milecastles. The broad conclusion was that the state of preservation varied from site to site, and that no general rule or trend could be drawn. Only three sites, Mc9, Mc14 and Mc19, were being actively affected by continued ploughing. Mcs10, 62, 71, 78 and 79 were stable, having been ploughed in the past; in other words the plough damage that was going to occur had already been done. In the single case of Mc17, the downhill drift of soil during ploughing had served to protect the milecastle. It was clear that stonework from the western milecastles of the Wall has been robbed almost completely in the past. This was certainly true of Mc71, where only a few small stones survived, and was probably the reason for the failure to identify Mc69 and Mc70 through geophysics. It is apparent that individual threats will need to be addressed by separate management strategies and agreements on a site-by-site basis.

6
Excavations at the Hadrian's Wall fort of Birdoswald *(Banna)*, Cumbria: 1996–2000

by Tony Wilmott, Hilary Cool and Jeremy Evans

with contributions by: K F Hartley, Katie Hirst, Jacquline I McKinley, Quita Mould, David Shotter, A G Vince, D F Williams and S H Willis

Part 1: Introduction

The report on the major excavations at Birdoswald between 1987 and 1992 was published in 1997 (Wilmott 1997a). At the time, it was considered unlikely that further work on the site would take place for many years, perhaps for a generation or more. This was not the case however, and no fewer than five archaeological projects were undertaken in 1996–2000. The work was mostly carried out through the Centre for Archaeology and its predecessors (p 2–7), while projects not directly implemented by CfA were either funded by English Heritage, or carried out in close collaboration. This report is the final statement on these projects, and acts as a supplement to the 1997 publication. Some interpretations in the previous work are overturned, but in most cases conclusions are either confirmed and expanded, or revised and moved forward. Frequent reference to the 1997 volume is made throughout this report, and a summary site history is provided at the end to unify the results of all projects undertaken up to 2000 and to consolidate current knowledge. The introductory and stratigraphic sections have been written by TW, incorporating information from the work of the co-authors, whose free-standing sections appear in the report under their names.

The site

Topography and geology

Birdoswald, in Wall mile 49, is the eleventh fort from the east end of Hadrian's Wall, lying 5.2km from Carvoran to the east, and 11.2km from Castlesteads to the west (Fig 306). In addition there is a road connection, the Maiden Way, to the outpost fort of Bewcastle 9.6km to the north. The fort is situated on a high spur contained to the south by a broad meander of the River Irthing. The underlying geology of the spur consists of the Upper Border Group of Carboniferous sedimentary strata, including crinoidal limestones, dark-blue shales and grey-white micaceous sandstones, of which a (now outdated) subdivision is known as the Birdoswald Limestone Group (Turner 1971, 52). These rock types were all utilised as building materials on the site, and can be seen as exposures in the sides of the Irthing Gorge. It is probable that the river cliffs below Birdoswald fort were used as quarries during the Roman period as was the case a little farther downstream at both Coombe Crag and Lanerton, where Roman quarry inscriptions have been noted (Hodgson 1840, 440; RIB 1946–52; Collingwood 1930, 120; Hassall and Tomlin 1992, 316–7). The site lies above two clear north–south faults in the underlying geology.

The upper drift geology consists of a thick deposit of pinkish boulder clay, the white weathered surface of which forms the natural subsoil of the site. Modern profiles developed over these clays comprise fine loamy mineral soils known as stagnogleys (Avery 1980; the Salop series after Kilgour 1985). These soils are typically subject to periodic wetness in their surface horizons, attributable to a combination of relatively high rainfall (900–1,000mm per annum) and impermeable boulder clay at depth. Modern topsoils are only slightly organic and are moderately acid. Surface wetness precludes widespread cultivation and most areas are utilized for permanent grass, pasture and rough grazing. An important element of the microtopography of the spur is a dip of unknown extent, which occupies the centre of

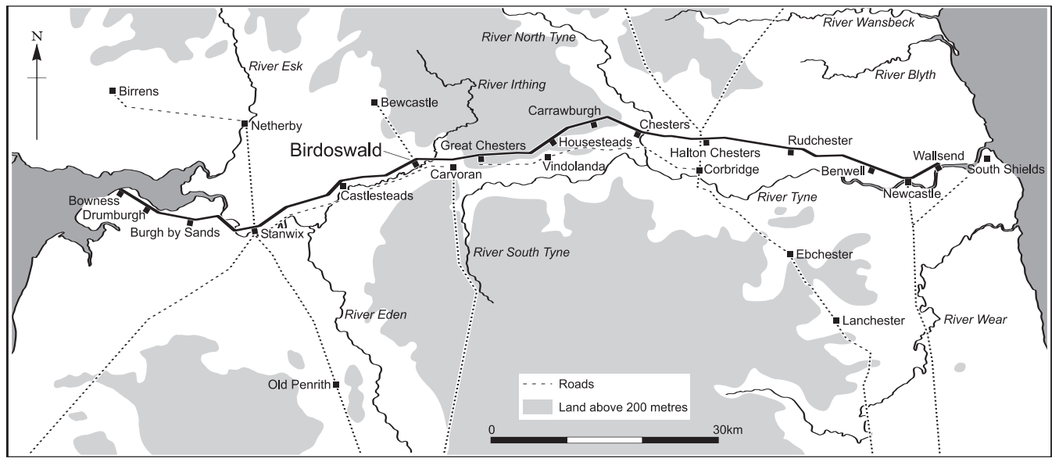


Fig 306
Birdoswald: location of Birdoswald on Hadrian's Wall.

the site chosen for Birdoswald fort. The impermeable qualities of the boulder clay caused a small peat bog to develop in this dip. This bog, the so-called 'morass', was first identified during excavations in 1930 (Richmond 1931, 123).

Hadrian's Wall was carried across the river by means of a bridge 0.65km to the east of the fort at Willowford (Bidwell and Holbrook 1989). The river now runs 72m west of the eastern abutment of the Roman bridge. The slow movement of the river has undercut its west bank at Harrow's Scar, resulting in the loss of part of Hadrian's Wall. River movement south of Birdoswald is less measurable, although the meander to the immediate south of the fort is slowly developing into an oxbow lake (Wilmott 1997a, 1, fig 1). This means that the spur is being eroded on both its eastern and western flanks. At least two, and possibly three previous southern river banks are visible as more-or-less pronounced ridges in the field within the meander to the west of the spur, but the relative ages of these could not be determined without intensive sedimentological survey. A comparison with the 1862 Ordnance Survey map, however, demonstrates that the eastern side of the meander has shifted approximately 20m to the west during the last century. The 1603 survey plan of the Barony of Gilsland, which was prepared for Lord William Howard of Naworth (Dept of Palaeography, University of Durham Library Special Collections, Howard of Naworth MSS C713/15), shows a less pronounced meander, although the lack of reference points for this part of the river makes this impossible to quantify. Bidwell and Holbrook (1989, 38) compared the 1603 map to later historical maps in order to gauge the shifting river course at Willowford Bridge. More recent analysis in this area has added detail to their conclusions (Yorke 2000).

The fact that the fort and Vallum were built on the spur and that a primary Vallum gate was provided clearly shows that more – probably substantially more – land existed to the south of the fort in the Roman period. Biggins and Taylor (2004, 173–4) postulated the loss of 100–200m from the spur since the 2nd century, and this may not be an unreasonable estimate. Certainly some 20m has been lost since MacLaughlan's survey of 1858, some 3m of this since the 1930s.

The active erosion of the eastern side of the spur is sufficiently distant to pose no current threat to the surviving archaeology on its summit. The western flank is a different matter, as here there is a steep slope down to the river, and this is being continuously undercut. The resulting instability of the slope is, at the time of writing, causing the collapse of the top of the spur edge, and the possible attrition of important archaeological deposits. Since the excavation of 1933 the spur seems to have been stable and the renewed erosion is a cause for concern, and prompted one of the projects reported upon here (p 250).

The Birdoswald sector of Hadrian's Wall

The Birdoswald sector of Hadrian's Wall is acknowledged as one of the most complex on the whole line, and has had a long history of

investigation (for detail *see* Biggins and Taylor 2004, 2–5) (Figs 306, 307). Broadly speaking, this sector may be described as the stretch between Mc49 (Harrow's Scar) and Mc51 (Wall Bowers); the only area where the primary Turf Wall and its later stone successor run along different lines. Much of early research in the area was undertaken to clarify the relationships between the different elements of the frontier; the Turf Wall, Stone Wall, Vallum and fort. The Turf Wall was discovered at Appletree in 1895 (Haverfield 1987, 187; *above* pp 73, 104), and most research on this aspect of the frontier has taken place in the Birdoswald area. The fact that the Turf Wall lay beneath the stone fort at Birdoswald was established in 1897 (Haverfield 1898a, 173). By the following year, Haverfield had traced the course of the Turf Wall in the Birdoswald sector from Mc49 to Mc51 (Haverfield 1899, 347–51, pl 1; Hodgson 1899), although it was not until 1934 that it was finally confirmed that the Turf Wall had extended from the River Irthing to Bowness-on-Solway (Simpson, Richmond and McIntyre 1935a, 217–8; *above* p 73). The site of Mc50TW (High House) was identified in 1933 and excavated in 1934 (Simpson, *et al* 1935b). This important excavation determined the essential features of a Turf Wall milecastle, and gave sufficient information to attempt a reconstruction (Simpson *et al* 1935a, figs 4 and 6). The detail of the use of timber in this reconstruction has recently been challenged on the basis of the pollen evidence, which suggests a lack of large timber in the area when the Wall was built (Wilmott 2001a, 44; *above* p 118). A fragment of a wooden building inscription from the site proves that the Turf Wall was constructed during the reign of Hadrian, and under the governorship of Platorius Nepos (AD 122–5), the legate apparently charged by Hadrian with the task of building the Wall (Collingwood 1935; RIB 1935). The three Turf Wall turrets (T49b, T50a and T50bTW) in this area were also located during 1933, and all but the severely robbed T49b were excavated (Simpson, *et al* 1934b). All were typical Turf Wall turrets of the type recognised in 1927 at T51a (Piper Sike), T51b (Leahill) and, the best preserved, T52a (Banks East) (Simpson 1928, 382–3). Whereas Stone Wall turrets were built with, and recessed into the Wall, turrets on the Turf Wall consisted of freestanding stone towers against which the turf work was abutted. Subsequently the stone replacement of the Turf Wall also abutted these turrets, a relationship first noticed as early as 1857 by Bruce (1859) at T53a (Hare Hill). Traces of the final turret, T49a, were found beneath Birdoswald fort in 1945 (Soc Antiqs Newcastle upon Tyne 1946, 275).

Recent work has demonstrated that the landscape through which the Turf Wall was built was much varied. At Appletree, pollen evidence (p 118) shows that the Turf Wall was built across open, grazed

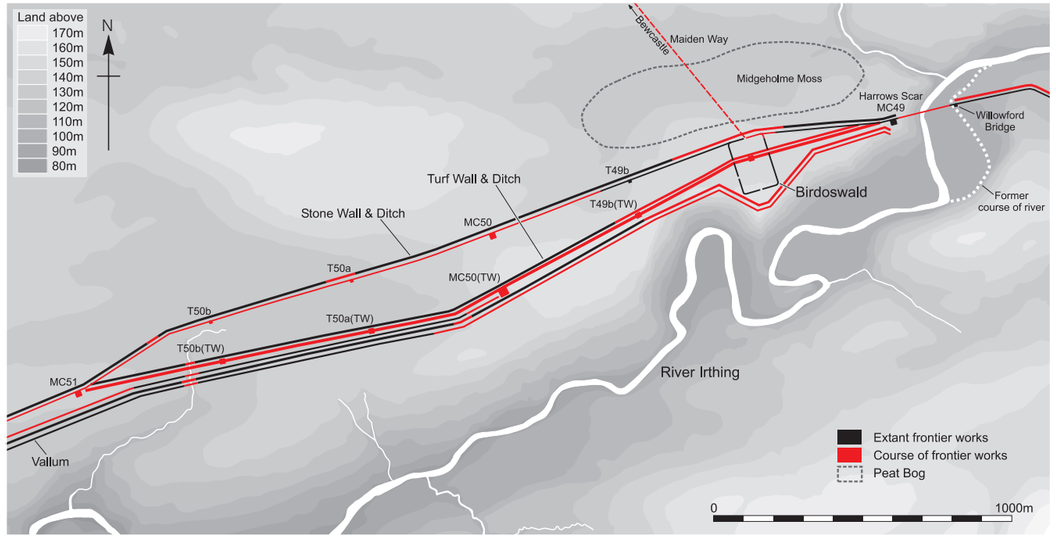


Fig 307
Birdoswald: the Birdoswald sector of Hadrian's Wall.

land long cleared of woodland, while at Birdoswald, an area of dense wood had to be cleared before the Wall could be constructed (Wiltshire 1997).

There is limited evidence to suggest that a primary timber fort was constructed at Birdoswald (Wilmott 1997a, 42–4), and that this operated in association with the Turf Wall. It was thought that this fort was smaller than its stone successor, and may have lain wholly behind the curtain Wall. The line of the Vallum was originally traced together with the Turf Wall by Haverfield (1899, 347–51, pl 1), and in 1932 a primary Vallum crossing, the first of its type to be identified, was excavated to the south of the fort (Simpson and Richmond 1933, 246–52). At Birdoswald, for reasons that may be connected with the proximity of the Vallum to the Turf Wall, the north Vallum mound was omitted, and the upcast from the ditch disposed of in a double-size south mound. This state of affairs existed over the whole of Wall mile 50 between Mcs 49 and 50 TW (Simpson and Richmond 1937a, 171–3). The situation at Mc50TW is further complicated by the fact that a primary causeway was provided across the Vallum at this point (Simpson and Richmond 1937a, 167–8). At Birdoswald, the Vallum was diverted around the south side of the fort, but it passes extremely close to the south-west angle of the stone fort. For this reason it has been suggested that the Vallum was built to work with the timber fort (Wilmott 1997a, 44–5). When the first fort was replaced with a larger stone fort, the Vallum was partially backfilled to accommodate the new installation. In confirmation of this, it was found that the ditches of the stone fort were cut through the backfilling of the Vallum ditch (Richmond 1929, 310).

The stone fort was constructed astride the Turf Wall, such that this wall abutted the south towers of its east and west main gates (*portae principales*). These gates, together with the north gate (*porta praetoria*) thus projected to the north of the Turf Wall. For this reason, two ancilliary single portal gates (*portae quintanae*) were built to the south of the mural barrier. The combined evidence of stratigraphy, soils and analysis of the stone masonry show that the building of the stone fort was abandoned for a while, allowing soil and vegetation to develop over the site (Wilmott 1997a, 73–9). When work was resumed, the completion of the defences and the construction of internal buildings was swift, and perhaps hurried (Wilmott 1997a, 100).

The final element of the frontier works in this sector is the Stone Wall, which replaced the Turf Wall from Mc49 (Harrows Scar) westwards. The stone Mc49 itself was partially excavated by Haverfield (1899, 352–3) in 1898, although the underlying Turf Wall milecastle was not recorded until 1953 (Richmond 1956a). It has long been accepted that the Stone Wall deviates from the line of its predecessor in order to meet the northern corners of the extant stone fort at Birdoswald. This meant that the two single portal gates became surplus to requirements, and were demolished and blocked (Wilmott 1997a, 100). The deviation begins some 55m from the west side of Mc49, where the Stone Wall strikes off the previous course at an angle of 8°. It meets the north-east corner of the fort and continues from the north-west corner to meet the Turf Wall line again at Mc51 (Wall Bowers). In between lie the stone-built Mcs 50 (High House) and turrets T49b, T50a and T50b. These installations were all excavated in 1911 (Simpson 1913). The 1911 excavation suggested that the primary levels of the milecastle and turrets of the final phase of this highly complex series of developments had been occupied during the Hadrianic period (Craster 1913; Newbold 1913). This interpretation would indicate that the whole of the above structural history was Hadrianic in date, taking place broadly between AD 122 and *c* 140.

