Trans. Bristol & Gloucestershire Archaeological Society **130** (2012), 63–88

Goths and Saxons? The Late Roman Cemetery at Kingsholm, Gloucester

by CAROLYN HEIGHWAY

INTRODUCTION

In the early 21st century, Kingsholm, a northern suburb of Gloucester, is in the public eye not for its antiquity but for its Rugby football. The Cherry and Whites' enthusiastic supporters are perhaps unaware that close to their stadium is a buried history which relates to the earliest origins of the town of Gloucester (Fig. 1).

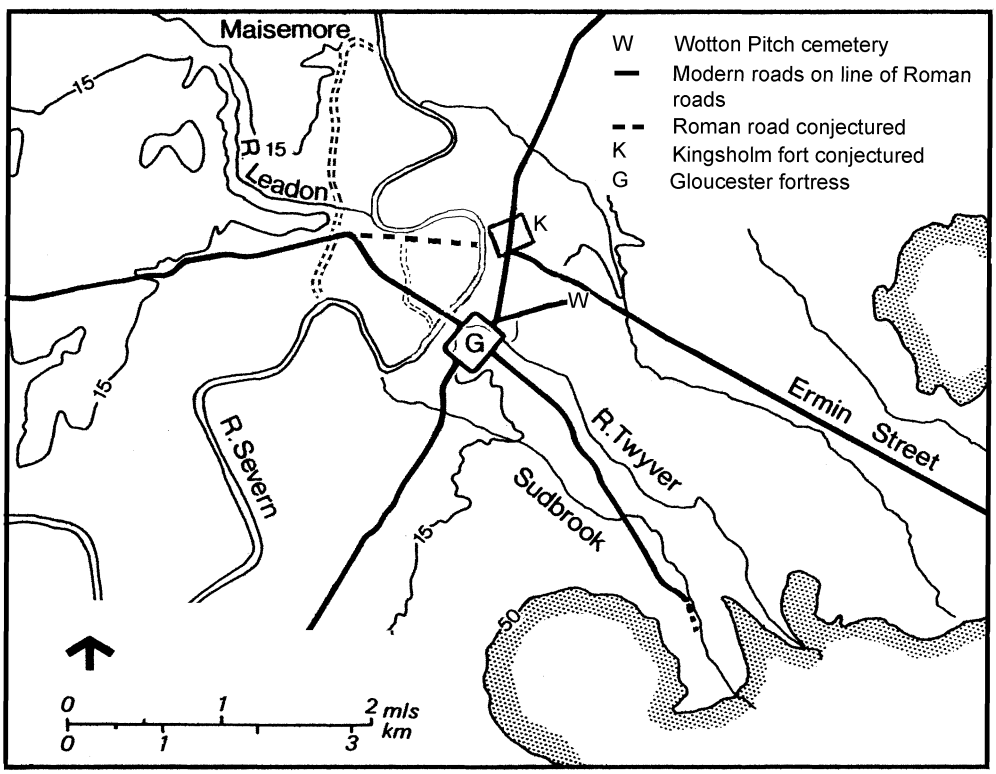


Fig. 1. Location plan: the area of Gloucester showing suggested topography in the late Roman period. Adapted from Hurst 1985, 4, Fig 1.

There was possibly a pre-Roman river crossing at Kingsholm, and there was certainly a settlement. Dobunnic coins and pottery in the Iron Age tradition have been found at the site known as 'Coppice Corner' (HER 784).[1] At the Roman conquest, this settlement became dominated by a legionary fortress. In about 66–67 AD the fortress was abandoned for a more defensible site further south: the latter was converted into a *colonia* (96–8 AD) – the Roman town of *Glevum*. The old Kingsholm fortress was dismantled, but remained officially part of the town, being used for cultivation but little else. In the late Roman period however the site was in use for burial. At least part of the cemetery was of high status, containing a mausoleum in which was buried an adult male equipped with military gear of an unusual type (Hurst 1985, 15–16, 131; Hills and Hurst 1989).

Six and a half centuries afterwards, in the time of King Edward the Confessor, Kingsholm[2] was the site of an Anglo-Saxon royal hall, described as a 'palace'. This royal residence was superseded by Gloucester Castle in the early 12th century, and the 'palace' became a manor house which was demolished by 1591 (VCH 4, 7–9; 391–92). The former royal complex included a chapel which may have been built in the late 11th century but certainly existed by 1216: it was maintained by the canons of the former royal minster of St Oswald. The chapel, of considerable size, was demolished in the late 14th century (Hare 1997, 57–8). Thereafter, the area was given over to market gardens and pasture until overwhelmed by suburban housing in and after the late 19th century.

There has been speculation as to whether the superimposition of 1st-century fortress, late Roman cemetery with mausoleum, and late Anglo-Saxon palace, had some topographical significance rather than being accidental. The coincidence is not only of location: the Anglo-Saxon buildings were apparently both aligned on the Roman fortress and also aligned with, and even avoided, the mausoleum. In the 1980s and early 1990s late Roman burial places, especially mausolea which might become places of veneration, were seen as the possible origin of some churches (e.g. Rodwell 1993). I once suggested a similar continuity for Kingsholm - the church in question being the chapel of the Anglo-Saxon palace (Heighway 2003, 3). Recent thinking has tended to throw doubt on such claims (e.g. Blair 2004). Nevertheless, having recently attempted to review the issue of Kingsholm in the wider context of Gloucester topography (Heighway 2010, 44–45), I concluded that there was potential for further investigation of the late Roman cemetery – as Richard Morris once put it, 'the idol of continuity … is always hungry for hard facts' (Morris and Roxan 1980, 176). This article attempts to further that inquiry.

Archaeological Investigation at Kingsholm

Re-examination of the late Roman cemeteries has been made possible using data derived from the Heritage Environment Record (HER) at Gloucester City.[3] In the text that follows, sites are referred to by HER numbers: these are shown on the maps in Figs 2, 4 and 5. The Appendix below (p 85) catalogues all sites with inhumations known up to 2010 by HER number and provides references.

In the 18th century Gloucester, though acknowledged as a Roman town, had produced few Roman finds, and the significance of Kingsholm was unknown. In the late 18th century, however, several Kingsholm fields were used for the extraction of gravel, and Roman finds emerged

1. Sources in Appendix, below. The evidence for the site was mostly extracted by Patrick Garrod during watching briefs on a housing development. This very important site deserves publication, and would be a fitting memorial to Patrick, who died in Sept. 2009.
2. The place-name 'Kingsholm' means 'King's Water Meadow' and does not refer to the royal hall: Smith 1964–5, II, 138.
3. Creation of a digital archive and indexing of records ceased operation due to Local Government cuts in May 2011 though work has since recommenced with the appointment of Andrew Armstrong as City Archaeologist.

including burials which were noted by local antiquaries; the finds were subsequently published by Samuel Lysons (Douglas 1785, Melville 1785, Mutlow 1785, Lysons 1792; Lysons 1817a, 112–125; Lysons 1817b, plates X-XVII.).

Suburban development began at Kingsholm in the 1850s and gathered pace in the latter half of the 19th century and even more during the 20th. By WWII little open space remained, though an area of gravel pits, having been backfilled, became – and remains – a sports field. From time to time Roman finds including burials were noted, and from the 30s onwards at least, carefully logged by the City Museum. The amount of information increased during the years after WWII, especially in and after the 1970s, when the recording work was mostly done by Patrick Garrod.

A problem with studying the archaeology of Kingsholm is that nearly all information derives from watching-briefs: only five excavations have been conducted under modern conditions and of these only the Kingsholm Close site has been fully published.

The Kingsholm Close site (HER 317)

In 1972, following a proposal to build a school on the last remaining open space of Kingsholm Close, an excavation was carried out (Hurst 1975; Hurst 1985). A first-century building interpreted as a military copper-smithing workshop had been destroyed by rubbish pits of the mid 60s AD. Above this were loam layers resulting from 2nd-century and later cultivation. The site was then used for burial: seven inhumations were found. A masonry building measuring 6.1m from east to west lay partly under the limit of excavation. In its interior was an *opus signinum* surface laid in irregular ridges, as if it had formed the setting for stone blocks. This building was interpreted as a

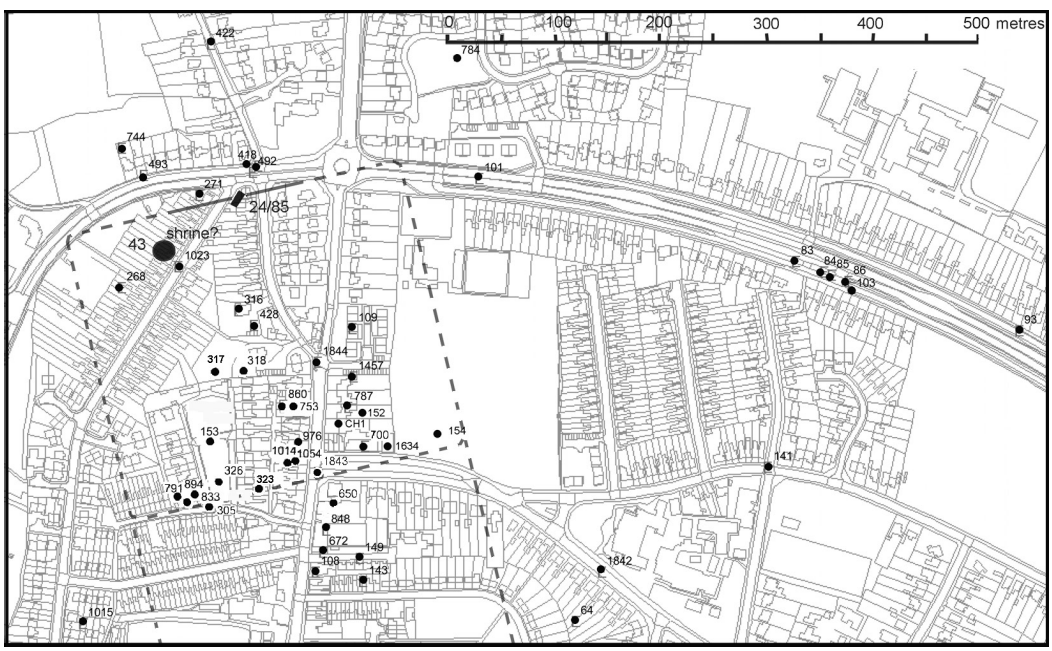


Fig. 2. Kingsholm, Gloucester: a plot of all finds of inhumation burials, with a hypothetical outline of the first-century fortress. Numbers are Heritage Environment Record numbers, except for the Museum excavation number 24/85. The Kingsholm Close site is no. 317.

burial mausoleum, of a type known from late Roman cemeteries elsewhere: the blocks might have been the settings for stone coffins (Hurst 1985, 16–17).

'Burial 1'[4], dug into the floor of the mausoleum, consisted of a wooden coffin containing the skeleton of a male aged about 40, laid with head to the west (aligned on the mausoleum). The body had been buried fully clothed wearing a silver belt buckle, silver shoe buckles, a pair of silver strapends and an iron knife. The belt and other fittings, originally thought to be British, were later shown to be of Eastern European type, which gained the burial the nickname 'The Goth' (Hills and Hurst 1989).

I presume that the primary burials in the mausoleum consisted of free-standing sarcophagi, and that Burial 1, being in the floor, was secondary, though the excavator would not take interpretation so far.

The next structure on the site was a late 11th-century timber building which was probably part of the late Anglo-Saxon palace complex; this apparently avoided, and was aligned with, the mausoleum.

In the event, the school was not built, and the site is still public open space.

76 Kingsholm Road (HER 650; HER 848)

A six-week excavation was carried out in 1987 on the east side of the Kingsholm Road on the site of a proposed car showroom (Fig 2, Fig 9). Two areas were excavated: area 1 near the street frontage (400m^2); and area 2 about 30m to the east (75m^2). The earliest features were first-century structures, of which the earliest (Building 449) was not on the Kingsholm military alignment, so perhaps predated even the military division of the land. Subsequent buildings, which did conform to the military alignment, were either within, or part of the *vicus* of, the first fortress. These buildings were demolished in the late 1st century. The site was thereafter under agricultural use, with the land divided into a series of narrow fields within a large rectangular close. Finally the site became a cemetery in the late 3rd/early 4th century. There were 60 burials in area 1, and a further 18 had been recorded in a 1978 watching brief. The burials could be divided into five sequential groups on the basis of their alignments and superimpositions. No burials were found in Area 2.

35 Kingsholm Road (HER 753; Fig. 2, Figs. 6–8)

A new building in 1981 infilling a former garden area on the west side of the Kingsholm road was preceded by archaeological excavation, carried out by the Gloucester and District Archaeological Research Group and by the City Excavation Unit. Early Roman (Claudio/Neronian) timber buildings were recorded; a subsequent phase in one area consisted of gravel spreads. There were also 23 late Roman burials, all supine, with head west and feet east, all or nearly all with wooden coffins. Seven were child or infant burials, all but one of these being in the trench towards the west part of the site, furthest from the street frontage. There were no grave goods. One of the burials was lined with stones. All the burials were packed fairly close, in orderly rows.

The Sandhurst Road site

An excavation in 1985 (site 24/85, Fig. 2) located the north fortress defence. A mid-1st-century turf rampart and ditch was replaced by an enlarged rampart and new ditch slightly further north.

4. The site annotation for the burial is (site) 44/72 (trench) I (context) 46 – Burial 1: the Gloucester museum reference is GLRCM: 1972.44.i.46.

This second phase was interpreted as accompanying an enlargement of the fortress to the south. The defences were partly levelled in the late 1st century but remained a boundary line at least until the late Roman period (Atkin 1986).

The Coppice Corner site (HER 784)

The cemetery at Coppice Corner was retrieved by watching brief in 1983–5, and in 1984–5 the western part of it was excavated by Western Archaeological Trust with the aid of a Manpower Services Scheme. The site is difficult to evaluate: the whole area had been badly truncated by post-medieval activity and the archive is not in good order. Altogether over 300 burials were noted, as well as 17 cremations in urns, the latter probably in the eastern part of the site. More than eleven burials were crouched. The burials were largely laid supine in coffins, some of which apparently had bases made of spaced planks. Some graves contained pottery vessels, coins and personal jewellery. Finds included a 3rd-century tombstone (Henig 1993, 49). Several dozen burials in the western zone were headless, and a collection of skulls were found in a contemporary ditch. The burials were thinly scattered, but there were some groups of overlapping burials which probably represent the reuse of family plots. The cemetery overlay a polygonal building, possibly a shrine, but perhaps a dwelling. The Coppice Corner cemetery appears to have been in use from the second to the fourth centuries AD.

Topography

To walk today round the streets of the suburb of Kingsholm is for an archaeologist a melancholy experience. Two thousand years of landscape history have been submerged in paving and asphalt. Yet irreversible is not irretrievable. Maps and written record have much to say.

Roman topography was dominated by the River Severn. Changes in the river course in medieval times have changed the relationship of town to river (Fig. 1). John Rhodes has presented a thorough study of the complex medieval history of the Severn flood-plain at Gloucester (Rhodes 2006). He has established that the western 'Maisemore' channel, which today is the principal channel, did not exist in the middle ages. Before the late twelfth century, and presumably also in Roman times, the river flowed in a single major channel, serving the quay next to the Roman town of *Glevum*. The river course shifted westward over the centuries, but was still one channel in 1119 when Foreign Bridge was built. Later in the 12th century the river broke through the western causeway to form the Westgate Bridge channel; Westgate Bridge was created 1154 × 89. Finally another major breakthrough of the causeway occurred in 1483, making the Maisemore third channel. The old eastern channel gradually silted up. It was known in 1529 as Old Severn, and by the post-medieval period was little more than a ditch; still visible today as boundary lines, its post-medieval name was 'Dockham Ditch' (Fig. 3).

The Roman roads are aligned towards Kingsholm rather than Gloucester: The Roman road from the west (Fig. 1) appears to aim to the north of Kingsholm: but the probable explanation of this is that the road was positioned so as to keep it on the higher ground for as long as possible (pers comm. John Rhodes). The road from Cirencester/London from the east ('Ermin Street' – now Denmark Road, medieval Gallows Lane) heads towards Kingsholm itself, a fact which has puzzled antiquaries for many years, leading some to suggest a Roman river-crossing here. The presence of a major pre-Roman Iron Age settlement at Kingsholm provides an alternative explanation (Hurst 1999, 115, 119); it also explains why the Kingsholm fortress was on low-lying ground (about 9.5 m AOD), rather than on the gravel promontory with a high point of about 16 m AOD where the later city-centre fortress was placed (Hurst 1985, 3).

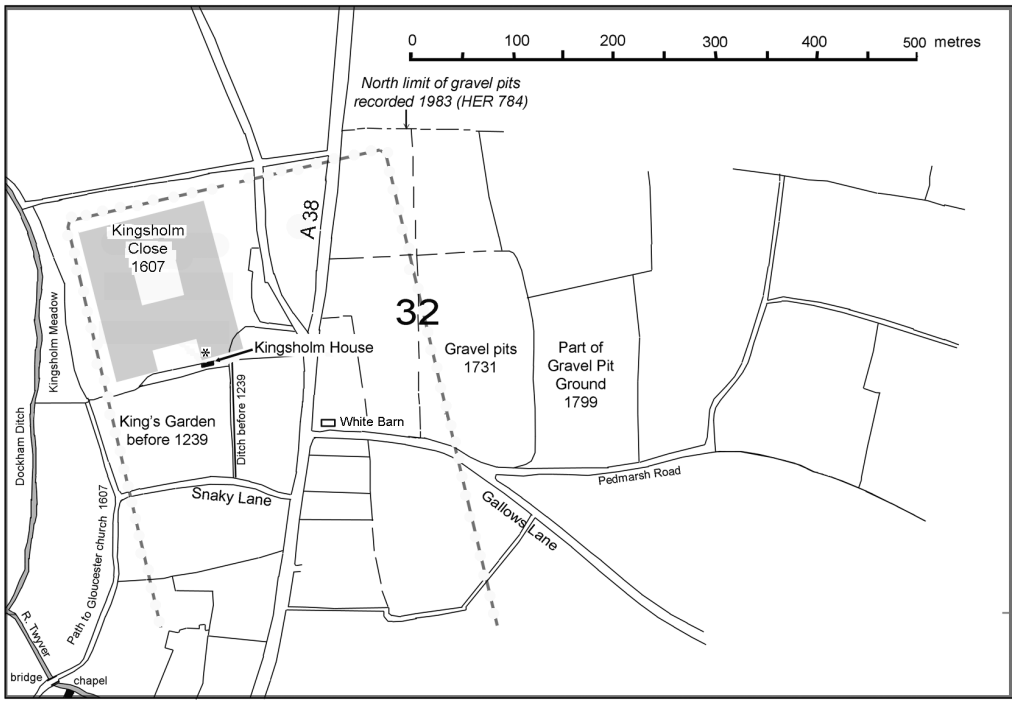


Fig. 3. Kingsholm fields in 1799, traced from the inclosure award map with some additional information. The shading in Kingsholm Close represents features sketched by Clarke in 1851. The asterisk indicates the 11-century structures excavated at Kingsholm Close.

The Kingsholm fortress was approached from the north by a Roman road which is now represented by the A38 to Tewkesbury. Today the A38 Tewkesbury Road continues south as Kingsholm Road to connect with the city centre, though it is far from clear that this is the Roman alignment (Hurst 1985, 119).

