophytes on the joint surface. Similar changes were recorded in the acetabulum. In addition, a smooth, well remodelled cloaca (26 x 10mm) leads from the acetabulum to the anteriolateral side of the obturator foramen and this is suggestive of infection of the bone or osteomyelitis. The cloaca in the right pelvis, in association with the gross alterations to the acetabulum and femoral head is indicative of a septic arthropathy. Marginal osteophytes were recorded on the upper bodies of the lower lumbar vertebrae (L4 and L5) and slight osteophytic lipping was also noted around margins of distal humeri, the proximal ends of the radii and ulnas, and the distal femora. There is spondylolysis of the 3rd lumbar vertebrae; this is a relatively uncommon location for this trauma as it usually occurs on C5 or sometimes C4 (Roberts & Manchester 1995: 78).

At least nine teeth had been lost prior to death and a further three survived only as roots. There was a large caries on the mesial aspect of the right mandibular 1st premolar. An external draining abscess was recorded below the right mandibular canine (lost post mortem). Flecks to moderate deposits of calculus were recorded on the surviving dentition. There is an interesting pattern of wear on three of the maxillary incisors which may be the result of artefact use or production. The wear on the right incisors and the left central incisor forms an arc-like line; the left central incisor is worn more heavily towards its mesial side, as is the right lateral incisor and the right central incisor is worn to an oblique '^' shape. At the point of the '^', a groove with striations runs from front to back of the tooth. In addition the central incisors are worn on both their buccal and lingual aspects. Unfortunately the occluding teeth in the mandible are missing.

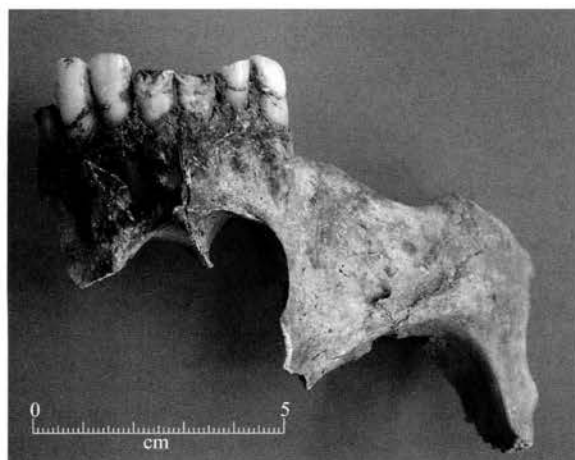


Figure 8. Mandible of Skeleton [161] shows teeth wear (photograph: M Abbott).

A sternal foramen, a non-metric trait caused by an ossification defect, was recorded and the metopic suture was still visible. Two thoracic vertebrae (T4 & T5) recovered from the later pit belong to this individual.

Skeleton [164] Mature adult male

The skeleton was identified whilst underpinning the northern wall of the property. The skull and cervical vertebrae were missing as was the right humerus and they had presumably been truncated when the property was constructed. The right femur was missing, possibly truncated by earlier underpinning and the lower legs had to be left *in situ* because they extended too far to the north. The right arm flexed across the body, the left was extended. Dimensions of the grave cut were 0.62 (min.) x 0.52 x 0.28m. The 2nd and 3rd lumbar vertebrae are ankylosed (fused) by flowing osteophytes at the left side of the bodies and at the left articular facets. Although damaged/broken as they were lifted it was possible to see that both of the sacroiliac joints were fused in life; a raised area of smooth, new bone at the lumbosacral ligament insertion on both ilia flowed over and fuses the upper portion of the joints.

The interosseous crest on both radii is pronounced, there are tufts of new bone on the olecranon process and there is a bony extension c. 25mm long extending ventrally from the right ischial tuberosity. These bony changes could lead to a tentative diagnosis of DISH, or at least the early stages of the disease. This being said, Rogers and Waldron insist that at least three contiguous vertebrae need to be affected for a secure diagnosis of DISH (2001). Fusion of the sacroiliac joints and vertebrae also occurs in *ankylosing spondylitis* which will always affect the lowest parts of the vertebral column first. But in this disease process it is the ligaments that become ossified and the vertebral bodies that are said to become squared; the vertebral osteophytes recorded here are more massive and characteristic of DISH, except that only two vertebrae are affected. Calcification of cartilage occurs in individuals with DISH but also in more mature individuals and so the retrieval and identification of ossified sternoclavicular cartilage, the 1st rib cartilage and tracheal rings is not in itself diagnostic of DISH. Marginal osteophytic lipping and porosity were observed on the thoracic and lumbar vertebral bodies with Schmorl's nodes in the lower thoracic bodies. Osteophytes, porosity and eburnation have altered the morphology of the right sternoclavicular joint and marginal osteophytes were recorded at the left glenoid cavity. Eburnation, porosity and marginal osteophytes, changes characteristic of osteoarthritis, were recorded on the left trapezium on the facet where it articulates with the navicular. Robust muscle attachments were noted, particularly on the left humerus.

Skeleton [166] Older middle/mature male, ht. 1.64m (5' 4")

This was the first skeleton to be identified; the workmen and the police removed it. The collection of the bones is good although unfortunately the pelvis, lower arms and hands were not retrieved. The skull is fragmentary and the face including most of the maxilla is missing. The surviving bones were in good condition although many had fresh breaks. The right femur had three breaks that had occurred post mortem but in antiquity. The dimensions of the cut could not be recorded although its depth was 0.42m. A well-healed fracture was observed across the lateral third of the left clavicle. The bone has realigned itself well although there is a 6mm foreshortening of the bone in comparison to the right. A pos-

sible well-healed fracture was recorded on a rib shaft. Of the surviving 12 vertebrae, four of the thoracic exhibited marginal osteophytes and porosity and Schmorl's nodes. Smooth remodelled and active sharp edged erosive lesions were recorded around and encroaching onto the heads of both the right and left 1st and 5th metatarsals and are suggestive of an erosive arthropathy or a systemic infection. The head of the right 3rd metatarsal has similar lesions although the left was unaffected (neither of the 4th metatarsals were collected). Periostitis was recorded on the medial shafts of both the left and right tibiae and may be associated with the lesions on the feet. At least three teeth were lost ante-mortem and two large caries were recorded, one on the buccal/occlusal aspect of the 2nd mandibular molar and one on the mesial/occlusal aspect of the loose right maxillary 1st premolar.

Skeleton [201] Mature adult female

This skeleton was identified at the rear of the house, as drains were being mechanically excavated. Only the upper body could be recorded *in situ* (the arms were extended and tight against the body) but the majority of elements from the lower body were recovered from the spoil. Many of the bones had recent post-mortem breaks.

The left clavicle is fractured and there is possible underlying osteoporosis; the horizontal trabeculae in the vertebral bodies appeared to have thinned which may have predisposed the individual to fracture. The fracture, which is well healed, is sited in the middle of the diaphysis and the alignment of the bone is good although it has foreshortened; 8mm in comparison to the right clavicle. Fractures of the clavicle often occur in incidents involving falling. Marginal osteophytes and porosity, changes characteristic of osteoarthritis, were recorded on both humeral heads and at both acromioclavicular joints. Similar changes were recorded in all the vertebral bodies except the upper thoracic, and the lower lumbar and the sacrum also exhibited changes on their articular surfaces. Neural arch deficits were recorded in the sacrum; both the 1st & 2nd sacral segments display cleft arches (*spina bifida occulta*). Fourteen teeth were lost prior to death and one of the surviving teeth survived only as a root. Moderate to frequent deposits of calculus were recorded on the surviving dentition; the occlusal surface of the 3rd maxillary molar is covered in calculus because it has no opposing dentition.

Skeleton [212] Adult ?female, ht. 1.57m (5' 1")

This individual is represented only by the disarticulated femora, right acetabulum, the humeri, the right ulna and five vertebrae. It was only identified as Skeleton [135] was being excavated under rescue conditions and probably rep-

resents an earlier burial. No cut dimensions were recorded and no pathology was observed.

Disarticulated material

Disarticulated bone was recovered from several medieval and post-medieval features and in all but a few cases it is clear from which skeleton the bone derives. One of the exceptions is a left innominate (mid/mature adult male) recovered from the top of ditch fill [111]. Another is the adult left fibula from pit fill [124] which is cut by two graves and may derive from an unidentified grave. In the trench behind the properties adult human bone including fragments of a mandible, a pelvis, vertebrae and ribs was recovered from two possible pits, [195] and [197]. A fragment of an adult temporal bone was identified whilst cleaning a ditch [183].