The subsequent history of the occupation of the fort has been summarised by Wilmott (1997a, 401–10). The conclusions reached in 1997 have been altered by the results of these more recent excavations, and the summary is updated and expanded upon below (pp 387–95).

The Projects (Fig 308)

The justification for and background to the projects are described below in chronological order.

Birdoswald spur, 1996 (CfA Project Code 590)

Early in 1996 it was realised that the western flank of the spur on which the fort stands was subject to accelerated active cliff-edge erosion. The loss of part of the cliff over the winter of 1995–6 confirmed a phenomenon that had been causing concern since it was noted in 1987 (Cumbria CC 1987). The principal cause of the failure seemed at the time to be the seepage of ground water into fissures in the boulder clay, posing a threat to the important archaeology known to exist on the spur. It was decided that it would be appropriate for the CfA to undertake an excavation designed to mitigate the immediate potential effects of erosion, to discover its causes and to establish how much of the archaeology of the spur had survived earlier excavations. This archaeology had been investigated on a number of occasions. In 1896 Francis

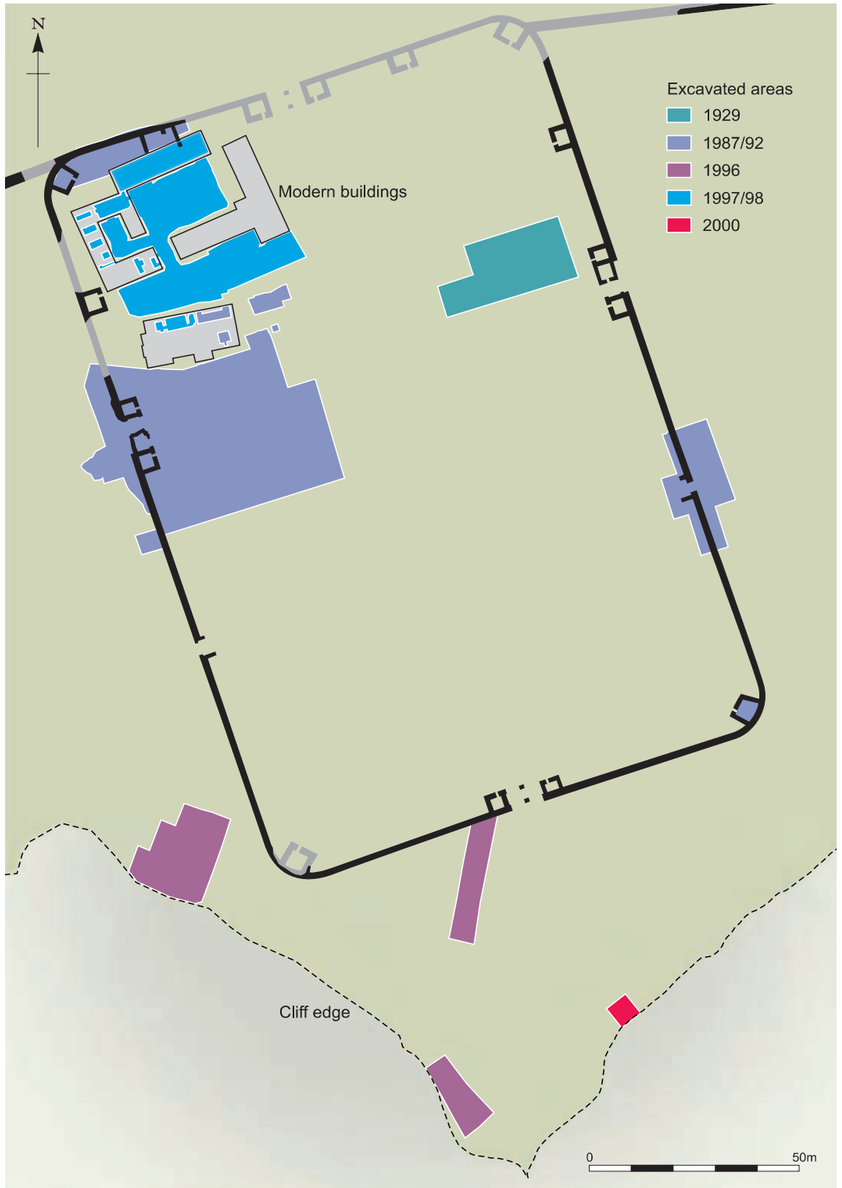


Fig308
Birdoswald: plan of Birdoswald fort showing all areas excavated between 1987 and 2000, and the area of the 1929 excavation.

Haverfield located the Vallum to the south of the fort (Haverfield 1897; Hodgson 1897), and in 1928 Ian Richmond (1929) established the relationship between the stone fort and Vallum ditches at the external south west corner of the fort. He also noted the presence of timber buildings to the south of the fort. In 1932 and 1933, F G Simpson and I A Richmond (1933; 1934) undertook large-scale excavations. They found the ditches of the stone fort, a number of substantial ditched enclosures, complexes of timber buildings and the primary Vallum crossing, the first such feature to be recognised. The publication of the work followed immediately upon the conclusion of each excavation season, but although photographs were taken and a plan published, this plan was interpretative, with no indication of the actual extent of the work carried out, or of the position of excavation trenches.

In order to add research value to the curatorial and management objectives, the original project design (Wilmott 1996b) specified several closely defined questions that required resolution. These related largely to the state of preservation of the Vallum, its local morphology and longevity, and the potential for environmental survival of the kind previously recovered at Birdoswald and Appletree (Wiltshire 1992; 1997), and later at Black Carts and Appletree (pp 80–102 and 103–20). Additional aims related to the confirmation and expansion of results obtained in the 1930s. Work took place over six weeks during September and October 1996, and a MAP2 assessment was completed in November 1999 (Wilmott 1999a).

Birdoswald Study Centre 1997–8 (CfA Project Code 585)

In March 1996, Cumbria County Council asked CfA to examine the archaeological implications of their proposal to convert the buildings of Birdoswald farm, situated in the north-west *praetentura* of the fort, for use as a residential study centre for Hadrian's Wall. A desktop assessment (Wilmott 1996a) proposed a staged approach and provided an outline cost. It was decided that the information available was not sufficient to draw up a detailed archaeological strategy for the site, and so the depth and preservation of stratified deposits and structures was established by excavating a number of evaluation trenches through the concrete farmyards and the floors of farm buildings in May 1997 (Wilmott 1997a). The evidence from these trenches proved that there was good archaeological survival beneath the farm, with Roman masonry buildings existing up to four courses high. The redevelopment work involved a complex upgrading of all mains and sewerage services to the former farm, which required considerable sub-ground work. It was also necessary to replace all ground-floor surfaces within the farm buildings, and to re-surface all yard areas. It was decided, therefore, that the correct archaeological approach would be to remove all surface overburden to the top of the latest surviving archaeological deposits. These would be recorded, but, in order to enhance the opportunity for site interpretation, an attempt would be made to understand the plan and function of the Roman structures by excavating down to the latest coherent level or phase. In addition, all service runs and other deeper areas such as toilet floors and lift shafts would be completely excavated, to provide an understanding of the full stratigraphic sequence in these areas. Work was constantly reviewed against archaeological and contracting needs. The initial evaluation was assessed, and a project design drawn up for the first excavation phase within the buildings of the farm (Wilmott 1997d). The excavation took place over six weeks in November–December 1997, with a watching brief throughout January 1998. An assessment of this work led to a further project design (Wilmott 1998) for six weeks of excavation in the farmyard areas, which took place during July–August 1998, and a MAP2 assessment and project design for analysis were completed in November 1999 (Wilmott 1999c). Interim statements of the results of this work have been published in previous works (Wilmott 1999k; 2001a; 2002).

Time Team, 1999

Knowledge of the extent of the site at Birdoswald has been revolutionized by the work of Alan Biggins and David Taylor of Timescape Archaeological Surveys, who have undertaken geophysical survey across the site (Biggins and Taylor 1999, 2004). These surveys have shown much that is new on the internal features of the fort, but most importantly have shown that to the east and west lay the buildings of an extensive extra-mural settlement or *vicus*.

In 1999, Cumbria County Council approached Channel 4's *Time Team* archaeological TV programme and invited them to undertake a three-day excavation within their established format. The work took the form of a basic evaluation, targeted towards answering a number of very specific questions laid out in a MAP2 Project Design (Wilmott and Hirst 1999), which formed the basis upon which Scheduled Monument Consent was granted for the work. Three trenches were excavated in the western *vicus* of the fort in order to characterise aspects of the layout and phasing of the area following the geophysical survey. In addition, four trenches were excavated in the known cremation cemetery in New Field (Fig 374) in order to establish the condition of the cemetery and aspects of its layout. The trenches were excavated during the three days of the 27th to 29th July 1999.

Housesteads Ware Project 2000 (CfA Project Code 656)

The Housesteads ware project was set up in order to answer a specific inquiry that emerged from work towards the present report. Housesteads ware is a class of pottery, with Frisian attributes, which has been found on a number of sites on Hadrian's Wall, notably in early 2nd-century contexts at Vindolanda, in 3rd-century contexts at Housesteads (Jobey 1979, 130) and also at Burgh-by-Sands (Greene 1986). This pottery was first found at Birdoswald, on the spur to the south of the fort, in two locations; in an 'occupation' layer noted in the section of a pit, and also in a pit which was apparently associated with a hearth (Simpson and Richmond 1934, 123), where it was originally thought to be pre-Roman 'native' pottery. Housesteads ware was found again during excavation on the spur in 1996, but pottery analysis from the excavations of 1987–92 inside the fort recovered none of this material. Similarly the 1997–8 work within the fort recovered no Housesteads ware. In order to further examine this curious distribution, it was decided to re-examine the location from which the first substantial find of Housesteads ware was recovered. A Project Design for the re-excavation of the so-called native hearth from which complete vessels were recovered in 1933 was written (Wilmott 2000a), and the work took place in 2000.

Part 2: The Study Centre Project (Site 585): excavations in the western *praetentura* of the stone fort 1997–8

Introduction

The 1997–8 Study Centre Project allowed stratigraphic links to be created between the two areas of the western *praetentura* and the *latera praetorii* of the stone fort, which had been excavated in 1987–92 (Wilmott 1997a; Fig 309). It is now possible to unify the plan, stratigraphic sequence and phasing of all of the areas excavated within the north-west quarter of the fort over a period of 12 years. This account reports on the new findings, while summarising the results from 1987–92 where necessary, in order to aid interpretation and the flow of the descriptive text. This report is a supplement and up-date of the previous work and includes a great deal of cross-referencing to avoid an undue amount of repetition from the previous volume.

In order to simplify the text there are no specific references to the post-medieval yards and buildings on the site, and among which the work was done. The excavation is instead discussed as a contiguous open area, and description is divided by archaeological sub-divisions (buildings, open spaces, alleys etc), period by period. No modern building lines are included on any of the plans, apart from the general location Fig 309. There were two areas where it was possible to excavate to depth, and within which most of the stratigraphy was recorded on the site. These were in the northern byre building, which covered the north intervallum of the fort, and also a north–south service trench, which extended from the south wall of the north byre to an area inside the farmhouse. This made it possible to connect the stratigraphy across the entire area examined.

Because the Study Centre Project sampled the same stratigraphic sequences as those examined during 1987–92, it was decided to unify the phasing structure. A concordance between site phases is given in Table 5, and references to the earlier phasing structure are provided in parentheses against phase headings in the text. In order to consolidate the description of the whole of the western *praetentura*, it was decided to allocate numbers within the Study Centre sequence to the *praetentura* buildings excavated during 1987–92, and to

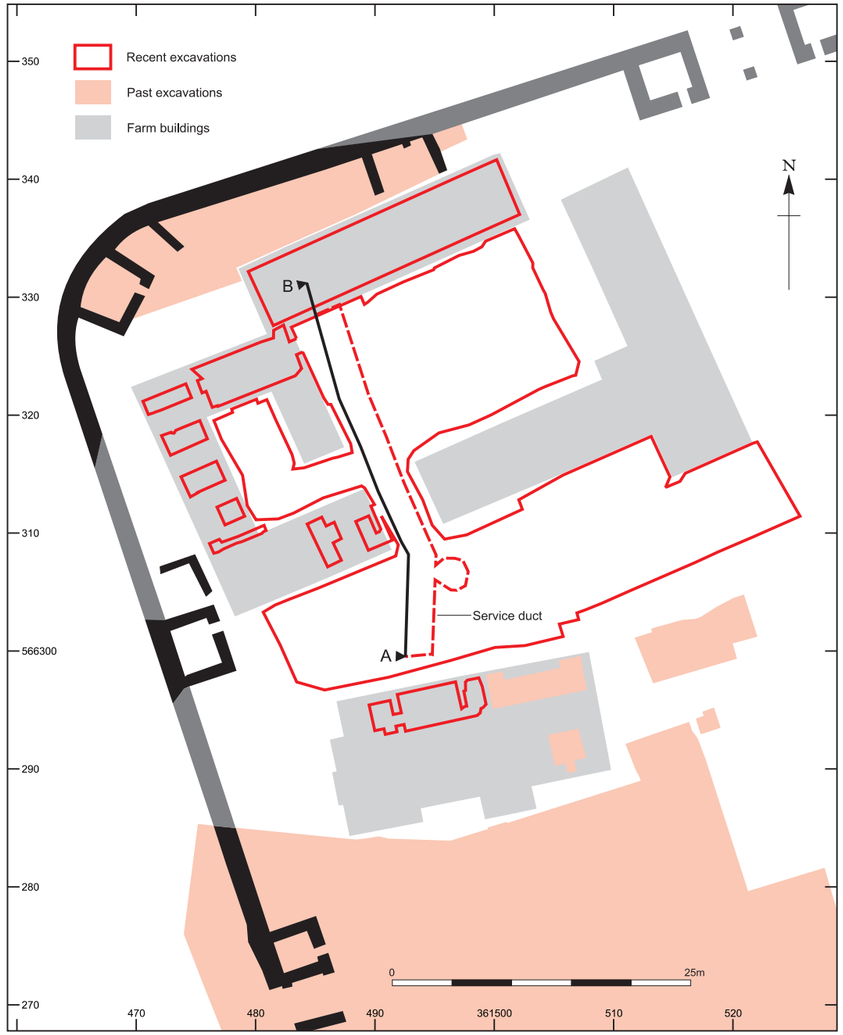


Fig 309
Birdoswald: plan of the north west praetentura *area, showing areas previously excavated and the limit of the 1997–8 excavations with relation to the modern building plan.*

present summary descriptions of these structures phase by phase. Where this is done, a concordance with the previous publication is also provided in parentheses.

The natural topography

The key to the siting of Birdoswald is the east–west ridge, which was used as the line for the Turf Wall. From the ridge, the ground dipped southwards into a small basin mire or morass, while to the north the slope was steeper and longer, down to a large tract of mossland, the Midgeholme Moss (Wiltshire 1997, 25). The crest of this ridge was later used as the line of the *via principalis* of the stone fort with the result that the whole of the *praetentura* lay on ground that sloped downwards to the north. The gradient of this natural slope was recovered in the service duct trench (Fig 310). To the north, the untruncated natural boulder clay surface lay at a level of 158.03m OD, while at the southern edge of the excavation this was 820mm lower, at 157.215m OD. At the north wall of the fort

Table 5 Summary phasing concordance of all major stratigraphic excavations at Birdoswald.