The fortress outline (Figs. 2 and 3)

The precise boundaries of the first fortress are uncertain. Following the excavation on the Sandhurst Road site (24/85), Malcolm Atkin (1986) published a tentative fortress plan which I have adopted here in the absence of more certain evidence simply to indicate its general position. A bank and ditch at 24 Kingsholm Square (HER 791: the south-west corner of the square) were interpreted by Atkin (and accepted by others: Holbrook 2010) as a southern defence of a first-phase fortress. This bank was not a long-lived feature and was totally ignored by 4th-century inhumations. The east and west fortress boundaries are guesswork. The south boundary could be as far south as the Rugby Ground (Hurst 1985, 116).

A Roman shrine

There was a Roman shrine at Kingsholm. In the Corinium Museum at Cirencester is a group of five altars, one dedicated to Mars, as well as a statue of Ceres/Fortuna: these were found in

Kingsholm in 1876 (Henig 1993, 10, no. 20; *RIB*, 36, nos. 119–20). Their exact provenance is unknown. However, a further altar rediscovered in 1969 in a rockery at 88 Kingsholm Road, had originally come from 117 Dean's Way.[5] The latter location could indicate the site of all the altars (Fig. 2 no. 43).

The date of the shrine is not certain: it could still have been in use when the cemetery began in the late 3rd/early 4th century (pers. comm. Martin Henig). It has been suggested that the shrine formed the focus of the Roman cemetery, which in turn became a pagan Anglo-Saxon cemetery (Yeates 2006, 93, 819, 847; Yeates 2008, 127). If the shrine was on Deans Way, it was very much on the fringe of the burial area and could not be said to represent a focus. Even a shrine on the palace site (Yeates 2006, 834) would be in an area, Kingsholm Close, thinly populated by burials (see below). An Anglo-Saxon cemetery would be remarkable but there is no good evidence for it (see below).

The medieval landscape

The fields shown in the inclosure award maps of 1799 (Fig. 3: Gloucestershire Archives Q/R1 70 Maps C and D) can be traced back in time using leases and early surveys. John Rhodes' invaluable work on the Llanthony Priory Terrier provides ownership and abutments over many centuries (Rhodes forthcoming).

The site of the manor house was known in the late 18th century to have been in the field called Kingsholm Close: a 1607 survey described it as 'a close of pasture called Kingsholm where formerly the manor was anciently constructed' (Gloucestershire Archives D 326/E1, ff. 53v, 58v; Rhodes forthcoming, nos. 153A, N of 153A, and 154). The Saxon palace was assumed, surely correctly, to have been on the same site as the manor – the royal hall had become the Manor House by the late 13th century (VCH 4, 391). In the late 18th century Mutlow (1785, 379) claimed to have seen in Kingsholm Close the foundations of the 'Saxon palace'. Fosbrooke cites Mutlow, but adds:

> the palace … stood in Kingsholm Close, on the opposite side of the road to the gravel pits, and is an exceedingly pleasant spot. From the ground plan it appears to have been a square building, about 120 yards each way, with offices [barns and cowsheds]. Ruined walls were standing in the memory of Mr Counsel, but the whole was removed for repairing the Tewkesbury road. A mineral spring called the Holy Well stood near it (Fosbrooke 1819, 12).

The visible stone remains must of course have belonged to the medieval manor complex rather than to 'Anglo-Saxon' structures.

John Clarke in the 1850s described Kingsholm Close as

> a large field out of sight of the main road….remains of a ditch are clearly visible on each side of it and on the western side a branch of the river ran in former times. The field is considerably higher than the surrounding country, and during the flood was literally an island. But this eminence….is not natural for the form is…regular…in that elevation I can trace the outlines of a large building … (Clarke 1854).

Thus, there was a roughly square ditched raised enclosure, as also described by Fosbrooke. Clarke added a sketch which had no scale, but using Fosbrooke's dimension the outer boundary was presumably 120 yards (110m) across. This would have taken up most of the area of Kingsholm Close: it is even possible that the north and west sides of Clarke's enclosure were actually the degraded banks of the Roman fortress (Fig. 3).

5. *Glevensis* 3 (1969), 3–4; Hurst 1975, 281, no. 4. The altar is in Gloucester Museum, GLCM 1975.101. The altar had an inscribed cross on each end of the volutes, but Martin Henig confirms that this is not a Christian symbol, as claimed by Garrod, *Glevensis* 3 (1969), 19.

South of Kingsholm Close was a plot called in the 13th century 'the king's garden', in the 15th century 'the lord's garden'; there was a ditch to the east of it (Fig. 3). This garden is now Kingsholm Square and the block of properties west of it (Rhodes forthcoming, nos. 154, 154N.)

North of Kingsholm Square was a house built after 1780 (VCH 4, 386; Verey and Brooks 2002, 498; not on Hall and Pinnell's *Plan of Gloucester* 1780) on a long narrow strip of land between Kingsholm Close and 'the lord's garden' (Gloucestershire Archives Q/R1 70 map D, no 72). In 1843 it was called Kingsholm House: the former 'lord's garden' was part of its grounds (Causton 1843).

Leading south from Kingsholm Close was Dean's Walk, a trackway known in 1607 as 'the path to Gloucester church'. This reflects its route between the King's Hall and the former royal monasteries of St Oswald and St Peter (Rhodes, forthcoming). It crossed the River Twyver by an iron bridge and close by was the chapel of St Thomas, which existed at least from the early 13th century (VCH 4, 317). Bridge, chapel and trackway are probably elements of the 11th-century topography, representing a minor route from palace to minsters (Hare 1997, 59).

The Late Roman Cemetery

Extent of cemetery (Fig. 4)

The realisation that there were large numbers of burials at Kingsholm derived from work in the late 18th-century gravel pits, as described above.

The gravel pits were 'on the opposite side of the road' from Kingsholm Close (Fosbrooke 1819, 12). Assuming the 'road' was Kingsholm Road, this places them in a block of fields belonging to the Mayor and Burgesses of Gloucester, St Bartholomew's Hospital land, known as the White Barn Estate (GBR J/4/1 no 18). Already in 1731 a field was 'gravel pits' (Fig. 3). By 1799 the field east of this was called 'part of gravel pit ground' (Q/R1 70 map D), and two fields had been combined to form Field 32. Presumably the western of these two fields was the area dug for gravel in the late 18th century and it was from here that Lysons recorded so many finds. It is interesting to find that gravel digging had started in the 1730s, and one wonders if a good many finds had been made (and disregarded) before Lysons came on the scene in the 1780s. However, a search of mid 18th-century newspaper indexes has produced no note of archaeological finds or skeletons.

Because only burials in lead or stone coffins gained mention, detailed information, even the number of burials, is now hard to quantify. Lysons cited 'a great number' (he included burial urns) (Lysons 1792, 132). Counsel mentions 'a vast number' of burials and 'more than 1000 skeletons' (Counsel 1829, 9 and 194).

On the south, burials extend to Edwy Parade and to Sebert Street. There may be missing information here: Akerman in 1854 noted the 'traces of the ancient cemetery' as including both sides of St Mark Street,[6] which was being built on at that time, but where no burials are recorded. Further south still, in the area of the Rugby stadium, interventions up to 2010 have recorded no burials.

On the west there are almost no burials west of Dean's Way even though there has been no lack of observation here.

To the east of the fort, beyond the gravel pits, the burials also thin out dramatically. The blank space represented by the Sports Ground and by Hinton Road is presumably a result of the 18th-century gravel pits (see Figs. 3 and 4), but Malvern Road, developed in the first decade of the 20th

6. Society of Antiquaries London Library, Akerman, Red Portfolio Glos., p. 18. I am grateful to Stephen Yeates for drawing my attention to this item.

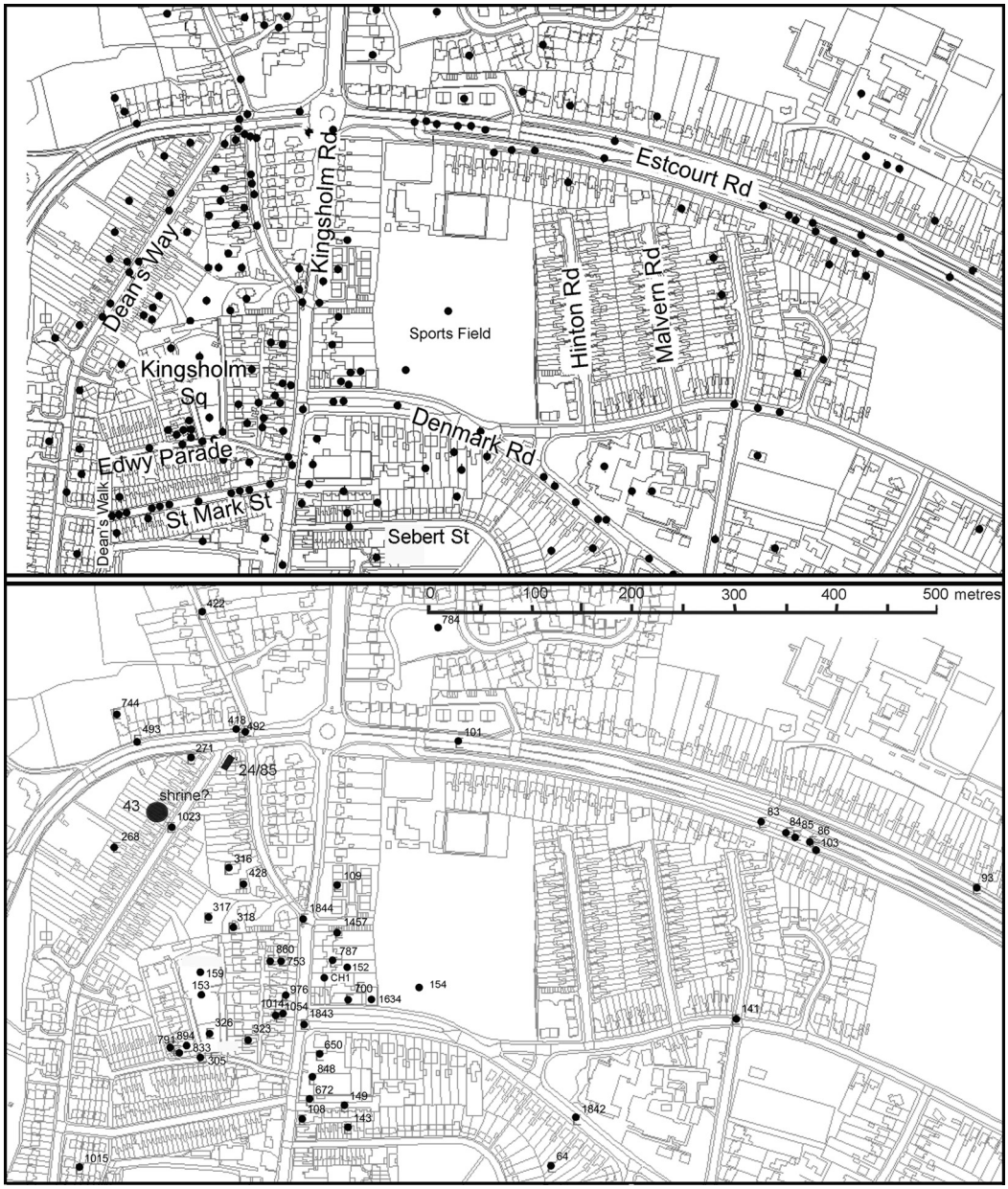


Fig. 4. Kingsholm, Gloucester: (a) a plot of all archaeological interventions and observations. compared with (b) a plot of inhumation burials

century, shows no burials. HER 141 represents a single skeleton found in 1908. The cluster on the by-pass (HER 83–86 etc) as well as HER 93 further east could have been isolated family burial groups. They seem too far away to represent outliers of the Wotton cemetery 500m further east (Simmonds *et al.* 2008).

The cemetery at Coppice Corner, north of the 1st-century Kingsholm fortress, seems to have been used from the 2nd century AD: it evidently started earlier than the cemetery further south on the fortress site which we have been examining in this article, and is separated from it by the northern fortress defences (Fig. 2, site 24/85). So far as we know the Coppice Corner cemetery does not contain any late 4th-century burials, nor any *mausolea*, nor any stone or lead coffins. It may have ceased operation by the early 4th century.

The densest part of the Kingsholm cemetery, as far as can be judged, centres on the junction of Denmark Road and Kingsholm Road extending west to Kingsholm Square (Fig. 4). (This densest area crossed over the putative southern boundary of the 'phase 1 fortress' which clearly had by then no topographical significance.) Burials in Kingsholm Square appear to have been relatively close-packed: for instance the five observations in Kingsholm Square shown on Fig. 2 produced 24 burials. There was also a high density of burials excavated at 76 Kingsholm Rd (HER 848) and 50m further north at 35 Kingsholm Road (HER 753). This general area was also where most of the high-status burials with stone coffins or lead coffins have been found (Fig. 5).

It is to be noticed that Kingsholm Close (the supposed site of the Anglo-Saxon Palace) was apparently not a densely occupied part of the Roman cemetery. It has produced only the eight burials excavated in 1972 and one coffin found in the early 18th century (HER 316). An evaluation and watching brief on a site 50m north-west of the 1972 Kingsholm Close excavation in 2007 and 2009 produced no evidence of burials (Witchell 2011, Hickling 2007). It is however possible that the interventions were not deep enough to locate burials.

Attributes of Burials

Stone coffins (Fig. 5)

Two stone coffins were observed in the gravel pits in the late 18th century (HER 154), and another at 80 Kingsholm Road in 1815 (HER 152).[7] The latter example had a stone lid 10 inches thick; it was lined with lead and contained a complete skeleton. A stone coffin was found at 13 St Oswald's Road (HER 744), north-west of the cemetery core.

Lead coffins; timber coffins

A lead coffin has already been mentioned as forming the lining of a stone coffin (HER 152). A coffin of lead was discovered in 1715 in 'the Kingsholm Ground' (HER 316). In about 1784 another lead coffin was found, with a regular arrangement of nails showing that the lead provided the lining for a nailed timber coffin (HER 153). This was found '50 yards from Ermin Street' in a field next to that in which the Saxon palace had stood (Mutlow 1785, 379–80)[8] which I interpret as being in Kingsholm Square.

7. The location is given by a later find of a skeleton at the house of Mr George Roberts, reported in the Gloucester Chronicle, 8 March 1890, which was said to be a few yards from the stone coffin found earlier. George Roberts lived at 46 Kingsholm Road (Census for 1891) which is about 80 Kingsholm Road on modern numbering. Counsel 1829, 194, confirms that the 1815 find was 'close to others of the same kind'.
8. The Ordnance Survey (1885 edition), in my opinion erroneously, placed the finds 50 yards south of Denmark Road.

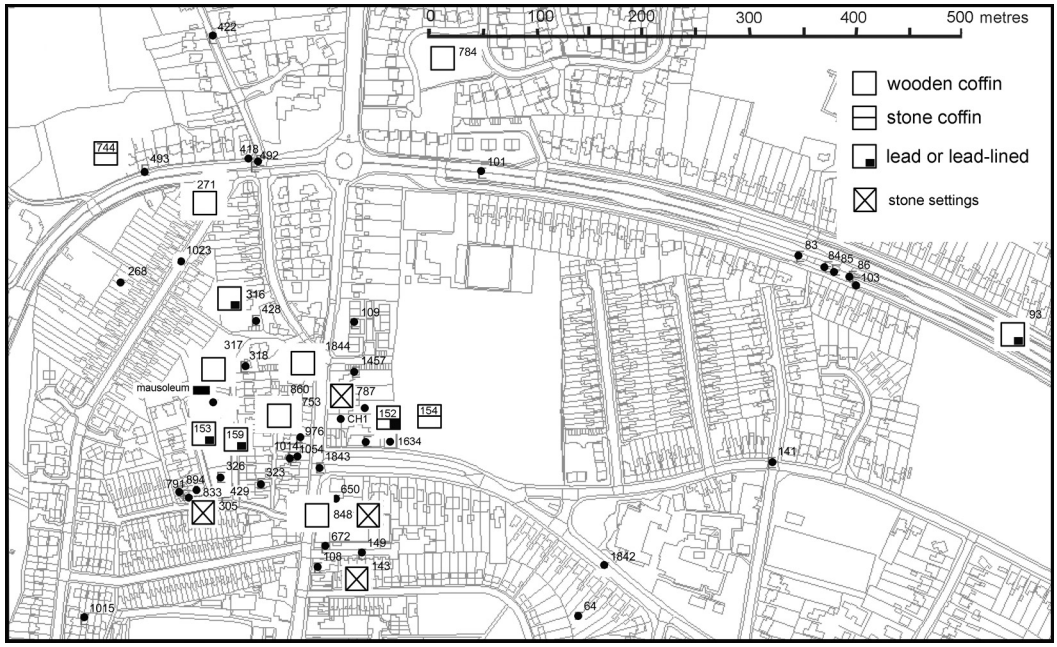


Fig. 5. Kingsholm Gloucester: a plot of stone and/or lead coffins.

Six skeletons including one in a lead coffin were recorded by Bellows in 1904 (HER 159). The location is unknown. Bellows provided a sketch of the coffin: it was made by folding, not soldering, and was tapered with an overlapping lid.

Estcourt Road produced another lead-lined timber coffin (HER 93). This was isolated midway between the Kingsholm cemetery and that at Wotton.

Evidence of timber-only coffins is scarce, but two sites indicate a high incidence of coffins. At 35 Kingsholm road nearly all the 23 burials had coffins (HER 753; Figs. 6–8). At 76 Kingsholm

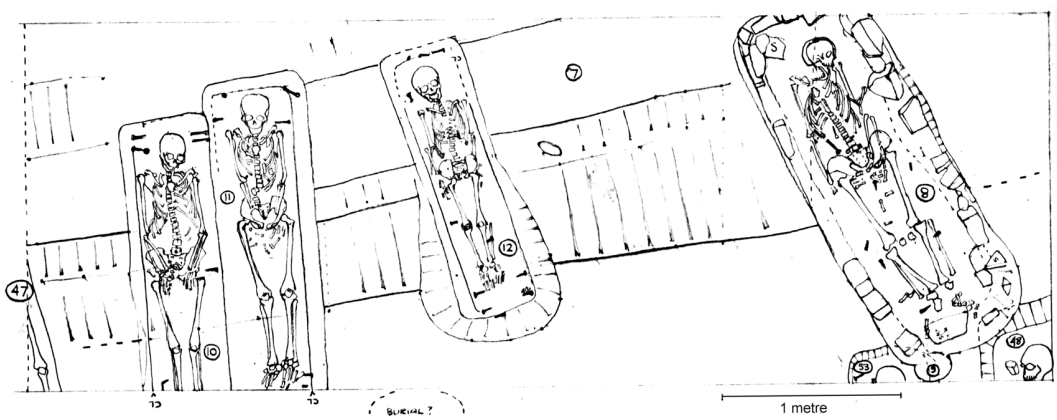


Fig. 6. Burials at 35 Kingsholm Road, Gloucester (HER 753), field drawing by Phil Moss, showing burials 10, 11 and 12 with coffin nails in position and burial 8 with stone setting. North is to the right.

Fig. 7. Burials at 35 Kingsholm Road, Gloucester (HER 753), Burials 10, 11 and 12. Photograph: Phil Moss.

