OSTEOLOGICAL ANALYSIS OF THE HUMAN REMAINS FROM LATTON LANDS, NORTH WILTSHIRE

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INTRODUCTION

Full osteological analysis of human skeletal remains recovered during archaeological investigations at Latton Lands was undertaken. The remains were recovered from Area G and they date from the Middle Iron Age to the Early Roman period. All were buried in association with enclosure ditches.

The material consists of one neonatal inhumation dating to the Middle Iron Age (300-100 BC), three cremation burials dating to the Early Roman period (AD 43 - 120), one probable *in situ* cremation burial (a *bustum* burial) and three inhumations dating to the Late Iron Age/Early Roman period (100 BC - AD 120).

PROVENANCE AND CONTEXT

The Iron Age Burial (3871)

The earliest burial from the Latton Lands site was that of a neonate skeleton (3871) found at the base of the upper fill (3870) of pit 3869 within enclosure ditch 3955 in Area G. Pottery from the fill of the pit dated the feature to the Middle Iron Age. The neonate had been laid out in a crouched position on its left side with its arms and legs tightly flexed. The skeleton was orientated W-E with its head facing north.

The Late Iron Age/Roman Burials

A total of three cremation burials, one probable bustum burial and three inhumation burials are included in this section.

Three deposits of cremated human remains were found in association with ditches. Cremation burial 1156 was located at the entrance of enclosure ditch 1285, and is estimated to be Late Iron Age to Early Roman in date. Burial 1488 truncated enclosure ditch 3930 and cremation deposit 1491 was cut into pit 1488 which in turn truncated the same ditch. Both date to the second century AD or later.

Another deposit (1100), was found cut into, at that time, the naturally silted up enclosure ditch 1285. The cut (1095) was 94 x 58 cm in size and it had been truncated so that the original depth of the feature is unknown. The cut was burned and contained the partly burned remains of a prone adult skeleton positioned between charcoal remains of burned timber. The legs were flexed upwards and were crossed, perhaps implying that the individual had been placed into the cut with some force. The grave cut was orientated NNW-SSE and the burial also contained a knife (SF 168) and an incomplete pot dating to the first century AD (SF166).

The partially burnt skeleton and the burning in the cut suggest that this context may represent a bustum burial. The Roman grammarian Sextus Pompeius Festus, who lived during the second century AD, provides the earliest known historical reference to busta burials. He describes a bustum as a special place, where the deceased is both burned and buried[1] (in Bechert 1980, 254).

Bustum burials are identified as pyre sites that had under-pyre pits (*Grubenbusta*) or flat sites covered by a mound (*Flächenbusta*) (McKinley 2000:38). These burials are not straightforward to identify in the archaeological record and, according to McKinley (2000), there are several examples that have been erroneously identified. Five definitions of a bustum, often referred to in the archaeological literature, are presented in Table 2.

Table 2. Common definitions of bustum burials used in archaeology.

Wahl (1982)	Pyre and bone remains after a cremation, remaining within its layer or disturbed and covered with soil. In-situ cremation pyre and burial
McKinley (2000a)	Pyre site which also functioned as a burial. Archaeologically they may be identified by the following features: 1) Most of the cremated bone is close to the surface and above most of the fuel ash. 2) They include the remains of complete skeletons that are roughly in anatomical order, although secondary manipulation may take place. 3) The amount of bone retrieved is expected to weigh, for one adult individual, between 1600-2000 g but may be as little as 1000 g. 4) In the case of *Grubenbusta* the depth of the fuel ash in the pyre pit varies from between 0.30m at the corners to 0.10m in the centre. The sides and the base of the pit turn salmon pink in colour, as well as a

[1] "Bustum proprie dicitur locus, in quo mortuus est combustus et sepultus [...]; ubi vero combustus quis tantummodo, alibi vero est sepultus, is locus (ab urendo) ustrina vocatur [...]"

	margin of approximately 0.08-0.60m that can be seen in plan around the top. 5) There is shallow penetration of burning into the ground to a depth of approximately 2-5cm.
Topál (1981)	Remains of pyre and calcinated bones in pits larger than that of other ordinary graves and containing the complete remains of the cremated body and the pyre.
Bechert (1980)	The cremated remains of a corpse in a grave pit including pyre remains.
Marquardt (1886)	A pit of about 1 m depth dug below the pyre and which contains the collapsed remains of the pyre with the cremated human remains, covered with soil or below a mound.

In keeping with these definitions, burial 1100 contained a relatively complete articulated skeleton that was above most of the charcoal. Further, the cut for the burial was larger than those associated with standard cremation burials. It was also shallow and the skeleton survived close to the surface. However, there is no indication what colour the cut was burned, the depth of fuel ash, or the extent of penetration, only that burning had occurred.

Two inhumation burials of Late Iron Age to Early Roman date (1690 and 1694) were found in association with ditch 1285 and are believed to have been buried there after it had fallen out of use. A third inhumation (1314) was a solitary burial located approximately 10 m east of trackway 3945. This may be a deviant burial associated with a Roman cemetery believed to exist nearby.

Skeleton 1694 was buried in the south-west corner of the enclosure. The burial was orientated north-south and the skeleton was found lying in a crouched position lying on its right side with the legs and left arm flexed and the right arm extended. No grave goods accompanied the burial, however, the large size of the grave cut (1.6 x 0.6 m) may suggest that organic material had been present but has fully decomposed.

Skeleton 1690 was found in a northeast-southwest orientated grave cut, lying on its left side. Owing to subsequent truncation, the original burial posture of the individual was difficult to asses although a crouched position was suggested. An Aucissa type brooch fibula, dating to AD 43-70, was found in the fill of the grave (SF 170).