1987–92 period	*site phase*	*1929 'level'*	*Study Centre (585) site phase*	*Spur 590 Trench A*	*Trench B*	*Trench C*
(Prehist)						C1
1	1	(Turf Wall)				
	2	0	1	A1	B1	C2
2	3	1		A2		
	4		2			
		3				
	5		4	A3	B2a	
3	6	2	5	A4	B2b	
4a	7	3				
4b	8		6a			
		6b				
5	9	4	7			
	10					
6	11		8	A5		
	12					
7	13				B3	
8	14					
9	15					
10	16					
11	17					

the level of the untruncated clay was 156.49m OD (not 155.49m OD as misprinted in Wilmott 1997a, 27). This height differential was reflected in the survival of archaeological deposits: the farmyard was levelled flat during the 18th century, with the result that the higher part of the site to the south was virtually totally truncated, while to the north there was progressively better stratigraphic survival (Fig 310).

The natural boulder clay was defined in a range of colours from pink to pale orange, and its weathered top appeared pale brown with whitish pebbles and occasional darker brown lenses or black or brown root stains. This weathered surface was universally recognised on site as the original natural ground surface. The survival of this material would tend to indicate that there had been little or no Roman truncation.

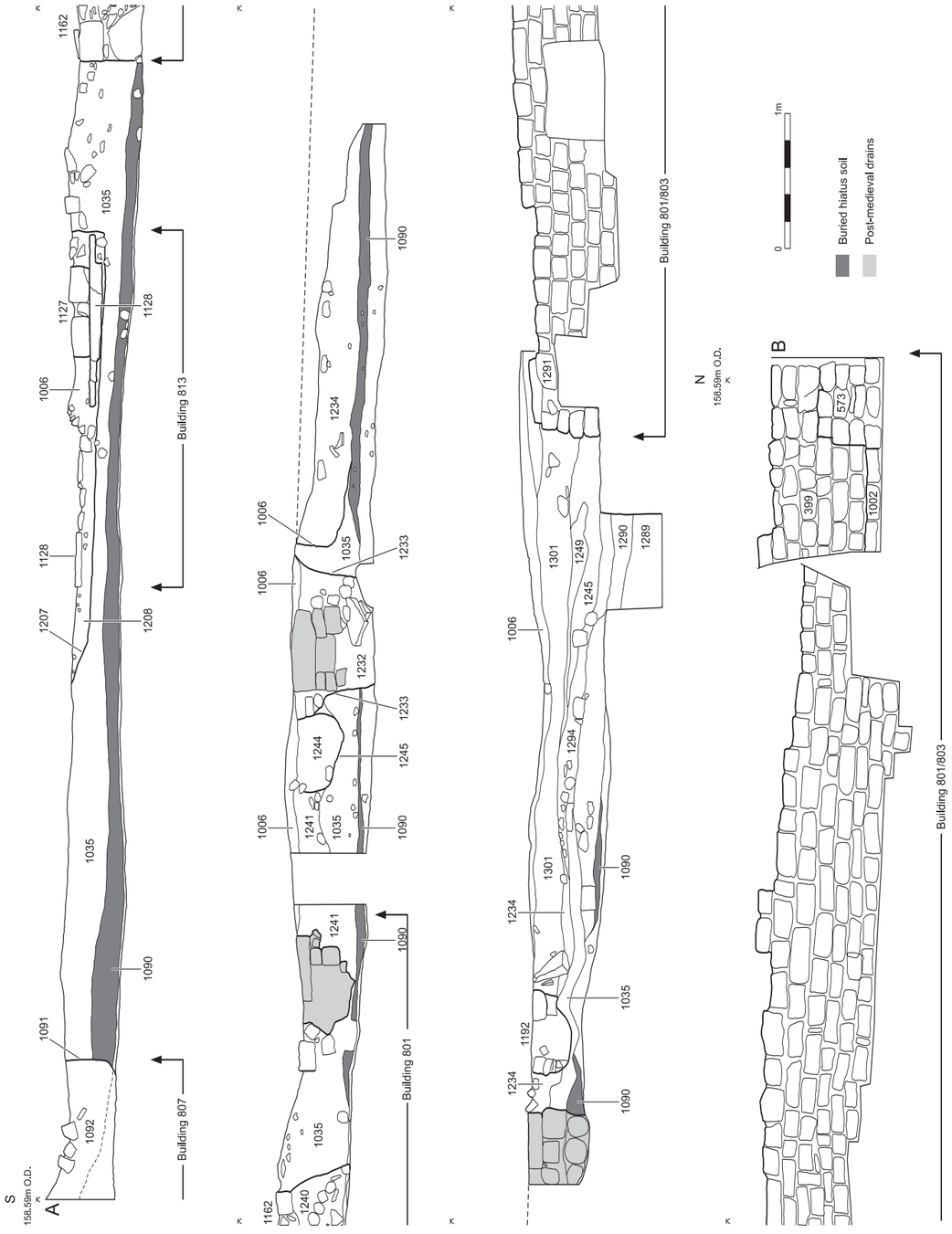
Occupation before the Stone Fort (Period 1)

Site Phase 1: early pits (= Wilmott 1997a, Site Phase 2: Period 1)

Description
Evidence relating to the period before the construction of the stone fort was entirely derived from the lowest levels within the deep service-duct trench (Fig 311). The surface of the natural boulder clay was exposed across this area, and was clearly devoid of the weathered surface familiar from the 1987–92 work. This implied that the clay (1287) had been deliberately truncated at a very early stage in the site's development, before the earliest features excavated came into being.

The earliest Roman activity following the truncation of the natural clay consisted of three substantial and stratigraphically well-defined features. These were cut into the clay (1287), but were sealed by all deposits associated with the stone fort. The southernmost of these was discovered owing to the fact that it had caused subsistence in an overlying wall, and this resulted in the collapse of the side of the service duct. It consisted of a sub-circular pit, 2.34m in diameter and 1.89m deep (1144). The main body of the fill of the pit was a mixture of lenses comprising organic debris, including heather twigs and straw, and re-deposited natural, pink boulder clay (1145). Above this was a deposit of clay incorporating flagstones (1146), which appears to have been an attempt to seal the pit in order to prevent subsidence, and which may have represented a number of such attempts over time. To the north, a cut feature (1284), at least 1.5m long and 1.80m wide was defined, and partially excavated. The possibility was expressed on site that this might have been the butt end of a substantial ditch, and this is entirely possible. The main fill of the pit/ditch was a very dark brown-black humic material (1283 = 1280), which produced wood fragments, leather and metalwork (*see below*). The lighter upper fill (1282) was cut by a further pit (1288), which was filled with grey silt (1289). These intercutting pits were also the cause of later subsidence, with overlying deposits slumping into them.

Eleven of these features were sealed by the levelling stratum of re-depositeded boulder clay (1035), which was deposited in preparation for the construction of the



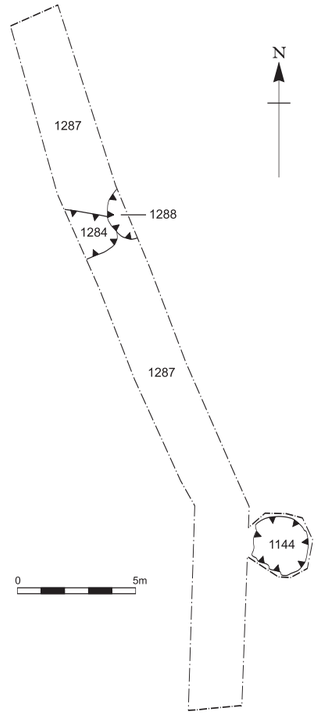


Fig 310 (opposite page) Birdoswald: major north-south site section A–B. see location on Fig 309.

Fig 311 Birdoswald: Site Phase 1. Plan of pits within service-duct trench. For location of duct see Fig 309.

buildings and roads of the stone fort during Site Phase 4. Although the relationships of all these features with the Site Phase 2 black hiatus horizon (1090), which lay beneath the clay levelling, was rendered somewhat ambiguous by subsidence, the balance of evidence suggests that they also pre-dated this deposit.

Finds and dating

Four contexts of this phase, all pit fills, yielded pottery (1145, 1146, 1283, 1289). The material of this phase would seem to have a Hadrianic (or later) date, but the small size of the assemblage precludes any determination of whether it might extend into the early Antonine period (p 295). The identifiable shoe leather from the pits comprises shoe styles thought to be typical of an 'Antonine Wall Group' *c* AD 140–60 (p 378, nos 2–5; van Driel-Murray 1993, 35), although it seems probable that the early context in which they were found at Birdoswald might move the dating of these shoe styles slightly earlier. It is possible that the leather from the pre-stone fort features was discarded by those engaged on the commencement of construction of the stone fort itself. Tent leather, (p 381, 383, nos 8–12, 16) and waste leather (p 384, nos 18–19) were also found in these pits. Among the other finds, an enamelled military belt plate (no. 97) was the most diagnostic object. This came from pit fill 1283, as did a small number of further finds; hobnails (no. 22), a fragment of wall plaster (no. 76), a hone (no. 80), a metal stud (no. 86), and a finely grained dressed siltstone fragment (no. 114).

Discussion of Period 1

The truncation of the surface of the natural clay to an even level may well be the result of the construction of the Turf Wall. It is clear from excavation elsewhere on the line of the Wall – for example at Appletree and Crosby-on-Eden (this volume, pp 106, 118, 132) – that turf was stripped from a broad area immediately to the north and south of the structure. At Appletree this left a swathe of bare clay very similar to that encountered at Birdoswald. At Birdoswald, however, the pollen evidence shows that the site was heavily wooded before the construction of the Turf Wall (Wiltshire 1997, 38), and the truncation was probably therefore the result of general land clearance, combined with the winning of building material for the Turf Wall. The ground would inevitably have been disturbed during the demolition of the Turf Wall. Following this demolition, the turfs of the Wall were disposed of by filling the Turf Wall ditch (Wilmott 1997a, 47), as they were at Appletree (this volume, p 106).

The chronological position of the three cut features, post-dating the construction of the Turf Wall and pre-dating the stone fort, suggest that they should be seen as part of the growing evidence for the existence of a turf and timber fort on the site. The first indication of the presence of an early fort came in 1927, when a covered drain, which pre-dated the stone, fort was found (Richmond 1929, 303). A ditch found in 1930 apparently post-dated the Vallum, but ante-dated the stone fort (Richmond 1931). In 1931 (Simpson and Richmond 1932, 141) a kerbed stone and clay foundation for a pre-stone fort rampart was found in the south-east corner of the fort. It was also noted that the rampart of the stone fort contained a large amount of pottery, and was composed of mixed occupation material. This was taken as "presumptive proof" (Simpson and Richmond 1932, 143) of an earlier fort (for discussion *see* Wilmott 1997a, 43–4).

Suggestively shaped traces seen in geophysical survey (Biggins and Taylor 1999, 105) have been tentatively interpreted as the lines of the defences of an early fort. This is probably not the case, as such defences would certainly have been found during the area excavations of 1987–92. The only other evidence for an early fort from the area to the south of the Turf Wall was found beneath the later northern *horreum* of the stone fort, where a very substantial north–south post trench was found (Wilmott 1997a, 46–8, figs 23, 25) indicating the presence of early timber structures. The existence of complex stratification beneath the south *horreum* was also established. None of these features yielded any dating evidence. In 1930, a hoard was found in the earliest levels encountered in the angle of the *via decumana* and *quintana*, "pushed into the floor" of a building (Richmond 1931). Although this building was assumed to be one of the earliest in the stone fort, it is also possible that this hoard was deposited in a building of the earlier timber fort (Wilmott 1997a, 54). The hoard was closed before the issue of Hadrian's second coinage in 125 (Bennett 1990, 350).

The previous discussions of the primary timber fort at Birdoswald have assumed that the fort lay entirely behind the line of the Turf Wall (Wilmott 1997a, 53–4, fig 24); a conclusion based primarily on the lack of evidence for any defensive features within the excavation areas of 1987–92. The principal contribution of the Site Phase 1 pits found in 1998 is to disprove this, and to demonstrate that the early fort must indeed have projected to the north of the Turf Wall line in the same way that its stone successor did. This fact enables us to propose a primary fort context for two other observations. In 1929, major excavations in the south-east *praetentura* of the fort revealed a phase ('Level 0') that lay above the backfilled Turf Wall ditch and beneath the Hadrianic stone buildings (Richmond and Birley 1930). This consisted of a drain and 'carpenters chips'. In 1987–92, excavations in the south-west *praetentura* revealed a similar phase above the backfilled Turf Wall ditch, this time comprising stake-holes, woodchips and a fragment of wattling. These features were notionally associated with the later hiatus soils (here, Site Phase 2), although this identification was never secure (Wilmott 1997a, 79, fig 49). It now makes considerably more sense to see these features as elements within a projecting turf and timber fort associated with the Turf Wall. The finds from the three cut features found cutting into the clay surface in Site Phase 1 suggest a Hadrianic date, although the indication of a later Hadrianic date is perhaps surprising.

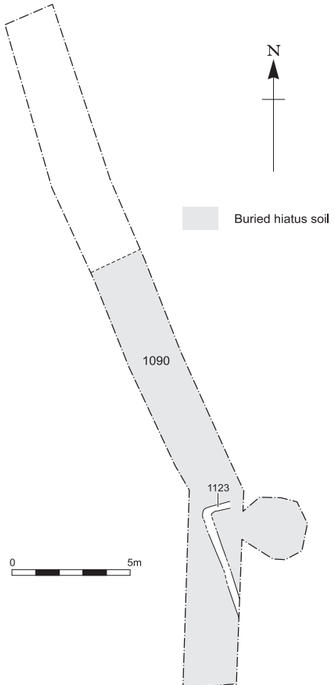


Fig 312
Birdoswald: Site Phases 2–3. Extent of black 'hiatus' soil within the service-duct trench, and Site Phase 3 beam slots.

The construction and primary occupation of the stone fort (Period 2)

Site Phases 2 and 3: The hiatus horizon and associated structures (= Wilmott 1997a, Site Phase 4: Period 2)

Site Phase 2: Description

This phase was represented by a widespread deposit of black material (565, 568, 1090; Figs 312, 313, 324), which was stratigraphically defined overlying the truncated natural surface and sealing the fills of the Site Phase 1 features. Macroscopically this material was a black or very dark grey silty soil with a moderately high organic content. It was sealed by a thick deposit of re-depositeded boulder clay (1035) that appears to have been laid in preparation

Fig 313
Birdoswald: plan to show the extent of observations of black 'hiatus' soils in the north-west praetentura.

for the construction of the buildings of the stone fort. The boundary between the black deposit and the clay was extremely sharp. Following the convention previously adopted (Wilmott 1997a, figs 25, 26, 34, 44), this deposit is shown in the section (Fig 310) as a solid black line.

There is no doubt that this layer is the same as the layer that was found in an identical stratigraphic position in every deep sondage in the previously excavated parts of the western *praetentura* and the *latera praetorii* (Fig 313; Wilmott 1997a, 73–9, fig 47). The deposit clearly represented a

hiatus in the process of the construction of the stone fort, and was referred to in earlier work as the 'hiatus horizon'. It was hoped that pollen and soils data might be recovered from this deposit, with the potential to augment and enhance the results gained in 1987–92. Unfortunately, the material proved to be heavily contaminated with diesel fuel and oil that had been held within the silt of modern drains and culverts, and was spread throughout the excavation by water inundation resulting from the abnormally wet summer of 1998.