Demography and burial rite

A total of 32 articulated human burials were identified. Some of the disarticulated bone points to additional disturbed burials and a further possible burial was identified in the trench behind the properties but was left unexcavated. Of the burials identified and excavated, two were juvenile and the remaining 30 were adult. The majority of adults (60%) were mature, dying over the age of 45 years. The only young adult identified was a female and hazards associated with pregnancy and childbirth are often proffered as the reasons for females in this age-category dying. The two juvenile burials were aged c. 6 and 7 years old. The paucity of immature remains is a common phenomenon in archaeological cemeteries of all periods. Explanations usually focus on the fragility of the immature skeleton or differential burial practices. At Jesus Lane it is unlikely that the former explanation pertains, as the preservation of the skeletal material is excellent. Indeed a single, disarticulated infant femur was identified in an adult grave fill suggesting that graves of younger individuals are (or were) close by.

Whilst the majority of disarticulated bone recovered can easily be attributed to the burials which were identified on the site, some recovered from the Roman settlement features (see above) are likely to derive from further, unidentified graves.

Both male and female adults were identified; four of the adults could not be sexed but if one includes the 'uncertain' categories (?M and ?F) then there are sev-

Table 1. Summary of age and sex of skeletons.

| | Female | ?Female | ? | ?Male | Male | Total |
|-----------------|----------|----------|----------|----------|-----------|-----------|
| Mature | 5 | 0 | 1 | 1 | 9 | 16 |
| Older mid/mat | 0 | 0 | 0 | 0 | 2 | 2 |
| Older middle | 1 | 0 | 0 | 0 | 1 | 2 |
| Middle | 0 | 0 | 0 | 0 | 2 | 2 |
| Younger middle | 1 | 0 | 0 | 0 | 1 | 2 |
| Sub adult/young | 1 | 0 | 0 | 0 | 0 | 1 |
| Adult | 0 | 1 | 3 | 0 | 1 | 5 |
| Juvenile | 0 | 0 | 2 | 0 | 0 | 2 |
| Total | 8 | 1 | 6 | 1 | 16 | 32 |

enteen males and nine females, a ratio of 1.9:1. Whilst this ratio would be significant if it was replicated throughout the cemetery, as stated above the limits of the cemetery are unknown and this is only a sample of the burial population. If the four individuals who could not be sexed are actually female then there are seventeen males and thirteen females, a far less dramatic difference. Details regarding the age and sex of the articulated individuals are presented in the table below.

Stature

Long bones were sufficiently well preserved to calculate the stature of 22 of the 30 adults. Where possible calculations were made using a combined femur and tibia length, which is the most accurate method. This gave a female (n=5) height range of 1.52–1.63m (5'–5' 4") with a mean of 1.57m (5' 11/2") and a male range (n=9) of 1.61–1.78m (5' 3"–5' 10") with a mean of 1.69m (5' 6"). In order to increase the data set, where the combined femur and tibia length was not available the femur length only was used, followed by the tibia length. Using this method the stature could be calculated for a total of seven females and 15 males; interestingly neither the height ranges nor the means for either sex varied from that calculated using combined femur and tibia measurements. At the late Roman cemetery at Foxton, Cambridgeshire, the males had a height range of 1.68–1.75m and the females a range of 1.55–1.63m (Price *et al* 1997).

There are several instances of spinal curvature (scoliosis and kyphosis), and the living stature of these individuals (Sks [061], [073] and [133]) would be less than that calculated using long bone length.

Pathology

Joint Disease is the most frequent post-cranial pathology recorded in both archaeological and modern populations. Eighteen of the skeletons excavated exhibited changes characteristic of osteoarthritis. The spine was the most commonly affected area of the body although the hip, shoulder and knee joints, and hands and ankles were also affected. Osteoarthritis involves damage to the cartilage and its frequency increases with age. It is perhaps unsurprising that 60% of the adults exhibited osteoarthritic changes given the maturity of the sample population and also the evidence that they were involved in heavy physical work. The sceptic arthropathy in the right hip of Skeleton [161] would have restricted movement of that joint.

DISH (diffuse idiopathic skeletal hyperostosis) is a systemic condition of older adults, particularly males, in which vertical osteophytes appear on the right anterolateral area of the thoracic vertebrae and calcification or ossification of extra-spinal entheses and ligaments. Skeleton [061] exhibited all the classic hallmarks of DISH and a further possible example was recorded in Skeleton [164]. In the medieval period there would appear to be a correlation between high calorie intake, obesity, type II diabetes and DISH. Nothing, such as

the inclusion of grave goods, marks these graves out from the others although it is interesting to note that the burials lay adjacent to each other.

Trauma: Seven of the adults had fractures and five of these had multiple fractures. The skeletal element affected is presented in Table 2 below. The high incidence of fractures recorded is likely to be the result of the maturity of the individuals observed and the excellent preservation. All but three of the individuals with fractures ([054], [129] & [166]) were male and all of the fractures could have resulted from everyday incidents.

Table 2. Skeletons showing fractures

| Skeleton | Sex | Fracture |
|----------|-----|---------------------------|
| [019] | M | r. fibula, l. tibia (x2) |
| [054] | F | r. fibula, L5 |
| [070] | M | r. fibula, 2 ribs |
| [073] | M | r. hand, 4 ribs |
| [129] | F | l. radius |
| [133] | M | l. scapula (os acromiale) |
| [166] | M | l. clavicle, rib? |
| [201] | F | l. clavicle |

Two individuals, one male ([166]) and one female ([201]), had fractures to the (left) clavicle and this injury is most commonly linked to incidents involving falling. Female [201] may also have had osteoporosis, which would have predisposed her to fracture. The other mature female with osteoporosis, Skeleton [054], had a vertebral compression fracture and a fractured fibula. The third woman ([129]) had a fracture to the left distal radius, also known as a Colles fracture, which can result from falling on an outstretched hand and is the commonest fracture in people, especially in females over 40 years (Roberts 2001, 346). Ribs can also be fractured as a result of a fall or as a direct blow to the rib cage. Skeleton [073], a mature adult male who may also have suffered from tuberculosis, had fractures to the right metacarpals which could have been caused by punching something hard or falling heavily on a clenched fist. Their poor realignment suggests some deformity to the hand; he also had four fractured ribs. Male [070] had two fractured ribs and a fractured right fibula. Three individuals had suffered fractures to the lower legs; these injuries are attributed to twisting of the leg whilst the foot is held solid or are a result of a direct force. The fractures to both the lower legs of Skeleton [019] are more severe and there is also considerable soft tissue and muscle involvement and possibly secondary infection. The intra-articular fracture of tibia base may be the result of falling heavily on that foot from a height. In sum, these fractures suggest that the individuals were involved in physical activity and manual labour; they were not heavily involved in activity of a violent nature.

Developmental and Congenital Disorders and Non-metric Traits: Developmental and congenital disorders were recorded, as were some non-metric traits. Many

of these disorders are heritable or familial but no pattern emerged when they were plotted (ie no family groups or plots could be identified using these traits). The disorders and traits observed are discussed below and summarised in tabular form.

The most commonly recorded developmental defect of the vertebral column is the cleft neural arch (Barnes 1994, 117–21). Amongst the bodies excavated at Jesus Lane two individuals ([052] & [136]) have a bifurcated vertebra (C1 and T1 respectively) and another ([201]) has spina bifida occulta (S1 and S2 are open). These, particularly the former two, would have been asymptomatic.

Spondylolysis, or the separation of the neural arch either unilaterally or bilaterally from the vertebral body, is an example of the interrelationship between genetic tendency and trauma. There is thought to be a congenital predisposition to the fracture and it has been attributed to excessive strain on the lower back during adolescence. Four cases of spondylolysis affecting three individuals were recorded ([052], [054] & [161]). In two of these individuals, both male, the 3rd lumbar vertebra is affected, a relatively uncommon location for this trauma as it usually occurs on L5 or sometimes L4 (Roberts & Manchester 1995, 78–9). Three individuals, [016], [052] and [136], exhibited partial sacralisation or lumbarisation.