Skeleton 1314 was found lying in a prone position in a northeast-southwest orientated grave. While the legs were extended and parallel, the arms were slightly flexed and had been pulled

round the individual's back so that the hand bones were resting on the posterior of the proximal femora, perhaps indicating that the hands had originally been bound. This skeleton broadly dates to the Roman period.

OSTEOLOGICAL METHODOLOGY

General terminology and equipment used

The anatomical terminology used in this report is strictly according to the international nomenclature as described by Feneis and Dauber (2000). The descriptive teeth formulae used are according to the Zsigmondy system (Zsigmondy 1861 in Hillson 2003, 8-9). The vertebrae are usually only mentioned in a shortened form, for example, the fifth cervical vertebra is C5, the eighth thoracic vertebra is T8, the second lumbar vertebra is L2 and the first sacral vertebra is S1.

Data were collected by a combination of metrical and morphological examination. Measurements were taken using an osteometric board with 0.50mm accuracy and a digital sliding calliper with 0.01mm accuracy.

Estimation of biological age at death

Neonatal age was estimated by employing measurements of the long bones with reference to standards set out by Fazekas and Kósa (as adapted in Scheuer and Black 2000).

Adult burials were primarily aged based on the morphological appearance of the auricular surface of the pelvis (Lovejoy *et al.* 1985), the sternal ends of the ribs (İşcan *et al.* 1984), the pubic symphysis (Brooks and Suchey 1990; McKern and Stewart 1957; Nemeskéri *et al.* 1960), and the sternal articular surface of the clavicles (Scheuer and Black 2000). The degree of attrition on the molar teeth (Brothwell 1981; Miles 1962) and suture obliteration (Meindl and Lovejoy 1985) were also considered.

Gejvall's method of age estimation, based on evaluating the relative thickness of the tables and diploë of skull vault fragments, was employed for the cremation burials (Gejvall in Sigvallius 1994, 10).

Based on these observations, all individuals were assigned to one of the age categories defined in Table one.

Table 1. Age Categories employed.

Age group	Range
Foetal	< 0 years
Neonate	~ 0 years
Infant	0-1 years
Young child	2-5 years
Older child	6-12 years
Adolescent	13-17 years
Young adult	18-25 years
Prime adult	26-35 years
Mature adult	36-45 years
Older adult	> 46 years
Child	*2-12 years*
Sub-adult	*< 18 years*
Adult	*> 18 years*

Estimation of biological sex

Biological sex was estimated by employing standard anthropological techniques (Bass 1995; Mays *et al.* 2002). The morphology of the of the pelvis was employed as the primary indicator of sex, followed by the morphology of the skull. Metrical data, usually taken from the femora, were also considered but were given less importance because of the tendency for male and female measurements to overlap. This involved recording, where possible, the length of the glenoid cavity (Bass 1995: 129), the greatest diameter of the femoral head and the width of the femoral condyles (Pearson in Bass 1995, 230).

Skeletons were assigned to one of the following categories as recommended by Sjøvold (1988):

-2 Hyperfeminine
-1 Feminine
0 Indeterminable sex *(Allophysis)*
+1 Masculine
+2 Hypermasculine

None of the estimations based on metrical data were recorded as hyperfeminine or hypermasculine, even if the measurements were very indicative of sex.

Estimation of stature

Estimation of stature was undertaken by employing the maximum length of the long bones and applying these to regression equations devised by Sjøvold (1990) and Trotter and Gleser (Trotter 1970). According to Sjøvold (1990), his method does not overestimate the stature of short persons and underestimate the stature of tall persons, unlike the method developed by Trotter and Gleser. Sjøvold's method is also independent of sex, which is suitable for archaeological material where disturbed burials are often missing skeletal elements with specific and reliable diagnostic characteristics. Depending on the bones available, the most accurate formula (*i.e.* the one with the smallest standard deviation) was used to determine stature. This was usually the femur, followed by the fibula and the tibia. When both sides of a bone element were present, the mean value of both calculations was employed.

For cases where long limb bones did not survive in tact, stature was estimated by employing the maximum length of the calcaneus and the talus bones of the foot (Holland 1995).
For comparative studies on stature between populations, it is recommended that the actual bone measurement rather than the calculated estimate is employed (see Brothwell and Zakrzewski 2004, 33). The long bone lengths are recorded in table A1:2.

Non-metric traits

Non-metric or discontinuous traits are minor anomalies in the morphology of the skeleton and are of no pathological significance. They may be present as localised deficiencies of bone (for example, as extra blood vessel openings or foramen), or as extra bone (such as wormian bones in the cranial sutures). Some traits, such as the inca bone, are highly heritable and have been used to indicate genetic relationships. Others, for example, squatting facets, may be environmentally produced. For the present analysis non-metric traits were recorded by employing the descriptions given in Berry and Berry (1967) and Finnegan (1978).

Metrics

Measurements of the skull and postcranial elements were taken in accordance with descriptions in Brothwell (1981). The measurements are available in tables A1:1 and A1:2.

Skeletal and dental pathologies

Palaeopathological diagnosis, terminology and description detailed in this report are based upon Ortner (2003) and Aufderheide and Rodríguez-Martín (1998) with reference to more specialised texts where appropriate (e.g. Rogers and Waldron 1995).

Dental pathologies were described according to Brinch and Møller-Christensen (1949), Hillson (2003) and Ortner (2003). Dental calculus was recorded by employing Brothwell's method (1981). Dental caries were described as occlusal caries, approximal caries or cervical caries (Brinch and Møller-Christensen 1949) and, where possible, their location was noted. Statistical analysis was undertaken by employing the Comparative Dental Index (CDI) as described by Arcini (1999) and Brinch and Møller-Christensen (1949). This method accounts for missing teeth (either lost before or after death) and facilitates meaningful comparison with other populations.

Cremation burials

There are many obstacles to the osteological study of cremated bone. The main limitations are the often considerable fragmentation and distortion caused by heat during the cremation process and loss of volume due to burning and the deposition of the bones in the grave. All of these factors make many of the available osteological methods inadequate when analysing burnt skeletal material (see Rösing 1977, 54).