Fig. 8. Burial 8 at 35 Kingsholm Road, showing stone settings. Photograph: Phil Moss.

Road (HER 848) five successive chronological burial groups were analysed. 11% of group 3 had coffins, but 72% of the later group 4–5 had coffins; thus the incidence of coffin use seems to have increased with time.

Stone-lined graves

Fosbrooke describes coffins 'composed of rough stones set edgeways at the sides and covered with one or more flat stones (the *kistvaen*, or early altar monument of the British)' (Fosbrooke 1819, 11). A burial at Edwy Parade was packed with stones (HER 305), and another in Sebert Street had a grave lined with oolite slabs (HER 143). A grave at 35 Kingsholm Road (HER 753) was entirely marked out by stones (Fig. 8). The excavation at 76 Kingsholm Road (HER 848) produced three skeletons in graves with cappings of sandstone tiles, another grave had corner stones to support the coffin, and one grave had stone lining on the long edges. At 82 Kingsholm Road, three burials had 'coffin supports' consisting of stones placed in the grave (HER 787). In most cases, these stone settings seem to be intended as packing or support for wooden coffins, and rarely act as a substitute for a coffin by lining the grave completely.

Stone settings are known elsewhere in late Roman cemeteries. For example, at Cirencester, 27 burials out of 450 had stone settings, though there were only one or two examples of full grave-linings (McWhirr *et al* 1982, 92–5).

Orientation

The orientation of the fortress and related 1st-century buildings at Kingsholm is known (slightly north-west/south-east: Hurst 1985, 114) and this 'Kingsholm military alignment' is still discernible in some modern boundaries.

Thorough study of orientation of burials has not been possible, with so much data derived from watching briefs, but the excavated sites give some idea of the changes in orientation over time. Of the five successive burial groups excavated at 76 Kingsholm Road (Fig. 9), the earliest burials (Groups 1 and 2) were fairly randomly aligned. Group 3 graves showed a slightly more ordered, NE/SW alignment, one which bears no relation to the 'Kingsholm alignment'. In groups 4 and 5, the final phases, the alignment changed to east-west, with heads to west, on the 'Kingsholm alignment'. If the entire cemetery followed this development, an east-west alignment could be an indicator of a date in the late 4th century.

If north-south burials indicate an earlier date, then Burials 2–4 in Kingsholm Close (Fig. 10), which presumably post-date the mausoleum since they respect a space round it, would indicate that the mausoleum was constructed at the beginning of the 4th century or before, and was already several generations old when Burial 1 was inserted. However, this may be stretching hypothesis too far.

The late Patrick Garrod was convinced by the number of east-west burials that the old fortress banks enclosed a Christian cemetery. Of 153 burials for which orientation can be established, 136 (89%) were east-west, of which 113 had heads to the west. However, east-west orientation is not necessarily a Christian rite. The Wotton cemetery also had a group of late Roman burials interred east-west with head to west. As the excavators there point out, it was not uncommon for burials to be re-aligned to an east-west orientation in the 4th century. It is likely that there were social factors involved other than the influence of Christianity (Simmonds *et al.* 2008, 139; Philpott 1991, 227).

Finally, the 2nd–4th century Coppice Corner cemetery (above p 67) demonstrates a quite different sequence of orientation: the *earliest* burials tended to be aligned east-west, and later ones north-east to south-west. Orientation there was perhaps dependant on topographical features.

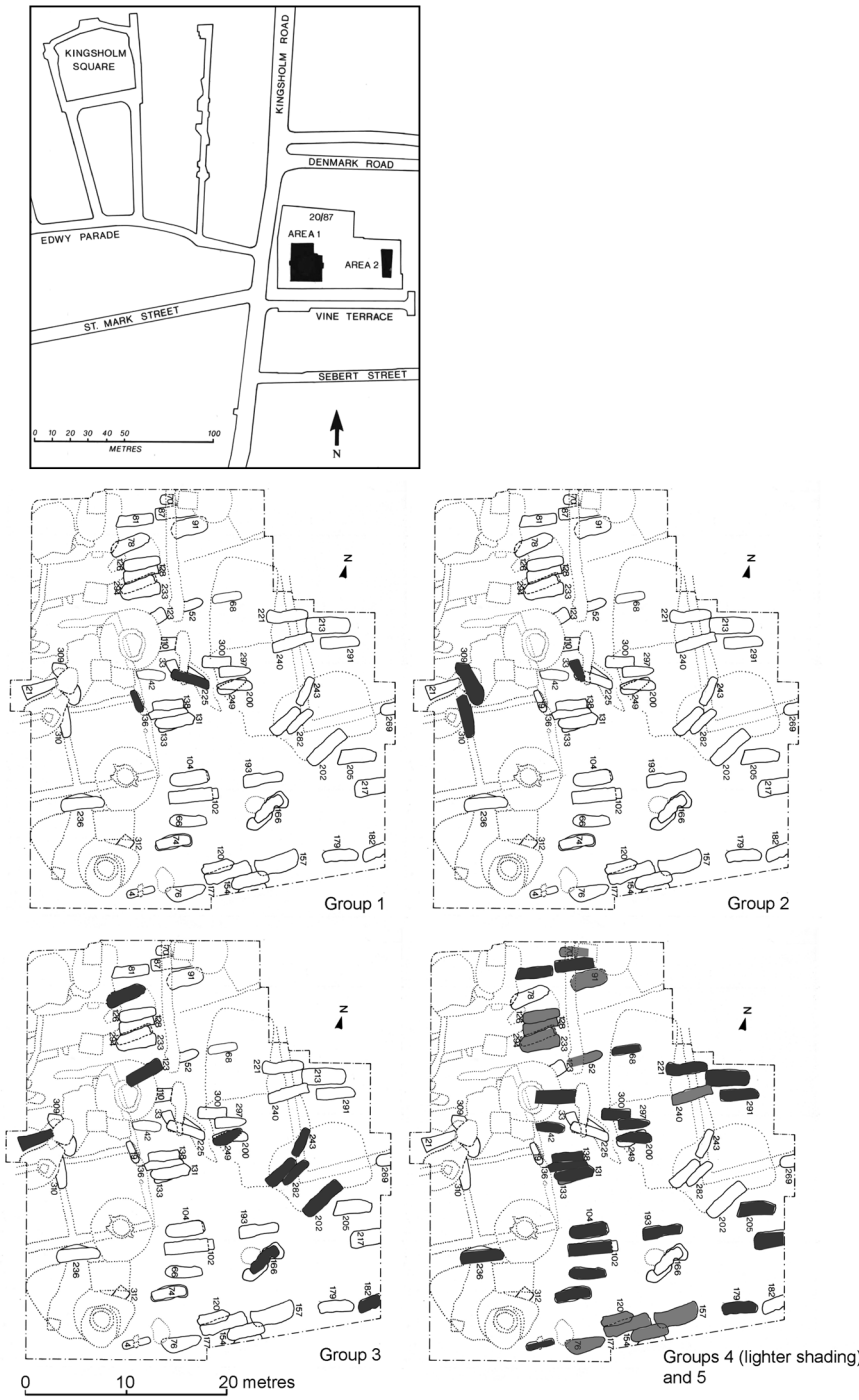


Fig. 9. Museum site 20/87, excavations at 76 Kingsholm Road: a plot of burial phases in Area 1, following Atkin 1987. The plots show re-ordering and re-orientation of the cemetery in phases 4 and 5.

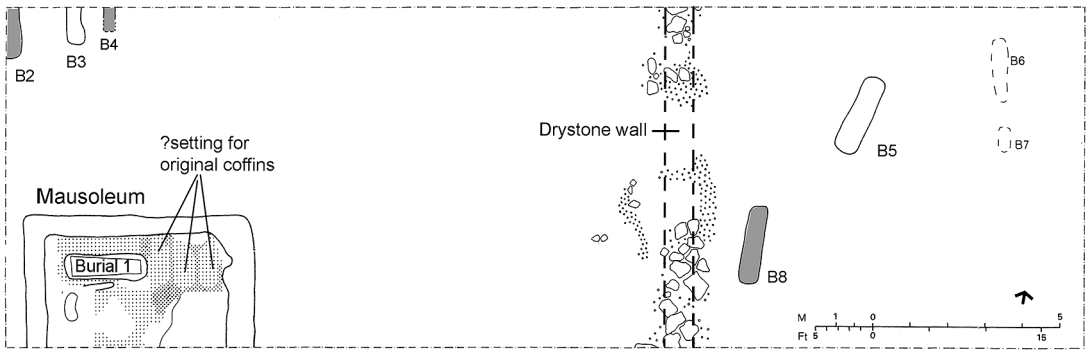


Fig. 10. The 1972 Kingsholm Close excavation, interpreted version of Hurst 1985, fig 7. Shaded burials were prone. Burials 3, 4, 6 and 7 were children; Burials 5 and 8 male, Burial 2 female.

Grave goods

Grave-goods are rare in most of the inhumations, though pots and coins are occasionally mentioned. It is not usually clear whether these are deposited or casual items. At the Kingsholm Close site, burials were without grave goods except for a lock found beside Burial 5 (Hurst 1985, 17). At 76 Kingsholm Rd, there were also very few grave goods. Some burials had brooches, but in the grave fill and not worn; one burial had a purse on the wrist with coins (Atkin 1988, 19).

Prone burials

Seven of 153 burials for which we have information were face-down. Such burials are not unknown in late Roman cemeteries where they usually form a small percentage of the burials (e.g. 7 out of over 1000 at Poundbury: Farwell and Molleson 1993, 226). The significance of the rite is not clear, although there is a suggestion that it was more common in the west of Britain. It may be accidental, or be a deliberate action to prevent the dead from walking (Simmonds *et al.* 2008, 132). Oddly, a high proportion of burials in the Kingsholm Close 1972 excavation, three out of seven, were prone (Fig. 10). Two (one a female, one a child) were in a group of three north-south burials with the same alignment as the mausoleum. The other (male) prone burial was separated from the mausoleum by a boundary wall.

There were prone burials in the Coppice Corner cemetery, but I have been unable to quantify these.

Mausolea

Mausolea are familiar features of late Roman cemeteries, and some, like those at Poundbury (Dorset) were elaborate structures which sheltered high-status burials or groups of burials in stone and lead-lined coffins. At Kingsholm there is likely to have been more than one such structure. It is probable that some of the stone coffins and lead-lined coffins were originally in mausolea. Groups of high-status burials could also have been set in hedged enclosures, as at Poundbury. In either case, the structures and ditches would not have been recognised by 18th- and 19th-century observers and the information has been lost.

The Kingsholm mausoleum (Fig. 10) is surrounded by a space without burials: there seems no reason to suppose that burial evidence from close to the mausoleum has been lost to some

later activity. This spatial separation is entirely consistent with the Poundbury evidence where mausolea were often surrounded by unused ground – an indication that important groups within the community were able to 'pre-book' plots of land (Farwell and Molleson 1993, 70).

Also at Poundbury, the cemetery was divided into ditched enclosures which could also have had banks or hedges (Farwell and Molleson 1993, 69). At the Kingsholm Close site a north-south band of stones (on the 'Kingsholm alignment') was interpreted as the remnant of a drystone wall belonging to the 2nd-century cultivation phase (Hurst 1985, 6, 15). Did this also serve as a cemetery enclosure wall in the 4th century? It appears to separate burials of slightly different orientation. Kingsholm, like Poundbury, may have had a rectangular network of such cemetery enclosure walls.

If Burials 2, 3 and 4 appear to respect the space around the mausoleum, no such respect is implied in relation to the creation of Burial 1: it does look as if the mausoleum's original occupants were disregarded and a new interment made, formal control having lapsed. 'The Goth' is the only indication that burial continued into the fifth century. At 76 Kingsholm Road the post-Roman levels evidence only agricultural activity until post-medieval housing began. At Kingsholm Close all post-Roman levels consisted of a dark stony loam, through which were cut features of 11th-century and later date.

The 'Goth' and the mausoleum

Burial 1 was wearing belt and other fittings (Ager, below, Figs. 1–3) of East European origin (Hills and Hurst 1989, 154–7); would his childhood origin concur with this? A grant was provided in 2010 by the Bristol and Gloucestershire Archaeological Society for isotope analysis. This indicated that 'the Goth' was born in a cold region of central/eastern Europe, and moved to a colder location in middle childhood: in general his origins were in the area of Hungary, W. Romania, or Eastern Poland (Chenery and Evans, below).

A study of the bones (Gilmore, below pp. 99–106) indicates that the man was in his late 30s or 40s (older than originally thought) and had an unusually broad head, perhaps reflecting his ethnic origins. A facial reconstruction can be seen in Gloucester City Museum.

The silver buckles and other fittings are commented on below by Barry Ager (pp. 107–114).

Fig. 11. The face of eastern Europe: reconstruction of the head of the 'Goth', 44–72 Burial 1, created by John Moore University Liverpool for Gloucester City Museum. ©Gloucester Museums Service.

'Anglo-Saxon' finds

Counsel stated that apart from skeletons and coffins, Kingsholm had produced 'spears, daggers, battle-axes, and other ancient military weapons' (Counsel 1829, 194) – phraseology which has been interpreted as indicating Anglo-Saxon burials (Yeates 2008, 127). Counsel appears to have been giving his own interpretation of the finds published by Lysons (1792). The finds that have survived in the British Museum are first-century Roman military items (Hurst 1985, 130). 'Battle axes' sounds Anglo-Saxon, but Lysons' illustration (Lysons 1792, Plate X, Fig. 4) shows an iron axe hammer of the type familiar from 1st-century forts. Beside it is depicted a Bronze Age palstave from Cirencester, which may well have prompted Counsel's plural 'battleaxes'. A sword, which has not survived, and was not illustrated by Lysons, was apparently Roman (Fosbroke 1819, 11; Melvill 1785).

Some antiquaries in the late 18th century and later were always ready to attribute items to Anglo-Saxons: writing in 1785 Mutlow was convinced that the stone coffins were Anglo-Saxon simply because they came from close to the Saxon palace. Such opinions were presumably the source of interpretations such as that voiced by John Clarke, who in 1853 noted 'It is probable that Kingsholm continued to be a burial-place for two centuries after the Roman period, as many Saxon remains have been found there' (Clarke 1853, 40).

Finds of beads in the Kingsholm cemetery have been taken to suggest pagan Anglo-Saxon burials (Yeates 2008, 127). Lysons noted 'a bead of brass found with many others of the same kind at Kingsholm; there were also found more than 60 blue ones of the kind commonly called Druid's beads' (Lysons 1792, 133). Beads of course are often found in Anglo-Saxon burials but these could equally be Roman. They may or may not have accompanied a burial. Some types of blue beads were quite common in the late Roman period; and it was not unknown for beads to accompany burials (Guido 1978, 91–7; Philpott 1991, 144–6). Burials with grave goods including beads have in the past been seen as indicators of 'foreigner' status (Clarke 1979, 377) although this view is rapidly being modified (Cool 2000). There is no way now to establish the nature of the Kingsholm beads, but there is no compelling reason to view them as Anglo-Saxon.

The only indication of post-Roman/pre-11th century items is in the finds from the Kingsholm Close excavation: a bronze (not brass) belt loop (Hurst 1985, 29 no 17) and iron objects described as parts of a 7th-century shield boss (*ibid*., 37, nos. 8 and 9) (Fig. 12). The 'shield boss' was from post-Roman cultivation levels. Professor Tania Dickinson does not think this is 7th century: 'the flange is far too wide and the wall far too low in proportion and overall: 7th-8th century Continental bosses without an apex have a cone that is either quite convex or bulbous or at least slightly angular, not almost level, as here'.[9] The object might be of late Saxon date (Reynolds 2003, 154), in which case it presumably represents a loss or discard rather than a burial. The belt loop was found in the robbing of the 'mausoleum'; it was bronze rather than brass and could be post-Roman.

In summary there is no evidence for a pagan Saxon cemetery at Kingsholm.

9. Professor Tania Dickinson, in litt. Dr Bruce Eagles commented in very similar vein, saying that the Krefeld-Gellep examples 'do not match the Kingsholm piece, the bosses themselves are higher and less rounded and they all have a much narrower flange'.

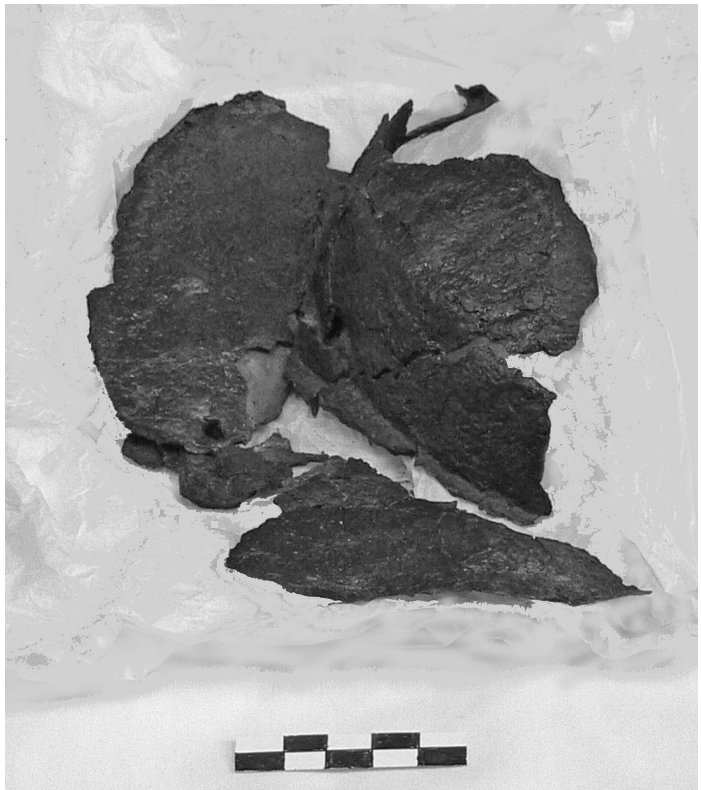


Fig. 12. The so-called 'Anglo-Saxon shield boss', Kingsholm close excavation, site 44/72, SF 59 and SF 333; scale 5 cm. Illustrated in Hurst 1985, 37, nos 8, 9. Photograph: David Rice. ©Gloucester Museums Service.

The 'Saxon Palace'

The late Saxon buildings at Kingsholm Close (44/72) consisted of linear trenches and straight sided pits interpreted as the setting for timber structures (Hurst 1985, 20). The layout of the buildings apparently respected late Roman features, such as a north-south dry-stone wall (*ibid*., 15) and the late Roman mausoleum. All were on the 1st-century AD 'Kingsholm alignment' as far as one can judge from the small areas concerned. The dating evidence from pottery suggested late 10th- to early 11th-century construction with occupation continuing up to the late 11th century (Hurst 1985, 94).

The timber structure was probably one of the service buildings of the hall, since the hall as well as the chapel would in all likelihood have been rebuilt in stone in the late 11th century, like Gloucester's gates and abbey. The chapel in particular, which one can assume was close to the Great Hall, is known to have been a very large stone building which survived to the 14th century (Hare 1997, 58). There must therefore have been a complex of medieval stone buildings in Kingsholm Close, the remnants of which were still visible in the late 18th century. Yet no worked stone fragments have been found, even when Kingsholm Close was almost entirely built over as Deans Way by 1921. The location of the hall and chapel should be seen as a prime aim in

any future investigations – for instance it is not impossible that 18th- to 19th-century cellars might incorporate fragments of worked stone.