Three individuals, [091], [133] and [161], had a retained metopic suture, which is a familial trait. It is interesting although probably not significant that two of the decapitated burials also had retained metopic sutures. The older middle mature male, [161], also had a sternal aperture, which is an order of delayed development with a prevalence of approximately 4% in Europeans (Barnes 1994, 223).

Infectious Disease. Skeleton [073] has destructive lesions in the spine and the hip that may be characteristic of tuberculosis. Tuberculosis is an infectious disease and is transmitted from person to person by

exhaling or coughing bacilli. It is usually considered to be a disease of closely gathered persons – in essence an urban disease – although in a rural community the infection is as likely to be the less virulent bovine form caught from infected milk or meat of domesticated cattle.

Metabolic Disease: Two possible cases of osteoporosis were identified; Skeletons [054] and [201].

Dental Disease: The dentitions of 22 individuals, all adults, could be examined and a total of 434 teeth were observed. A total of 55 caries were recorded (this includes teeth where the tooth was so rotten that only the root survived) and this gives a prevalence rate of 12.7%, which is within the norm for this period. The number of tooth positions observed was 633 and the number of teeth lost ante-mortem was 125, which gives a prevalence rate of 19.8%. The mean tooth loss in the Romano-British period is 13.9% (Roberts & Manchester 1995, 57) and so the degree of tooth loss appears high until one remembers the maturity of the sample. Ante-mortem tooth loss prevalence at Baldock, Hertfordshire, was 20.1%. In the 22 dentitions examined 633 tooth positions were observed and five individuals had an external and/or internal draining abscess. This gives a prevalence rate of 0.8%, which is slightly lower than the 1.2% recorded elsewhere in the Romano period (Roberts & Manchester 1995, 51).

Although not pathological, the interesting wear pattern in Skeleton [161] should be highlighted as it suggests use of the teeth as a ‘third hand’. The skeleton is that of a mature adult male and his central maxillary incisors are worn on both their buccal and lingual sides. In addition the left central incisor is worn more towards the mesial line as is the right lateral incisor. The right central incisor is worn to an oblique ‘^’ shape and at the point of the ‘^’ a groove runs from front to back of the tooth. Unfortunately the occluding teeth in the mandible are missing.

Table 3. Skeletons with developmental or congenital disorders or non-metric traits

| Skeleton | Sex | Age | Spondylolysis | Neural arch deficit & border shifting | Non-metric traits |
|----------|-----|----------------------|-----------------------------------|--|---------------------------------|
| [016] | M | mature | | partial sacralisation | |
| [052] | M | middle | bilateral spondylolysis L3 and L5 | bifurcated C1, partial lumbarisation of S1 | |
| [054] | F | mature | unilateral spondylolysis L5 | | |
| [091] | M | mature | | | metopic suture |
| [133] | M | mature | | | metopic suture |
| [136] | F | younger middle | | bifurcated T1, lumbarisation of S1 | |
| [161] | M | older middle/ mature | bilateral spondylolysis L3 | | sternal foramen, metopic suture |
| [201] | F | mature | | S1 & S2 arch open | |

The groove across the crown suggests some sort of habitual activity such as wear from pulling a fibre. Ethnographic examples of threads being pulled between the teeth in spinning are known (eg flax in modern Egypt; Barber 1991, 46) but this results in thinner grooves. Dental parafunctional wear believed to be caused by leather working have been identified amongst the mummies in Greenland (Hansen *et al* 1991). In both the examples however the activities are likely to have been common to a group and this individual is the only example identified at Jesus Lane and, therefore, its precise cause can only be a matter of speculation.

Decapitation

Three of the 32 burials had been decapitated. This rite appears to have been relatively common in the late third and fourth centuries AD, and Philpott in his study of Roman burial practices found that 162 examples of decapitation are known from 76 sites (1991, 77–89). In Cambridgeshire he identified twelve decapitations from five sites (*ibid*, Tables A24–A26), and since then at least a further ten such burials have been discovered in the county (McKenna & Meadows 1993, Lucas & Hinman 1996, Casa-Hatton & Wall 1999, Dodwell 2003 and forthcoming, Price *et al* 1997 and BUFUA forthcoming); this figure does *not* include the three decapitated individuals identified at Jesus Lane.

All of the decapitations identified at Jesus Lane were adult males and in each instance the head was not in the correct anatomical position. In the case of Skeleton [052] the skull was beside the left lower leg, for Skeleton [091] the skull was beside the right knee and in the case of Skeleton [161] the skull was below the left ribs. The position of the skull in the first two instances is relatively common, but no other examples of a skull position similar to [161] are known (Philpott 1991, 78). In the majority of cases, the decapitation occurs between the second and the fourth cervical vertebrae (Harman *et al.* 1981, Table 7). In Skeleton [052] several of the vertebrae were missing or fragmented but a cut mark was identified on a fragment of a thoracic vertebrae (either T1, T2 or T3). This individual also had a blade injury on the skull. Skeleton [091] also had a blow to the head and the decapitation occurred at C5. The blow to Skeleton [161] left cut marks on C2 and on the inferior portion of the mandible. In the two former cases of decapitation the blow through the neck would appear to have been made from the back whereas in the latter instance the blow would have come from the front. The blade injuries to the two of the skulls are curious. Neither shows signs of healing and so must have been inflicted perimortem. They are non-penetrative wounds and it is conceivable that they were inflicted to stun the victim or otherwise were just miss hits.

Body Position

With the exception of a single interment, Skeleton [118], all of the graves were aligned southwest-northeast. The Roman ditch F. 1 is also on this alignment,

and it is probable that the graves were dug to respect this feature. Indeed four of the graves actually cut into the ditch. Of those graves aligned southwest-northeast all but one were supine and had their heads in the southwest. The exception was Skeleton [073] who lay in a crouched position with his head in the northeast. There is nothing to distinguish this individual except that he might have suffered from tuberculosis and had a severely deformed spine (Pott's Disease). The position of several of the bodies, with their limbs tight against the torso and knees and ankles together, might suggest binding prior to burial in a coffin.

In conclusion, the majority of individuals examined from Jesus Lane are mature adults and the diseases that show themselves on the bones reflect their excellent preservation and the age of the individuals. The prevalence of dental caries, tooth loss, fractures and joint disease are all likely to increase with age. Many of the males are robustly built and all of the adults, including the females, have robust muscle attachments which, in conjunction with the high incidence of spondylolysis, suggests heavy physical work.

Roman Pottery

Gwladys Monteil

A total of 657 Roman pottery sherds were recovered (9357g; 11.35 EVEs). Although small, the assemblage is diverse, especially if compared to the assemblage yielded by the site of Vicar's Farm on the other side of the Roman Cambridge (Monteil in Lucas 2002). While this group is mainly domestic in nature, the presence of two grave goods with Skeletons [022] and [067] and of two possible wasters (in grave fill [097] and ditch [149]) provides a significant insight into the activity carried out in this part of Roman Cambridge.³

Although several contexts yielded mixed Roman, medieval and post-medieval pottery, most of the contexts produced homogenous Roman groups. Apart from a residual 1st century *Terra Nigra* fragment found in the fill of the service trench ([005]) and other possible early material, the pottery is mainly dated to the mid to late 2nd and early 3rd centuries AD. While reasoning in terms of absence is less than satisfactory, the lack of typical late forms usually found on Cambridgeshire sites (eg Nene Valley colour-coated versions of earlier types made in Nene Valley grey ware) suggests a main phase of occupation from the mid 2nd to the mid 3rd centuries AD. The settlement probably still existed in the mid to late 3rd and the 4th centuries but on the face of the pottery evidence its activity significantly decreased (the presence of the cemetery itself would suggest a reduction of the size of the occupational space).