All cremations deposits were subjected to whole-earth recovery. The samples were subsequently wet sieved into >10mm, >5mm and >2mm size categories, and the residues were sorted for bone and artefacts.

The bone was examined, in accordance with recommended practice (Brickley and McKinley 2004), to explore the minimum number of individuals (MNI) present, demography, pyre technology and ritual, and evidence for pathology. This was undertaken by recording, colour, weight (in grams to one decimal place), maximum fragment size, and identifiable skeletal elements. The presence of pyre goods and grave goods within the deposits were also noted. Biological age and sex were estimated and pathology was recorded, by employing the methods described above.

OSTEOLOGICAL FINDINGS

The Iron Age Burial (3871)

The skeletal remains were in a good condition, although most of the skull, the right shoulder and both feet were missing. The individual was estimated, based on long bone measurements, to have been about 38-39 lunar months at the time of death and has, therefore, been classified as a neonate.

The cremation burials

Minimum number of individuals

Based on the non-duplication of elements and the biological age and sex of certain elements, it was determined that at least one skeleton was present in each of the three contexts that contained cremated remains. The cremated material from Latton Lands therefore represents a minimum number of three individuals.

Quantity and fragmentation

Five hundred and ninety-five fragments weighing 617 grams were examined in total. Of the fragments, 38.58% (43.57% of the total weight) were identified to skeletal element. The mean weight per fragment was 0.8 g, and the largest bone fragment ranged from 32.64 to 58.83 mm.

The sample largely comprised bone fragments that exceeded 10 mm in size. Virtually no bone fragments were less than 5 mm in size (Table 1).

Table 1. The distribution in weight of fragments >10mm, 5-10mm and 2-5mm after sieving Abbreviation: ENF = Estimated number of fragments.

Cut no	**Weight (g)**	**ENF**	**>10 mm (g)**		**5-10 mm (g)**		**2-5 mm (g)**	
1156	260	300	229	*88.29%*	30.5	*11.7%*	0.5	*01%*
1488	328	141	328	*100.0%*	0	*0.0%*	0	*0.0%*
1491	29	154	21.5	*74.1%*	7.5	*25.9%*	0	*0.0%*
Total	*617*	*595*	*578.5*	*93.7%*	*38*	*6.15%*	*0.5*	*0.08%*

Compared to other British examples, the weights reported here are generally low and fragment sizes, generally large (McKinley 2000). Weight is no longer considered a useful indication of the number of individuals present in a cremation deposit. However, this does suggest that, taphonomic factors aside, little attention was paid to collecting the smaller bone fragments from the pyre sites for burial. If the amount of time expended on collecting elements is considered a useful reflection of that person's status in life (McKinley 2000) then perhaps this implies the relative unimportance attached to the burial of these individuals.

Age and Sex

It was possible to estimate the age of two of the cremated skeletons. Based on the relative thickness of the diploë and the internal and external vault tables of a skull fragment, burial 1488 was estimated to have been between 35 and 64 years of age. The remains belonging to burial 1156 indicated that the individual had attained adulthood when they died. However, it was not possible to estimate a more precise age for this individual. The remaining cremation

burial did not have any surviving features that would allow age to be estimated in this instance.

Biological sex could not be estimated for any of the cremated remains owing to the absence of diagnostic fragments.

Cremation technology

The bones from all three cremations ranged from black to grey in colour suggesting that they had all been poorly cremated. In total, 76 g of the material (19.06%) was black in colour, indicating that these bones were burned at a temperature that did not exceed 400ºC. A complete, successful cremation displays bones that are white in colour, and requires exposure to incineration temperatures exceeding 700-800ºC (Herrmann 1988, 578; Wahl 1982, 27).

Colour variation indicated that approximately 20% of the total bone weight of cremation burials 1156 and 1488 comprised burned bones while the remaining 80% comprised cremated bone. Assessing degrees of incineration based on the colour of burned/cremated bones is considered, by some, to be a useful way of estimating the original position of the body on the pyre. For example, Gejvall (1947, 45), writing on burned human vertebrae from the Pre-Roman cremation cemetery at Horn, suggested that the poor degree of burning seen here was an indication that the corpses had been laid out in an extended, supine position on the pyre. Wells (1960, 34-37), on the other hand, interprets the same findings as evidence that the deceased were placed directly on the ground in an extended, supine, position with the pyre built on top (1960, 34-37).

Different degrees of burning between skeletal elements are also explained by the fact that bones with little soft tissue coverage will cremate more fully than bones with dense tissue coverage (McKinley 2000a). This has been demonstrated in pyre experiments with animal carcasses (During 2002, 11).

Other factors that may account for colour variation include a lack of oxygen during the cremation process, perhaps because the cremation fire was not stoked enough (Gräslund 1978, 370) and/or because of rain and wind at the time of the cremation.

Additional deposit of cremated human bones (1668)

In addition to the cremations described above, 59.5 g and 67 fragments of cremated human bones were found in the fill (1668) surrounding skeleton 1690. They did not belong the inhumation, and are likely to be the remains from a truncated cremation burial.

The bones that were identified include skull vault and arm bone fragments. These represent a MNI of one, an adult individual (18-44 years old) of unknown sex.

Skeleton 1100

Approximately 60% of this skeleton had survived and was represented by skull, spine, right and left scapulae, the right humerus, right and left proximal femurs and both feet, all in varying degrees of completeness. The bones were judged to be in a good condition; there was little post-mortem abrasion and bony surfaces were generally in tact.

Age, sex and stature

Features of the pelvis indicated that the remains represented those of a male. Based on the morphological appearance of the auricular surface, he was judged to have been approximately 40-44 years of age when he died. By employing a combination of measurements from the tali and calcanei, he is estimated to have been approximately 170.27 centimetres (5 feet 7 inches) tall.