Site Phase 3: Description

The feature that defined Site Phase 3 comprised an L-shaped slot (Figs 306, 324), which was cut into 1090 and filled with clay (1024) similar to the overlying deposit (1035), possibly as part of the same deposition operation. The slot (1123) was square-cut, 280mm wide and 120mm deep. It was aligned north–south with an eastward return at its southern end. At the corner of the return was a patch of small stones (1163). These features possibly represent a beam slot building, with a postpad in the corner.

Site Phase 4: The primary buildings (= Wilmott 1997a, Site Phase 5: Period 2)

Description

As already mentioned, the hiatus horizon of Site Phase 2 and the timber slots of Site Phase 3 were sealed by a uniform deposit of re-deposited boulder clay (531, 539, 873, 1035), which acted as an overall site preparation deposit. The colours of this clay reflected the geological variations in the parent material, ranging from dark pink, to (predominant) orange, to yellow and buff. This deposit was similar to the layer that sealed the fill of the Turf Wall ditch and the hiatus deposit further to the south (Wilmott 1997a, 79). The foundations of the primary buildings of the stone fort were cut through this material, and the make-up of roads was laid over it. To the south of the 1997–8 excavation area the stratigraphy of the site was truncated to the level of this deposit, and only a few fragments of the deeper foundations of the primary buildings survived. To the north the early structures survived, but were sealed by later, unexcavated structures. Despite this, the character and plan of the primary stone fort phase could be recovered with confidence.

There were four buildings in the primary western *praetentura*, the fragmentary remains of which (Fig 314) were recovered. The buildings were arranged *per scamna*, which is to say that their long axes were parallel with the *via principalis* on an east–west alignment. The walls of the buildings were all faced in coursed rubble (*sensu* Hill 1981, 2–4) and were bonded with orange clay derived from the natural boulder clays of the site.

Building 830 (= Wilmott 1997a, 82–3: Building 4400)

The western 30m of this building was excavated in 1989–90 (Fig 315). It was the southernmost building within the western *praetentura*, and its southern long side fronted the *via principalis*. It measured 5.6m externally north–south, and had clay-bonded, coursed rubble walls 540mm in width. The western end wall of the building lay against the *via sagularis*, and was on the same north–south line as the west wall of the building immediately to the north, the basilica, Building 807. The probable length of the building is 42.78m, which is the calculated length of the basilica (*see below*). In its initial phase (Wilmott 1997a, Building 4400, Phase a) the building was undivided, and was floored with small flagstones. Later, however, it was divided into a series of unevenly sized rooms (Wilmott 1997a, Building 4400, Phase b).

Building 807: basilica exercitatoria (= Wilmott 1997a, 79–82: Building 4403)

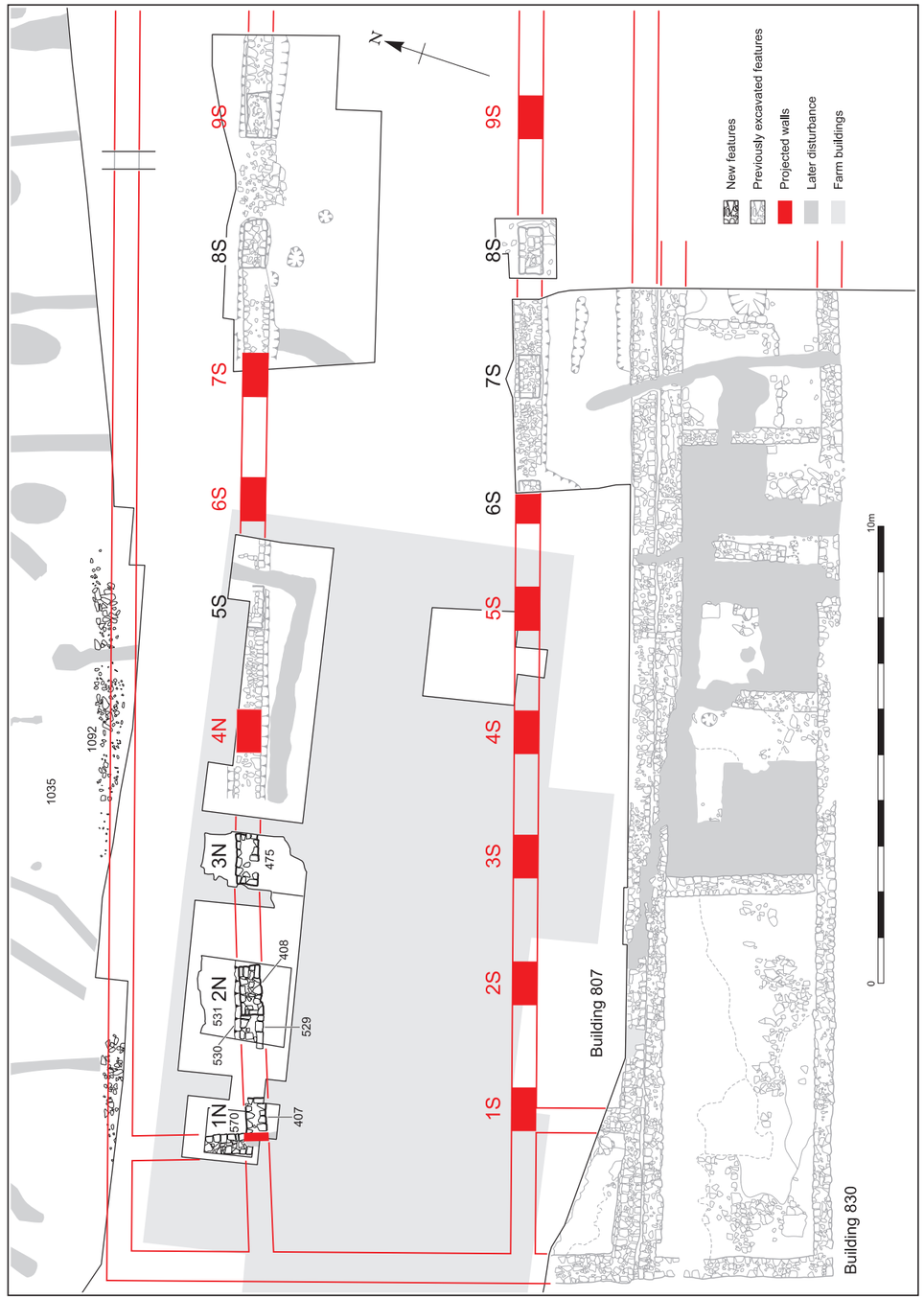
This was a major basilican building (Fig 309), anomalous in auxiliary fort planning, and has been fully described and discussed elsewhere (Wilmott 1997a, 75–82, 95–7; Wilmott 1997b). It lay adjacent to Building 830 to the north, separated by a gap of only 200mm.

As previously interpreted, the building measured 42.78m long, utilising most of the available space between its western wall, which abutted the *via sagularis* to the west, and the *via praetoria* to the east. The overall exterior width was 16.05m. The interior space of the building was divided into a nave 7.4m wide and two side aisles, each 2.9m wide, by a pair of longitudinal arcades. The evidence for these arcades consisted of two east–west sleeper walls on which were constructed a series of rectangular pier bases measuring on average 1.32m 710mm in plan. The end bays of the building were 3.52m long. Although only six of the pier bases were excavated in 1987–92, this was

Fig 314
Birdoswald: Site Phase 4. Plan to show outline of walls of this phase excavated in the north-west praetentura. *Locates Figs 315 and 317.*

sufficient to demonstrate through mathematical analysis that the arcades comprised 10 piers each spaced 2.36m apart, except for the central pairs, which were only 1.9m apart (Wilmott 1997a, 81–2; 1997b). So exact are these measurements, and the appearance of symmetry that any other interpretation seems most unlikely. Recent geophysical work by Biggins and Taylor (1999, 103) has shown an east–west wall several metres short of the calculated position of the east wall of the building. This is interpreted by the surveyors as an end wall, but is more

Fig 315 (over)
Birdoswald: Buildings 807 and 830; information from 1987-92 in grey tone, reconstruction of building plans in red and new information in black.



likely to be a later partition within the building, of a kind that is now known from excavation, or even a later shortening of the building. Given the deliberate variation of the central intercolumniation, which is best interpreted as an attempt to achieve internal symmetry, a primary foreshortening of the plan would appear highly unlikely.

The Study Centre excavation afforded an unexpected opportunity to confirm the mathematical reconstruction of the plan of the building by allowing the investigation of an area beneath the modern farmhouse incorporating the calculated positions of the westernmost three pier bases of the northern arcade (Fig 315 – compare Wilmott 1997a, fig 50; projected piers numbered 1N, 2N, and 3N). It was discovered that all three piers were present (1N = 407, 2N = 408, 3N = 475) and were situated at, or very close to their calculated positions. Piers 1N and 3N were recorded in plan only. 3N was in good condition, and its measurements of 1.4m × 694mm may be regarded as fairly reliable, despite the fact that it was flanked by two post-medieval wall foundations that almost certainly distorted it to some degree. Pier 1N, although present in its calculated position, was badly disturbed by the foundations of the farmhouse, lying as it did partially beneath the original load-bearing north exterior wall of the building. It was clear that the pier had been distorted in shape, with stones of the visible courses pushed out of position.

A trench 1.20m wide and centred on the middle pier (2N, 408; Fig 316) was excavated down to natural clay (569) as part of the main service duct. The primary clay levelling deposit (here, 531) was cut by a foundation trench (530) for a single-course sleeper wall of clay-bonded coursed rubble (529), 712mm wide, upon which the pier bases were constructed. The excavated pier base was 1.38m in length, 692mm wide, and survived to a height of 660mm (five courses). Following its construction the sleeper wall trench was filled with clay (563, 564), sealing the single course foundation. The primary floor deposit over the fill of the sleeper wall trench may be represented by an isolated flagstone (516), and flagstones have been recorded previously as the earliest flooring in the building (Wilmott 1997a, 81). Above this lay a compact deposit of red sandy clay with pebbles, 300mm deep (514). The surface of an overlying deposit of

Fig 316
Birdoswald: pier base 2N (408) in the northern arcade of the basilican Building 807.

similar material (512) was extremely compact, forming a hard, resilient pebbly clay surface at 158.55m OD. These types of flooring are typical of those recorded in other parts of the building, although they could not be positively identified with phases elsewhere. It is likely that a building of this size saw a complex sequence of floor patching, and it is probably too much to expect that small exposures of the floor should relate exactly one to another.

Piers 2N and 3N were 2.36m apart, thus conforming exactly to the interval recorded previously. The measured distance between 1N and 2N was 2.40m, but within this it is necessary to account for the distortion of 1N due to the construction of the foundations of the farmhouse. Abutted against pier base 1N (407) was a fragment of north–south clay bonded wall (570). By analogy with the previously excavated south-western corner of the building it seems likely that this was a primary partition wall.

To the north of the farmhouse lay the northern wall of the basilica, the foundation of which survived (1092), albeit in a highly truncated state. It consisted of an alignment of large river cobbles packed in boulder clay, within a trench (1091), which was cut into the preparatory clay levelling (1035). The truncation of the foundation trench, and the fact that its southern edge lay beneath the exterior wall of the farmhouse outshot, made the intended width of foundation impossible to judge, but it was at least 890mm. This also meant that it was not possible to assess the precise width of the aisle as built. It is, however, assumed that this was identical to that of the south aisle at 2.9m.

Between the north wall of Building 807 and the south Wall of Building 808 was a broad alley or road up to 6.7m in width.

Any surfacing of this area had been truncated down to the re-depositeded clay, although a worn hollow (1207) became filled with mixed silt containing some stone (1208 = 1055; Figs 304, 311).

Building 808: south barrack (Fig 317)

The only parts of Building 808 to survive post-medieval truncation were fragments of the bottom courses of its walls, but it was still possible to interpret the structure as a conventional barrack building facing northwards. In common with the rest of the fort buildings, the walls were built of clay-bonded coursed rubble with core work of small rubble in similar clay. The exterior walls were all 720mm wide, and the interior partition walls 640mm. Although the south wall of the building (1162) was provided with cobble foundations (1240; Fig 310) over one of the Site Phase 1 pits (1144) there was no further sign that the building had either cobble foundations throughout, or indeed any foundation trench of any kind. The walls appear to have been simply constructed on top of the general clay levelling deposit (1035).

Two courses of the western end of the south wall of the building (1162) survived, showing a well built, 90° corner with a western wall (1180) that ran southwards across the alley between Buildings 808 and 807 for a distance of 2.32m. An equally well built, stratigraphically contemporary wall, of which a single course survived (1188), abutted the north side of this corner at right angles.

Fragments of primary wall (1102, 1188, 1237, 1271 = 1158 = 876), which were later variously truncated, re-used, or demolished provide the basis for the plan of the western block of Building 808. This was a room, or suite of rooms, 10.17m long (north–south), and 8.24m in width (interior measurements). On the eastern side of the room the exterior wall 1271 was bonded with an east–west wall (1176) at a T-junction. This east–west wall appeared to be the main north wall of the building, suggesting that the western block projected 2.58m north of the main frontage (exterior measurement). This room may be conventionally interpreted as the officer's quarters of a standard barrack block, which projected to the north of the men's accommodation.

The overall width of the main block to the east of the projecting room or rooms was 8.97m (exterior dimension). Within this block, fragments of five north–south

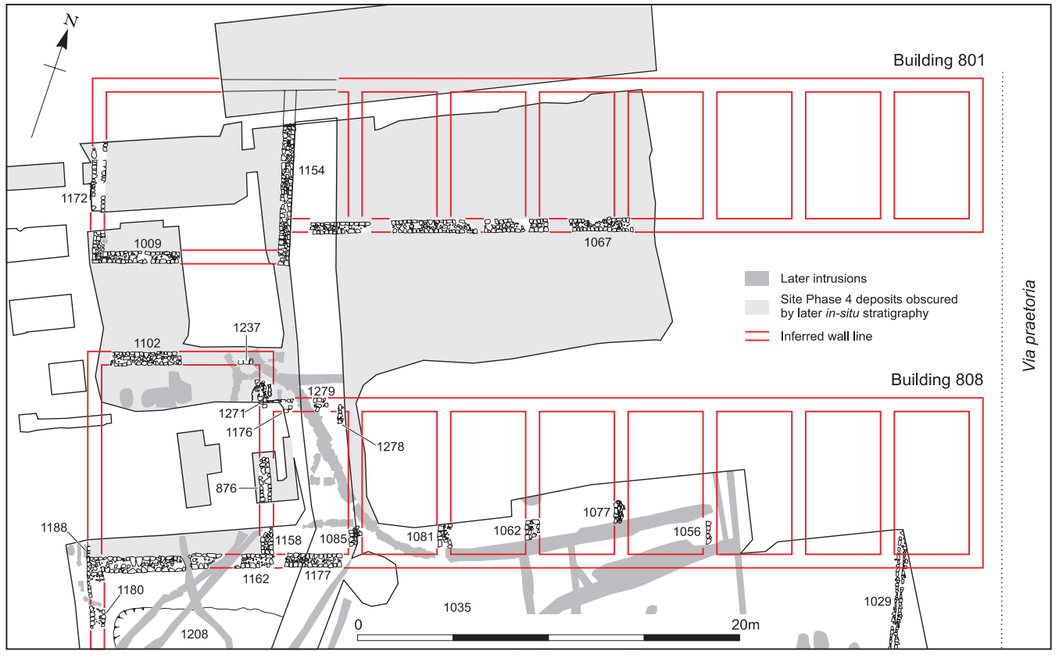


Fig 317
Birdoswald: barrack Buildings 801 and 808. Detail plan of excavated wall fragments with building interpretation in red.

partitions survived (1056, 1077, 1062, 1081, 1278 = 1185). If these are interpreted as barrack room partitions, then they represent five full *contubernia*, varying in width between 3.83m and 3.99m; sufficiently similar to have been intended as the same sizes. The intended size may be notionally interpreted as *c* 3.92m. If so, the available length of the building between the *via sagularis* and the *via praetoria* would provide space for a total of eight *contubernia* within a building whose overall external length was 45.52m. The internal detail of the *contubernia* survived in only one place; at the south-eastern edge of the excavation, a north–south, primary, stone-lined drain (1029, fill 1030) was cut into the clay levelling. This drain appeared to run straight north–south before describing a shallow curve westwards. The point of origin of the drain seems to have been in the south-west corner of the easternmost *contubernium*, where a latrine may have been located.