Table 4. Wares present within the assemblage.

| Fabric | Sherds | Weight | EVEs |
|--------------------|------------|-------------|--------------|
| BB1 | 1 | 213 | |
| BB2 | 3 | 38 | 0.06 |
| BBS | 30 | 292 | 0.59 |
| COLCC | 6 | 17 | |
| COLWW | 5 | 345 | 0.52 |
| CSBW | 3 | 12 | |
| CSGR | 349 | 3875 | 4.32 |
| CSGS | 9 | 69 | 0.25 |
| CSRE | 29 | 281 | 0.47 |
| CSRS | 2 | 8 | |
| CSWS | 11 | 265 | 0.45 |
| CSWW | 1 | 33 | |
| EARSW | 1 | 4 | |
| FSBB | 2 | 25 | |
| FSBW | 3 | 13 | |
| FSGR | 12 | 73 | 0.75 |
| FSRE | 11 | 76 | 0.02 |
| FSRS | 3 | 46 | 0.05 |
| FSWS | 5 | 136 | |
| HADBS | 1 | 2 | 0.05 |
| HADRE | 10 | 96 | |
| HORNBB | 1 | 37 | |
| HORNGR | 37 | 889 | 0.48 |
| HORNRE | 2 | 44 | 0.1 |
| HORNWS | 28 | 1043 | 0.09 |
| NVCC | 35 | 504 | 1.45 |
| NVGW | 5 | 46 | 0.1 |
| NVWW | 1 | 37 | |
| OXRE | 1 | 62 | |
| PORD | 1 | 6 | 0.1 |
| SAMCG | 8 | 92 | 0.26 |
| SAMLG | 1 | 19 | 0.08 |
| SAMMV | 1 | 7 | 0.03 |
| SMSW | 16 | 230 | 0.06 |
| TN | 1 | 1 | |
| VERRE | 12 | 287 | 0.5 |
| VERWW | 10 | 134 | 0.57 |
| Grand Total | 657 | 9357 | 11.35 |

Imports

Samian is the only imported ware of the Jesus Lane group with one South Gaulish bowl and seven Central Gaulish examples being represented (1.52% of total sherds). While most of the Central Gaulish samian comes from Lezoux with a very limited range of plain forms present (dishes Dragendorff 31R and cup Dragendorff 33), one Central Gaulish samian Dragendorff 18/31 comes from Les Martres de Veyre ([001] dated AD 100–125).

*Romano-British Wares**Nene Valley Wares*

Not surprisingly, part of the assemblage was composed of Nene Valley products (6.24% of total sherds). The domestic range of Nene Valley forms was relatively limited and is confined to the first two centuries of the industry with beakers being dominant (2nd and 3rd centuries AD). The domestic assemblage included colour-coated bag-shaped beakers with cornice rim ([001] & [005]), beakers with underslip barbotine decorations (mainly scroll decorations), funnel-necked and rouletted and/or indented. The Nene Valley cream wares

chiefly include a single fragment of mortarium in [105]. An unusual Nene Valley colour-coated form was deposited as a grave good with Skeleton [022] (Fig. 9.2). It is a small flask of the form Cam 339 (Hull 1963) with 'Romano-Saxon' style white-painted circles around the shoulder (dated to the late 4th century AD).

Colchester Wares

A small number of vessels come from Colchester (1.67% of total sherds). Colour-coated beakers formed the largest part of this group with five examples identified, including two folded and rouletted examples ([063] & [146]) and a roughcast decorated fragment in [027]. An almost complete Colchester white ware mortarium of the form Cam 501 (Hull 1963) was identified in [143] (Fig. 9.7).

Hadham Ware

A total of ten sherds of Hadham red ware were catalogued, while one fragment of Hadham black-burnished ware was identified in [168]. They represent 1.67% of total sherds.

Oxfordshire Wares

Very little Oxfordshire ware was identified, a single fragment from [035].

Verulamium Ware

One cupped-rim flagon in [074] and at least five jars including a jar close to the Cam 307 and jars with everted grooved rims were recovered both in a white and a red version of Verulamium fabric (3.35% of total sherds).

Portchester

A jar in a Portchester Fabric D with the typical smoke-blackened surface was found in [009].

Black-burnished Type Wares

A dish fragment in a black-burnished fabric (One) was identified along with three dishes in a black-burnished Two Fabric. Forming 5.18% of the total sherds, the major part of the black-burnished grouping remains unsourced. Most of the sherds are characterised by a hard fine sand-tempered fabric varying from buff to pink. The surfaces are covered with a thick black slip slightly burnished (BBS). The repertoire is poor with beaded bowls and plain-rimmed dishes.

Fine Grey Ware

The second possible grave good was found associated with Skeleton [068] (Fig. 9.1). It consists of a slit cordoned small flask in a fine reduced fabric. The flask was used before being deposited as a grave good and could date to the late 2nd/3rd centuries AD.

Terra Nigra

One abraded sherd of *Terra Nigra* was found in [005]. The core is off-white and the slip is black.

Local Wares

Horningsea grey, white-slipped and black-burnished wares form 10.35% of the total sherds. The range of forms is relatively varied with plain-rimmed dishes, beaded bowls and dishes and several types of jars. The bulk of Horningsea vessels is made up of typical Horningsea storage jars. Two Horningsea storage jar fragments display the vertical strips of combing as described by Lucas (1999, Fig. 6, 62), they are usually dated between 90 and 150 AD and are probably residual in these contexts ([041] & [095]). The rest of the

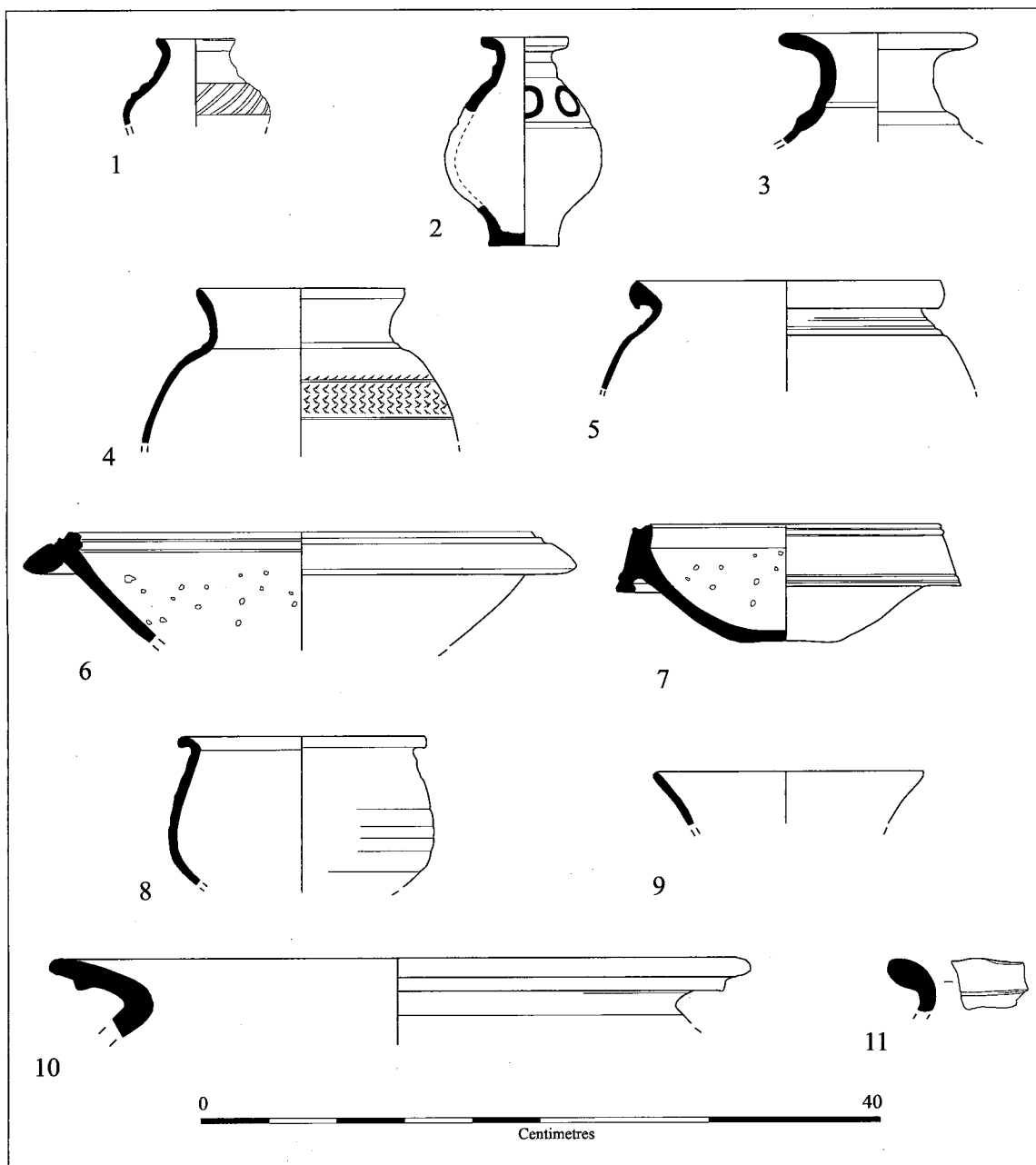


Figure 9. Selected Roman pottery.