Conclusions

The late Roman cemetery at Kingsholm is unexceptional. It is not even the strictly ordered, managed cemetery seen at many late Roman towns, although at least part of it was re-planned in the late 4th century to introduce east-west burials and more orderly rows. The presence of 'The Goth', the burial of a military leader or official, born in eastern Europe, is the one unusual, indeed unique, element of the cemetery. The enrolment in late Roman Britain of soldiers and administrators from all corners of the Roman empire is well-attested though rarely encountered archaeologically. It is hard to know whether the burial might date to before or after '410'. After Britain became independent it is unlikely that a provincial town like Gloucester would have the contacts to recruit from so far afield (Hills and Hurst 1989, 157). Nevertheless the 'Goth' was not, as originally thought, a young man, but a 'veteran' in his late 30s or 40s (Gilmore, below), and it is conceivable that he might have retired from the army or civil service and have held in his mature years a position of power in Gloucester (Ager, below p. 111).

Foreign elements in late Romano-British cemeteries are occasionally found, but these tend to be Germanic (e.g. B374 in the East London cemetery: Barber and Bowsher 2000, 305–6). East/central Europe figures rarely, but most notably at Lankhills, near Winchester (Clarke 1979), where Clarke identified a group of sixteen late Roman skeletons with unusual burial-rites as an immigrant population of the 4th century deriving from the Danube region. Isotope analysis only partly supported the Danube hypothesis; although a few individuals came from that restricted area, most were from further afield in the eastern European region (Evans *et al.* 2006). A study of forty skeletons from later work at the same site by Oxford Archaeology revealed a more diverse picture; up to a quarter of the individuals were incomers, and several derived from the Danube region, but there was no clear link between geographical origin and cultural identities from archaeology. In other words burial practice was dictated by social factors (Eckardt *et al.* 2009, 1; Booth *et al.* 2010; Cool 2000). It would appear that the Gloucester Goth is unusual in this respect as well – his accoutrements and ethnic origins concur.

Claims that part of the Kingsholm cemetery was Christian should be treated with extreme caution. The data is too unreliable and incomplete, and recognition of Christian criteria too imponderable (Farwell and Molleson 1993, 236). The east-west orientation of most 4th-century burials could have other explanations, as discussed above. There were few unworn grave goods – jewellery etc placed in the grave, rather than worn on the person (though the distinction between worn and unworn grave-goods is not clearly made for most Kingsholm burials). On the other hand the 'pagan traits' are not strong either: no decapitation, no coins in the mouth, no hobnails (the evidence for placing boots in the grave for the journey after death). Prone burials, which can indicate pagan burial, are few, as indeed is the case in all late Roman cemeteries. The significance of the high number (three out of seven) of the group excavated in Kingsholm Close is unknown. The earlier cemetery at Coppice Corner had decapitated burials as well as some prone ones: more information on these is needed, but this area of burial may well, as discussed above, be earlier than the 'fortress' burials, so the customs were different.

Like so many late Roman cemeteries, burials ceased at the latest in the early 5th century. The site was then abandoned for six centuries. It may be just coincidence that Kingsholm became the site of the Anglo-Saxon palace in the 11th century, but one might ask why the alignments of the 11th-century buildings follow fairly closely the alignment of the Roman fortress and seem to avoid the Roman mausoleum. The explanation may be that the site at Kingsholm began to be used as a

place of assembly at a time when Roman alignments were still discernible and influential. By the time of the takeover by Anglo-Saxon leaders in the 7th century, the town of Gloucester was more or less abandoned, but it may nevertheless have been regarded by the new regime as a significant place, and a few generations later became the site of a minster dedicated to St Peter founded in 679 by nobles of the kingdom of the Hwicce.

A few decades ago scholars thought that early royal centres were sited in former Roman towns, but hard evidence for such location has been slow to appear, and as John Blair points out, the sources do not sustain such an assumption (Blair 2005, 273). It was the minsters that administered their estates from static central places; Blair sees early royal residences as 'impermanent, even open-ground sites, near to road and water transport, providing plenty of space for ... retinues, tents and field kitchens' (ibid, 279–80). The ruinous town of Gloucester might not have been an enticing site for a princely entourage. By contrast, the meadows at Kingsholm comprised a level open area, raised above flood level, perhaps partly defined by a Roman bank and ditch, close to the river and to roads, but still with easy access to the town of Gloucester with its Roman river crossing, its ancient church of St Mary de Lode, and in due course the minster of St Peter. In the 7th century Roman cemetery enclosure walls and even the old fortress banks, could still have been visible, surviving as field boundaries to influence the placing of temporary buildings. The tenacity of property boundaries is well-known.

As all commentators on Kingsholm reiterate, an extensive controlled excavation is needed to understand more about the Kingsholm sites. This is unlikely to be in prospect in the near future. In the meantime we need continued vigilance, on the part of both professional and independent archaeologists. A community project set up in 2012 by Gloucestershire County Council Archaeology Service has now recorded a Norman worked stone (www.kingsholm.info). The story of Kingsholm is not yet complete.

Acknowledgements

I am grateful to those who have read or commented on earlier drafts of this text: Tania Dickinson, Bruce Eagles, Michael Hare, Henry Hurst, John Rhodes, and Nigel Spry. I could not have completed this article without the help of Lisa Donel and Phil Greatorex, who then maintained the Heritage Environment Record at Gloucester City. David Rice of Gloucester City Museum was instrumental in managing the work on the 'Goth' skeleton, and allowed me to use Museum-sponsored information for this article; he also adeptly located items in the Museum finds system. I am very grateful to him. Any errors in this article are entirely my own.

Work on the isotopic analysis (reported on below, pp. 89–98) was to be funded by a grant of £500 from the Bristol and Gloucestershire Archaeological Society (Miss Irene Bridgeman fund). However, the research results were important enough to be contributory to other projects and the grant was not needed. The funds were then diverted to osteological analysis of Kingsholm Burial 1: this is reported on below (pp. 99–106). I am most grateful to the Bristol and Gloucestershire Archaeological Society for their assistance.

References and Abbreviations

Abbott, R., 1967. 'Two Romano-British Burials at Kingsholm, Gloucester', *Trans. BGAS*, 86, pp. 197–8

Atkin, M., 1986. 'Kingsholm: Sandhurst Road site 24/85' *Glevensis* 20, 4–11.

Atkin, M., 1987. 'Excavations at 76 Kingsholm Road (BMW Showroom) 1987', typescript report in 20/87 archive.

Atkin, M., 1988. 'Excavations in Gloucester 1987: 76 Kingsholm Road', *Glevensis* 22, 16–21.

Baker, N. and Holt, R., 2003. *Urban Growth and the medieval church: Gloucester and Worcester* (Aldershot).

Barber, B. and Bowsher, D., *Eastern Cemetery of Roman London: excavations 1983–1990*, MOLAS monograph 4 (2000).
Bellows, J., 1904. *Letters and a Memoir* (ed. Mrs Bellows, London).
Blair, J., 2004. 'Wells: Roman mausoleum or just Anglo-Saxon Minster?' *Church Archaeology*, 5–6, 134–7.
Blair, J., 2005. *The Church in Anglo-Saxon Society* (Oxford).
Booth, P., Simmonds, A., Clough, S., Cool, H., and Poore, D., 2010. *The Late Roman Cemetery at Lankhills, Winchester Excavations 2000–2005* Oxford Archaeology monograph 10 (Oxford).
Causton, A., 1843. *Map of the City and Borough of Gloucester from an actual survey made in 1843*.
Clarke, G., 1979. *Pre-Roman and Roman Winchester: part 2; The Roman Cemetery at Lankhills; Winchester Studies* 3 (Oxford).
Clarke, J., 1850. *The Architectural History of Gloucester from the earliest period to the close of the eighteenth century* (Gloucester, no date, about 1850).
Clarke, J., 1853. 'Discovery of Roman Remains at Kingsholm, Gloucester,' *Gents. Mag.* 40, 39–40.
Clarke, J., 1854. 'The Diggings at Gloucester' *Gents. Mag.* 41, 486–7.
Cool, H., 2000. 'Finding the Foreigners' in Eckardt, H. (ed.) *Roman Diaspora* Journal of Roman Archaeology Supplementary Series 78 (Portsmouth RI), 27–44.
Counsel, G.W., 1829. *The History and Description of the City of Gloucester from the earliest period to the present time* (Gloucester).
Douglas, Revd. Mr, 1785. 'Letter …to Lt. Gen. Melvill concerning the sword' *Archaeologia* 7 (London 1785), 376–8.
Eckardt, H., Chenery, C., Booth, P., Evans, J.A., Lamb, A. and Muldner, G., 2009. 'Oxygen and strontium isotope evidence for mobility in Roman Winchester' *J. Archaeol. Sci.* 30, 1–10.
Evans, J., Stoodley, N., and Chenery, C., 2006. 'A strontium and oxygen isotope assessment of a possible fourth century immigrant population in a Hampshire cemetery, southern England' *J. Archaeol. Science* 33 issue 2, 265–72.
Farwell D.E., and Molleson, T.I., 1993. *Excavations at Poundbury, 1966–80, vol. 2, The Cemeteries* (Dorchester).
Fosbrooke, T.D., 1819. *Original History of the City of Gloucester.*
Fullbrook-Leggatt, L.E.W.O., 1968. *Glevum* (Gloucester).
Furney, R., 1746. 'Manuscript history of Gloucester', Gloucestershire Archives D327.
Garrod, A.P. and Heighway, C., 1984. *Garrod's Gloucester* (Bristol).
Garrod, A.P., 1984. 'Site Reports: Gambier Parry Lodge Estate nr Kingsholm', *Glevensis* 18, 49–51.
Guido, M., 1978. *The Glass Beads of the Prehistoric and Roman Periods in Britain and Ireland* (London).
Hare, M., 1997. 'Kings, Crowns and Festivals: the Origins of Gloucester as a Royal Ceremonial Centre', *Trans. BGAS*, 115, pp. 41–78.
Heighway, C., 2003. 'Christian Continuity and the Early Medieval Topography of Gloucester' *Glevensis* 36, 3–12.
Heighway, C., 2010. 'Christian Origins at Gloucester: A Topographical Inquiry' in M. Henig and N. Ramsey (eds.) *Intersections: The Archaeology and History of Christianity in England 400–1200: Papers on Honour of Martin Biddle and Birthe Kjølbye-Biddle*, 39–48.
Henig, M., 1993. *Roman Sculpture from the Cotswold Region* (Oxford).
HER Heritage Environment Record.
Hickling, S., 2007. 'An Archaeological evaluation at Kingsholm Close, Sandhurst Rd, Gloucester' unpublished report by Gloucestershire Country Council Archaeology Service.
Hills, C. and Hurst, H., 1989. 'A Goth at Gloucester', *Antiq. Jnl.*, 69, pp. 154–7.
Holbrook, N., 2010. 'Kingsholm and Gloucester', in *Roman Frontiers in Wales and the Marches* (RCAHMW Aberystwyth), 184–87.
Hurst, H., 1975. 'Excavations at Gloucester – Third Interim Report: Kingsholm 1966–75' *Antiquaries Journal*, 55, 267–94.
Hurst, H., 1985. *Kingsholm: excavations at Kingsholm Close and other sites with a discussion of the archaeology of the area* (Cambridge).
Hurst, H., 1999. 'Topography and Identity in Glevum Colonia' in H. Hurst (ed.) *The Coloniae of Roman Britain – new studies and a review* (1999), 113–135.
Jenkins, V., 1983. 'Excavations at Gambier Parry Lodge (Coppice Corner)' typescript report in site archive 9/83.

Lysons, S., 1792. 'Account of Roman Antiquities discovered in the County of Gloucester' read May 20 1790, *Archaeologia*, 10, 131–6, with plates.
Lysons, S., 1817a. 'Account of the remains of several Roman burials and other Roman antiquities discovered in the county of Gloucester', *Archaeologia*, 18, 112–125.
Lysons, S., 1817b. *Reliquiae Britannico-Romanae* 2.
McWhirr, A., Viner, L. and Wells, C., 1982. *Cirencester Excavations II: Romano-British Cemeteries at Cirencester* (Cirencester).
Melvill, Lt. Gen., 1785. 'Observations on an ancient sword …..in a letter to Rev James Douglas FAS', *Archaeologia*, 7, 374–5.
Morris, R. and Roxan, J., 1980. 'Churches on Roman buildings' in W. Rodwell (ed.) *Temples, Churches and Religion in Roman Britain*, BAR Br S 77(i) 1980, 178–209.
Mutlow, Revd. Mr, 1785. 'Account of some Antiquities found in Gloucestershire', *Archaeologia*, 7, 379–81.
Philpott, R., 1991. *Burial Practices in Roman Britain – a survey of grave treatments and furnishings AD 43–410* BAR British Series, 319.
PCNFC, *Proceedings of the Cotswold Naturalists Field Club*
Rennie, D.M., 1953. 'Burials in Kingsholm Square, Gloucester', *Trans. BGAS*, 72, 154.
Reynolds, A., 2003. 'The early medieval period' in *Twenty Years of Archaeology in Gloucestershire*, ed. N. Holbrook and J. Jurica (Bristol), 133–160.
Rhodes, J., 2006. 'The Severn Flood-Plain at Gloucester in the Medieval an Early Modern Periods' *Trans. BGAS*, 124, 9–36.
Rhodes, J., forthcoming *Llanthony Priory's Terrier of Gloucester 1443* (Bristol and Gloucestershire Archaeological Society Record Volume).
RIB. R.G. Collingwood and R.P. Wright, *The Roman Inscriptions of Britain: vol I: Inscriptions on Stone* (Oxford 1995).
Rodwell, W., 1993. 'The role of the church in the development of Roman and Early Anglo-Saxon London' in *In Search of Cult: Archaeological Investigations in Honour of Philip Rahtz* (Woodbridge), 91–9.
Simmonds, A., Marques-Grant N. and Loe, L., 2008. *Life and Death in a Roman City: excavations at…London Road Gloucester* (Oxford).
Smith, A.H., 1964–5. *The Place Names of Gloucestershire*, 4 vols., Eng. Place-Name Soc. 38–41 (Cambridge).
VCH 4 *Victoria History of the Counties of England: Gloucestershire: 4. The City of Gloucester* (London 1988).
Verey, D. and Brooks, A., 2002. *Buildings of England: Gloucestershire: 2: The Vale and the Forest of Dean* (New Haven and London).
WB Watching brief.
Witchell, N., 2011. 'Watching brief at Kingsholm Close, Sandhurst Road, Gloucester, Gloucestershire' unpublished report by Gloucestershire County Council Archaeology Service.
Yeates, S., 2006. *Religion, Community and Territory: Defining Religion in the Severn Valley and Adjacent Hills from the Iron Age to the Early Medieval Period*, BAR British Series 411 (Oxford).
Yeates, S., 2008. *The Tribe of Witches* (Oxford).

APPENDIX: KINGSHOLM LATE ROMAN BURIALS

list by HER number, giving sources

Gloucester HER number	Number in Hurst 1975, 280–283 and Garrod and Heighway 1984, 60ff	Address	No of inh	Date of find	Museum number; source especially earliest	Attributes
316		'The Kingsholm Ground'	1	1715–16	Furney 1746, 168	lead coffin
154		'close to Ermin St': probably gravel pits.	2	1780 [c.]	*Archaeologia* **7**, 379	Two stone coffins, 'one about 6.5 feet in length, and nearly in the form of a cistern'
153		50 yards from Ermin Street, Saxon Palace was 'in next field', so could be Kingsholm Square.	1	1784	*Archaeologia* **7**, 376–7, 379	Nailed wooden coffin enclosing lead one Skeleton, nothing else in coffin, no wood remaining only nails [finds not illustrated] other finds nearby including sword. Sketch showing coffin dimensions.
		Gravel pits	1000 +?	1790 s	Counsel 1829, 194; Fosbrooke 1819, 11.	no information
152	cit Hurst 1975, p.283	Cellar at Mr Simms' (next 80 Kingsholm Rd: [CH1] below)	1	1815	Counsel 1829, 193	A stone coffin of large dimensions weighing about 3 tons., stone lid, lead-lined, hammered not soldered; skeleton with folded arms on breast, EW head E.
		Field of Mr Reynolds, iron merchant, being built on. Location unknown. Not mapped.	3	1853	Clarke 1853, 40.	Skulls, other finds
159		Kingsholm while digging a drain Location unknown. Not mapped.	7	1878	Bellows 1904, 30.	6 skeletons, plus one in lead coffin with lid: latter folded over not soldered
305	6	Edwy Parade	1	1880	Fullbrook-Leggatt 1968, 64	inhumation: No coffin but stones around burial. EW. Coin of Constantine.
[CH1]	cit Hurst 1975, p.283	House of George Roberts market gardener 80 Kingsholm Rd.	1	1890	*Gloucestershire Chronicle* 8 March 1890	Skeleton of a man of great stature. It was yards from the stone coffin found in 1815 (see HER 152).
141	28	Seabrooke Rd/ Lansdown Rd	1	1908	A.462 Fullbrook-Leggatt 1968, 67.	skeleton left *in situ*

Gloucester HER number	Number in Hurst 1975, 280–283 and Garrod and Heighway 1984, 60ff	Address	No of inh	Date of find	Museum number; source especially earliest	Attributes
93	22	Estcourt Rd	1	1933	A.297; *Citizen* 15 Nov 1933	inhumation in lead-lined timber coffin
271	5	143 Deans Way	2	1933	21/33 A2660-5. *PCNFC* 25 (1934), 202–3	Iron nails suggested coffins. Two skeletons, part of a bronze bowl, pottery including a beaker of early 4th century.
101		Estcourt Rd	2	1940	not published	2 skulls, pottery
64	25	77 Denmark Rd	some	1940 [*c*]	verbal record only	inhumations found during construction of WW2 air raid shelter. also pot and coins.
83	17	74a Estcourt Rd	2	1940	A.192–3	inhumations
84	18	78 Estcourt Rd	2	1940	A.194–5	inhumations
85	19	80 Estcourt Rd	1	1940		inhumation
86	20	84 Estcourt Rd	3	1940	A.196	inhumations
103		Estcourt Rd	some	1940	not published	inhumations
428	11	Path from Sandhurst Road to Kingsholm Close	2	1951	Inf Mrs Lambert – in service trench	inhumations
326	8	Kingsholm Sq, E and W sides	11	1951	Rennie 1953, 154.	at least 11 inhumations All EW heads E . Dug through layers with 2nd century pot.
422		Sandhurst Lane	1	1955	not published	inh
108	13	64–6 Kingsholm Rd	2	1964	26/69; Abbott 1967.	B1 NS head N; B2 no inf
149	29	Vine Terrace	1	1965	*TBGAS* 86 (1967) 198	orientation not recorded
109	14	Bijou Court Kingsholm Rd	2	1969	106/69	inhumation, RB pot, coins.
318	9	Sandhurst Lane or Road, Kingsholm Court maisonettes	some	1969	inf Miss Whitmore	inhumations .
317	10	Kingsholm Close	8	1972	44/72: Hurst 1985	inhumations all N/S, or similar. Head sometimes N, sometimes S except B1. Some coffins
418	12	Sandhurst Lane/St Oswalds Road	1	1972	WB	inhumation
143	30	15 Sebert St	1	1973	*Glevensis* **7** (1973), 9.	Head to W; Grave lined with oolite slabs. Male, 60s.
323	7	1a Kingsholm Sq	1	1973	WB	skull fragment
493	32	9–11 St Oswalds Rd	1	1974	57/74: Garrod and Heighway 1984, 61–2	?mausoleum, building materials, human bone
650	36	76 Kingsholm Rd	18	1977	4/78: Garrod and Heighway 1984, 65	Late Roman burials orientated EW heads W.