Fig 318
Birdoswald: Building 801; north wall of primary build (573) looking west, to where the angle of Site Phase 5 Building 803 (walls 423, 399: see Fig 320a) is built over it.

Building 801: north barrack (Fig 317)

This building is interpreted as a second barrack, facing southwards and confronting Building 808 across an alley. During Site Phase 5 two buildings stood on the site of Building 801; a long narrow barrack (Building 802) and a separate, free-standing centurion's quarters (Building 803). In the Site Phase 4 barrack however, the barrack and centurion's block formed part of the same structure. In the south-west corner of the centurion's block, the south and west walls of the building (1009, 1172) were built upon a thin clay deposit (1082), identified with the general clay levelling (1035), which lay upon a grey-brown cobbled surface (1083). Apart from here, the alley between the Site Phase 5 buildings was the only place where undisturbed elements of Building 801 could be found, and by chance, this alley was the route taken by the main service duct. It was therefore possible to examine these deposits.

Stratigraphy relating to the initial construction of Building 801 was defined in a small exposure against its north wall (Fig 319). The earliest deposit was a levelling layer of small, medium and large river cobbles in a grey-brown sandy silt matrix (539 = 873; Fig 330), identical to that beneath the south-west corner. Similar variations in the primary levelling for stone fort construction were found beneath the *via principalis* near the *porta principalis sinistra* (Wilmott 1997a, 84). Above this deposit were the lowest courses of the north wall of the building (573; Figs 318, 320a, 329), which survived up to four courses in height. A contemporary partition wall (1002), which later served as a foundation for the east wall of the Site Phase 5 Building 803 (399), was identified by virtue of the fact that it was properly bonded with courses of wall 573 (Figs 310, 330). The bottom courses of both walls were offset by 80–100mm and the north wall was 720mm wide. The south wall of the building (1167), of which four courses survived, was also bonded with the bottom two courses of the partition wall 1002, which appears to have been the partition between the main block of the barrack and the officer's quarters. Within the building a hard silty-clay floor (872) was laid.

Fig 319
Birdoswald: Building 801; drain (567) replacing primary north wall (573).

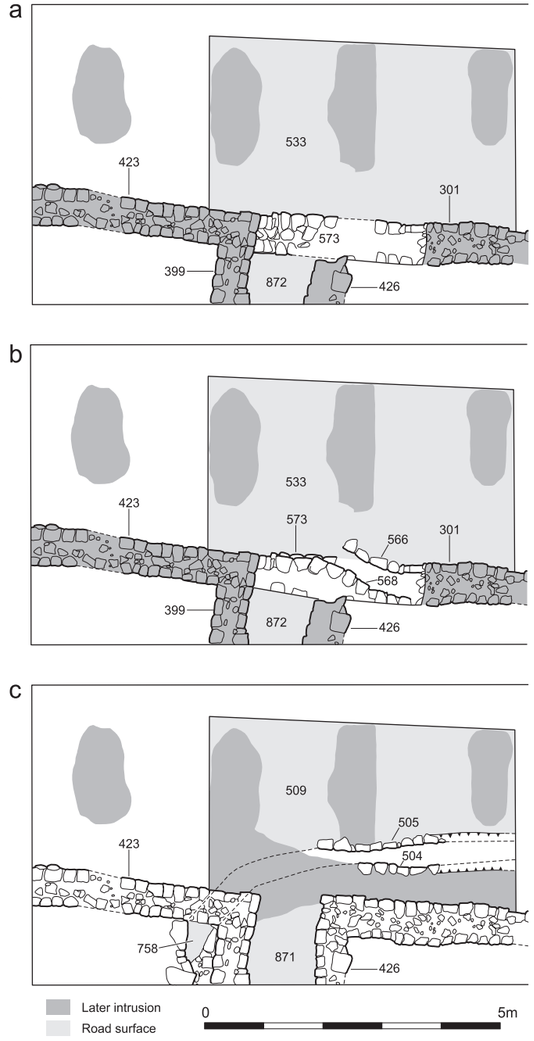


Fig 320
Birdoswald: phase plan of area between N corners of Buildings 802 and 803 to show (a) Wall of Site Phase 4 Building 801 (573), (b) conversion of above to drain (566, 568), (c) Site Phase 5 Buildings 802 and 803 with drain and surfaces.

The north wall was later demolished and converted into a stone-lined drain 300mm wide (Figs 319, 320b). This drain (567) had walls constructed of re-used facing stones (566, 568) without bonding of which one course survived. It was revealed only within the duct trench in Area A, but appeared to run along the length of the former wall (573), curving northwards at the point at which it was excavated. It did not survive to the north of the former wall owing to later activity in this area. The drain (567) appears to have been deliberately backfilled with compacted stone (566), and may represent a short lived intermediate phase.

Roads and alleys

Very little of the make-up, surfacing or drainage of primary roads and alleys were excavated, but some useful observations were made. Within the service duct trench the alley between Buildings 808 and 801 was sectioned. Above the general clay levelling (1035) was a layer of large cobbles, one deep (1294, Fig 310), over which was laid 120mm of fine orange gravel, the surface of which was compacted to a hard, resilient texture (1295, 1265, 1266, 1267, 1299; generic context number 1279). The pattern of compacted gravel over cobbles has been encountered in primary road levels elsewhere on the site (ibid), particularly on the *via principalis* and the western *via sagularis*, where the cobble layer tended to incorporate the capstones of drains.

On the *via sagularis* to the north of Building 801, identical stratigraphy was recorded in sondages 11.4m apart. Here a preparatory cobble layer identical to and contiguous with that found beneath Building 801 (539 = 873), formed the foundation for a primary road (533) comprising 100mm of orange-brown sandy gravel (Fig 320a,b). A 100mm deep layer of similar material (532) formed a road patch, which was probably laid during the lifetime of Building 801. In the eastern deep sondage, the primary road material (533) was overlain by a compact surface of flat siltstone of a dark blue-grey colour 80mm deep (523). Above this were two small lenses of stone debris in a black charcoal matrix (522), and a 120mm thick deposit of gravel in light-brown sandy clay (537) (Fig 335).

Finds and dating

Site Phases 2 and 3 contained no finds or dating evidence. Pottery, 63 sherds in all, was found in 13 contexts of Site Phase 4 (p 295). Most of the material was of Hadrianic–early Antonine date. Exceptions were Context 1279, which contained samian ware dated to AD 50–200, and a stamped Mancetter mortarium rim dated *c* AD 135–65/70. This context was an upper road surface, and therefore relates to the use of the buildings and roads, rather than to their construction. This pottery is therefore potentially later than the construction deposits from which most of the other material from the phase derived. Similarly, a group from Context 566 dated to AD 160/70–250, the latest ceramically in Site Phase 4. This context was the filling of the drain constructed into the north wall of Building 801, and is therefore the stratigraphically latest deposit of Site Phase 4. This group provides a *terminus post quem* for rebuilding in Site Phase 5.

Discussion of Period 2

The Site Phase 2 black soil, which lay over the truncated clay and the pits of Site Phase 1, was part of an extensive deposit covering much of the north-west quarter of the fort (Fig 313), and seems to represent a major hiatus. The previously reported stratigraphic relationships of this deposit are crucial to understanding its importance in the early history of Birdoswald (Wilmott 1997a, 59). It represents a complete cessation of work during the construction of the stone fort. The stratigraphic sequence recorded at the *porta principalis sinistra* explains the significance of this horizon. The Turf Wall ditch was carefully backfilled with a deliberate layer of rubble and clay in order to make up the ground for the construction of the gate, and to prevent subsidence. The foundations of the gate were laid, and the bottom blocks of the structure of the piers were put into place, using well-dressed blocks. The black deposit post-dated this, as it overlay the raft foundation of the gate, and lapped up against the lower blocks. That this represented a hiatus during the construction of the stone fort is demonstrated by the fact that the primary gate-sill was laid over the black deposit at a later time, when the gate was completed in a noticeably less well finished masonry style (Wilmott 1997a 56–60).

The construction of the roads and principal buildings of the fort was contemporary with the completion of the gate. This involved the emplacement of an extensive levelling deposit of boulder clay and gravel directly over the hiatus soil across the whole site, sealing the black material rapidly and producing a sharp boundary.

The conclusions drawn from the analysis of the hiatus soils (ibid, 78–9) were these. Following the primary intervention on the site caused by the construction and demolition of the Turf Wall and associated fort, work on the stone fort began. Shortly afterwards a break took place in the building work. During this break a humic soil developed in the stripped and disturbed areas of the site. There was continued human activity during the accumulation of these soils, and this was followed by a period of undisturbed plant growth and 'normal' soil development. Some scrub growth took place, which was subsequently cleared by burning, and the site was extensively used for animal housing or penning until just prior to the commencement of the completion of the stone fort. The general conclusion that the site was used during this hiatus is derived from analysis of the soil chemistry (McHugh *et al* 1997), but has now been confirmed by the L-shaped slot of Site Phase 3. This seems to represent the foundation of a short-lived timber building, which post-dates the accumulation of most of the hiatus deposit, but antedates the completion of the stone fort. It may therefore synchronise with the apparent animal housing phase which immediately precedes the resumption of work on the stone fort.

The new information on the primary stone fort plan derived from these excavations is important. The existence of the *basilica exercitatoria* (Building 807) in the western *praetentura* had raised the question of the impact of this as yet unprecedented structure on fort planning (Wilmott 1997a, 99). This area would conventionally be assumed to have been occupied entirely by barracks, and recent geophysical survey has supplemented the report of the 1929 excavations (Richmond and Birley 1930) in showing that this was the case in the adjacent eastern *praetentura* (Biggins and Taylor 1999). In only one Wall fort, Wallsend, has the Hadrianic layout been totally excavated and thoroughly understood (Hodgson 2003). The *praetentura* plan of this fort was symmetrical about the *via praetoria*. On each side, a long, narrow building fronted the *via principalis*. This was constructed back-to-back with a single barrack block, which faced a further barrack across an alley. The second barrack was built back-to-back with a third, which fronted onto the *via sagularis*. In the eastern *praetentura* at Birdoswald, excavation in 1929 showed that a long narrow building similarly fronted the *via principalis* and that this too was placed back-to-back with a barrack block. Geophysical survey showed that this barrack faced a second across an alley. As at Wallsend, the second barrack block was built back-to-back with a third,

which this time faced a fourth barrack across another alley. The fourth barrack backed onto the *via sagularis*. Apart from the 'extra' barrack, this was identical to the layout at Wallsend. In the western *praetentura*, however, the plan was amended to accommodate the basilica. It seems to have been important to maintain a symmetry of street frontage to the north of the *via principalis*, as a long narrow building (Building 830), mirroring that to the east, was provided. Behind, and back-to-back with this building lay the basilica. North of the alley behind the basilica lay a pair of barracks that faced each other, with the back of the northernmost on the *via sagularis* (Fig 321). It may be significant that this primary layout maintained the presence of six barrack blocks in the *praetentura*; the same number as at Wallsend. It should be stressed that the geophysical surveys at Birdoswald present a palimpsest of the barracks at the latest stage in their development and survival, and not the Hadrianic pattern. Despite this, the maintenance of a similar building plan throughout the history of the western *praetentura* encourages the idea that the basic layout of barracks in the Hadrianic period to the east also was maintained, and therefore that the above interpretation is valid.

The only Hadrianic barrack plans available from Birdoswald are the partial plan taken from the excavations in the east *praetentura* in 1929 and the recently

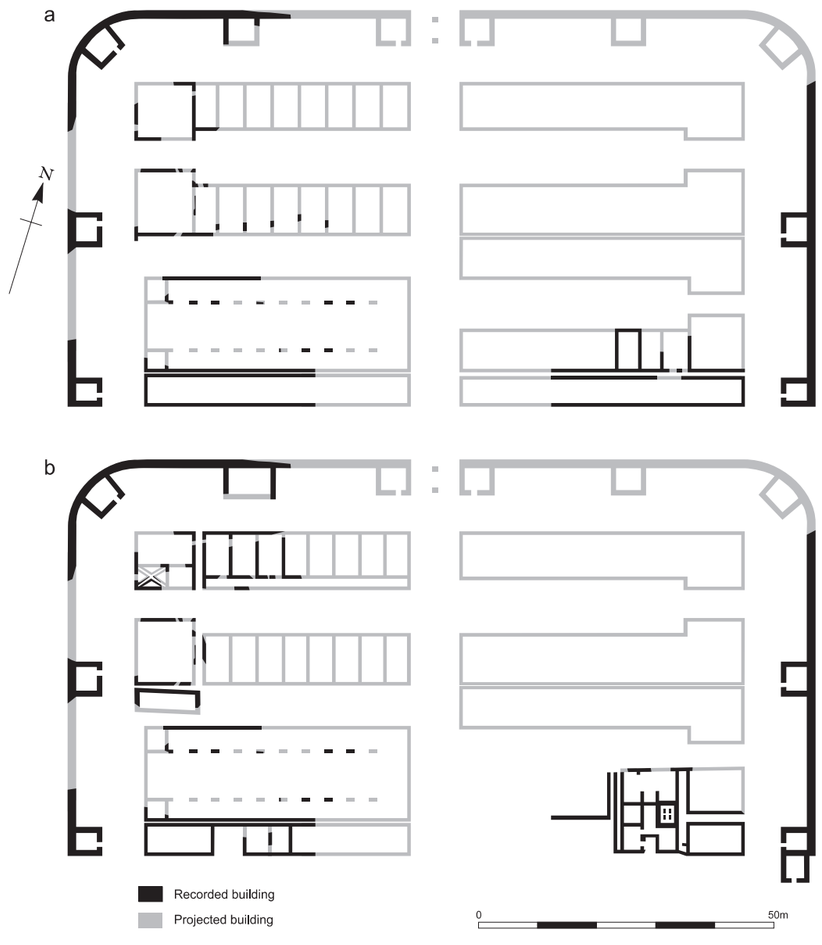


Fig 321
Birdoswald: phase p
praetentura *as orig*
built (a), and as alt
Period 3 (b).

excavated southern barrack, Building 808. Although so little survived of this structure, its identification seems secure. The plan as reconstructed from small scraps of primary walling is entirely consistent with the pattern of Roman auxiliary barracks. It was particularly fortunate that sufficient evidence of partition walls survived to assess the dimensions and numbers of *contubernia*. The dimensions are the only real comparative features that the building offers, and these can be assessed in the light of the detailed analyses that have been compiled for such buildings by Davison (1989).