Horningsea white-slipped ware storage jars are plainer with the usual combing and thumb-impressed herringbone at the base (*ibid*).

2.59% of total sherds were made up of shell-tempered jars, most of them used as cooking pots.

A local (?) white-slipped mortarium with a bead and reeded rim was found in [74] (Fig. 9.6). The fabric is unsourced but probably local and a very similar example was found on Vicar's Farm site on the other side of the town (Monteil in Lucas 2002).

A small fragment of a 'ring and dot' beaker with a characteristic metallic shine and panels of barbotine dots decoration was identified in [143].

Two jars of the form Cam 207 with frilled pedestal bases, one in a fine white-slipped fabric and another in a coarse sand-

tempered reduced fabric. Another narrow-mouthed possibly pedestalled jar was identified in [041], the fabric is reduced and black-slipped and the general appearance is, in many ways, close to the wasters found in the 20th century (see Lucas 1999, Fig. 9, n.1)

The bulk of the assemblage is made out of General Coarse Sandy Grey Ware (CSGR, 54.49% of total sherds). They cater for a wide variety of forms: beaded bowls and dishes, plain-rimmed dishes, a carinated flanged reeded bowl was recorded in [001], flanged bowls and various jars including several examples of the form Cam 307.

Two contexts yielded fragments of possible wasters ([097] & [149]). These display twisted and cracked rims in a coarse sand-tempered reduced fabric with

white inclusions (chalk?). A fresh break looks like a fragment of volcanic bomb stones (with frequent rounded voids). In terms of fabric, they do not bear any immediate resemblance to the wasters found on the site of Friends Meeting House in the early 20th century (Hughes 1902; now stored at the Museum of Archaeology and Anthropology, Cambridge),⁴ but they do support the presence of an industrial complex on the southern 'suburbs' of Roman Cambridge.

Table 5. *Proportion of the different pottery forms (% total sherds and % total EVEs)*

| Forms | %Total sherds | %Total EVEs |
|--------------|----------------|----------------|
| Bowl | 2.13% | 8.02% |
| Beaker | 4.57% | 7.05% |
| Cup | 0.46% | 1.76% |
| Dish | 4.57% | 8.81% |
| Flagon | 1.83% | 13.22% |
| Jar | 40.33% | 51.37% |
| Lid | 0.61% | 1.85% |
| Mortarium | 1.07% | 5.81% |
| Storage jar | 8.68% | 0.79% |
| unidentified | 35.77% | 1.32% |
| Total | 100.00% | 100.00% |

The jar-dominated functional pattern of this group (see Table 5) would suggest a relatively rural type of living for this area in the 2nd and 3rd centuries AD (Evans 2000). It seems to fit the local pattern, as a similar proportion of jars are visible at Wimpole (Horton *et al* 1995, 60). However, the diversity of the pottery in terms of supply (ie imports, Romano-British and local) and the presence of beakers, bowls and dishes in decent quantity could suggest a fairly urbanised 'Roman' way of living. The high level of flagons (see % total EVEs in Table 5) is related to the presence of two grave goods, both with almost complete rim and classified as flagons.

This group also demonstrates the presence of an extra-mural settlement where industrial activity (i.e. pottery production) was carried out alongside normal domestic occupation from possibly 150 to 250 AD. As outlined above, while a few early sherds found residual in later contexts could point towards a possible 50–150 AD phase of occupation, overall the pottery dates from the mid 2nd to the mid 3rd centuries AD.

⁴ A few sherds (Hadham, Oxfordshire and Portchester) suggest a late 3rd and 4th centuries AD occupation, but probably of a diminished scale which would explain the use of this space as burial ground.

Metalwork

Andrew Hall

Six items of copper alloy were retrieved from the excavation (Fig. 10), with three firmly identified as grave goods.

Strip Bracelet, Skeleton [129] (Fig. 10.2). A bracelet was worn on the left wrist of this mature female. The position of the arm over the stomach had caused the bracelet to press into the surface of a lumbar vertebra to become fixed within the bone as illustrated. The bracelet measures 60mm in diameter, with a simple subrectangular cross section 4mm in width. Similar bracelets have recently been found with burials at the Vicar's Farm inhumation cemetery, West Cambridge (Lucas 2002). A date within the 3rd–4th centuries AD would seem appropriate.

Finger Rings, Skeleton [054] (Fig. 10.3 & .4). A pair of rings were recovered from the 'ring'-finger on the right hand of this mature adult female. Both are formed from a simple band of metal bent to form a ring with an overlap. One ring is plain (.3), although the corrosion may obscure some decoration. The other (.4) has cross bands and indistinct chevrons inscribed into the surface. The preservation of this ring is much better suggesting a different metallic composition. The metal does have a slight silvery appearance perhaps indicating silver is included within the alloy.

In addition to the grave goods, three other copper alloy finds were recorded. These included a large 2nd century bronze coin recovered from the east-west ditch. Although badly worn, it seems likely that this is a Dupondius of Antoninus Pius (AD 138–161). A small belt fitting (Fig. 10.1) was retrieved from a service trench, and lacks any secure context. The cast copper alloy attachment is shaped like a flower head with two integral hooks on the back. The find is reminiscent of furniture attachments or belt fittings of a medieval or early post-medieval date. A small brass pin fragment was also recovered from another service trench, and a similar date is suggested.

A single short rod of lead, or possibly pewter (Fig. 10.5), was recovered from the grave fill of burial [051]. This rod, 85mm in length and 5mm in diameter, has a chamfered end forming a chisel-like point. Although similar to styli of this period, comparison with examples from Verulamium demonstrates clear differences. The flattened end does not flare or fan out from the rod, and it lacks the tapered point at the opposing end, and in general the object lacks the quality of manufacture seen in the published examples (eg Stead & Rigby 1989). A 19th century drain truncates the burial and therefore it is possible that the rod is much later in date, most likely post-medieval. This argument is further supported by the rarity of styli accompanying inhumations as grave goods. Two examples are recorded from Butt Road in Colchester, but no further examples are referenced within Philpott's survey (Philpott 1991).

A total of sixty iron objects were recovered with a further three groups of hobnails (an additional 70). By far the majority of the finds were of nails, a selection