Gloucester HER number	Number in Hurst 1975, 280–283 and Garrod and Heighway 1984, 60ff	Address	No of inh	Date of find	Museum number; source especially earliest	Attributes
672	37	74 Kingsholm Rd	1	1978	12/78: Garrod and Heighway 1984, 65	N/S (head to ???)
700	39	46–8 Denmark Rd	1	1979	40/79: Garrod and Heighway 1984, 65	EW Head W.
744	40	13 St Oswalds Rd	2	1981	3/81: *TBGAS* **100**, 263	Oolite stone coffin aligned N/S
753	41	35 Kingsholm Rd	23	1981	20/81: *Glevensis* **17** (1983), 26–7	supine, EW heads W . Wooden coffins (nails).
784	42	'Coppice Corner' also known as Gambier Parry Gardens	300+	1983	9/83: Garrod and Heighway 1984, 68; Garrod 1984; Jenkins 1983; *Britannia* 15 (1984) 315; *Britannia* 16 (1985) 300, 302; Hurst 1985, 113–4; 118; Hurst 1999, 119.	Aligned on Roman ditch; mostly with coffins: parallel or at right angles to Ermin Street. Few grave-goods. 7 cremations.
787		82 Kingsholm Rd	9	1983	12/83.	All EW, heads W. 3 stone coffin supports, coffin nails.
791		24 Kingsholm Sq	4	1983	23/83: *Glevensis* **28**, 58–9	NS head S; one EW head to W.
833		24 Kingsholm Sq	1	1986	9/86	Burial NE/SW, Head NE. coffin nails
848		76 Kingsholm Rd	58	1987	20/87: Atkin 1987; Atkin 1988.	late 3rd to 4th century burials. EW heads to W.
860		35 Kingsholm Rd	2	1987	51/87: *TBGAS* **106**, 216.	Two adult females orientation not recorded
894		23 Kingsholm Sq	7	1989	11/89: *Glevensis* **24**, 19–20	supine, hands on pelvis, 'aligned on defences' – some NS some EW.
1842		127–9 Denmark Rd	5	1989	25/89: *TBGAS* **109**, 231	2 inhumations NS 2 cremations 3 burial slots
1843		Denmark Rd junction	1	1989	25/89: *Glevensis* **25**, 25	inhumation
1844		Kingsholm Rd/ Sandhurst Rd	3	1989	25/89: *Glevensis* **25**, 25	1 inhumation, 2 burial slots. EW. Iron coffin nails.
976		23 and 25 Kingsholm Rd	1	1993	34/93: *Glevensis* **28**, 63.	Supine, EW, head W, 2m deep
1014		21 Kingsholm Rd	1	1995	73/95: *Glevensis* **29**, 21	EW feet W.
1015		Deans Way	1	1995	76/95 *Glevensis* **29**, 22	not recorded

Gloucester HER number	Number in Hurst 1975, 280–283 and Garrod and Heighway 1984, 60ff	Address	No of inh	Date of find	Museum number; source especially earliest	Attributes
1023		102 Deans Way	1	1996	2/96 vi, *Glevensis* **29**, 23	EW
1054		19 Kingsholm Rd	1	1997	53/97: *Glevensis* **31**, 70; *TBGAS* **116**, 202.	EW
1457		86 Kingsholm Rd	some	2000	2000/42; *Glevensis* **34**, 8	not recorded
1634		46–50 Denmark Rd	1	2004	*Glevensis* **40**, 54	EW

Trans. Bristol & Gloucestershire Archaeological Society **130** (2012), 89–98

Results of oxygen, strontium, carbon and nitrogen isotope analysis for the 'Kingsholm Goth'

by CAROLYN CHENERY and JANE EVANS

INTRODUCTION

This report presents the results of oxygen, strontium, carbon and nitrogen isotope analysis on individual 44/72 Burial 1 interred in the late Roman cemetery at Kingsholm, Gloucester, Gloucestershire. The burial is of a male aged around 40 years who had been placed in the floor of a mausoleum. The style of distinctive military items found in the grave was unusual and the closest parallels are with 4th–5th century items from SE Europe and S Russia. The skeleton is also unusual as the skull was particularly large. Given the surmised date of the burial and the grave findings this man was deduced to be a foreigner.

The purpose of this study was to determine if this individual was local to Gloucester, and if not to suggest potential place of origin based on oxygen and strontium isotope analysis of dental enamel. Additionally carbon and nitrogen analysis were carried out to provide information on this individual's diet and in the case of carbon as an aid to determining his place of origin.

Isotope Background

Strontium, oxygen, and carbon and nitrogen form three independent isotopic systems, reflecting local geology, climate and diet respectively. Oxygen and strontium isotopes are fixed in enamel biogenic phosphate at the time of tooth formation (Hillson 1996; Price *et al.* 2002; Hoppe *et al.* 2003. As strontium and oxygen isotopes behave independently of one another, they allow two parameters for investigating an individual's place of origin and migration patterns (Evans *et al*,. 2006a). Carbon and nitrogen isotopes are major constituents of collagen. In bone, collagen turns over at varying rates, depending on the type of bone and the age of the individual, whereas dentine is fixed at the time of formation (Sealy *et al.* 1995). When isotopes from the diet are incorporated into bodily tissue, a change typically occurs in the ratio of one isotope to another, commonly referred to as fractionation.

Oxygen isotopes

Oxygen isotopes ($\delta^{18}O$) are derived primarily from ingested fluids and indirectly reflect the isotopic value of available meteoric/ground/drinking water (Levinson *et al.* 1987; Daux *et al.* 2008). Drinking water is ultimately derived from meteoric water and the oxygen isotope value varies according to geographical and climatic factors and in particular temperature, altitude, and distance to the coast (Dansgaard 1964; Longinelli 1984; Kohn 1996; White *et al.* 1998; Daux *et al.* 2008). The isotopic value of ground waters varies systematically across the UK from higher on the west coasts to lower in the east (Darling *et al.* 2003b). A similar pattern with more extreme

values exists for western Europe (Lecolle 1985, Longinelli and Selmo 2003) and the Eastern Mediterranean follows a similar trend (Lykoudis and Argiriou 2007) (Fig. 1).

Oxygen (and other light stable isotopes D/H, C, N) is subject to several stage of metabolic fractionation, from drinking water to body fluids and again from body fluids to phosphates. This fractionation is fairly well understood and predictable, thus allowing the calculation of drinking water values to assist in determining an individuals place of origin (Longinelli 1984; Levinson *et al.* 1987)

Strontium isotopes

Strontium isotopes ($^{87}Sr/^{86}Sr$) are derived from both solid and liquid food and directly relate to the geology of the area where the food was produced (Montgomery 2000; Bentley 2006 and Evans *et al.* 2006a). Strontium isotopes, unlike oxygen, are not fractionated by metabolic functions.

Carbon and nitrogen isotopes

Isotope analysis of carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) in collagen provide evidence for sources of dietary intake - plant carbohydrates (fruits, vegetables and grains) and animal protein (meat, fish and milk products) respectively (Sealy 2001). Nitrogen isotopes primarily provide information about position in the food chain, as each step up the food chain (trophic level) entails a fractionation of 3–5‰ from diet to consumer (Hedges and Reynard 2007). Thus, in general, the higher the nitrogen isotope values the greater consumption of animal protein. Carbon isotopes also fractionate by about 1‰ from diet to consumer, they also provide different types of information on diet depending on the local climate. Due to different photosynthetic pathways different plant types can be distinguished by their isotope values. C_4 plants (usually tropical grasses such as maize, millet, or sugarcane) have higher carbon isotope values than and C_3 plants (almost all other grains, fruits and vegetables consumed in temperate climates).

Materials and Methods

For the purpose of identifying childhood place of origin and evidence of migration oxygen and strontium isotopes were analysed in two teeth were selected to represent early childhood and adolescences:

Upper left second pre-molar (enamel formation between 3 and 6 years)
Upper left third molar (enamel formation between 9 and 13 years)

In order to investigate if this individual's diet changed during his lifetime (i.e. in response to moving from his place of childhood residence to Gloucester) three collagen samples were analysed to compare his food consumption during middle childhood (2nd premolar root dentine, formed ~ 7 to 12 years of age), adolescence (3rd molar dentine formed ~12 to 18 years) and the last decade of his life (clavicle, the only available bone other than the cranium, see Sealy *et al.* 1995; Hilson 1986).

Isotope Analysis

Tooth Sample Preparation

Each tooth was cut in half using a flexible diamond edged rotary dental saw. The half selected for analysis was cleaned ultrasonically for five minutes in high purity water and rinsed twice to remove

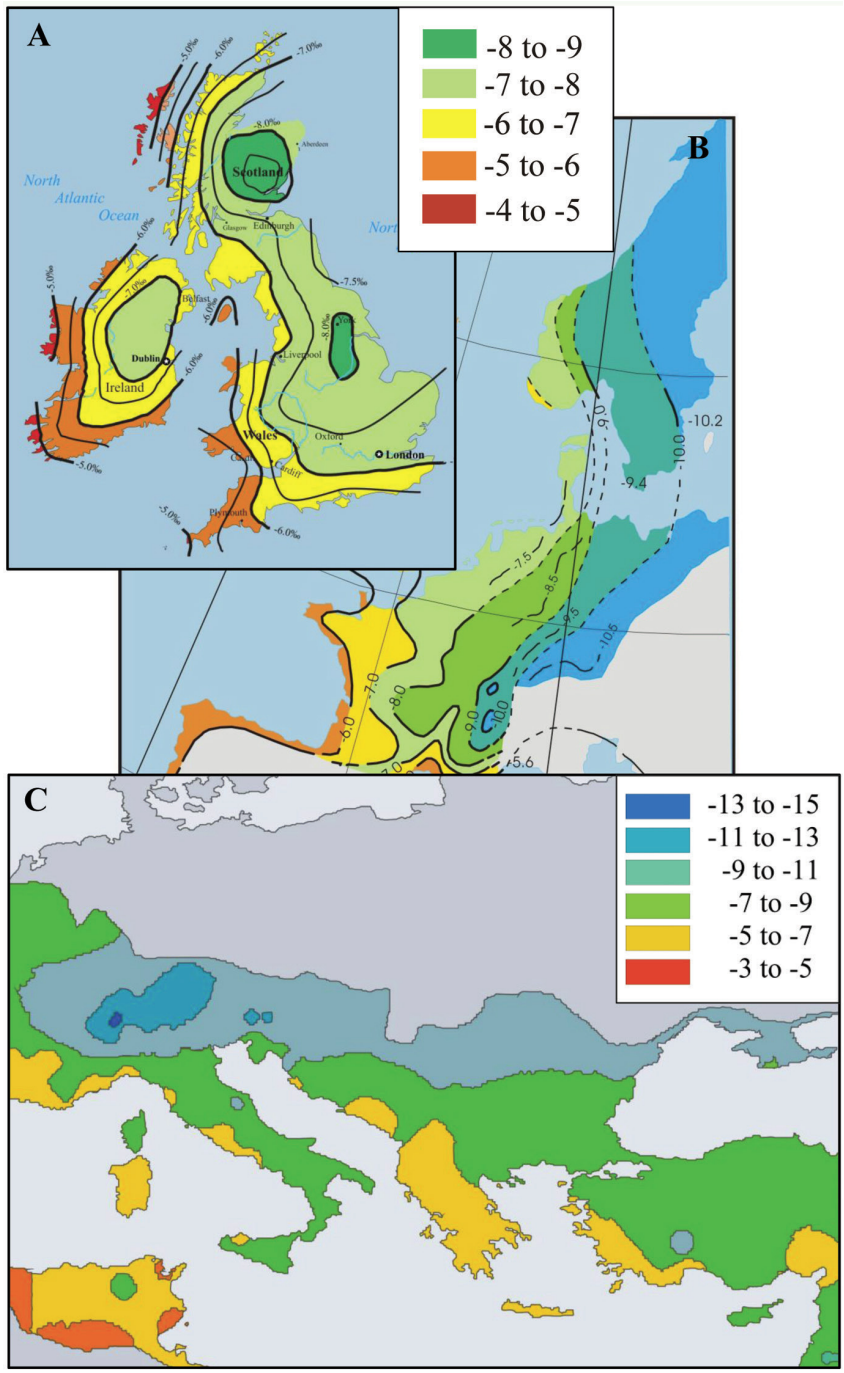


Fig. 1. UK and European oxygen isotope maps. A) after Darling *et al.* 2003, B) after Lecolle, P., 1985 and C) after Evans *et al* 2012 (extent of Roman Empire)

loosely adhered material. A tungsten carbide dental burr was used to abrade off the enamel surface to a depth of > 100 microns. Secondary dentine was removed and discarded and the enamel and primary dentine were separated. The dentine was reserved for carbon and nitrogen analyses and the enamel was prepared for oxygen and strontium analysis as described below.

Strontium isotope analysis

In a clean laboratory, the enamel samples were washed in acetone and cleaned twice, ultrasonically, in high purity water to remove dust and impurities. They were dried and weighed into pre-cleaned Teflon beakers. Each sample was mixed with ^{84}Sr tracer solution and then dissolved in Teflon distilled 8M HNO_3. The sample was then converted to chloride and taken up in 2.5M HCl. Strontium was collected using conventional, Dowex® resin ion exchange methods.

The Sr isotope composition and concentrations were determined by Thermal Ionisation Mass spectroscopy (TIMS) using a ThermoFinnigan Triton multi-collector mass spectrometer. Samples were run at *c* 3V using single Re filaments loaded using TaF following the method of Birck (1986). The international standard for $^{87}Sr/^{86}Sr$, NBS987, gave a value of 0.710226±0.000006 (1σ, n=12). All strontium ratios have been corrected to a value for the standard of 0.710250. Strontium procedural blanks provided a negligible contribution.

Oxygen isotope analysis

Biogenic phosphate was converted to silver phosphate (Ag_3PO_4) using the method of O'Neil (1994) and is briefly summarised here. The core enamel samples were crushed to a fine powder and cleaned in hydrogen peroxide for 24 hours to remove organic material. The peroxide was evaporated to dryness and the sample dissolved in 2M HNO_3. The sample solutions were transferred to clean polypropylene test tubes and each sample was treated with 2M KOH followed by 2M HF to remove Ca from the solution by precipitation. The following day, the samples were centrifuged and the solution was added to beakers containing silver amine solution and silver phosphate precipitated, filtered, rinsed and dried. Prior to analysis ~0.36mg aliquots of Ag_3PO_4 were weighed into silver capsules.

Analytical measurement was by Continuous Flow Isotope Ratio Mass Spectrometry (CFIRMS) using the method of Venneman *et al.* (2002). The instrumentation is comprised of a TC/EA (thermo chemical elemental analyser) coupled to a Delta Plus XL isotope ratio mass spectrometer via a ConFlo III interface, all by Thermo Finnigan.

All reported isotope ratios are expressed using the delta (δ) notation in parts per thousand (permil: ‰) relative to a standard:

$$\delta(‰) = ((R_{sample}/R_{standard}) - 1) \times 1000$$

The reference material NBS120C, calibrated against certified reference material NBS127 (assuming $\delta^{18}O$ of NBS127 = +20.3‰ versus SMOW, has an expected value of 21.70‰ (Chenery *et al.*, 2010). Each sample was analysed in triplicate. The mean internal mass spectrometry reproducibility for this sets of analyses is ± 0.10‰ (1σ, n=3) and for the batch control (external reproducibility of the full chemical procedure) was 0.10‰ (1σ, n=3). Drinking water values are calculated using Levinson's equation (Levinson *et al.* 1987),

$$\delta^{18}O_{\text{Drinking Water}} = (\delta^{18}O_{\text{Phosphate Oxygen}} - 19.4)/0.46,$$

after applying a method bias of –1.4‰ to the measured $\delta^{18}O_p$ value (see Appendix to Chenery *et al.* 2010).

Bone sampling and C and N analysis of collagen

Two sections of the clavicle were sampled for analysis. The samples were prepared following a modified Longin method (Brown 1988), described briefly below. Approximately 0.5–1.0 g of bone was cleaned and immersed in 8 ml of cold 0.5 M HCl to demineralise. The remaining solid collagen was rinsed and solubilised in a solution of pH3 HCl at 70ºC in a hot block for 48 hours. The solutions were then filtered using an 8µm Ezze filter to remove solids before freeze drying. Three 0.6mg aliquots from each collagen sample were weighed into small tin capsules for analysis. Analysis of carbon and nitrogen isotopes was by Continuous Flow Isotope Ratio Mass Spectrometry (CFIRMS). The instrumentation is comprised of an Elemental analyser (Flash/EA) coupled to a ThermoFinnigan Delta Plus XL isotope ratio mass spectrometer via a ConFlo III interface.

All reported isotope ratios are expressed using the delta (δ) notation in parts per thousand (permil: ‰) relative to a standard:

$$\delta(‰) = ((R_{sample}/R_{standard}) - 1) \times 1000$$

Collagen carbon and nitrogen isotopes ratios ($\delta^{13}C$ and $\delta^{15}N$) are reported in per mil (‰) relative to Vienna Pee Dee Belemnite (vPDB) and ambient inhalable reservoir (AIR) standards respectively. $\delta^{13}C$ and $\delta^{15}N$ ratios were calibrated using an in-house reference material M1360p (powdered gelatine from British Drug Houses) with expected delta values of –20.32‰ (calibrated against CH7, IAEA) and +8.12‰ (calibrated against N-1 and N-2, IAEA) for C and N respectively. The 1σ reproducibility for mass spectrometry controls in this batch of analysis were $\delta^{15}N$ = ± 0.06‰ and $\delta^{13}C$ = ± 0.03‰ (1σ, n=11) and for the batch control (external reproducibility of the full chemical procedure) was $\delta^{15}N$ = ± 0.22‰ and $\delta^{13}C$ = ± 0.11‰ (1σ, n=3).

Results and Discussion

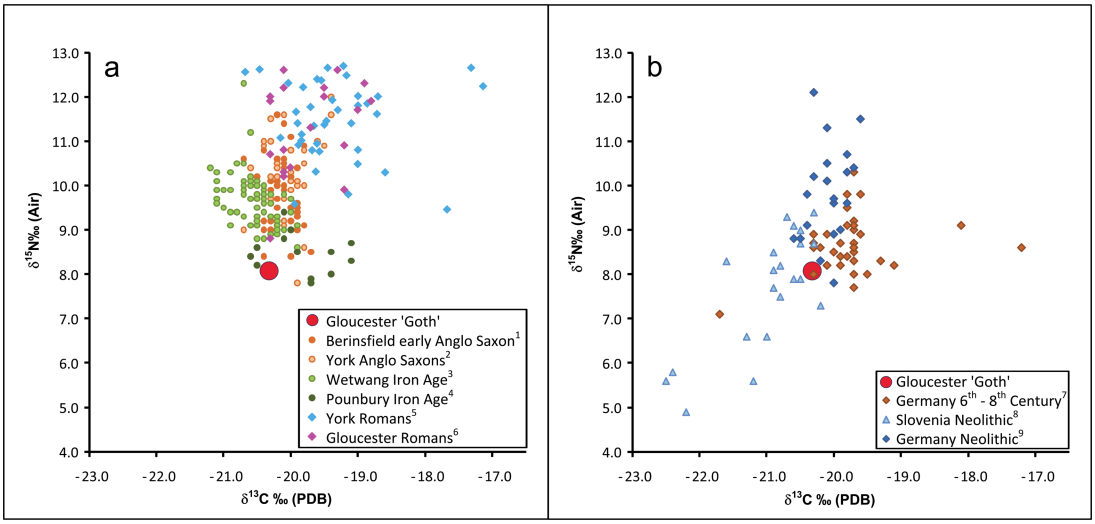
The isotope values for this individual are presented in Table 1 and Figures 2 and 3 (overleaf).