Degree of burning

Most of the skeleton did not show any evidence that would suggest thermal alteration. Only limited parts of the upper and lower limbs had been cremated and this was indicated by bone that was grey to white in colour. Other parts of the skeleton, the back of the cranium, the right humerus, the pelvis, both knees and feet, were burned and were black in colour, but this was restricted to relatively small areas of the bones. Together, these changes suggest that the remains may be the result of a failed attempt at a bustum burial.

The cremation may have been aborted before it had had a chance to complete, perhaps owing to weather conditions and/or inadequate pyre construction which had resulted in premature collapse. However, this may also reflect a cultural practice in which the full oxidation of bone was not considered necessary. Several contemporary examples exist (for example, Derby Racecourse and Baldock) that support this theory (McKinley 2000).

Non-metric traits

Non-metric traits observed on this skeleton are listed in the skeletal catalogue at the end of this report. However, two are worth noting here. The first is a third trochanter that was present on the right femur. This was identified as a bony projection on the proximal end of the shaft, at the superior end of the gluteal tuberosity. This trait has a strong activity component in its aetiology, being associated with altered gluteal muscle function (Bolanowski *et al*. 2005).

The second trait involved the process on the posterolateral border of the left talus bone of the ankle which was unfused. Non-fusion of this process, known as os trigonum, has an incidence today of between 2.5 and 13% (Mc Glamry *et al.* 1992:934). It tends to occur unilaterally and may cause generalised pain in the rear of the foot (*ibid*.)

Pathology

Spinal osteophytosis, or new bone growth around the margin of a joint, was present as massive paravertebral bone extensions between L4 and L5 and was located on the antero-lateral (right aspect). Disc space between the vertebrae and facet joints was retained and, although broken post mortem, the out growths had clearly been fused together in life. These changes may be the result of ossification of the anterior longitudinal ligament, a change that is typical in individuals suffering from Diffuse Idiopathic Skeletal Hyperostosis (DISH). Very little is known about this condition but it has the following epidemiological features: it is more common in males than females, it is associated with late onset type II diabetes and obesity, and it is more common among older age groups (Rogers and Waldron 2001). In dry bone, DISH is diagnosed if at least four contiguous vertebrae are fused by large flowing osteophyte on the right hand side. However, in the present example, no other vertebrae were involved. Differential diagnosis includes spinal degenerative joint disease, a very common condition seen in skeletal material that results from degeneration of the intervertebral discs which lose their elasticity with the advancement of age.

Schmorl's nodes, or intervertebral disc herniation, were present on the surfaces of the lower thoracic and upper lumbar vertebrae. On dry bone these appear as depressions on the surfaces of the vertebral bodies. Although associated with degenerative disease, Schmorl's nodes have also been linked to activity and trauma, especially in adolescence, or metabolic disorders (Jurmain, 1998).

Changes that are consistent with a diagnosis of osteoarthritis were present on the left articular processes between C7 and T1. Osteoarthritis is diagnosed in dry bone by the presence of eburnation and/or at least two of the following: bony contour change, osteophytosis, and porosity (Rogers and Waldron 1995). It is a very common condition today, and in the past,

and it is more frequent in the elderly compared to the young. Great attention has been focused, in the archaeological literature, on the relationship between OA and activity and occupation (see Jurmain, 1998). However, it is very unlikely that occupation and activity will have played a unique role in the manifestation of OA in this skeleton. Many factors, including age, sex, ancestry, and genetic predisposition, as well as activity and occupation, play a part in the manifestation and course of the disease. Except in rare instances, when a pattern of OA occurs that it unique to an activity or occupation, it is impossible to determine which of these factors was responsible for this disease (Waldron and Cox, 1989). The distribution of the disease in the present skeleton would not seem to be directly associated with a specific activity or occupation.

Trauma

Healed blunt trauma was identified on the cranial vault as a sagittal line, with an adjacent medial depression, that ran across the left parietal bone. The lesion was well healed, although the depression had a rugged and pitted external surface. No damage was evident on the endocranial surface of the vault, but this observation may be biased because of the fragmentary and burned condition of the bone.

The inhumations

Skeletons in this category were between 40 and 70% complete. Only one (1694) was judged to be in a good condition based on its well preserved bone and joint surfaces. The remainder were considerably abraded as a result of post mortem damage and were classified as being in a poor condition.

Age, sex and stature

It was possible to estimate the age and sex of all three individuals. They were all males. One individual was aged as a young adult (1314), two as prime adults (1694 and 1690).

Burial 1690 had a stature of 160 cm (5 feet 3 inches) and burial 1694 was more than a decimetre taller , being 173 cm (5 feet 8 inches) tall. The mean male stature during the Roman period in Britain is estimated to have been 169 cm (5 feet 6 ½ inches) (Roberts and Cox 2003, 396). It was not possible to estimate the stature of skeleton 1314.

Non metric traits

Three of the skeletons had non-metric traits located cranially and post-cranially. Third trochanters and os trigonum were observed on one skeleton (1690) and are described above. These and the other traits that were present are detailed in the skeletal catalogue. They are

among a range of traits that are frequently observed in skeletal material of similar date and type. Unfortunately, the present sample is too small to explore relatedness between the individuals using these traits.

Skeletal pathology

Spinal changes

Osteophytosis was present on the margins of the vertebral bodies and vertebral articular facets of skeletons 1690 and 1694, the only skeletons with preserved vertebrae. On the vertebral bodies, the changes appeared as horizontal new bone that increased in extent caudally. The appearance of all of these changes is consistent with normal age-related degeneration of the spine. Its occurrence is very common.