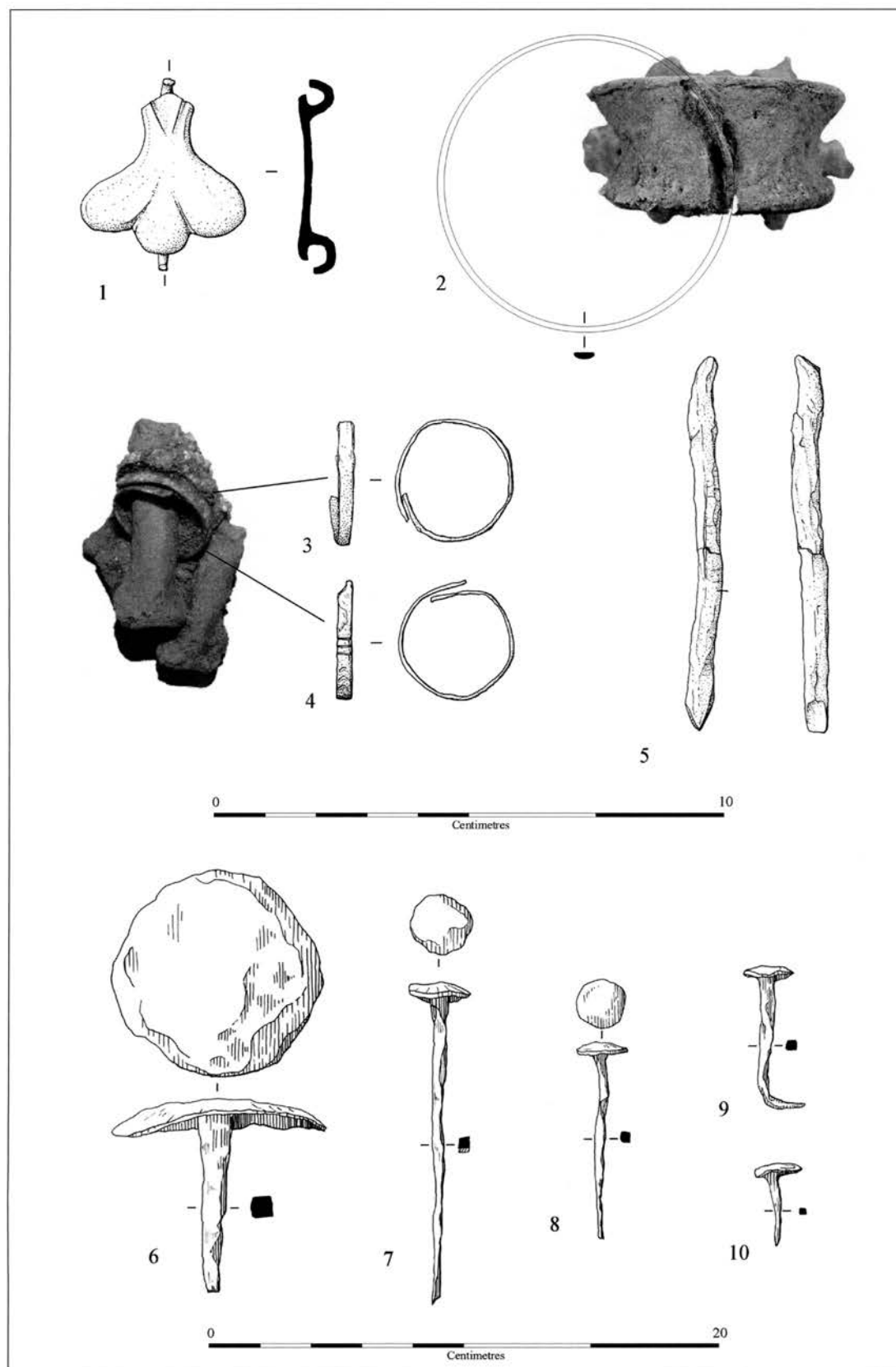


Figure 10. Metalwork.

of which is illustrated (Fig. 10.7–10.10). Their lengths range from 120–150mm. Many of these are coffin nails. This is clear within grave [118] where the location of the nails clearly mark the coffin outline. However, many of these nails are probably not directly associated with the burials and originated from within the backfill of the graves.

One artefact that stands out is a large boss or stud with domed head of 80mm diameter and square-section shank (Fig. 10.6). It was recovered from directly above the stomach area of Skeleton [052]. The long shank (70mm) suggests this object had a more structural role than purely being a decorative attachment, although it cannot be ruled out as an item of coffin furniture.

Hobnails were recovered from three graves; [016], [022] and [073], those of two adult males and a juvenile of unknown gender. The position of the nails within grave [016] demonstrates that the shoes or sandals were deliberately placed within the grave on either side of the legs and not worn at the time of burial. In the other two cases it is unclear whether the shoes were worn or placed above or below the feet (shoes within burials are much discussed within Philpott's 1991 survey).

Economic and Environmental Evidence

As identified by A Clarke, some 298 pieces of animal bone were recovered, of which 161 came from Romano-British contexts, the remainder being medieval or post-medieval. Only 41% of the Roman assemblage was identifiable to species. These consist entirely of the major domestics, with cattle (62%) and sheep/goat (32%) the most prevalent, while pig and horse were also present. The bones are mostly those that are discarded when an animal is slaughtered and the carcass prepared (ie the bones of the skull and distal limb bones). Many of these fragments bear cut and chop marks and spiral fractures from the primary stage of butchery, together with a small number of horn cores that have been broken or chopped off the skull for the removal of the horn. The emphasis on these activities may indicate that the site was located away from domestic settlement, perhaps in a dedicated industrial area. The few bone fragments from grave fills show the same characteristics as the rest of the assemblage and are considered to be intrusive (ie not grave goods).

As reported by R Ballantyne (in Alexander *et al* 2003), five samples were processed by hand using bucket flotation (grave fills [070], [132], [147], [154] and [157]). Low quantities of charred plant remains and charcoal were recovered in all. Grains of wheat predominate, mostly of a free-threshing variety (*Triticum aestivum sensu lato*), though grains of hulled wheat (*Triticum spelta/dicoccum*) were also identified. Lesser amounts of barley grain (*Hordeum vulgare sensu lato*) occur, along with occasional grains of rye (*Secale cereale*). Other plant taxa are represented in very low

quantities, including garden pea (*Pisum cf sativum*), goosefoot type (*Chenopodiaceae* indet.), knotgrass (*Polygonum* sp.), vetch/wild pea (*Vicia/Lathyrus* sp.) and brome or oat (*Bromus/Avena* sp.).

The cereal assemblages from the grave fills are unusual for the Roman period. Free-threshing wheat and rye only became significant crops during the Saxon period, and Roman sites in East Anglia tend to be dominated by chaff of hulled wheats. Charred plant remains from a grave in nearby Park Street (see below) are very different and characteristically 'Roman', with large amounts of hulled wheat chaff and no free-threshing wheat or rye. The material may thus be intrusive, although the consistent recovery of charred grain in all sampled contexts would be impressive if this were so. An alternative explanation would be that these are unusual Roman period remains, indicating the increasing use of new cereal crops. The dominance of grain, with little seeds or chaff, may suggest that a cleaned grain product has been charred, probably within a domestic setting.

Discussion

The evidence from the cemetery is consistent in indicating its Late Roman usage. The burials post-date settlement features of mid 2nd to mid 3rd century, and the datable grave goods consist of a (used) vessel of the late 2nd–3rd century in burial [068] and a later 4th century Nene Valley vessel in burial [022]. The exclusive use of inhumation, the presence of decapitation burials, the occurrence of hobnails and the low frequency of grave goods are all suggestive of a later 3rd–4th century date.

As is typical of the period, almost all of the inhumations were laid out in a supine position, with only a single crouched burial present. Although no coffin stains were identified, iron nails recovered from several of the burials may suggest the use of wooden coffins ([022], [055], [061], [068], [118] & [158]). As discussed above, the three decapitation burials represent a burial rite now well attested as a recurrent practice in the Cambridge region, as elsewhere in southern England.⁵ The smears of a white 'chalk-like' substance noted by the excavators in the graves of skeletons [013] and [019] could indicate 'plaster burials'. This similarly late Roman rite involved the covering of the body with gypsum plaster, lime or chalk, apparently in an attempt to preserve the body (Philpott 1991).

The demographic make-up of the sampled area of the cemetery indicates a strong bias towards males of 1.9:1, though this need not have been replicated throughout the wider cemetery. Barber and Bowsher (2000) have noted that biases towards males of between 1.5:1 and 2.2:1 seem typical of large urban Roman cemeteries, while rural cemeteries tend to have a more even balance. This is suggested to reflect the presence of greater numbers of men in towns, or cultural factors causing men to be buried in towns, whereas women were more often buried in rural areas. In this context it can be noted that females

formed the majority of the sexed burials in the small later Roman inhumation cemeteries to the west of the town of Cambridge at Vicar’s Farm (ten female and six male; Lucas 2002) and New Hall (four female and two male; Evans 1996), although the small sample sizes implies that little can be attached to this.

While acknowledging the biases that may entail from only its partial exposure – it extends in all directions and the site only represents a sample of a larger burial ground – some observations can be made of the cemetery’s layout. Firstly, although four graves cut the fills of F. 1, and another truncated ditch F. 2, in general the arrangement of the graves gives a sense of ‘stand-off’ or respect of the ditches that suggests a degree of contemporaneity. The density of graves generally seems to have been greater in the swathe

northwest of the junction of the two ditches, and it is possible that the ditches originally bounded the cemetery plot. Secondly, there are hints of patterning or grouping in terms of burial rites. The three decapitated inhumations and the only crouched burial all fall along the same northwest-southeast axis, and this could suggest some manner of ‘conceptual boundary’ – perhaps at one time marking the ground’s northern limits (Fig. 11). Further patterning can be seen where the cemetery is most dense, under the northern room of the No. 36 Jesus Lane property, where there seems to be a propensity for pairing of graves. The two ‘plaster’ burials (Sk [013] & [019]) and two out of the site’s three interments with hobnail footwear (Sk [016] & [022]) are in each case placed together in a head-to-foot relationship.