Carbon and Nitrogen isotopes – identifying diet

The carbon and nitrogen isotope values for dentine collagen (both early and late formed teeth) and bone collagen (two samples of the same bone) have very similar values giving a mean $\delta^{15}N$ of 8.1 ± 0.2‰ and $\delta^{13}C$ of –20.3 ± 0.1‰ (1σ, n=12), which are within the expected experimental error. Such tightly constrained values indicate that this individual did not experience any significant change in diet from early childhood through adolescence to adulthood. As can be seen in Fig 2a his mean carbon isotope value falls close to the mean $\delta^{13}C$ for British Iron Age to Anglo Saxon populations (–20.0 ± 0.6‰, 1σ, n=237) and is typical of a terrestrial-temperate climate diet (refs i.e. Muldner and Richards 2007 & others used for C&N plots). In contrast his nitrogen isotope value is low compared to British populations (10.2 ± 1.2‰, 1σ, n=237), see Figure 2a. Low nitrogen values, such as his, suggest he consumed significantly less animal protein than British and Romano British populations between the Iron Age and Anglo Saxon times. Populations with similar low nitrogen values have been identified from Neolithic and 6th–8th century German (Durrwachter *et al.* 2006 and Schutkowski *et al.* 1999) and Neolithic Slovenian (Ogrinca and Budja *et al.* 2005) populations, as shown in Fig 2b. The mean $\delta^{15}N$ for these European populations is 8.1 ± 1.3‰, 1σ, n=32.

Table 1. Results of oxygen, strontium, carbon and nitrogen isotopes for the Gloucester 'Goth' (44/72 Burial 1)

Sample	**$\delta^{15}N$‰ (Air)**	**$\delta^{13}C$‰ (PDB)**	**% C**	**% N**	**C/N**	**$^{87}Sr/^{86}Sr$**	**Sr (ppm)**	**$\delta^{18}O$‰ (SMOW)**	**1 s**	**$\delta^{18}O$‰ drinking water (SMOW)**	**1 s**
Pre molar 2	8.1	–20.4	42.6	14.9	3.3	0.71090	70.3	+16.0	0.08	–10.5	0.17
Adult molar 3	8.1	–20.3	45.7	16.0	3.3	0.71101	54.0	+15.2	0.12	–12.26	0.25
Bone A	8.0	–20.3	43.7	15.1	3.4						
Bone B	8.2	–20.4	41.4	14.5	3.3						
Mean Values											
Bone	8.1	–20.3	42.9	14.9	3.4						
Dentine	8.1	–20.3	44.2	15.5	3.3						
Dentine & Bone	8.1	–20.3	43.6	15.2	3.4						



Figs. 2. a and b. $\delta^{13}C$ and $\delta^{15}N$ (mean tooth and bone collagen) for the Gloucester 'Goth' plotted against data from: a) British Iron Age to Anglo Saxon populations and b) selected Neolithic to 6th–8th century European populations. Data sources: 1) Private and O'Connell 2002, 2) Müldner and Richards 2007; 3) Jay and Richards 2006; 4) Richards *et al*. 1998; 5) Leach *et al*. 2009; 6); Evans *et al*. 2006b; 7) Schutkowski *et al*. 1999, 8) Orinca and Budja 2009; 9) Dürrwächter *et al*. 2006

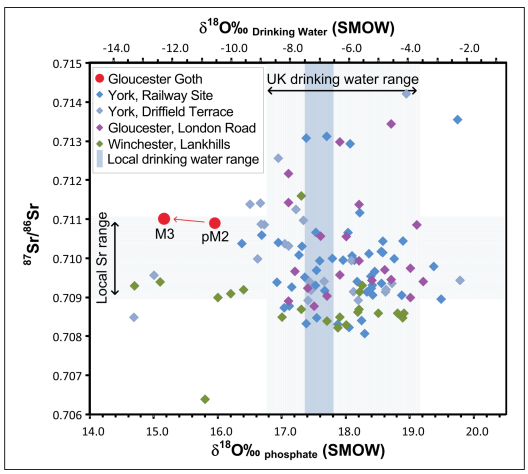


Fig. 3. Oxygen and strontium isotopes for 'the Goth' compared to three UK Romano-British populations. Data sources: Chenery *et al*. 2010, Leach *et al* 2009, Evans *et al*. 2006.

Strontium and oxygen isotopes – identifying place of origin.

To determine if Gloucester was this individual's place of origin, we can compare his oxygen and strontium isotope values to ground/drinking water $\delta^{18}O$ and bio-available $^{87}Sr/^{86}Sr$ from the Gloucester area (see Chenery *et al. 2010)*.

Oxygen

The range in oxygen isotope composition for ground/surface water in the UK is from –8.5‰ to –4.5‰ and the expected range for the Gloucester area is between –7.5‰ and –6.5‰, (Darling *et al.*, 2003). The results of the oxygen isotope analysis for the early and late formed teeth were +16.0‰ and +15.2‰ and these equate drinking water values of –10.5‰ and –12.3‰ for pM2 and M3 respectively. From our data (Fig 3), we see that the individual's oxygen isotope values place well him outside the expected UK range (Evans *et al.*, 2012). Calculated drinking water values as low as these indicate that his childhood place of origin was in a cold location and that he moved to a colder location in middle childhood before travelling to Gloucester. By comparing his calculated drinking water values to a maps of $\delta^{18}O$ values for Europe (Figure 1) we see that areas with drinking water values similar to those of the 'Goth' are most likely to be found in northern Europe (Scandinavia, Poland, Belarus, Russia) and in central and southern Europe (Alpine regions of Southern Germany, Switzerland, Austria, Slovakia, northern most Hungary, Northern Romania).

Strontium

The expected $^{87}Sr/^{86}Sr$ range for bio-available strontium measured in plants for the area within 10km of Gloucester is between 0.7090 and 0.7110 with a mean $^{87}Sr/^{86}Sr$ of 0.7095.

The strontium isotope values measured in the enamel of early and late formed teeth are 0.71090 (pM2) and 0.71101 (M3) respectively. These values lie at the upper range for plants growing on Mesozoic mudstones in Gloucester area (Chenery *et al.* 2010) and are more similar to those expected for the Devonian sedimentary terrains such as those in South West England (see Evans *et al.* 2010). Geological terrains with comparable strontium isotope values can be found in areas elsewhere in Europe and the Middle East. European mineral waters within the range of the 'Goths' values can be found in southern Germany, south-eastern Austria, Slovakia, Hungary and Romania (see Voerkelius 2009).

In an earlier isotope study of late Roman burials at Lankhills, Winchester, southern England (Evans *et al.* 2006b), a group of individuals with 'exotic' burial rites that indicated origins in the Danube area (Clark 1979) was compared with a group interpreted as 'local' Romano-British. The 'exotic' group were suggested to be Samartian in origin from Roman Pannonia, an area east of the Danube between Vienna and Belgrade. The isotope results indicated that six of the individuals (four 'exotic' and two 'local' controls), with an expected drinking water oxygen isotope range of –13.2 to –9.61, came from various cold environments outside the British range (Evans *et al.*, 2006b). This data suggests their origins were scattered across central and southern Europe. While the 'Goth' has slightly higher strontium isotope values than the Lankhills individuals his oxygen isotope values fall within this range.

Conclusions

The oxygen isotope composition of the tooth enamel shows that this individual did not spend his childhood in the UK but came from a colder environment elsewhere in Europe.

The strontium isotope values are not very diagnostic but rule out areas of old rock terrains such as Scandinavia and suggest he was raised in an areas Europe dominated by Mesozoic or younger rocks.

The $\delta^{13}C$ and $\delta^{15}N$ is unusual for UK populations as the $\delta^{15}N$ nitrogen is low. The values have more in common with Neolithic populations from area of central Europe such as Germany and Slovenia.

Overall the data show that he is not a native of Britain but was probably raised in central/eastern Europe.

References

Darling W.C., Bath, A.H., Talbot, J.C., 2003. 'The O & H stable isotopic composition of fresh waters in the British Isles: 2, Surface waters and groundwater' *Hydrology and Earth System Sciences* 7 (2), 183–95.

Daux V, Lécuyer C., Héran M., Amiot R., Simon L., Fourel F., Martineau F., Lynnerup N., Reychler H., Escarguel, G., 2008. 'Oxygen isotope fractionation between human phosphate and water revisited' *Journal of Human Evolution* 55, 1138–47.

Dürrwächter, C., Craig, O.E., Collins, M.J., Burger, J., Alt, K.W., 2006. 'Beyond the grave: variability in Neolithic diets in Southern Germany?' *Journal of Archaeological Science* 33, 39–48.

Chenery, C., Muldner, G., Evans, J., Eckardt, H., Lewis, M., 2010. 'Strontium and stable isotope evidence for diet and mobility in Roman Gloucester UK' *Journal of Archaeological Science* 37, 150–63.

Clarke, G., 1979. *Pre-Roman and Roman Winchester. Part II: the Roman cemetery at Lankhills*, Winchester Studies 3, Oxford.

Evans J, Chenery C, Fitzpatrick A., 2006a. 'Bronze Age childhood migration of individuals near Stonehenge, revealed by strontium and oxygen isotopes tooth enamel analysis' *Archaeometry* 48, 309–21.

Evans J, Stoodley N, Chenery C., 2006b. 'A strontium and oxygen isotope assessment of a possible fourth century immigrant population in a Hampshire cemetery, Southern England' *Journal of Archaeological Science* 333, 265–72.

Evans, J.A., Montgomery, J., Wildman, G. and Boulton, N., 2010. 'Spatial variations in biosphere Sr-87/Sr-86 in Britain' *Journal of the Geological Society*, 167(1): 1–4.

Evans, J.A., Chenery, C.A. and Montgomery, J., 2012. 'A summary of strontium and oxygen isotope variation in human tooth enamel excavated from Britain over the last 6000 years' *Journal of Analytical Atomic Spectrometry*, 27, 754–764.

Graig O.E., Biazzo M., O'Connell T.C., Garnsey, P., Martinez-Labarga, C., Lelli, R., Salvadeli, L., Tartaglia, G., Nava, A., Reno, L., Fiammenghi, A., Rickards, O., Bondioli, L., 2009. 'Stable Isotopic Evidence for Diet at the Imperial Roman Coastal Site of Velia (1st and 2nd Centuries AD) in Southern Italy' *American Journal of Physical Anthropology* 139 (4), 578–83.

Hillson, S., 1996. *Dental Anthropology*, Cambridge.

Hoppe, K.A., Koch, P.L., Furutani, T.T., 2003. 'Assessing the preservation of biogenic strontium in fossil bones and tooth enamel' *International Journal of Osteoarchaeology* 13, 20–8.

Jay, M. and Richards, M.P., 2006. 'Diet in the Iron Age cemetery population at Wetwang Slack, East Yorkshire, UK: carbon and nitrogen stable isotope evidence' *Journal of Archaeological Science* 33, 653–62.

Leach, S., Lewis, M., Chenery, C., Müldner, G., Eckhardt, M., 2009. 'Migration and Diversity in Roman Britain: A multidisciplinary approach to the identification of immigrants in Roman York, England' *American Journal of Physical Anthropology* 140, 546–61.

Lecolle, P., 1985. 'The oxygen isotope composition of landsnail shells as a climatic indicator – applications to hydrogeology and paleoclimatology' *Chemical Geology* 58 (1–2): 157–81.

Levinson, A.A., Luz, B., Kolodny, Y., 1987. 'Variations in oxygen isotope compositions of human teeth and urinary stones' *Applied Geochemistry* 2, 367–71.

Longinelli, A., 1984. 'Oxygen isotopes in mammal bone phosphate: a new tool for palaeohydrological and palaeoclimatological research?' *Geochimica et Cosmochimica Acta* 48, 385–90.

Lykoudis, S.P. and Argiriou, A.A., 2007. 'Gridded data set of the stable isotopic composition of precipitation over the eastern and central Mediterranean' *Journal of Geophysical Research* 112, Issue D18, Cite ID D18107.

Müldner, G. and Richards, M.P., 2007. 'Stable Isotope Evidence for 1500 Years of Human Diet at the City of York, UK' *American Journal of Physical Anthropology* 133, 682–97.

Ogrinca, N., Budja, M., 2005. 'Paleodietary reconstruction of a Neolithic population in Slovenia: A stable isotope approach' *Chemical Geology* 218, 103–16.

Price, T.D., Burton J.H., Bentley R.A., 2002. 'The characterization of biologically available strontium isotope ratios for the study of prehistoric migration' *Archaeometry* 44, 117–35.

Privat, K.L. and O'Connell, T.C., 2002. 'Stable Isotope Analysis of Human and Faunal Remains from the Anglo-Saxon Cemetery at Berinsfield, Oxfordshire: Dietary and Social Implications' *Journal of Archaeological Science* 29, 779–90.

Richards, M.P., Hedges, E.M., Mollson, T.I., and Vogal, J.C., 1998. 'Stable Isotope Analysis Reveals Variations in Human Diet at the Poundbury Camp Cemetery Site' *Journal of Archaeological Science* 25, 1247–52.

Schutkowski, H., Herrmann, B., Wiedemann, F., Bocherens, H., Grupe, G., 1999. 'Diet, Status and Decomposition at Weingarten: Trace Element and Isotope Analyses on Early Mediaeval Skeletal Material' *Journal of Archaeological Science* 26, 675–85.

Sealy, J., Armstrong, R., Schrire, C., 1995. 'Beyond lifetime averages: tracing life histories through isotopic analysis of different calcified tissues from archaeological human skeletons' *Antiquity* 69, 290–300.

Voerkelius, S. *et al*., 2010. 'Strontium isotopic signatures of natural mineral waters, the reference to a simple geological map and its potential for authentication of food.' *Food Chemistry* 118(4): 933–40.

Trans. Bristol & Gloucestershire Archaeological Society **130** (2012), 99–105

Burial B1 known as 'The Kingsholm Goth': A Report on the Human Skeletal Remains

By TERESA GILMORE

INTRODUCTION

The remains of the individual B1 from the late Roman cemetery at Kingsholm (see above p. 66, 78 and references) were originally examined in 1972 (Oyler 1972): they were re-examined by the writer following recent isotopic tracing work on the teeth. The analysis was carried out in two stages: the first for Gloucester City Museum in 2010, and then further analysis in 2011 after more of the skeleton was located in the archaeological store. The 2011 work was assisted by a research grant from the Irene Bridgeman fund of the Bristol and Gloucestershire Archaeological Society.

Methodology

Standard osteological analysis was done following recommendations in Brickley and McKinley (2004) and in the standards produced by Buikstra and Ubelaker (1994). The skeletal elements were laid out in anatomical position and examined individually.

Preservation and Completeness

Approximately 75% of the skeleton was present for analysis by the author. The surviving elements consisted of the skull, mandible, pelvis, femora, tibae, fibula, humeri, ulnae, hand, foot, 19 vertebrae (C1-6, T2-5, T10-12, L1-5, S1). No duplication of elements was observed; therefore the minimum number of individuals (MNI) is one. Apart from the skull, the skeletal material had been subjected to a degree of fragmentation. With regards to preservation, using the grades suggested by McKinley (2004, 14), the skeletal material is Grade 1. A minor degree of surface exfoliation has occurred on some elements, but the cortex is still relatively intact. Anatomical features are easily identified.

Post depositional damage has resulted in some areas of porosity being present along raised edges and some joint surfaces. It is possible that the porosity is a result of pathological changes.

The left clavicle along with the left mandibular 2nd premolar and 3rd molar had been removed prior to reanalysis to enable isotopic tracing to be undertaken on the individual.

Age

Skeletal age was assessed accordingly to skeletal elements present. Those elements consisted of epiphyseal fusion, dental eruption, dental attrition, cranial sutures, sternal rib ends (Iscan and Loth 1984; Iscan *et al* 1985) and auricular surface (Lovejoy *et al* 1985) of the pelvis. Following the standards issued by Brickley and McKinley (2004) and Buikstra and Ubelaker (1994), the

following broad age categories will be used: Adolescent (12–20 years), Young Adult (20–35 years), Middle Adult (35–50) and Old Adult (50+).

The only late fusing epiphyseal region present for re-analysis was the annular epiphyses, which were fully fused onto the edges of the vertebral bodies for the lumbar and thoracic vertebrae present. The annular epiphyses start commencing union when the individual is around 17 to 19 years old, and is complete by age 25 years (Scheuer and Black 2004, 213)

The dentition is fully erupted, with M3 being present: this is consistent with an age greater than 21 years.

Assessment of age using dental attrition is subjective to diet, tooth morphology and activity. The anterior teeth have been lost post-mortem, so only the posterior teeth, i.e. premolars and molars can be assessed for dental attrition. The wear appears to be fairly consistent over both sides of the jaw, which would indicate that minimal activity related wear has happened to the teeth. Using the attrition charts in Brothwell (1981, 69), the age is consistent with a range of 25–35, as there is more wear on M1, compared to M2.

Assessment of the cranial sutures using the scoring method recommended by Meindl and Lovejoy (1985) and Buikstra and Ubelaker (1994), the vault suture ages scored a total of 7, which results in a mean age of 39.4 years with a standard deviation of 9.1 years (30.3–48.5 years). The lateral-anterior suture ages scored a total of 4, which results in a mean age of 41.1 years with a standard deviation of 10.0 years (31.1–51.1 years).

Age assessment using the sternal rib ends method (Iscan and Loth 1984; Iscan *et al*. 1985) could not be determined due to the absence of any sternal rib ends.

The right auricular (sacro-iliac joint) surface was present for assessment of age related changes. Using the descriptions detailed by Lovejoy *et al* (1985) and Buikstra and Ubelaker (1994), the age related changes would be consistent with Stage 5, which is consistent with an age range of 40 to 44 years.

When Dr Oyler assessed age in 1972, using the teeth, he suggested an age of 30 years. Using a variety of methods to increase accuracy in determination of age of death, I would suggest that this individual was aged between 35 and 45 years of age, fitting in the category Middle Adult (35–50 years).

Sex

Biological sex of the individual was assessed using the skull and part of the pelvis. Using both the skull and pelvis, an accuracy rate of 97% can be determined, with the use of either the skull or the pelvis, then the accuracy can decrease down to 90%. The pelvis is considered to be more accurate for the determination of sex, in comparison to the skull.

The sexual dimorphic traits present in the pelvis and skull of the individual are considered to be more masculine than feminine. The pelvis was highly fragmented. The sciatic notch (both R and L) was male, exhibiting an acute angle. The key sexual dimorphic traits of the skull included prominent supraorbital ridges, large mastoid processes, sloping forehead and prominent mental eminence, all are indicative of a male.