Firstly, the overall length of 45.52m, and the width of the main block at 8.97m fall within the most frequently occurring size range in Davison's (1989, 6, fig 2.4) scattergram analysis of Trajanic and Hadrianic barrack types across the Roman Empire. Most other considerations are also within his normal ranges. The length of the officer's quarters as a percentage of the length of the building is 21%; within the standard 20–27% (Davison 1989, 92), while the area of the officer's quarters at 83.8 sq m is within the quoted range of 50–150 sq m (Davison 1989, 12). The areas of the *contubernia*, however, are more exceptional, as at 29.52 sq m the area is high; Davison's main concentration of such areas is from 14–29 sq m (1989, 13, fig 10).

The barrack block excavated in the eastern *praetentura* in 1929 was identified by the excavators as "probably a standard barrack" (Birley and Richmond 1930, 172). It was divided into small rooms which have been identified as *contubernia*. Although the published plan is less than satisfactory, it does allow some examination of the dimensions of the building. Three *contubernia* had widths that could be measured. The first was somewhat over 4m in internal breadth, but the other two compare with those in Building 808. The officer's quarters were in the region of 9m wide, and the main block somewhat less than 9m in external width. These dimensions are very closely comparable with those of Building 808, and it is clear that, given the available length of the building, there would be no space for more than eight *contubernia*. Geophysical survey has shown that, of the other three barracks in the eastern *praetentura*, the northernmost seems to have been altered, but the central back-to-back pair also featured eight *contubernia* (Biggins and Taylor 1999, 102). It is reasonable to conclude, therefore, that all six barracks shared the same original plan. The only difference in the eastern *praetentura* is that the geophysical survey shows no projecting officer's quarters. This may be due to later re-planning.

Discussion of *contubernia* has historically centred on their number, and what this might be presumed to say about the fort garrison. The surviving partitions in Building 808 give a clear size for the rooms, and confirm that an even spacing within the available building length would give a total of eight similarly sized *contubernia*. Extrapolation from the later periods allows the same conclusion for the north barrack, Building 801. Davison (1989, 12, fig 9) shows that the most usual number in auxiliary barracks is ten, with eight as the second most common number, although eight is uncommon in Hadrianic and Trajanic Britain. It has generally been assumed that an auxiliary infantry barrack housed a century of 80 men in ten *contubernia* each of eight men, and that a cavalry barrack was of similar size, but with eight rooms, housing two *turmae*, each of 32 men, in eight man *contubernium* units (eg Breeze and Dobson 1974, 14; Johnson 1983, 63; Hassall 1983). Davison (1989, 186–7) showed that there are no universally applicable, general, simple rules that govern the relationship of *contubernia* numbers to garrison type, although he inclined to believe a tendency towards the traditional norms. The question should be capable of more definition on Hadrian's Wall, where forts were constructed for individual auxiliary units, and the requirements for the different kinds of units should be clearly demonstrable (Breeze and Dobson 1969; 1974; Austen and Breeze 1979). The truth of this has dramatically been shown in recent work at Wallsend (Hodgson 2003; Hodgson and Bidwell 2004), where the barrack requirements for a *cohors quingenaria equitata* in the Hadrianic period have been conclusively demonstrated. The fort was zoned, with six infantry barracks in the *praetentura*, and in the *retentura* four cavalry barracks of a distinct type. These barracks had an officer's quarters and nine *contubernia*, which were divided to accommodate horses and men. Each *contubernium* is reckoned to have held three men and their mounts. The principal diagnostic aspect of the barracks is the existence of a definite partition within the *contubernia*, and a large pit in the front (stable) room. The identification of these

barracks has shown that single *turmae* were accommodated in cavalry barracks, and that there was no requirement for separate stables in forts, as the horses were accommodated in the barracks. This evidence, with other examples from Germany (Sommer 1995) seems to show the normal type of cavalry barrack. During the Birdoswald excavation in 1997–8 it was thought that the barracks of eight *contubernia* might have been cavalry barracks, based upon the traditional idea that the barrack would accommodate the men of two *turmae*. Given the evidence from Wallsend and South Shields, this now seems highly unlikely. It is clear that the Birdoswald barracks did not have the diagnostic features (pits and partitions) of the newly identified single *turma* cavalry barracks. The best interpretation of the buildings is therefore as infantry barracks, possibly with the unusually large *contubernia* accommodating ten men each, and that in this case a century was divided into eight *contubernia* of ten, rather than ten of eight.

Building 808 shows one slightly anomalous feature, at the south-west corner, where the western end wall was continued beyond the southern exterior wall of the barrack, and returned to the east. Although this might have been a corridor on the back of the barrack, such an arrangement would be unique. It is perhaps more likely to represent an error in layout or a change of plan during construction, in which the barrack had been begun with the projecting officer's quarters facing southwards instead of northwards.

The space between the basilica (Building 807) and the barrack (Building 808) is exceptionally broad for an alley in this position. As the barrack faced northwards, the alley functioned with the basilica alone. The north side of the basilica was the only place, apart from the two ends, where the building could be accessed and it is probable that the main entrances were on the north side. If so, the area to the north could have been used in association with the basilica, perhaps as an area to gather troops together before entering the building. If the interpretation of the basilica as an exercise facility for infantry is correct (Wilmott 1997a, 75–82, 95–7; 1997b) its position among a number of infantry barracks makes perfect sense.

The elucidation of the plan of the *praetentura* contributes to discussion on the garrison of the Hadrianic fort. Previously the only evidence was derived from finds and from the size of the fort (Wilmott 1997a, 99). The analysis of fort size by Bennett (1986) was cited as demonstrating that Birdoswald could have been built for any type of unit other than an *ala milliaria*. At 2.145ha in area, Birdoswald is closest to Housesteads (2ha), which is thought to have been built for a *cohors milliaria*, and Chesters (2.35ha) which is known to have been built for an *ala quingenaria* (Austen and Breeze 1979). The presence of the basilica prompted the conclusion that the first garrison was either wholly infantry in composition or part- mounted. There is limited evidence for the presence of auxiliary cavalry in the form of a samian sherd inscribed as the property of one Martinus, a decurion (Wilmott 1997a, 356: found in the primary rampart of the stone fort), a fragment of a curry comb, and the proportionately large quantity of silver among the coinage. The coin evidence has prompted Shotter (1995) to believe that the garrison might have included an element of the higher paid auxiliary cavalry. The identification of six infantry barracks in the *praetentura* proves conclusively that infantry was a major element in the garrison; however, the question of whether the primary garrison was part-mounted is not addressed. The recent findings at Wallsend and South Shields (Hodgson 2003) conclusively show that the *praetentura* in Hadrianic forts for *equitate* units in the Wall zone was reserved for the infantry, and the *retentura* for cavalry. At Birdoswald the emphasis in the *praetentura*, with six century barracks and the *basilica exercitatoria*, is certainly on infantry.

What then can be said of the *retentura*? Whether the fort was built for a *cohors milliaria* or a *cohors equitata quingenaria*, four barrack buildings would be required – either infantry century barracks like those in the *praetentura* or cavalry *turma* barracks like those at Wallsend and South Shields. Although the *retentura* was the same size as the *praetentura*, and there is room for these buildings and more besides, there would certainly not be sufficient space there for the 12 additional barracks that would be required to house the remaining four centuries and eight *turmae* of a *cohors equitata milliaria*.

The *retentura* has been explored recently by geophysical survey, and small-scale excavation took place in the 1930s. It is clear from reports on these works that the

excavation picked up features not recorded in geophysical survey and vice versa. The geophysical survey of the *retentura* (Biggins and Taylor 1999, 105) shows an area that has clearly seen a complex series of alterations culminating in a possibly medieval farm complex. The survey does not give a picture from which the Hadrianic layout of the fort can be extrapolated. The reason for this may be found in the nature of the ground and the depth of the archaeology. The buildings to the south and east of the excavated *horrea* were built in a deep natural hollow from the base of which buildings were terraced upwards to north and south (Richmond 1931, 127; Wilmott 1997a, 27, fig 13). This means that the buried back wall of the *principia* survives to 15 courses, and the north wall of the building to the south of the south *horreum* is at least 1.75m in height. Despite Richmond's (1931, 127) comment that buildings at foundation level were revealed in the area over the *via quintana*, it seems likely that the northern part of the *retentura* was similarly deeply buried. This is suggested by the pattern of medieval ridge and furrow, which appears only over these deeply buried areas of the fort (Biggins and Taylor 1999, fig 2 – topographic survey), where the drift of soil into the naturally low-lying centre of the fort in the post-Roman period created sufficient depth for ploughing to take place. Excavation revealed a primary building in the south-west angle of the *via quintana* and the *via decumana*. The eastern end room of the building was partially excavated, but can certainly be defined as a single small room, possibly the *contubernium* of a barrack block. This room was *c* 3.95m wide; consistent with the *contubernia* in the barracks of the *praetentura*. This building did not show in geophysical survey; the survey showed only later structures, partly attested by the 1930 excavation (Richmond 1931, 128–30), which were built over the primary buildings and over the *via quintana*, and which therefore post-dated the blocking of the *portae quintanae*. It is difficult to assess the excavated evidence (derived from 'rapid trenching' in 1930) for primary buildings at the rear of the *latera praetorii*. Although it is possible that the buildings extended southwards as far as the *via quintana*, the geophysics seems to indicate that this was not the case, and that the area around the *via quintana* included an empty space in the order of 16m broad. This would be consistent with the existence of such spaces at Wallsend and South Shields, which were interpreted by Hodgson (2002, 889) in association with the deployment of cavalry from the cavalry barracks in the *retentura*. It is necessary to conclude that what is known of the archaeology of the *retentura* is inadequate to address the issue of primary garrison type in the fort, and it remains possible that this was either a *cohors milliaria*, or a *cohors equitata quingenaria*.

Second major construction phase and subsequent occupation (Period 3)

Site Phase 5
(= Wilmott 1997a, Site Phase 6: Period 3)

Description

Site Phase 5 was characterised by a major campaign of rebuilding and remodelling in the western *praetentura*. This included the complete remodelling of the barrack buildings of Period 2. This means that Building 808 becomes Buildings 809 and 810, and Building 801 becomes Buildings 802 and 803. An interval tower on the north wall of the fort (Wilmott 1997a, 179, building 4419b) becomes Building 804 (Fig 322). The subdivision of Building 830, however, does not occur until a later phase.

Building 830
(= Wilmott 1997a, 82–3: Building 4400)

Although there is no dating evidence for the change, it is at least possible that this was the phase during which the building was divided into a series of unevenly sized rooms (Fig 309) (ibid, Building 4400, Phase b).

Building 807: basilica exercitatoria
(= Wilmott 1997a, 79–82: Building 4403)

No alterations took place that are dated definitely to this phase. It is probable that the building remained functionally the same and undivided.

Building 813 (Figs 323, 324)

Building 813 was constructed *de novo* in the western end of the broad alley between the basilica, Building 807, and the remodelled southern barrack, Building 809. Three stones of the western wall (1186) of the building survived, although it is possible that the southward return of the south wall of Building 807 (1180) was used as part of the foundations of the north-west corner of the building. The northern and eastern

Fig 322
Birdoswald: Site Phase 5: plan of all excavated walls in north praetentura, *locating Figs 323, 326.*

walls of the building (1127) survived to a single course on cobble foundations. Areas of packing made of flat, micaceous sandstone flags, were placed to fill soft spots in the clay beneath the foundation, and the shallow worn area of Site Phase 4 (1207, fill = 1208) was also capped with flags (1128; Fig 304) for this purpose. The walls of the building were 840mm in width, and were constructed of coursed rubble set in orange clay bonding with a rubble and clay core. The building measured 11.20m long, and would have been a maximum of 5.50m wide. No evidence existed for its function.

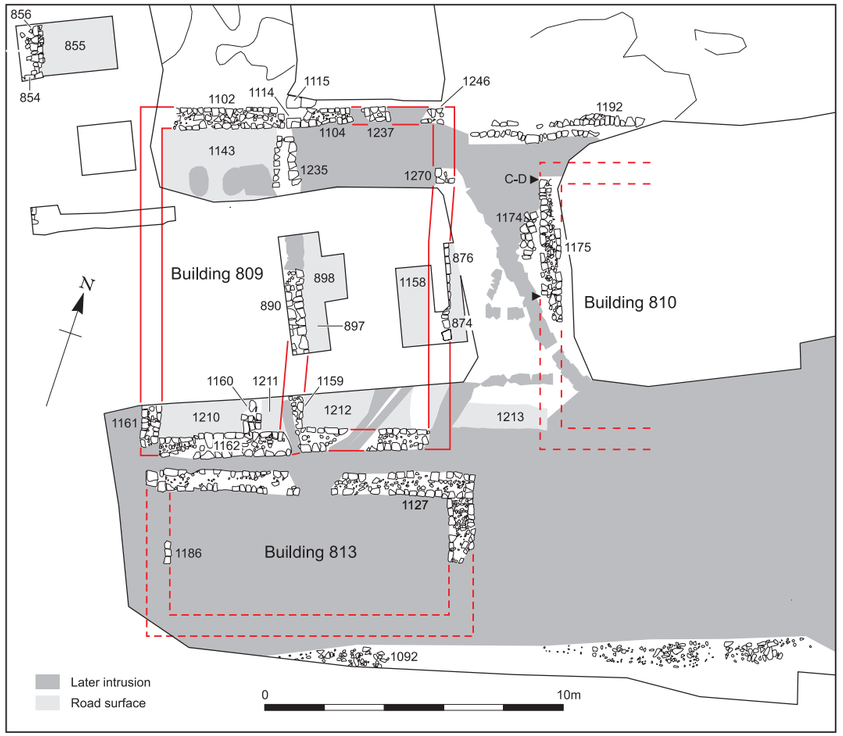


Fig 323
Birdoswald: detail plan of Buildings 809, 810 and 813.

Fig 324
Birdoswald: Buildings 813 and 808/ 809 viewed from the east. Within the service trench in the foreground, the black hiatus soil deposit of Site Phase 2 can be seen, with the orange clay-filled beam-slot of Site Phase 3.

Building 809: officer's quarters, south barrack (Figs 323, 324)

The unitary barrack block (Building 808) of Period 2 was converted into a pair of buildings, consisting of a barrack building and a freestanding officer's quarters, divided by a narrow alley. Building 809 is the officer's block. This was constructed as a total rebuild, as could be seen at the south-west corner of the building. Here the primary corner comprising walls 1162 and 1188 was demolished to its foundations, and a new corner (1161) was constructed on the old foundations, but slightly off the previous line. The east wall of the building (876 = 1270) was moved 880mm east of the equivalent wall (875) of Building 808. The earlier wall was sealed by a compacted orange clay floor (874 = 1158), which respected this rebuild on both the eastern and western sides. The relationship between this wall and the south wall was obscured by modern disturbance. The new building measured 10.67 × 11.7m externally.

Within the block, two partition walls (1160, 1159 = 890) were found abutting the south wall of the building. As these were only 1.02m apart, they were probably two sides of a narrow internal corridor. The rooms defined by these partitions were all floored with compacted orange clay (1210, 1211, 1212, 897), which acted as the base for flagstones (898). The northern wall of the block maintained a fragment of the earlier fabric (1102) at its western end. This was partially demolished up to the northward outlet of a stone-lined drain (1235). East of this drain a new wall (1104 = 1237 = 1246) was built. The base of the drain (1114, 1115) comprised flat stones, which were built into the replacement wall 1104. These stones were re-used fragments of a decorative stone slab (Fig 327). The floor built up around the drain (1143), which survived only on the west side, again consisted of compacted orange clay.