Porotic hyperostosis and Cribra orbitalia

Porotic hyperostosis, in the form of increased porosity and expanded diploic space, was present on both parietal bones belonging to skeleton 1690. The changes were present along the sagittal suture, and were not active at the time of death. The full extent of the changes were impossible to estimate owing to fragmentation. Cribra orbitalia, in the form of large and small isolated foramina and consistent with the type III lesion described by Stuart-Macadam (1991), was identified on the roof of the right orbit of the same skeleton.

Porotic hyperostosis and cribra orbitalia are believed to be the result of iron deficiency anaemia. It is generally believed that most examples of iron deficiency anaemia in British material have been caused by the acquired form of the disease because the inherited form is rare (Boylston *et al* 1998). Anaemia tends not to leave traces on adult bone (Stuart Macadam 1985) and, therefore, the case described here probably relates back to a time during the individual's childhood, the only time when skeletal lesions relating to this disease are manifest. Aetiological factors associated with this condition relate to dietary deficiency, malabsorption (due to gastro-intestinal infection or parasites), blood loss and chronic disease (Roberts and Cox, 2003:234). Because of their multi-factorial aetiology, cribra orbitalia and porotic hyperostosis are regarded as non-specific indicators of childhood health stress.

Dental pathology

A total of 64 teeth and 68 sockets were available for analysis. Four of the teeth (all belonging to skeleton 1314), had caries (6.25%) and eight examples of ante mortem tooth loss were

observed (two belonging to skeleton 1314 and six belonging to skeleton 1694), that is, 11.76% of all surviving sockets.

Caries involves the destruction of the enamel, dentine and cement of the tooth as a result of acid attack that occurs when the bacteria in dental plaque acts on carbohydrates (Arcini 2003, 63; Hillson 2003, 269). Skeleton 1314 had two front teeth and two first molars affected by caries mainly at the cervix of the teeth. The Caries rate for Roman skeletal populations excavated in Britain is estimated to be 7.45% of all teeth that have been examined (Roberts and Cox 2003, 396).

Both skeletons 1314 and 1694 had lost about 20% of their teeth in life, primarily the molars. Ante-mortem loss may arise as a result of several factors including:

- abscess development secondary to caries,
- periodontal disease secondary to calculus formation, and
- pulp exposure and abscess formation secondary to severe attrition.

In the present specimens, there were no macroscopic signs that cases of ante-mortem loss were associated with abscess formation and no calculus deposits were noted. However, both skeletons exhibited heavy attrition on their front teeth.

DISCUSSION

Osteological Findings

The burials described in this report represent a total of at least nine individuals. One of these dates to the Iron Age and had died around the time of birth. The remainder, believed to be of Late Iron Age/Early Roman date include four cremations, one probable bustum burial and three inhumations. Three of the cremations were those of adults, two of whom could be more precisely aged to between 35 and 64 years old and 18-44 years old. Sex could not be estimated for any of the cremated remains. An elderly male was identified as belonging to the probable bustum burial and the inhumations, all males, were estimated to have been young adult (one skeleton) or prime adults (two skeletons) when they died.

Among the pathological conditions observed were degenerative changes and osteoarthritis, probably associated with advanced age, and cribra orbitalia and porotic hyperostosis which indicate that at least one of the individuals had a history of childhood health stress. Dental conditions included caries and ante mortem tooth loss. Most interesting, however, is the blunt trauma that the skeleton from the bustum burial (1100) had received to his head. The healing

associated with this lesion indicates that this occurred sometime, perhaps several years, before he died. This would have been caused by a direct blow to head, possibly as the result of a fall.

Burial Practice

During the seventh to fifth centuries BC, inhumation gradually replaced cremation as the predominant burial practice in Britain (Cunliffe 1978, 311). At this time, pits and/or ditches were the most common contexts for the placement of the dead. Although infant burials are uncommon during the early part of the period, they become more common later on, especially in settlement contexts (Wait 1985, 88-90). In general, however, much of this period is characterised by the under-representation of formal burial, and it is now believed that the dead were disposed mainly by excarnation and the scattering of cremated remains (Haselgrove 1999, 123).

Whimster (1981) mentions 22 infant pit burials dating to the Iron Age, all from Berwick St. John and Steeple Langford in Wiltshire. All of these were, just as the Latton Lands examples, found in association with ditches (*ibid.*, 246-248). During the Iron Age, settlement enclosures and boundaries had a symbolic meaning, separating culture from nature or, in this case, the living from the dead. Burials found in ditches should therefore be seen as evidence of a ritual act which was very significant for the communities who put them there (Hingley 1990, 100; Parker Pearson, 1999, 51-52).

Both cremation and inhumation burial practices took place at the beginning of the Roman period in Britain. Cremation was the predominant burial rite during the early period until about the mid second century AD when inhumation became the main burial tradition (Adkins and Adkins 1982, 142; Taylor 2001, 87, 109). The deceased were interred in cemeteries which, in accordance with Roman law, had to be located outside settlements, and often occupied land alongside main roads into towns (Taylor 2001, 87).

Ordinary domestic pots were usually used for cremation burials. Cremated bone deposits found without any urns are generally thought to have been interred into a container made of organic material such as wood, leather or cloth. In the inhumation tradition, the deceased were usually buried supine and extended inside nailed wooden coffins or in high-status stone and/or lead coffins (Taylor 2001, 101-109).

The bustum burial rite is believed to have been introduced to Britain by the Romans (Philpott 1991, 48-49, Struck 1993, 81). Several have been identified at military sites, for example Petty Knowes, Beckfoot, Herd Hill, Riseholme and Derby Racecourse. Generally they are

relatively rare discoveries in Britain, although several have been documented in recent years (Boston and Witkin 2006; Cotswold Archaeology 2005; MacKinder 2000; McKinley 2000b). Seven busta burials were discovered at Pepper Hill in Kent (Boston and Witkin 2006), six of them dating the Early Roman period and one was generally dated as Roman. Three of the individuals were females and two were subadults of unknown sex, an unusual pattern for this burial tradition which is believed to be related to the army.