This individual is considered to be male.

Metrical Analysis

Metrical analysis of skeletal remains allows comparison between different sites and populations to be made.

Metric analysis was limited due to fragmentation. None of the long bones was intact.

The skull has survived in reasonable condition. It has been partially reconstructed; probably in 1972, with fragments mainly of the occipital and temporal bones being glued back in anatomical position. Such reconstruction introduces a degree of error and any measurements taken from the reconstructed skull may not be completely accurate.

Measurements taken in 1972 classified the skull as having a cephalic index of 80.02, bracecephalic (round headed), and a cranial capacity of 1520cc (megacephalic).

Stature

In 1972, when Dr Oyler assessed the individual, the long bones were present and in a suitable state to allow assessment of stature. I have recalculated stature using the formula calculated by Trotter (1970, 96) and the measurements obtained by Dr Oyler.

Stature is considered to be more accurate when calculated using the long bones of the legs compared to the long bones of the arms.

Table 1: Stature determination for B1 (Kingsholm Goth)

Element	Max length (cm)	Estimated Stature (cm)
Femur (R)	44.7	167.80 +/– 3.27
Humerus (R)	31.5	167.47 +/– 4.05
Average		167.67 cm

The average height estimation calculated is 167.67 cm or 5 ft 6 inches. This stature estimation is provisional: the 1972 excavation photographs appear to show that the long bones were not intact, so would very probably have required reconstruction prior to measurement.

The stature calculated for the Kingsholm Goth is shorter than that determined for four adult males from the London Road cemetery (Marquez-Grant and Loe 2008, 33) and two adult males from Parliament Street (Gilmore 2008, 101–102) (Table 2).

Table 2: Stature comparison between B1 (Kingsholm Goth) and selected individuals from London Road and Parliament Street, Gloucester

Individual	Element	Max Length (cm)	Estimated Stature (cm)
B1 (Kingsholm Goth)	*Femur (R)*	*44.7*	*167.80 +/– 3.27*
	Humerus (R)	*31.5*	*167.47 +/– 4.05*
1109 (London Road)	Humerus (L)	34.5	176 +/– 4.05
1153 (London Road)	Humerus (L)	32.4	170 +/– 4.05
1313 (London Road)	Radius (R)	25.4	175 +/– 4.32
1393 (London Road)	Femur (L)	40.1	156 +/– 3.27
B3 (Parliament Street)	–	–	177.9
B4 (Parliament Street)	–	–	159.4

However, as isotopic tracing has proved that individual B1 spent his childhood years in the Balkan area, these individuals are not suitable comparative material. This individual would be better compared to other individuals recovered from the Balkan area.

Non-metric Traits

Non-metric traits are the result of normal skeletal variation. They can be either genetic in origin or have developed due to environmental influences such as the individual's occupation.

One dental non-metric trait was noted: a tuberculum dentale on the upper left canine.

The cranial non-metric traits that were noted during analysis consist of a high nuchal line being partially present on the right side. A total of 10 extra-sutural ossicles were noted. One was noted as being present at Lambda. Three were noted being present on both on the right and left sides of the lambdoidal suture. An asterion ossicle was noted on the left side, and two were noted on the right side. A partial accessory infra-orbital foramen was noted on the right side. Supraorbital foramens were noted both on the left and right sides.

Three out of seven individuals at London Road has at least one lambdoidal ossicle on the left side; four out of six had at least one on the right side and one out of three individuals had an ossicle at asterion (Marquez-Grant and Loe 2008, 35). None had as many extra-sutural ossicles as our individual B1. As there is a probable genetic component to non-metric traits like extra-sutural ossicles, comparisons should be made with his native populations in the Balkans.

Musculoskeletal Stress Markers

Musculoskeletal stress markers (MSM), or otherwise known as enthsopathies, are areas of excessive bone formation at the sites of tendon and ligaments attachment to the bone. As ligaments stablise joints, and tendons link the bone to the muscle, these skeletal changes have been linked to activity related stress.

The right and left femora both have a pronounced linea aspera (attachment site of muscles *Vastus internus* and *vastus externus* (part of the quadriceps). A prominent ridge is present next to the malleolar groove on both left and right tibiae. This groove contains the *tendons of the tibialis posterior* and *flexor digitorum longus* muscles. Likewise extra osseous growth is present at the site of attachment of the *tendo Achilles* (Achilles' tendon) on both the right and left calcaneums.

These MSMs are suggestive of prolonged activity-related stress to the leg muscles, indicating an active lifestyle.

Dental Disease

Signs of dental disease are frequently encountered in skeletal remains.

17/32 teeth were present for analysis. Several teeth had been lost post mortem (all four incisors, 3 canines and 2 premolars).

Evidence of dental hypoplasia was present in 8/17 teeth. The affected teeth were mainly maxillary, with the right C, PM1, PM2, M1 and M2 being affected. The line of hypoplasia is consistent with a period of nutritional stress at age about 1.5–2 years of age.

Calculus was encountered on 9/17 teeth. The calculus deposits were slight, and generally affected the lingual surfaces of the teeth.

Dental caries was encountered in 1/17 teeth, the upper right second premolar. The lesion was small and was located below the crown on the distal surface, next to the first molar. Unfortunately the first molar has been lost post mortem so it cannot be determined if it had been affected by the carious lesion. There is an abscess external drain hole present superior to the roots of the first molar, the edges of the sinus are rounded. No signs of infection are present around the lesion.

The alveolar bone has been subject to a minor degree of post mortem taphonomical damage, so it is hard to determine whether any periodontal disease is present or not.

Congenital Conditions

Congenital conditions are those are present at birth. The majority have a hereditary nature. Examples of congenital conditions are dislocation of the hip, talipes equinovarus, spina bifida.

No evidence of congenital conditions was noted during examination of the skeleton.

Trauma

Bodily injuries or wounds can result in lesions of a traumatic nature on the skeleton. There are four main categories: fractures (partial or complete break in a bone); abnormal dislocation or displacement of a bone; disruption of the nerve/blood supply; and articular induced abnormal shape or contour (Ortner and Putschar 1981, 55). These traumatic events can occur in all bodily tissues. However, for the recognition of soft tissue injury, calcification or new bone formation will have had to occur within the soft tissue (Roberts and Manchester 1995, 66–67).

Individual B1 exhibits two lesions of a traumatic nature. These consist of a soft tissue injury to the left humerus and an avulsion injury to the right calcaneum. The humeral lesion consists of an exostosis, probably the result of an ossified haematoma, located on the lateral epicondyle of the right humerus, at the point of attachment of the *radial collateral ligament*.

Tendons and muscle attachments to the bones may occasionally ossify as a result of trauma, for example, where a haematoma has been generated in the proximity of the injured periosteum (Aufderheide and Rodriguez-Martin 1998, 26). The resulting mass of woven bone is known as *myositis ossificans traumatica*. It may occur without obvious skeletal injury and after only minor muscle trauma.

The right calcaneum exhibits an avulsion injury to the top of the cuboid articulation surface. Avulsion injuries occur when a fractured fragment becomes incompletely or completely detached. The aetiology of these injuries is not well known but it is thought to be caused by direct trauma or repetitive microtrauma (Waldron 2009, 153). The MSMs noted earlier in this report would suggest that individual B1 led an active lifestyle and put his leg muscles under repeated stress, so an avulsion injury to the foot is not unexpected.

Infectious Disease

Signs of infectious disease are commonly encountered in human skeletal remains. However due to the length of time it takes for the human skeletal system to respond to infection, only conditions of a chronic or long term nature can be identified. Examples of these are tuberculosis, leprosy and syphilis.

No signs of infectious disease were noted either by the author or by Dr Oyler in 1972.

Degenerative Disease

Evidence of degenerative disease or joint disease is frequently encountered when skeletal remains are analysed. The most common type is osteoarthritis of the spine.

Evidence for degenerative joint disease in the spine was noted in 19/19 vertebrae present.

Porosity of the superior and inferior bodies was noted on 33/34 surfaces present.

Osteophytic lipping was present on 22/34 superior and inferior bodies.

Each of the ten vertebrae assessed for degenerative joint disease, demonstrated a degree of porosity and osteophytic lipping. Schmorls' nodes were present on 6/19 vertebrae (T10-12, L3-5), both on the superior and inferior bodies.

T3 demonstrates a shallow fossa (approx 2.3 mm deep) on the left side of the spinous process (lamina), at the point where the trapezius muscle attaches. No signs of active infection (periostitis) are present. This fossa is probably the result of a spinal nerve lying close to the neural arch.

The presence of osteoarthritic changes in the vertebrae would suggest that this individual led an active life, with a degree of manual activity.

Metabolic Disease

Metabolic diseases are defined as those that result due to dietary deficiency in key nutritional elements, resulting in a lack of bone mass and ossification. Examples of metabolic diseases are rickets (lack of vitamin D) and scurvy (lack of vitamin C).

No evidence of metabolic disease was encountered during analysis of the skeleton.

Conclusions

The individual presented for analysis is a middle aged adult male, probably aged between 35 to 45 years of age at time of death. He was about 5 foot 6 inches tall (167 cm).

Between 1.5 and 2 years of age, he suffered a period of physiological stress as evidenced by defects in the enamel formation of his teeth. He suffered from a lack of dental hygiene as the majority of his teeth exhibited a minor degree of calculus (mineralised plaque) build up. One carious lesion was present in the upper right jaw, and there were signs of an abscess with an external drain next to it.

He suffered from a minor degree of spinal osteoarthritis, probably due to an active lifestyle. This is also evidenced by the pronounced musculoskeletal stress markers present in the femora, tibia and calcanea, and by a traumatic lesion in the right foot, due to prolonged stress. An ossified haematoma was present in his left arm, due to soft tissue injury. He had some degree of back trouble, as evidenced by the muscle pulling away a piece of bone from his third thoracic vertebra.

The activity-related muscular changes and traumatic lesions would be consistent with this individual being a member of the Roman army.

Acknowledgements

Many thanks to David Rice, Curator of Gloucester City Museum and Art Gallery for allowing me access to the skeletal material and equally providing me with plenty of time to write up the report.

Thanks are extended to Carolyn Heighway of Past Historic and the Bristol and Gloucestershire Archaeological Society for providing grant money to enable analysis of the majority of the post-cranial material in 2012.

Thanks to Sharon Clough, of the Archaeological Burials Company, for her expert opinion and diagnosis of the traumatic lesions noted in the humerus and calcaneum.

Bibliography

Aufderheide, A.C. and Rodriguez-Martin, C., 1998. *The Cambridge Encyclopedia of Human Palaeopathology* (Cambridge).

Brickley, M. and McKinley, J.I., 2004. *Guidelines to the Standards for Recording Human Remains.* IfA Paper No. 7. BABAO/IfA (Southampton/ Reading).

Brothwell, D.R., 1981. *Digging Up Bones 3rd Edition* (Ithaca, New York).

Brown, D., 1975. 'A Fifth Century Burial at Kingsholm', in Hurst 1975, 290–4.

Buikstra J.E and Ubelaker, D.H., 1994. *Standards for Data Collection from Human Skeletal Remains* Arkansas Archaeological Survey Report Number 44 (Fayetteville, Arkansas).

Gilmore, T., 2008. 'The Human Remains', in Holbrook and Bateman 2008, 100–103.

Holbrook, N. and Bateman, C., 2008. 'The South Gate Cemetery of Roman Gloucester: excavations at Parliament Street 2001', *Trans. BGAS*, 126, pp. 91–106.

Hurst, H., 1975. 'Excavations at Gloucester: Third Interim Report: Kingsholm 1966–75', *Archaeological Journal* 55, 267–94.

Hurst, H.R., 1985. *Kingsholm: Excavations at Kingsholm Close and other sites with a discussion of the archaeology of the area* (Cambridge).

Iscan, M.Y. and Loth, S.R., 1984. 'Determination of age from the sternal rib in white males: a test of the phase method' *Journal of Forensic Sciences* 31, 122–32.

Iscan, M.Y., Loth, S.R. and Scheuerman, E.H., 1985. 'Determination of age from the sternal rib end in white females: a test of the phase method'. *Journal of Forensic Sciences* 31, 990–9.

Lovejoy, C.O., Meindl, R.S., Pryzbeck, T.R. and Mensforth, R.P., 1985. 'Chronological metamorphosis of the auricular surface of the ilium: a new method for the determination of adult skeletal age at death' *American Journal of Physical Anthropology* 68, 15–28.

Marquez-Grant, N. and Loe, L., 2008. 'Unburnt Human Bone', in Simmonds, Marquez-Grant and Loe 2008, 29–72.

Meindl R. and Lovejoy, C., 1985. 'Ectocranial suture closure: a revised method for the determination of skeletal age at death based on the lateral-anterior sutures' *American Journal of Physical Anthropology* 68, 57–66.

McKinley, J.I., 2004. 'Compiling a skeletal inventory: disarticulated and co-mingled remains' in Brickley and McKinley (eds.) 2004.

Olyer, C.R., 1972. 'Kingsholm: The 'Saxon Palace' site. Human burials found at excavation' Unpublished archive report.

Ortner, D. and Putschar, W.J., 1981. *Identification of Pathological conditions in human skeletal remains* (Washington D.C.).

Roberts, C. and Manchester, K., 1995. *The Archaeology of Disease. 2nd Edition* (Stroud).

Scheuer, L. and Black, S., 2004. *The Juvenile Skeleton* (London).

Simmonds, A., Marquez-Grant, N., and Loe, L., 2008. *Life and Death in a Roman City. Excavation of a Roman Cemetery with a mass grave at 120–122 London Road, Gloucester*. Oxford Archaeology Monograph No. 6 (Oxford).

Stewart, T.D. (ed.), 1970. *Personal Identification in Mass Disasters* (Washington D.C.)

Trotter. M., 1970. 'Estimation of stature from intact long bones', in Stewart (ed.) 1970, 71–83.

Waldron, T., 2009. *Palaeopathology* Cambridge Manuals in Archaeology (Cambridge University Press, New York).

Trans. Bristol & Gloucestershire Archaeological Society **130** (2012), 107–113

Kingsholm, Gloucester, burial B1 revisited

by BARRY AGER

Summary

The aim of this note is to provide an update on the artefactual evidence from the exceptional adult male burial, B1, excavated at Kingsholm, Gloucester, in 1972 (Fig. 1) (Brown 1975; Böhme 1986; Hills and Hurst 1989; see also Heighway 2010, 44–6). The body had been buried in a nailed coffin wearing a silver belt-buckle, a presumptive pair of smaller silver shoe-buckles (only one of which survived) forming a set with two strap-ends, and an iron knife with a silver mount on the handle found on the outside of the right thigh. Silver belt-fittings are extremely rare in Roman Britain and have been found in only one other grave, at the Lankhills cemetery, Winchester, grave 1846, where they are gilded (Booth, Simmonds, Boyle, *et al.* 2010, 289–90, Fig. 3.248, 2–3). Arguments for acceptance of the suggestion by H.W. Böhme that the man was of East Germanic origin, perhaps a Goth, have been presented in the discussion by C. Hills and H. Hurst (1989), who cautiously concluded that the 'Kingsholm burial seems to have been an easterner, perhaps eastern Germanic (if he was a Goth) … a soldier … billeted at Gloucester during the last decade or two of formal Roman administration'. It is further argued below that, within this timeframe, the silver fittings, which are of Pontic-Danubian manufacture, appear to indicate only the broadly eastern origin of the wearer, while questions of ethnicity must be answered primarily from the anthropological evidence.

The belt-buckle

The belt-buckle found at waist level has a circular loop and a triple-riveted, round plate with extended, stepped hinge-lugs and a multi-faceted tongue; length, 54 mm. (Fig. 2).

In addition to the parallels observed in the previous discussions, the form is comparable with Danubian, late Roman belt-buckles of the mid-4th /early 5th century with circular loops, zoomorphic tongues and triple-riveted, round plates but with shorter tongues and hinge-lugs, e.g. from Bécsi ut, Budapest-Újlak, Hungary, grave 2 dated to *c.* 400 (Nagy 2005, 448, 476, Abb. 13, 4–6, 18, 26, 5 and 34, 4), which was associated with a sword made in an East Roman workshop, a silver crossbow brooch and other silver belt-fittings, and is further comparable with a copper-alloy buckle from grave 283 at Lankhills, dated by coins to 390–410 (Clarke 1979, Fig. 83, 481). This further supports the thesis previously advanced of Eastern Germanic soldiers serving in the Roman army in Britain (Nagy 2005, 448–9), although it is difficult to agree with Nagy that the Lankhills buckle is the immediate prototype for the one from Gloucester, since both its tongue and hinge-lugs are comparatively short. On the other hand, long, hook-ended tongues and extended hinge-lugs are features of central and eastern European buckles such as 4th/early 5th-century buckles from the Ukraine, with both round and rectangular plates, and the numerous gold-and-garnet shoe and belt-buckles of the early 5th-century Hunnic period, which were probably made in Roman centres near the imperial frontiers, such as Aquincum and Cherson, and supplied to the members of barbarian elites beyond (Ambroz 1989, Fig. 5; Bóna 1991, Farbtaf. XXVI; Aibabin

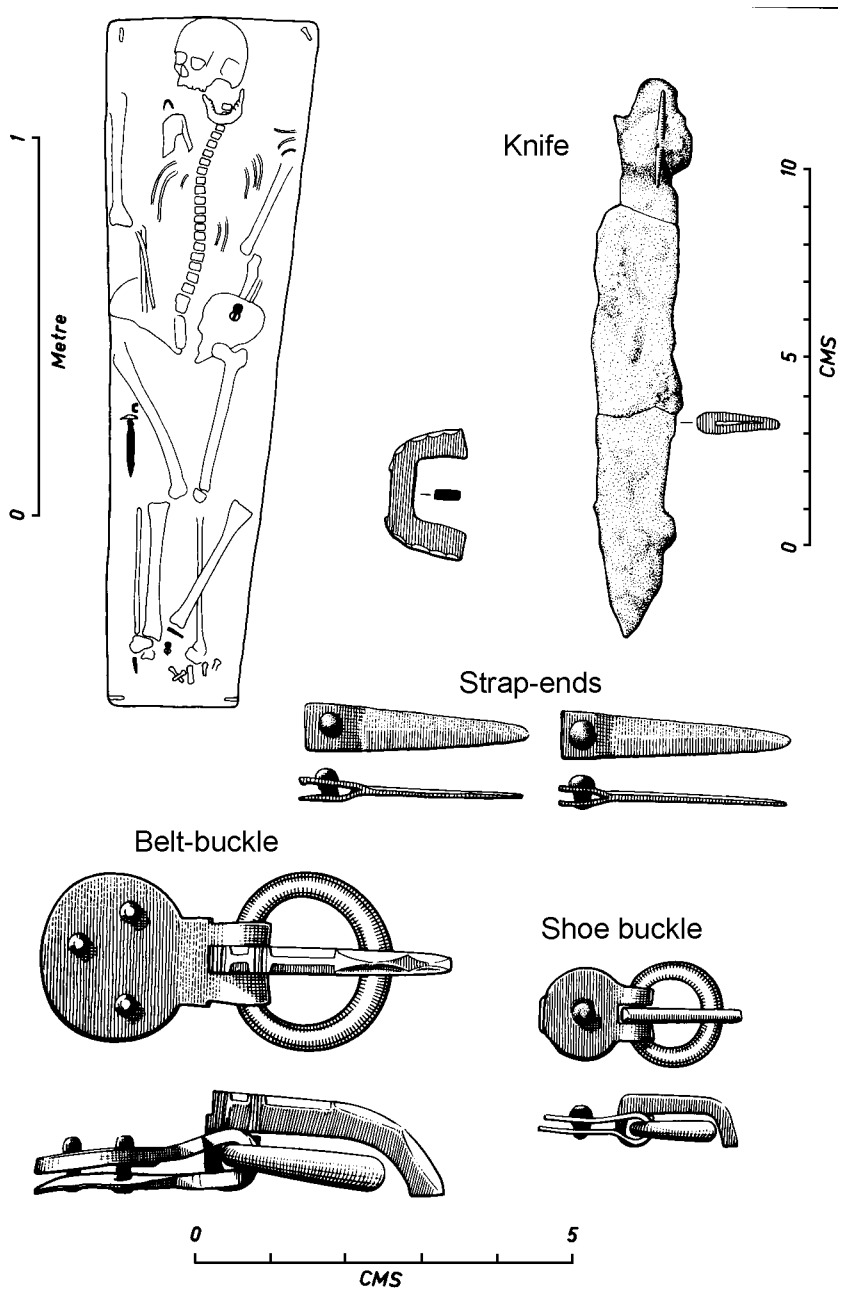


Fig. 1. Kingsholm site 44-72 Burial 1 excavated in 1972, drawing by Phil Moss reproduced by permission from Hurst 1985

Fig. 2. The belt-buckle of 44-72 Burial 1 excavated in 1972, length 54mm; photograph by David Rice, © Gloucester Museums Service.