Building 810: south barrack (Fig 323)

The remodelling of the primary barrack, Building 808 was attested only in the westernmost *contubernium*, which was converted into an alley. To create a western exterior wall to the barrack, the partition wall between the western *contubernium* and the next to the east was demolished and rebuilt. The sequence is shown in Fig 325. The earlier *contubernium* wall (1278) and its associated scrap of flagstone floor (1227) were sealed by a spread of orange clay, typical of the clay used as wall-bonding on the site, spreads of which tend to be associated with demolition (1226). This material was in turn overlain by a brown clay deposit (1285), which served as bedding for the new western wall (1175). To the west of this wall, part of the alley appears to have been surfaced with small, sub-rectangular blocks laid edge to edge, but in an irregular pattern (1174). Elsewhere in the alley (Fig 304) it is clear that the southern wall which had connected Buildings 809 and 810 had been robbed in a broad cut (1239), which was filled with sandy gravel to create a road surface between the buildings, and on the alley to the north. No evidence survived for alterations within the barrack, or for the internal arrangements or the number of *contubernia*.

Alley (Figs 323, 326)

To the north of Building 810 was a stone-lined drain (1192). This drain ran from west to east, and abutted the side-wall of the officer's quarters, Building 809. The drain was built into a shallow cut (1239), which must have removed the north wall of Building 808 in the alley between Buildings 809 and 810 (Fig 310), and which was filled with grey and orange sandy gravel (1234), compacted to create a proper surface. Lying on this surface to the west a perforated stone drain cover was found (Fig 327). It seems likely that the piece came from the top of the western terminal of the drain against the side of Building 810, where it may have received waste water from the roof of this structure.

The laying of this drain was part of a general resurfacing of the area between

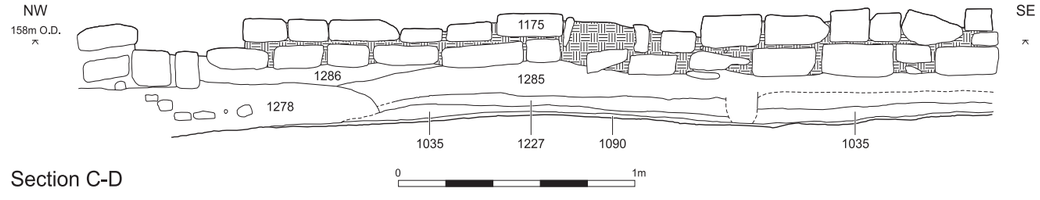
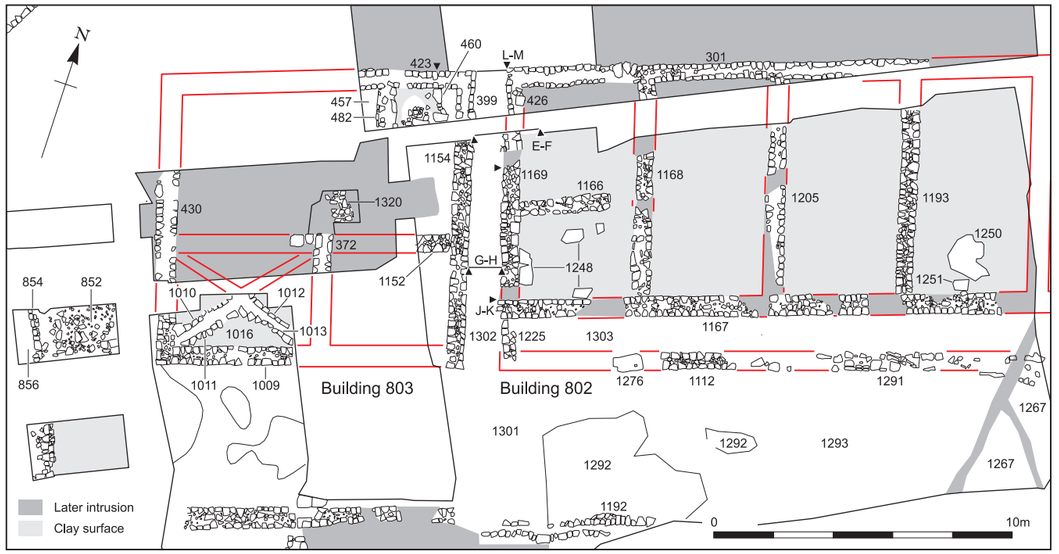


Fig 325
Birdoswald: east section in Buildings 808/ 810, C–D (location see Fig 323).



Buildings 810 and 802 in association with the reconstruction of the barrack buildings. The area was covered with a thick layer of sandy gravel (1301 = 1303 = 1293 = 1267), which was later patched with deposits of rubble material (1292). The drain to the north of Building 810 was mirrored by a similar drain to the south of Building 802 (1291; Figs 326, 310), which butt-ended against the east wall of Building 803 and ran eastwards, presumably to discharge into the roadside drain of the *via praetoria*.

Building 803 (Phase i): officer's quarters, north barrack (Fig 326)

The primary barrack, Building 801 was remodelled, and turned into a pair of buildings. To the west, the separate officer's quarters seem to have maintained the dimensions and wall lines of the earlier attached officer's block, with exterior measurements of 10.3 × 9.87m. The north wall (423) was built directly upon the bottom four courses of the Site Phase 4 wall of Building 801 (573; Fig 329). The east wall (399 = 1154) was similarly constructed on the bottom four courses of the Building 801 partition wall (1002), while the south and west (1009) walls of the earlier structure were retained. The walls were uniformly 565mm wide, faced with coursed rubble, and bonded with orange-brown clay, and, as usual, the core was of rubble within a matrix of orange-brown clay.

Owing to later truncation, and the presence of modern buildings on the site, it was not possible to gain a full plan of the internal arrangements of the building. It was, however, possible to conclude that it was relatively well appointed. The most obvious evidence for this was the presence in the south-west corner of a saltire-shaped channelled hypocaust (Fig 328). The two excavated channels were 200mm wide, and faced with two courses of coursed rubble (1010, 1011, 1012, 1013), 200mm deep. The channels were set into orange clay (1016, 1017), which formed the platform for the raised floor under which they were built. They were filled by dark silty clay (1014, 1015). The channels were constructed at 45° to the exterior walls (1009), meeting in the centre. There was some indication that they opened up into a small rectangular chamber in the centre of the room, which would, however, have been too small to require *pilae* to support the floor over it. Only half of this heated room was excavated, although its north-eastern corner walls (372), built of uneven coursed rubble containing re-used material, were located. Its full internal dimension would have been 3.66m north–south 4.67m east–west. The unexcavated room to the east would probably therefore have measured 3.66m × 3.81m, and this is so reconstructed in Fig 326. A stub of the northern wall of this room was also

Fig 326
Birdoswald: detail plan of Buildings 802 and 803.

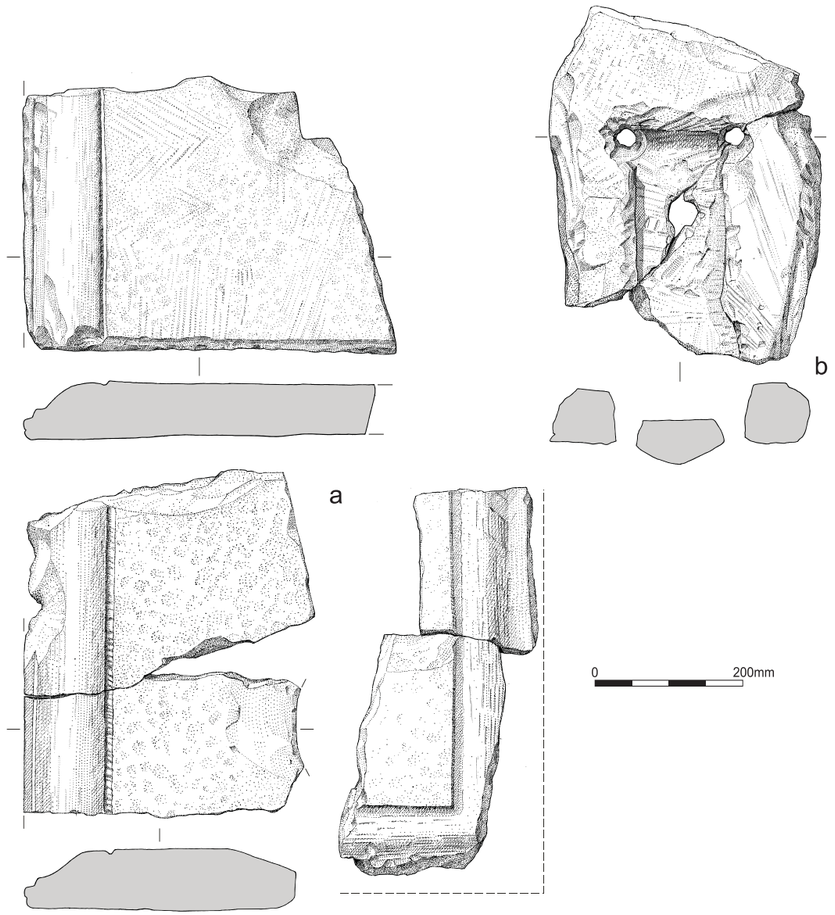


Fig 327
Birdoswald: (a) re-used decorative stone panel (b) perforated stone drain cover.

Fig 328
Birdoswald: channel hypocaust in Building 803.

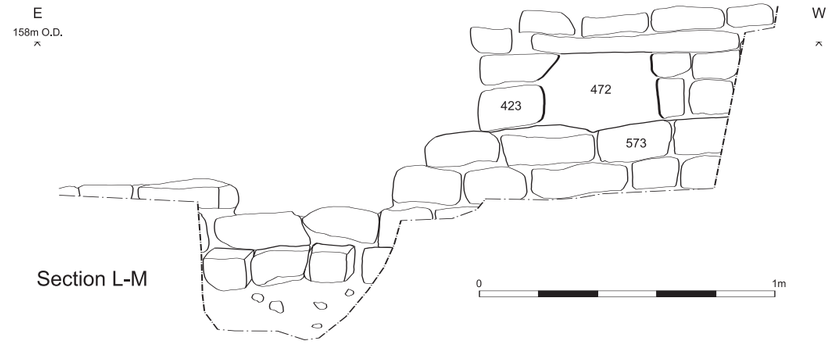


Fig 329
Birdoswald: elevation L-M, outlet to privy in Building 803 (location see Fig 326).

located (1152). To the north of these two rooms was a corridor floored with small flagstones set in clay (1320).

In the north-east corner of the building it was clear that an artificially raised floor laid at the same level as the hypocaust, existed throughout the building. Again, clay (457 = 84) was used to raise the level. A slight partition wall (482 = 83) of which a single course partially survived was constructed on top of the clay, and divided off an area 2m wide in the angle of the building (Figs 320c, 331). This is interpreted as the private latrine of the officer's quarters, and it was clear that the latrine channel, outlet and raised clay floor were of one construction with the remodelling of the corner of the building. Internally, the channel was formed by revetting the clay flooring material (457) with two courses of stone, leaving a channel 80mm wide between this revetment (460) and the east wall (399). (460) includes a flagstone base to the channel, beneath which lay a coin (CO9), dated to AD197. The channel was partially backfilled with a deposit of orange clay (458), similar to the floor (457), which may represent some slumping. The outlet comprised a drain, built within the north wall of the building, and angled at 45° to flow outwards at the north west corner. The base of the drain was formed by the uppermost surviving course of the Site Phase 4 wall (573). The outlet (472) was 400mm wide and 260mm or two courses deep (elevation, Fig 329).

Building 802: north barrack (Figs 326, 332)

The northern and southern walls of the building were on the same lines as the walls of Building 801. As already mentioned, the building was separated from the officer's block by an alley and a new western exterior wall was therefore required. The north-west corner of the building was built over the drain that had been formed by the north wall of Building 801, so the opportunity was taken to create a properly bonded corner between the north (301 = 559) and west (426 = 1169) walls (Fig 314c). At the south-west corner of the building, the former south wall of Building 801 (1167) was partially dismantled to accommodate the alley, and the west wall (1169) abutted it (Fig 320). The former floor of Building 801 (872) was covered by a layer of greenish, clean, sandstone chippings, possibly masons chips from the remodelling process (871 = 521 = 506 = 509: Fig 330a). This was sealed by a thin deposit of gravelly sand (870 = 1312). On the eastern side of the alley, a layer of re-depositeded boulder clay 250mm thick (1311) then acted as the foundation bedding for the west wall of the barrack (for these relationships *see* Fig 330).

The walls of the building were all built of clay-bonded coursed rubble, with clay and rubble core work. All were 560mm thick. Four *contubernia* were examined, numbered i–iv from west to east. The *contubernia* were separated by partition walls; i and ii by (1168), ii and iii by (1205), and iii and iv by (1193).

Contubernium i was was 3.92m in width. It was originally floored with stone flags (1248) upon which a partition wall (1166) was later constructed, abutting the west wall of the building. The area to the south of the partition was 2.69m deep, and was accessed by a doorway 860mm wide at the south eastern corner. The partition and floor were sealed by a thick deposit of dirty clay (865 = 1269 = 1215), which appears to have comprised levelling for rebuilding in Site Phase 6. In *Contubernium ii*, which was 3.96m wide, and *Contubernium iii* at 3.82m in width, this Site Phase 6

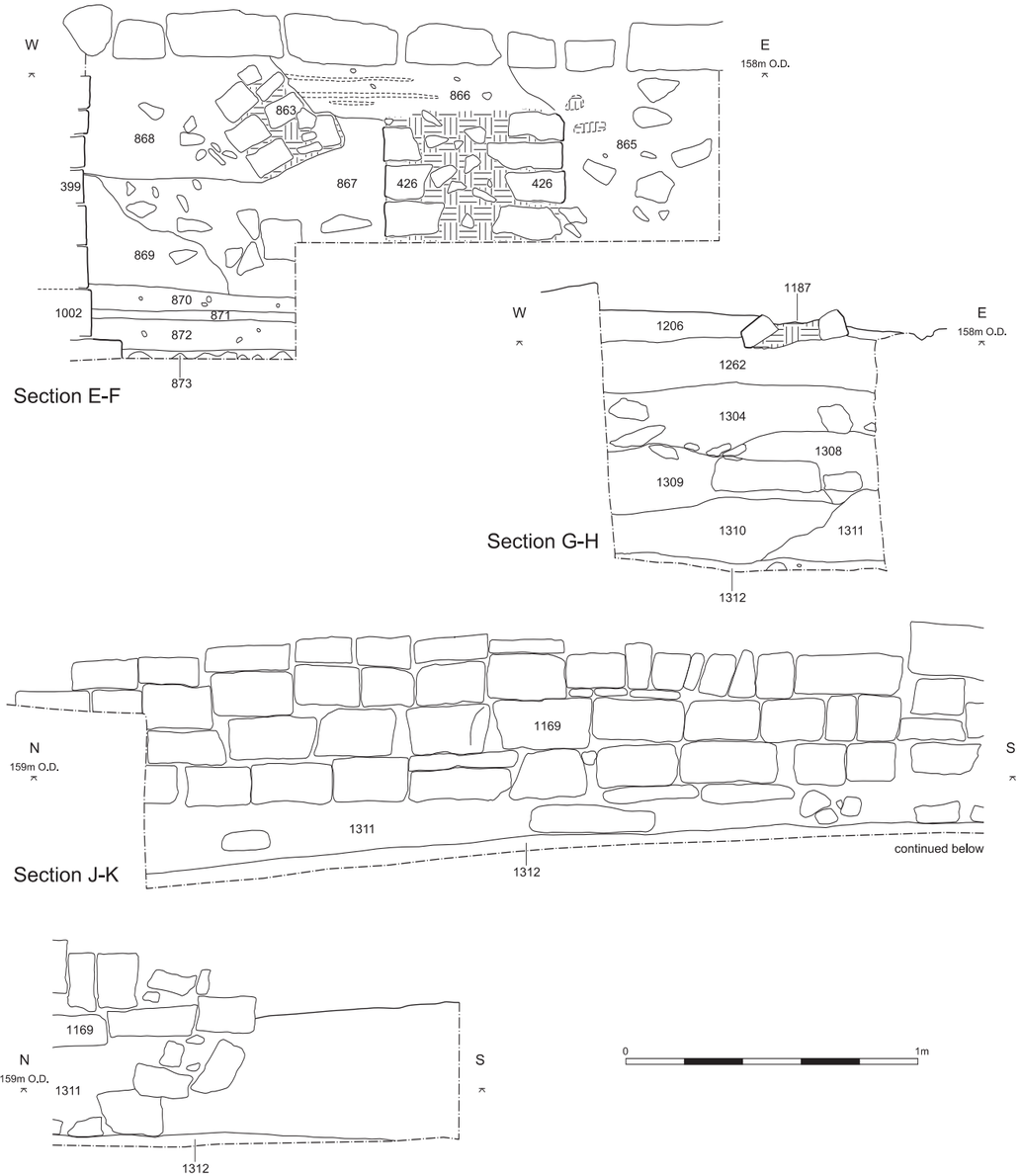


Fig 330
Birdoswald: sections E–F, G–H and J–K in alley between Buildings 802 and 803 (location see Fig 326).