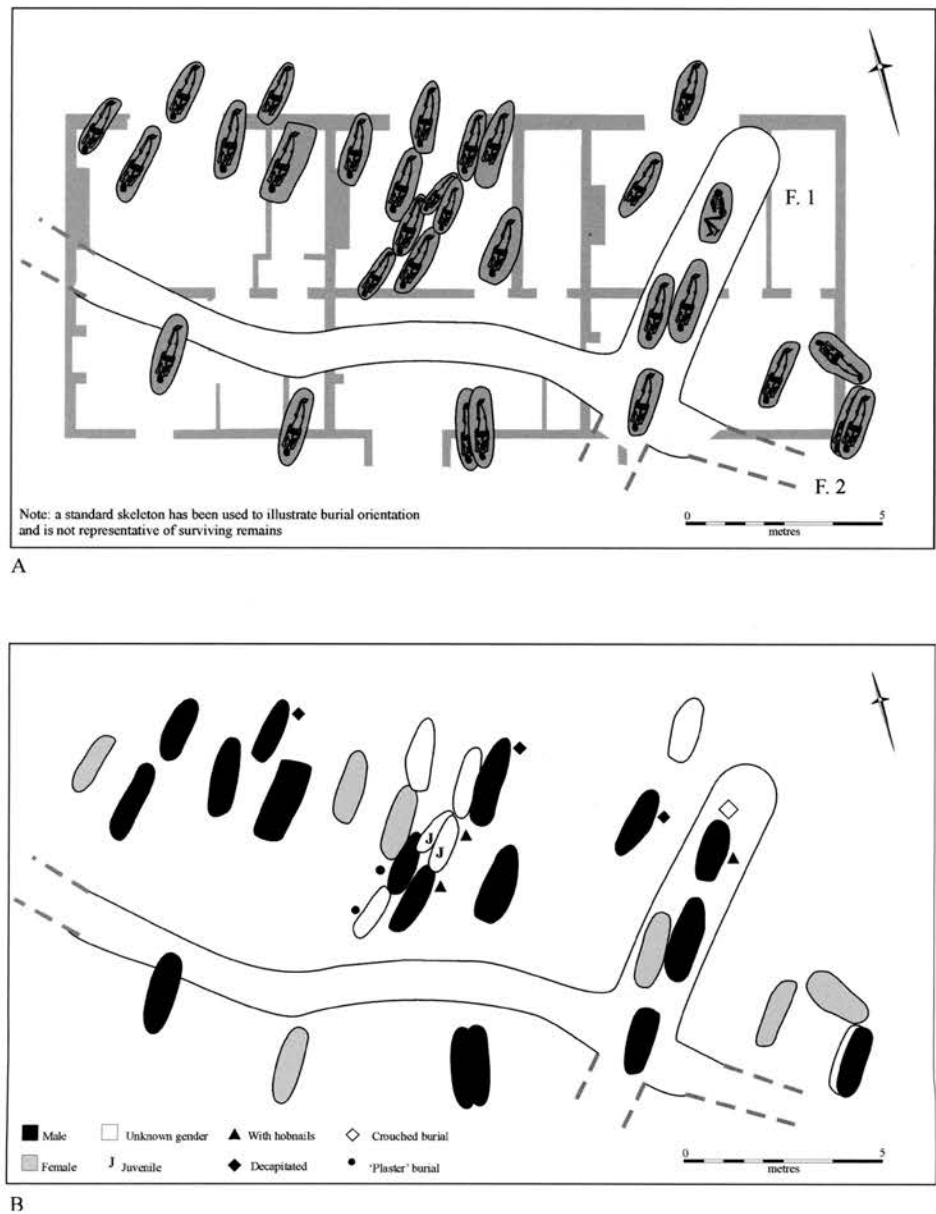


Figure 11. A: Reconstruction plan showing Roman ditch system in relationship to graves; B: Cemetery distributions.

While the extent of the Jesus Lane cemetery is unknown, there are some possible hints that it was large. Following immediately upon its investigation, work at 11 Park Street in 2001, located c. 170m to the northwest, also unearthed cemetery remains, with the graves of two adults (one buried with a neonate) and the disarticulated remains of a sub-adult and five neonates being identified (Fig. 1 & 12; Dodwell 2002). A total of 54 sherds (2375g) of pottery was recovered, mostly dating to the late 2nd and 3rd centuries AD, with some 4th century material also. All of the ceramics comprised domestic waste as opposed to grave goods.⁶ A residual sherd of 2nd/3rd century pottery was recovered from one of the grave fills and one of the burials was cut into a ditch containing 4th century sherds.

If part of the same cemetery as the Jesus Lane

plot, given its frequency of neonates the Park Street portion would be quite distinct. Equally, that the orientation of its graves differed from the Jesus Lane exposure could argue that they were, in fact, separate burial grounds. Yet, against this would have to stand the evidence of other burials within the immediate area. Although not recorded in the Cambridgeshire Sites and Monuments record, human remains excavated over a century ago at the Union Building, Friends Meeting House and along Jesus Lane are catalogued in both the Duckworth Collection and the Cambridge University Museum of Archaeology and Anthropology. Unfortunately the human bone in the Duckworth Collection consists only of disarticulated material (mainly skulls and leg bones) and in most cases it is poorly provenanced (eg '0409A, Cambridge Jesus Lane Drainage works, 1896, Baron Von Hugel'

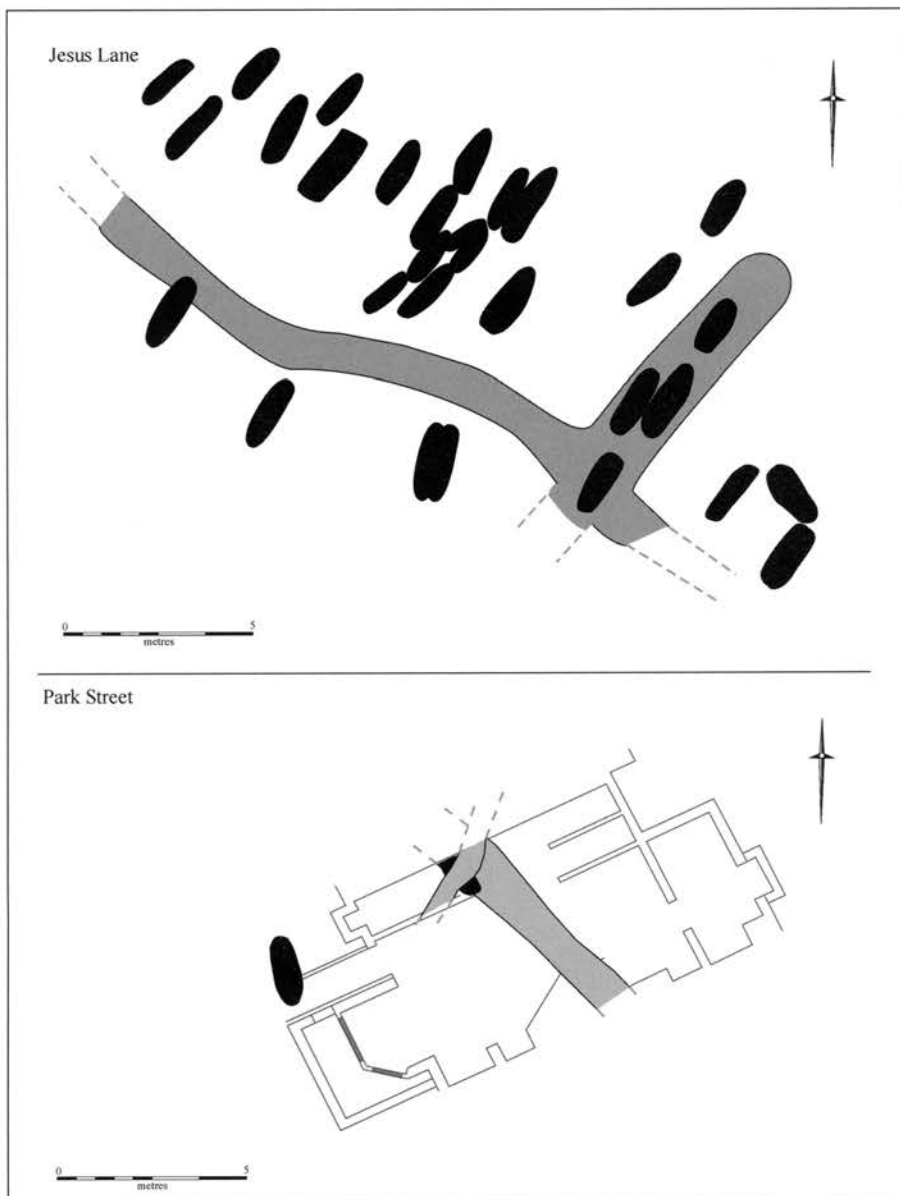


Figure 12. Comparative plans of Jesus Lane and Park Street burials.

or '0597A, Cambridge behind Round Church [Union], Prof. Hughes'). In addition, dating this material is difficult. Both Roman and Anglo-Saxon material has been found in the area and those human remains recovered from behind the Round Church may be later and derive from the church graveyard. With these reservations, a total of 24 skulls are held in the Duckworth Collection with some reference to either Jesus Lane, the Friends Meeting House or the Union Building. The long bones held in the Duckworth Collection, all collected during drainage works, have been briefly examined and derive from a minimum of 15 individuals (12 adults and three sub-adults).