A further nine busta burials have recently been found at The Lea in Denham. These were large rectangular features (up to 222 x 79 cm in size), possibly reflecting a different status of the deceased (Cotswold Archaeology 2005).

There are several known continental parallels, in particular from the Rhine frontier, Gall, Lower Germany, Northern Italy, Pannonia, Thrakia and Dhakia, all of which suggest that this specific burial practice was associated with the Roman army (Struck 1993).

It should also be mentioned that in-situ cremation burials are also known outside Roman contexts in Europe. Two examples from Puddlehill in Bedfordshire are known from Iron Age Britain (Whimster 1981, 154) and they are known throughout the entire Iron Age in Scandinavia (BC 500 - 1050 AD) (Gräslund 1978). There are also examples from the Greek colonies around the Black Sea, suggesting that this burial rite has a long history in the Mediterranean area (Struck 1993, 89).

Latton Lands is located approximately six miles south from Cirencester which was the location of a Roman fort in the early first century AD. Other busta found in Britain have mainly been found in association with military sites, although this is less frequent in southern England (Philpott 1991, 48). The bustum burial at Latton Lands should possibly be viewed as a reflection of Roman military presence in the area or that the buried individual might relate to the army in some way.

The Late Iron Age/Roman cremation and inhumation burials were all found in close proximity to enclosure ditches. That the five burials (1100, 1157, 1668, 1690 and 1694) had been cut into enclosure ditch 1285 after it had fallen out of use does not necessarily mean that their placement here was coincidental. Rather, it is likely that they were buried in the feature to emphasise connections with past occupation on the site, a tradition that may have its origins in the Iron Age. Land ownership and belief in the influence of the dead over the living are among the suggestions that may explain this funerary practice (Esmonde Cleary 2000, 137-138).

CATALOGUE

Abbreviations:

1	=	dental alveolar present	R	=	root only
~~1~~	=	dental alveolar not present	PU	=	pulp exposed
P	=	tooth present	DCC	=	distal cervical caries
X	=	antemortem tooth loss	MC C	=	mesial cervical caries
			MA C	=	mesial approximal caries
/	=	postmortem tooth loss	-	=	unknown antemortem or postmortem tooth loss

The cremation burials

Cut number: 1156
Context number(s): 1157, 1158
Container: Cremation burial pit
Period: Late Iron Age - Early Roman
Estimated number of fragments: 300 (16.50% identified)
Weight (g): 260.0 (28% identified)
Maximal fragment size (mm): 49.38
Colour/Incineration: Black-Grey (400-600°C)
Unburned (g): 0.0 (0.00%)
Burned (g): 74.0 (28.4%)
Cremated (g): 186.0 (71.5%)
Clean/Sooty: Clean
Skull: Vault and teeth
Axial: Not present
Upper limb: Clavicle, radius, scaphoid and phalanges
Lower limb: Femur, tibia, fibula, calcaneus, navicular bone and a metatarsal
MNI: 1
Age: > 18 years *(Adult)*
Sex: Indeterminable
Pathology: Left first metacarpal distal head eburnation
Animal bones: 2 fragments (1 g)

Cut number: 1488
Context number(s): 1489
Container: Cremation burial pit (disturbed)
Period: Middle - Late Roman
Estimated number of fragments: 141 (36.88% identified)
Weight (g): 328 (33.5% identified)
Maximal fragment size (mm): 58.83
Colour/Incineration: Black-Grey-White (400-800°C)

Unburned (g): 0.0 (0.00%)
Burned (g): 41.0 (21.69%)
Cremated (g): 163.0 (79.9%)
Clean/Sooty: Clean
Skull: Sphenoid bone, tooth roots, skull vault fragments
Axial: Cervical and lumbar vertebrae and hip bone
Upper limb: Humerus, radius, ulna and phalanges
Lower limb: Femur and fibula
MNI: 1
Age: 35-64 years *(Mature-Older Adult)*
Sex: Indeterminable
Pathology: Eburnation facet on an inferior articular process from a cervical vertebra (7 x 2 mm).
Animal bones: Not present
Iron hobnails and charcoal present

Cut number: 1491
Context number(s): 1493
Container: Cremation burial pit
Period: Middle - Late Roman
Estimated number of fragments: 154 (0.65% identified)
Weight (g): 29 (1.72% identified)
Maximal fragment size (mm): 32.64
Colour/Incineration: Grey (500-600°C)
Unburned (g): 0.0 (0.00%)
Burned (g): 0.5 (1.72%)
Cremated (g): 28.5 (98.28%)
Clean/Sooty: Clean
Skull: Maxilla
Axial: Not present
Upper limb: Not present
Lower limb: Not present
MNI: 1
Age: Indeterminable
Sex: Indeterminable
Pathology: Not present
Animal bones: 1 fragment (0.5 g)

Cut number: 1691
Context number(s): 1668 (Fill surrounding skeleton 1690)
Container: Un-urned
Period: Unknown
Estimated number of fragments: 67 (23.88% identified)
Weight (g): 59.5 (26.05% identified)
Maximal fragment size (mm): 62.64
Colour/Incineration: White (>700-800°C)
Unburned (g): 0.0 (0.00%)
Burned (g): 0.0 (0.00%)
Cremated (g): 59.5 (100.00%)
Clean/Sooty: Clean
Skull: Vault
Axial: Not present
Upper limb: Ulna
Lower limb: Not present
MNI: 1

Age: 18-44 years *(Young-Mature Adult)*
Sex: Indeterminable
Pathology: Not present
Animal bones: Not present