1993; Arrhenius 2000, 217). A triple-riveted, silver buckle of the late 4th/beginning of the 5th century, with extended lugs, but a plain tongue, is known from Kerch, Crimea (Zasetskaya 1993, 56, pl. 26: 1026) and a 5th-century buckle with a rectangular plate and a faceted tongue similar to the Gloucester buckle, although with a more markedly zoomorphic terminal, is recorded from Kerch and a further example from Bosporus (Ambroz 1992, tab. 1: 46; and 1995, 48, figs. 9: 10 and 10: 10). Such zoomorphic tongues on buckles with circular loops are an occasional feature of Crimean buckles of the first half of the 5th century, e.g. from Cherson, 'Novikovskii' and Kerch, and continue in use in that century (Aibabin 1990, Fig. 22: 14, 25 and 27; 23: 1–5 and 7).

The shoe-buckle

The small shoe-buckle (Figs 1 and 3) found at the feet, with a circular loop, round plate and a hook-ended tongue is a rare find in Western Europe; length, 27 mm. But a good parallel from Nyons, Drôme, France (apparently from a female grave to judge by the associations), has been noted by M. Kazanski, who observes that the type is well known in central and eastern Europe during the Hunnic period, especially in the Black Sea/Danube region, and reached the West as one of the elements of 'Danubian fashion' attested there by other evidence (1993, 124–5, fig. 2, 3; 1989, 60, fig. 5, 11–12, and 16; see also above). A silver example of the first half of the 5th century from Kerch is illustrated by Zasetskaya (1993, 83, pl. 24: 290) and what appears to be a further example from the town, but without context, is in the British Museum collection,[1] while one with a faceted tongue and loop, possibly from later in the century, comes from Dyurso, southeast of Taman, Russia (Dmitriev 1982, 91, Fig. 9, 5a).

The strap-ends

As noted by Hills and Hurst (1989, 154), the long, narrow, pointed strap-ends associated with the shoe-buckle(s) (length, 30 mm) are comparable in form with, although much shorter than, the

1. Registration no. PE 1910,0712.72.

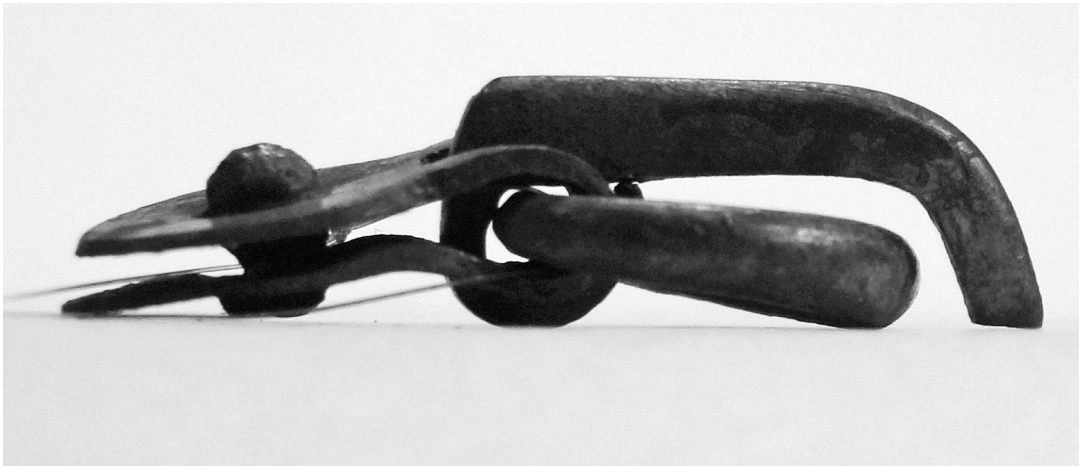


Fig. 3. The shoe buckle of 44-72 Burial 1, length 27mm, photograph by David Rice, © Gloucester Museums Service.

silver examples from the early 5th-century 'warrior' grave at Lengyeltóti, Hungary. Similar gilded silver strap-ends also occur in Bosporan cemeteries of the last quarter of the 4th/first half of the 5th century (Zasetskaya 1993, 44, no. 33, pl. 13: 33).

In the opinion of Professor A. Aibabin, the silver belt and shoe-fittings from Gloucester were produced in the Crimea and the northern Black Sea coast and Danube region in the first half of the 5th century and would have been worn by Goths, Alans and Huns alike (Aibabin pers. comm. 11/3/2010, referring to Aibabin 1999, 73, Fig. 27, 5–6) and there is, furthermore, an example of a Hunnish grave with such objects (Aïbabine 1996).

The knife

The medium-sized knife (surviving overall length, 148 mm) has a decorative vertical strip of silver, which tapers towards each end and is riveted to the tang. The knife appears to be similar in form to Manning's long-lived type 16, although corrosion hinders an exact identification (Manning 1985, 116, fig. 28). The knife's position in the grave indicates it was probably worn in a sheath slung from the belt and perhaps strapped to the thigh rather like the Sarmatian short sword, the *akinakes*, which was also worn in this position and secured by double straps (Simonenko 2001, Abb. 22), as has been debated on the internet,[2] although the *akinakes* had a substantially broader and longer blade and no strap-buckle was found at Kingsholm. But its relatively small size suggests it served a utilitarian function rather than as a weapon and it would not betoken a specifically Sarmatian origin for the wearer (see below), although the manner of wearing may nevertheless be a sign of Iranian influence.[3]

A thin, C-shaped silver mount (width, 18 mm) is thought to have come from one end of the grip of the knife, and probably fitted over the tang (Brown 1975, 292). Although it differs in form, the knife seems likely to have been worn as both a sign of status and as an age marker like those of

2. http://www.romanarmytalk.com/rat/viewtopic.php?f=25&t=27497 (accessed 02/03/2010).
3. Even Sarmatian daggers ranged in length from around 240 mm to around 300–310 mm (Simonenko 2001, 217–40).

'fancy', small to medium-size type found in mid-4th/early 5th-century exclusively male - and all but one adult (over 25 years) -, graves at Lankhills, and in other late Roman contexts, with blades usually curved on both sides and mostly associated with belts; some of these knives were almost certainly part of native military dress (Clarke 1979, 249–251; Booth *et al.* 2010, 490–492). In the case of Kingsholm, a similar function is further supported by the addition of the silver mount to the grip, and the knife may have been for display as a symbol of rank, comparable perhaps with late Roman knives of 'Simancas' type from Spain (influenced by forms of the Rhine *limes* and other areas) of the mid-fourth/fifth century, if they were not for hunting as has also been tentatively proposed (Barroso *et al.* 2001, 189), or the *Schweizerdolch* of the 16th century and later imitations (Egger 2007). If that is the case, the owner may have held an official position, either civilian or military.

The vertical silver strip mounted on the grip of the knife has a parallel in the copper-alloy strip mounted on the grip of a knife of similar shape from the possibly early 5th-century female grave 196 at the Roman and Anglo-Saxon cemetery of Frilford (Brown 1975, 293). It may be further compared with the beaded vertical silver strip mount secured to the grip of a late 4th-century, Roman sword from Budapest-Újlak, which also tapers at each end (Nagy 2005, 476, Abb. 16 and 20). As noted above, the sword was made in an East Roman workshop, indicating a possible eastern origin for the Kingsholm knife (and perhaps the one from Frilford, too), which would be fully in keeping with the Pontic-Danubian derivation of the silver belt and shoe-fittings. A narrow-bladed knife was found with a spearhead and a fixed-plate buckle set for a wide belt of late Roman 'military' type of the second third of the 5th century in grave 979 at Mucking, Cemetery II, Essex (Hirst and Clark 2009, Fig. 108, 9), but it is uncertain whether the two rivets in the tang were to secure a mount, or bone plates from the grip.

The burial rite

Hills and Hurst (1989, 154) note that the Kingsholm burial is neither unfurnished nor supplied with weapons and, in this respect, seems to resemble Danube Basin burials, where weapon-graves appear to have been rare. It is feasible, therefore, that the man may have been a foreign civilian, serving in an official capacity, who was buried according to his 'national' custom.

Eastern Germanic and nomadic federates in the Roman army

The region to the east of the Vistula/Danube in the first quarter of the 5th century was occupied by peoples of very varied ethnic affiliations, such as the Germanic Sciri, Gepids, Goths, Taifali (probably Germanic) and Rugians (the latter in the process of migrating westwards), and also the Iranian-speaking Alans and western Sarmatian Iazyges. Further back in time, it is recorded that a huge levy of 5,500 Sarmatian/Iazygian horsemen taken hostage in 175 was sent to Britain, probably as *dediticii.* Some of them were presumably formed into the *ala Sarmatarum*, which is probably the same as the *numerus equitum Sarmatarum Bremetennacensium*, attested by inscriptions at Ribchester (Bremetennacum Veteranorum) in the first half of the 3rd century (or perhaps later), and the *cuneus Sarmatarum* recorded around 400–410 in the *Notitia Dignitatum* may have been assimilated descendants of the original veterans (Richmond 1945; Rivet and Smith 1979, 277; Sulimirski 1970, 174–6; Jarrett 1994, 43, 69, 76–7; Heather 2005, 246–8). Other Sarmatian troops were likely seconded to regular garrisons at other forts, e.g. possibly Chesters and Morbium, but settled in the region of Ribchester following their discharge.

After the fall of the 'empire' of the Huns following their defeat at the battle of Nedao in 455, written sources show that the Roman army on the Danube had continued to recruit soldiers

from the Eastern Germanic and nomadic peoples, such as the Ostrogoths, Rugians, Sarmatians, Alans, and Huns. The presence of Eastern Germanic soldiers serving in the late Roman army in western Europe, especially in Gaul and Britain, as hinted at by the archaeological evidence from metalwork and jewellery, has been discussed by Böhme, who suggests that on occasion they were accompanied by their families (1986, 487–505; for the hoards from Coleraine and Traprain Law, see Marzinzik, and Hunter and Painter in press), and further by Tejral (1997, 162). For practical reasons, it seems highly unlikely that different equipment would have been issued to either soldiers or officials based on their ethnic origins, and point of recruitment and rank would probably have been the determining factors behind variations in type and quality.

The high-status silver belt-fittings from the Kingsholm burial are broadly datable to the first half of the 5th century and, on the basis of the discussion above, it seems likely that the deceased was an east European recruited into the Roman army or civil service and transferred to Britain during the closing years of the imperial administration of the province, i.e. before 410. But he appears to have been older than originally thought and his age at death is more likely to be around 30 to 40 years, making it more difficult to determine whether he died before, or sometime after 410.

Hills and Hurst (1989) attribute the silver belt- and shoe-fittings from Kingsholm to Gothic craftsmen working under oriental and Roman influences, although they are careful not to ascribe a precise ethnicity to the wearer. But Aibabin prefers to ascribe the manufacture of these artefacts simply in geographical terms to the Pontic-Danubian region, where they could have been worn by a wide range of peoples, both Eastern Germanic and nomadic (Alanic and Hunnic). This requires that the question of the origin of the Kingsholm man must be decided on the basis of the anthropological evidence, rather than from the grave goods (see the two preceding articles).

Acknowledgements

Grateful thanks are due to Dr Ljudmila Pekarska and Professor Aleksandr Aibabin for invaluable assistance and advice with references to Ukrainian and Russian archaeological sources; also to my colleague Ralph Jackson for reference to the publication by Rivet and Smith. The author alone, however, takes responsibility for any errors of fact, or interpretation.

References

Aibabin, A.I., 1990. 'Khronologiya mogil'nikov Kryma pozdnerimskogo i rannesrednevekovogo vremeni', *Materiali po Arkheologii, Istorii i Etnografii Tavrii*, 1, 3–85.

Aibabin, A., 1993. 'La fabrication des garnitures de ceintures et des fibules à Chersonèse, au Bosphore Cimmérien et dans la Gothie de Crimée aux VIe-VIIIe siècles', in *Outils et ateliers d'orfèvres des temps anciens*, Antiquités Nationales, mémoire 2, 163–70.

Aibabin, A.I., 1999. Etnicheskaya Istoriya Rannevizantiyskogo Kryma, Simferopol.

Aïbabine, A.I., 1996. 'Population de Crimée au milieu du IIIe et au IVe siècle. L'identité des populations archéologiques', in *XVIe Rencontres Internationales d'Archéologie et d'Histoire d'Antibes*, Valbonne, 13–39.

Ambroz, A.K., 1989. Khronologiya drevnostei Severnogo Kavkaza V-VII vv. Moscow.

Ambroz, A.K., 1992. 'Bospor. Khronologiya rannesrednevekovykh drevnostei', *Bosporskii Sbornik*, 1, 6–108.

Ambroz, A.K., 1995. 'Yugo-Zapadnyi Krym. Mogil'niki IV-VII vv', *Materiali po Arkheologii, Istorii i Etnografii Tavrii*, 4, 31–88.

Arrhenius, B., 2000. 'Garnet jewelry of the fifth and sixth centuries', in K.R. Brown, D. Kidd and C.T. Little (eds.), *From Attila to Charlemagne. Arts of the Early Medieval Period in the Metropolitan Museum of Art*, New York, 214–25.

Barroso, R., Jaque Ovejero, S., Major González *et al.*, 2001. 'Los yacimientos de Tinto Juan de la Cruz – Pinto, Madrid – (ss. I al VI d.C.), 1a. parte', *Estudios de Prehistoria y Arqueología Madrileñas*, 11, 129–204.

Böhme, H.W., 1986. 'Das Ende der Römerherrschaft in Britannien und die angelsächsische Besiedlung Englands im 5. Jahrhundert', *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz*, 33, 469–574.

Bóna, I., 1991. *Das Hunnenreich*, Stuttgart.

Booth, P., Simmonds, A., Boyle, A. *et al*., 2010. *The Late Roman Cemetery at Lankhills, Winchester. Excavations 2000–2005*, Oxford Archaeology, mono. 10, Oxford.

Brown, D., 1975. 'A fifth-century burial at Kingsholm (burial B1 in the 1972 excavation)', *Antiquaries Journal*, 55, 290–4.

Clarke, G., 1979. *The Roman Cemetery at Lankhills*, Winchester Studies, 3, pt. 2 (Oxford).

Dmitriev, A.V., 1982. 'Rannesrednevekovie fibuly iz mogil'nika na r. Dyurso', in A.K. Ambroz and I.F. Erdélyi (eds.), *Drevnosti Epokhi Velikogo Pereseleniya Narodov V-VIII Vekov*, Akademiya Nauk SSSR, Moscow, 69–107.

Egger, F., 2007. 'Der Schweizerdolch – von der Waffe zum Symbol',*Waffen- und Kostümkunde*, 49.2, 99–115.

Heather, P., 2005. *The Fall of the Roman Empire. A New History*, London.

Heighway, C., 2010. 'Christian origins at Gloucester: a topographical survey', in M. Henig and N. Ramsay (eds.), Intersections: The Archaeology and History of Christianity in England, 400–1200. Papers in Honour of Martin Biddle and Birthe Kjølbye-Biddle, BAR British Series 505, Oxford, 39–48.

Hills, C. and Hurst, H., 1989. 'A Goth at Gloucester?', *Antiquaries Journal*, 69, 154–8.

Hirst, S.M. and Clarke, D., 2009. *Excavations at Mucking: vol. 3, The Anglo-Saxon Cemeteries. Excavations by Tom and Margaret Jones*, Museum of London Archaeology, London.

Hunter, F. and Painter, K.S. (eds.), in press *Late Roman Silver and the End of the Empire: the Traprain Treasure in Context*, The Society of Antiquaries of Scotland, Edinburgh.

Jarrett, M.G., 1994. 'Non-legionary troops in Roman Britain: part one, the units', *Britannia*, 25, 35–77.

Kazanski, M., 1989. 'La diffusion de la mode danubienne en Gaule (fin du IVe siècle – début du VIe siècle): essai d'interprétation historique', *Antiquités Nationales*, 21, 59–73.

Kazanski, M., 1993. 'Les objets orientaux de l'époque des Grandes Migrations découverts dans le couloir rhodanien', *Antiquités Nationales*,25, 119–27.

Kazanski, M., 2007. 'Les Wisigoths, du Danube à la Gaule', *Bulletin de liaison de l'Association Française d'Archéologie Mérovingienne*, 31, 9–12.

Manning, W.H., 1985. *Catalogue of the Romano-British Iron Tools, Fittings and Weapons in the British Museum*, London.

Marzinzik, S., in press 'The Coleraine Treasure from Northern Ireland: a consideration of the fittings', in F. Hunter and K. Painter (eds), *Late Roman Silver and the End of the Empire: the Traprain Treasure in Context*, The Society of Antiquaries of Scotland, Edinburgh.

Nagy, M., 2005. 'Zwei spätrömerzeitliche Waffengräber am Westrand der canabae von Aquincum', *Acta Archaeologica Academiae Scientiarum Hungaricae*, 56.4, 403–86.

Richmond, I.A., 1945. 'The Sarmatae, Bremetennacum Veteranorum and the Regio Bremetennacensis', *Journal of Roman Studies*, 35, 15–29.

Rivet, A.L.F. and Smith, C., 1979. *The Place-Names of Roman Britain*. London.

Simonenko, A.V., 2001. 'Bewaffnung und Kriegswesen der Sarmaten und späten Skythen im nördlichen Schwarzmeergebiet', *Eurasia Antiqua*, 7, 187–327.

Sulimirski, T., 1970. *The Sarmatians*, London.

Tejral, J., 1997. 'Les fédérés de l'empire et la formation des royaumes barbares dans la region du Danube moyen à la lumière des données archéologiques', *Antiquités Nationales*, 29, 137–66.

Zasetskaya, I.P., 1993. 'Materialy bosporskogo nekropolya vtoroi poloviny IV-pervoi poloviny V vv.H.E.', *Materiali po Arkheologii, Istorii i Etnografii Tavrii*, 3, 23–105.