It is possible that the larger cemetery may have also included cremation burials as Roman 'cinerary urns' found in Jesus Lane and under the Union Building are held in the Museum of Archaeology and Anthropology (id. numbers 1901.43 and 1893.125 respectively; the cremated bone does not appear to have been kept). Cremation burial would attest to Early Roman occupation, and could correspond with the reported recovery of amphorae from Jesus Lane. The latter could, however, equally suggest a Late Iron Age presence (possibly burial related; see Hill *et al* 1999). If so, then this could resonate with the recovery of the sherd of Terra Nigra from the Jesus Lane excavations and perhaps relate to the recent discovery of Iron Age settlement within the grounds of the College itself (Hattersley & Evans 2003).

Regardless of whether the Jesus Lane/Park Street findings relate to one continuous Roman cemetery swathe or a series of separate nuclei or clusters, these findings are of the utmost importance for the understanding of the scale of Roman Cambridge. On the one hand, the recovery of what are obviously earlier settlement-related features (ditches, pits, etc.) indisputably attests that there was a lower 'town' on the eastern side of the river below Castle Hill. Equally, the recovery of pottery wasters in the course of these investigations – confirming earlier 20th century findings along Jesus Lane (Hartley 1960) – indicate industrial activity within the area. This could be further demonstrated by the possible evidence of horn-working from the site and also the robust musculature of, and injuries to, the populace interred at Jesus Lane. Much of the skeletons' pathology could be attributable to sustained quasi-industrial labour; the worn notch in the incisor of Skeleton [161] (possibly the result of leatherworking) would be a specific case in point. In this regard, a sense of 'urban gradient' or 'edge' can be established in relationship to excavations within Jesus College proper. Only field boundary ditches have thus far been identified from the period with the College's grounds, and the quantity of contemporary pottery recovered would suggest no more than manuring activity (Evans *et al* 1998; Whittaker 1998).

In contrast, more recent evaluation fieldwork at the ADC Theatre opposite No. 11 Park Street showed a high density of Roman settlement activity of 2nd–3rd century date with no interments present (Whittaker 2002). Together with the evidence of Hughes' earlier Union Building investigations (1906: 410), this sug-

gests a focus of Roman occupation straddling the Via Devana approach road adjacent to the eastern Cambridge bridge-crossing.

Pending any further investigation along Jesus Lane any estimation of the scale of the Nos. 35–37 cemetery must be a matter of speculation. If continuing uninterrupted to No. 11 Park Street in the same densities, then it is estimated that it could have had an interred population of upwards of 750–1000 individuals. This would be considerable given its Late (-only) Roman attribution and could represent a population of c. 150–300 individuals at any one time depending on whether an average age of death is assumed to be either 30 or 50 years. In this case, this finding could call for some reappraisal of the status of Roman Cambridge (cf Evans 2000). Alternatively, of course, the Jesus Lane and Park Street burial plots may have been entirely separate and their respective scales may not have greatly differed from the Vicar's Farm and New Hall cemeteries (30 and 6 individuals). Yet for reasons already outlined, the percentage of male burials could attest to a larger, more specifically 'urban-type' cemetery.

The results from excavations within the upper town proper – including its defensive walling (probably by Imperial decree; see Taylor 2000 and 2002) – would indicate that Cambridge remained a significant centre during the 4th century, and this would be furthered by the recovery of the Jesus Lane cemetery. Although the evidence of human burial and industrial activity (kilns/furnaces; Alexander & Pullinger 2000: 73) from within the walls would seem at odds with expectations of Roman urban life, together with Jesus Lane pottery wasters the latter would attest that the town still sustained an economic/commercial role.

Acknowledgements

We are grateful for the exemplary co-operation of Jesus College in response to the discovery of the cemetery; particularly that of its President, Dr S Heath, the Domestic Bursar, the late V Osborne, and its Buildings Manager, Mr A Forsbeary. Equally, representing Bidwells, the assistance of S Drury was essential to the success of this project.

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Endnotes

1. The work was initiated by the discovery of a skeleton by workmen, revealed during the removal of the floor in No. 37 Jesus Lane. The local Coroner was contacted and the pathologist/archaeologist, Corinne Duhig investigated the discovery, which had been excavated by the local police. Establishing the antiquity of the burials, no police enquiry was required and a programme of work was thereafter rapidly negotiated to dovetail with the refurbishment schedule.
2. The general methods used are those of Bass (1992), Buikstra and Ubelaker (1994) and Steele and Bramblett (1988). An assessment of age was based on the stages of dental eruption and epiphyseal union, on the degree of dental attrition (Brothwell 1981) and, where possible, on changes to the pubic symphysis (Brooks & Suchey 1990) and the auricular surface. The following age categories are used:

| | |
|--------------|-------------|
| Infant | 0–4 years |
| Juvenile | 5–12 years |
| Subadult | 13–18 years |
| Young adult | 19–25 years |
| Middle adult | 26–44 years |
| Mature adult | 45 years + |

There may be overlaps between categories or a broad category, such as adult, may be used where insufficient evidence was present. Sex of the adults was ascertained where possible from sexually dimorphic traits on the pelvis and skull and from metrical data. A five sexes classification (female, ?female, indeterminable, ?male, male) is used. No attempt was made to sex immature individuals. The living stature of the skeletons was, where possible, calculated from the long bone lengths using the regression equation devised by Trotter and Gleser (1958). Combined femur and tibia were used in most cases, the ranges being $\pm 29.9\text{mm}$ and $\pm 35.5\text{mm}$ for males and females respectively.

3. The pottery from each was sorted by a combination of fabric and form, and then quantified (number of sherds, weight and rim EVEs). Lucas (1999) was used as the reference for the local ware. All fabrics were compared with the Roman fabric reference collection defined for the Romano-British site of Earith, Cambridgeshire (unpublished).
4. The Friends Meeting House wasters were attributed to the late 3rd and 4th century by Hartley in 1960 because of similar forms being found in Great Chesterford in contexts of that date (1960, 27). However, this type of narrow-mouthed jars, one of which is pedestalled, is a relatively long-lived type and their production in Cambridge could have started earlier in the 2nd century AD. One very similar jar was found in [041] associated with 2nd century material.
5. Having a ratio of 1 per 10.7 inhumations, the occurrence of decapitated burials on the site is well in keeping with the frequency of such interments in other later Roman rural and small town cemeteries (eg Foxton, Cambs. – 2 out of 24 or 1:12; Kempston, Beds. – 12 out of 92 or 1:7.7; Dunstable, Beds. 12 out of 116 or 1:9.7). Interestingly, they appear to occur in lower frequencies in large Roman towns (Philpott 1991; see also Roberts & Cox 2003: Table 3.29).

6. Analysed by G Monteil, most of the assemblage consists of local grey and black-burnished wares, probably from Horningsea (Lucas 1999), in a limited range of forms. The only imports are one samian dish Walter 79 and a 'Mozelkeramik' rouletted beaker fragment. Nene Valley colour-coats dominate the finewares with indented and rouletted beakers and one beaker with underslip barbotine decorations. Other finewares consist of a Hadham red-slipped samian imitation of the form Dragendorff 31 and two sherds of Oxfordshire red-slipped ware. One Nene Valley mortarium was found, it is typologically close to M36 and can be dated to the later 3rd century (Dannell *et al* 1993, Fig. 78).

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