The bustum burial

Skeleton number: 1100
Completeness: 60%: The skull vault, spine, both shoulders, right humerus, pelvis, proximal femora and both feet.
Preservation: Good
Period: Late Iron Age - Early Roman
Age: 40-44 years *(Mature Adult)*
Sex: Male (+1)
Stature: 170.27 ± 5.33 cm
Position: Prone
Orientation: NNW-SSE
Dental inventory: Not present
Skeletal pathology: Minor to considerable osteophytosis, increasing caudally, on T2, T5-S1. Minor to moderate Schmorl's nodes, increasing caudally, on T4, T8, T10-L3. Minor to moderate osteophytes on the right articular processes of L1-L2. Eburnation on the left articular processes between C7-T1. Minor ossified ligamentum flavum on T3 and T9-T10. A massive cupping osteophyte (~ 29 mm), with a fractured segment (25 x 31 x 13 mm), on L4-L5, at the right ventro-lateral aspect. No degenerative changes in the pseudojoints. Minor marginal osteophytes in the right glenoid cavity. Considerable osteophyte on the head of a left lower rib. Enthesophytic bone on both lesser trochanteres and on the ischial tuberostities. Healed impression fracture of the left parietal bone; a 47.59 long sagittal line is running across the parietal tuber with a medial depression area of 59 x 28 mm adjacent to it. The impression area is irregular with a porotic and pitted ectocranial surface.
Metrical indices:
Platymeric (right): 78.63 *(Platymeria)*
Non-metric traits and anomalies: Bilateral plaque formations, third trochanter (right), exostosis in the trochanteric fossa (right), os trigonum (left). An unfused right mammilary process on L1, no degenerative changes present. Congenital blunt pit (1 x 1 mm) in the proximal concave articular surface of the proximal phalanx for the first left metatarsal.
Cremated skeletal elements:
Context number(s): 1096, 1097, 1104, 1574
Estimated number of fragments: 2204 (6.76% identified)
Weight (g): 990.0 (20% identified)
Maximal fragment size (mm): 85.59
Colour/Incineration: Black-White (300-800°C)
Skull: Vault, occipital bone, mandible and teeth (43 g)
Axial: Cervical and lumbar vertebrae, hip bone and ribs (19.0 g)
Upper limb: Humerus, radius, ulna, hamate, lunate, scaphoid, trapezium, trapezoid, metacarpals and phalanges (46.0 g)
Lower limb: Femur, patella, tibia, talus, metatarsal and phalanx (99.0 g)
Comments: Possibly an unsuccessful in-situ cremation within a bustum burial. The majority of the skeletal remains were unburned, however the back of the skull vault had been burned black, as well as the right humeral shaft, both iliac crests, both knees and feet. Cremated skeletal elements were mainly the upper and lower limbs. The mainly brown to black colour of the burned segments to a grey-white colour of the cremated bone suggests an exposure temperature of between 300-800ºC. Charcoal present.

The inhumation burials

Skeleton number: 1314
Completeness: 40%: Fragments of the skull, both arms, and legs.
Preservation: Poor
Period: Roman
Age: 17-25 years *(Young Adult)*
Sex: Male (+2)
Stature: Indeterminable
Position: Prone
Orientation: E-W
Dental inventory:

-	-	*P*	-	-	*P*	*P*	*P*	*P*	*P*	-	-	-	-	-	-
~~8~~	~~7~~	~~6~~	~~5~~	~~4~~	~~3~~	~~2~~	~~1~~	~~1~~	~~2~~	~~3~~	~~4~~	~~5~~	~~6~~	~~7~~	~~8~~
~~8~~	~~7~~	~~6~~	~~5~~	~~4~~	~~3~~	2	1	1	2	3	4	5	6	7	8
-	-	*P*	*P*	*P*	*P*	*/*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*X*	*X*
		BCC					*MCC*	*MCC*					*MA*		
							DCC	*DCC*					*C*		

Dental Pathology: Cervical caries, approximal caries and ante-mortem tooth loss. Very heavy wear on the front teeth, due to occupational abrasion.
Skeletal pathology: Not present
Metrical indices: Not available
Non-metric traits and anomalies: Mastoid foramen exsutural (left)

Skeleton number: 1690
Completeness: 60%: The skull, spine, shoulders, arms, hands, fragments of the pelvis and both legs and feet.
Preservation: Poor
Period: Late Iron Age - Early Roman
Age: 25-35 years *(Prime Adult)*
Sex: Male (+1)
Stature: 160.07 ± 4.94 cm (Sjøvold); 164.54 ± 4.05 cm (Trotter and Gleser)
Position: On its left side
Orientation: E-W
Dental inventory:

-	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	-
~~8~~	7	6	5	4	3	2	1	1	2	3	4	5	6	7	~~8~~
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
P	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*
								R							
								PU							

Dental Pathology: Medium deposits of calculus

Skeletal pathology: Moderate osteophytes on dens axis, minor osteophytes on the body of C6, minor porosity on the inferior body of the axis, minor ossified ligamentum flavum on T10-T11, considerable osteophytic growth on the right articular process between T11-T12. Healed porotic hyperostosis along the sagittal suture on both parietal bones (> 20 x 16 mm), full extent unknown. Cribra orbitalia (right): type III. Considerable marked impressions for the costoclavicular ligament on both clavicles. Healed lytic lesion (28 x 16 mm) on the medial condyle of the right femur with active periosteal new bone formation on the superio-medial margin (8 x 4 mm); has resulted in an impression through the subchondral bone into the spongious substance (~ 3 mm deep), possibly an infection of the knee joint. Inactive periostitis on the medial surface of the right tibial diaphysis (~ 152 x 24 mm), moderate enthesophytic bone growth on the left tuber calcanei
Metrical indices:
Platymeric (left): 71.46 *(Platymeria)*
Platymeric (right): 79.26 *(Platymeria)*
Platycnemic (right): 58.36 *(Platycnemia)*
Non-metric traits and anomalies: Lambda ossicle (29 x 18 mm), bilateral zygomatic-facial foramina, unilateral septal aperture (left), bilateral third trochanters, double calcanea facet (right), os trigonum (right).

Skeleton number: 1694
Completeness: 70%: The skull, spine, pelvis, shoulders, arms, hands, proximal femora and both feet
Preservation: Good
Period: Late Iron Age - Early Roman
Age: 30-34 years *(Prime Adult)*
Sex: Male (+2)
Stature: 173.10 ± 4.94 cm (Sjøvold); 173.01 ± 4.05 cm (Trotter and Gleser)
Position: Crouched
Orientation: N-S
Dental inventory:

X	*X*	*X*	*P*	*P*	*/*	*/*	*/*	*X*	*P*	*/*	*X*	-	-	-	-
8	7	6	5	4	3	2	1	1	2	3	4	~~5~~	~~6~~	~~7~~	~~8~~
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
P	*P*	*X*	*/*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*	*P*

Dental Pathology: Considerable ante-mortem tooth loss, slight calculus deposits. Considerable dental attrition and abrasion of the front teeth. Occupational wear pattern of the front teeth at two locations, at the right side premolar teeth and the left side incisors.
Skeletal pathology: Moderate osteophytes and minor porosity in the atlas-dens axis articulation. Minor to considerable osteophytes on the articular processes of the axis-C6, T3-T5 and L3-L5. Minor osteophytosis on C4-C7, T7 and considerable ditto on T10-T12 and L3-L5. Minor to considerable porosity on the bodies of T7-T8, T10-T12, L3 and L5. Moderate marginal osteophytes in both glenoid cavities, the left ulnar articular circumference, both acetabuli and on two distal phalanges from an unknown hand.
Metrical indices:
Cranial: 78.19 *(Mesocranic)*
Platymeric (right): 75.12 *(Platymeria)*
Non-metric traits and anomalies: Palatine torus, bilateral lambdoid ossicles (left: 19 x 11mm and 18 x 8 mm; right: 17 x 11 mm), unilateral (right) ossicle at asterion, bilateral accessory infraorbital foramina, unilateral (right) zygomatic facial foramen, bilateral supra-orbital foramina, unilateral (right) posterior condylar canal, bilateral mastoid foramina exsutural, blunt congenital pit (1 x 1 mm) in the concave articular surface of the proximal phalanx of the left first metatarsal.

Skeleton number: 3871
Completeness: 60%: Virtually complete skeleton excluding most of the skull, the right shoulder and both feet.
Preservation: Good
Period: Middle Iron Age
Age: 38-39 foetal weeks *(Neonate)*
Sex: Indeterminable
Stature: Indeterminable
Dental inventory: Not present
Skeletal pathology: Moderate osteophytes and minor porosity in the atlas-dens axis articulation. Minor to considerable osteophytes on the articular processes of the axis-C6, T3-T5 and L3-L5. Minor osteophytosis on C4-C7, T7 and considerable ditto on T10-T12 and L3-L5. Minor to considerable porosity on the bodies of T7-T8, T10-T12, L3 and L5. Moderate marginal osteophytes in both glenoid cavities, the left ulnar articular circumference, both acetabuli and on two distal phalanges from an unknown hand.
Metrical indices: Not available
Non-metric traits and anomalies: Not available

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APPENDIX 1: Measurements

Table A1:1. Craniometrics (mm)

Measurement		1690	1694
L		-	188.00
B		-	147.00
B’		-	108.99
O'_1	L	-	37.11
	R	-	35.76
O_2	L	-	32.10
	R	-	33.59
H’		-	133.50
GB		-	99.30
NH’		-	47.08
NB		-	26.02
G'_1		-	49.93
G’H		-	62.65
S_1		-	135.00
S_2		-	130.00
S_3		-	117.00
S'_1		-	85.00
S'_2		-	114.00
S'_3		-	94.00
FB		-	30.36
FL		-	36.26
Biast. B.		-	109.73
CrH	L	-	-
	R	-	67.17
RB’	L	34.56	-
	R	-	-
ZZ		43.88	45.20
H_1		31.28	30.51

Table A1:2. Osteometrics (mm)

Measurement		1100	1690	1694	3871
FeL_1	L	-	-	-	72.77
	R	-	-	-	73.32
FeL_2	L	-	-	-	-
	R	-	-	-	-
FeD_1	L	-	25.62	-	-
	R	26.42	26.60	28.60	-
FeD_2	L	-	35.85	-	-
	R	33.66	33.56	38.07	-
FeE_1	L	-	-	-	-
	R	-	-	-	-
TiL_1	L	-	-	-	65.32
	R	-	-	-	-
TiD_1	L	-	-	-	-
	R	-	36.24	-	-
TiD_2	L	-	-	-	-
	R	-	21.15	-	-
TiE_1	L	-	-	-	-
	R	-	-	-	
HuL_1	L	-	305.50	-	-
	R	-	-	333.00	64.13

HuE_1	L	-	-	69.76	-
	R	-	-	70.55	-
RaL_1	L	-	229.50	261.00	-
	R	-	-	-	53.57
UiL_1	L	-	-	-	-
	R	-	-	-	61.45

APPENDIX 2: Dental data

Table A2:1. Prevalence of dental data from adult dentitions in inhumations. Abbreviations: AMTL = Ante-mortem tooth loss, PMTL = Post-mortem tooth loss

Skeleton no	**Caries**		**AMTL**		**PMTL**		**Periapical abscesses**	
1314	4/17	*23.53 %*	2/10	*20%*	0/10	*0%*	0/10	*0%*
1690	0/30	*0%*	0/30	*0%*	0/30	*0%*	0/30	*0%*
1694	0/17	*0%*	6/28	*21.43 %*	5/28	*17.86 %*	0/28	*0%*
Total:	*4/64*	*6.25%*	*8/68*	*11.76 %*	*5/68*	*7.35%*	*0/68*	*0%*