levelling (ii; 420 = 1204, iii; 1257) was not removed during excavation. *Contubernium iv* was at least 3.98m wide, and its eastern wall was glimpsed beneath the concrete in the western edge of the excavation. It showed a sequence of exposed floor surfaces of which the earliest visible was the remnant of a stone-flagged floor (1251). This was overlain by a thin, black, silty deposit (1252), above which was a deposit of orange-brown gravel metalling (1250). This was sealed by a final deposit of orange

Fig 331
Birdoswald: Building 803; latrine in north eastern room viewed from the north, showing partition wall to right, pit in corner and drainage outlet in north wall.

clay (1249), which again appeared to have been levelling belonging to Site Phase 6. It was not possible to establish whether *Contubernia ii, iii or iv* had been subdivided as *i* was (Fig 332).

To the south of the building, a verandah was built. A north–south wall (1225) abutted the south-west corner of the building, extending southwards 1.65m, and an east–west wall (1112) ran parallel to the frontage of the building. This wall followed the line of the south wall of Building 803, and though it survived in a very fragmentary condition, retained a threshold block (1276) towards its eastern end. It was built on top of the cover slabs (1307 = 1297) of the drain to the south of the building (1291).

In the alley between Buildings 802 and 803, the clay (1311) that was deposited

Fig 332
Birdoswald: Building 802; contubernia *ii and iii from the south-east.*

during the construction work was levelled across the alley with a further dump of clay (1310, 1298), probably to create a consistent level with the area to the south. Surfacing with mixed material including stone and gravel was added within the verandah of Building 802 (1302), and between the verandah and Building 803 (1303) in order to seal the drain and the early wall (Fig 310).

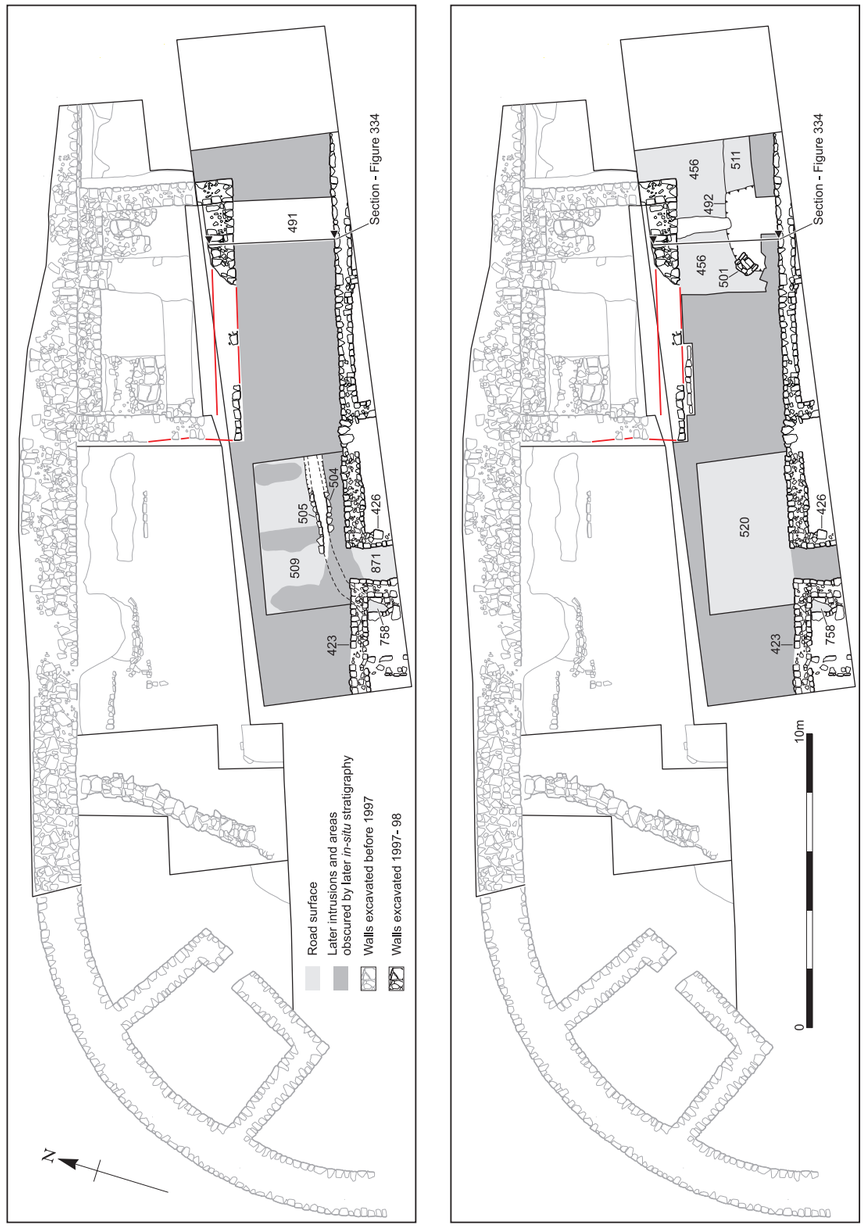


Fig 333
Birdoswald: detailed sub-phase plans of north intervallum and Building 804.

The north intervallum (Figs 333, 334)
The defining stratum of the initiation of this phase on the *via sagularis* was the layer of clean sandstone chippings already referred to in connection with Building 802 (506 = 509 = 521 = 871). This was found in the two deep sondages which lay 11.4m apart. The deposit sealed the primary road surface (533), and was the earliest deposit to abutt the walls of the remodelled Buildings 802 and 803. As such it formed an excellent marker for the beginning of Site Phase 5, and was probably produced during the reconstruction work as mason's detritus.

At the western end of the intervallum, the outlet of the privy in Building 803, gave out northwards into a stone lined drain, comprising two parallel walls of unbonded coursed rubble (504, 505) 800mm apart and two courses high. These were built in a shallow construction trench (503), which was cut into the masonry chippings layer (Figs 320, 334). This suggests that the construction work on the buildings was completed first with the drainage being laid as part of the finishing process.

Within the eastern sondage (Fig 333), a wall on the northern side of the *via sagularis* was built on top of the Site Phase 4 road surface (523), and the earliest deposit to abutt this wall was the mason's chipping level (521), indicating that the wall was contemporary with the remodelling of the north barrack. This was the south wall of a previously excavated rampart building, Building 804 (*below*).

Over the entire area of the *via sagularis*, a 200mm deep red-brown gravel layer (520), with a very compact surface (456) was laid, which appears to be the road surface associated with the completion of Site Phase 6 (Fig 334). Between Buildings 804 and 803, on the road surface, were a group of industrial features (Fig 333). The earliest of these was a pit 160mm deep and 1.10m wide (492) containing two large stones (510). These are interpreted as the remains of a robbed oven or furnace. After robbing, the pit was filled with silty clay containing iron fragments and pottery (491). Above this was a small hearth or oven (501) in good condition, measuring 600 × 700mm. It was horseshoe-shaped, with a flat stone base and stone sides bonded with clay (490). Within the area lay a lens of silty charcoal (508) representing the firing of the oven. To the east of the pit (492) a compact hard standing (511) appears to have been a working platform associated with the hearth. These features give the appearance of a short-lived industrial process, which may have been in some way associated with the Site Phase 5 construction work.

Along the south side of Building 804, a drain (535) was built, consisting of a cut (525) lined with stone on the south side, and with capping stones over a drain 320mm wide. The construction cut was filled with grey silty gravel (534), which levelled the drain cut up with road surface (456) to create a sub-road drain (Fig 334). It is possible that this drain is identical to an east–west drain found in 1987–92 running along the foot of the rampart (Wilmott 1997a, 182, fig 43, context 1732), and constructed to replace a collapsed drain which had run north beneath the fort rampart. This would be logical, as such a drain would run downhill to the east, and would discharge into the roadside drain of the *via praetoria*, which ran to waste through the *porta praetoria*.

Building 804: rampart building
(= Wilmott 1997a, 179; Building 4419)
This building (Fig 333, 334) originated as an interval tower located on the north wall of the fort midway between the *porta praetoria* and the north-west corner tower, and was converted into a rampart building apparently used as a bakehouse. The fact that this building can now be fitted into the overall phasing structure of the west *praetentura* is very useful, as it clearly demonstrates that the remodelling of part of

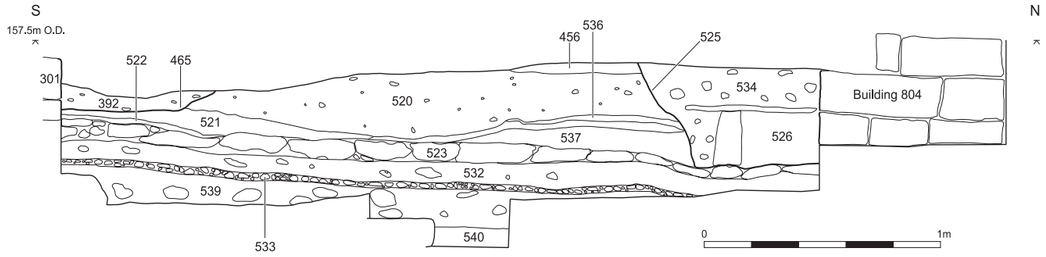


Fig 334
Birdoswald: section south of Building 804 (for location, see Fig 333).

the defences as well as of the internal buildings of the fort were contemporary, and links to evidence of reconstruction at the *porta principalis sinistra* (ibid, 103–9). The south wall of the building (524) was built of coursed rubble, and was 820mm wide (three courses survived). At the eastern end was a door threshold 1.10m in width. Within the threshold lay deposits forming floor, working, and demolition deposits. The earliest such deposit was a fine friable sandy clay (517), which is probably the same as a sandy floor level observed within the building (ibid, 179, context 1853). Above this, a layer of soil containing a high proportion of charcoal probably relates to the firing of the ovens within the building (ibid, context 1851).

The west intervallum

Three sondages into the west intervallum (Fig 329) revealed a resilient and compact road surface (855), which abutted a stone kerb on the western side (854). This appears to have retained the earthen fort rampart (856). Various stone features and pits built on and cut into the road surface were uninterpreted and undated, as they were only defined in limited areas, however these were probably elements of structures and activity in the intervallum zone.

Finds and dating

One of the few stratified coins from the site was found beneath the flagstones lining the base of the officer's latrine in Building 803 (460). This coin (CO9) was Commodan, dating to 179, and provided a clear *terminus post quem* for the construction of Buildings 802 and 803, amplifying that provided by the pottery from the late Period 4 drain cut into the barrack wall (566; *above*, p 223). A mid-late 2nd century plate-brooch (no. 4) from the masons chippings layer associated with this operation (521) confirmed the broad date.

A total of 50 sherds of pottery were recovered from 15 contexts (p 295), containing mostly residual Hadrianic and Antonine pottery and very little contemporary material in this phase. Only three other small finds were recovered, all from the *via sagularis* pits and ovens: no. 92, a loop-headed spike, no. 88, a globular-headed nail, and the decorated bar, no. 106.

Discussion of Period 3

Period 3 saw major reconstruction and alteration in the western *praetentura*, though the buildings retained their former functions. The *basilica exercitatoria* remained unchanged, and the long narrow building on the street frontage (Building 830) may have been sub-divided, but significantly it was the actual accommodation, the barracks, which saw the greatest alterations. The two barrack blocks were remodelled in a similar manner, with the officer's quarters becoming detached blocks. This must have been considered important, as the buildings required at least partial dismantlement to effect the change. The officer's quarters were well appointed. Building 803 certainly had its own latrine, while the existence of a well-built drain through the north wall of Building 809 suggests that it too was so equipped. Both buildings were divided into a number of rooms, but Building 803 was further supplied with at least one heated room with a channel hypocaust. Though latrines are not uncommon in the officer's quarters of barracks (Davison 1989, 233–7; Hodgson and Bidwell 2004, 141) the example in Building 803 is particularly well constructed, with a chute through the wall, which is paralleled at South Shields (ibid). The hypocaust in the same building is extremely unusual; Davison (ibid, 232) in his thorough survey of barracks is unable to quote a single example in an auxiliary fort and only a small number in legionary barracks (in Britain at Inchtuthil and Caerleon). Hoffman (1995, 121) quotes 3rd-century examples in the legionary fortresses of Bonn, Regensburg and Carnuntum. The exceptionally appointed quarters in this building are surely an indication of rank, and it seems probable that this building was provided for the use of the senior centurion of the unit in garrison. Building 802 demonstrates how the barracks themselves were treated. It seems that they retained the same number of *contubernia*, eight, from Period 2. The verandah at the front levelled the barrack frontage with that of the officer's quarters. Apart from the detached and well-appointed officer's quarters, the barracks remained typical of auxiliary barrack buildings (Davison 1989) of the 1st and 2nd centuries, and had no affinity with some of the later forms of barrack which begin to appear at sites such as Vindolanda and South Shields in the 220s and 230s (Hodgson and Bidwell 2004, 147–9).

That the reconstruction of the barracks was part of major works of renovation and alteration in the fort was demonstrated by

the proven relationship between this and changes to the intervallum and northern defences. The key deposit which makes this link is the layer of clean, greenish sandstone mason's chippings which occurs across the *via sagularis*, and which is the earliest deposit to abut the walls of the remodelled barrack Buildings 802 and 803, as well as the south wall of Building 804, a rampart building. The chippings are interpreted as the spread waste from the rebuilding activity. Only the south wall of Building 804 was found during the present excavations; the rest of the structure was excavated in 1987–8 (Wilmott 1997a, 179). It had originated as a primary interval tower on the north wall of the fort, which was dismantled and rebuilt as a bake-house. Previously this rebuild had not been dated, and could not be tied confidently into any other phase of the fort's development. The clear stratigraphic link with the rebuilding of the barracks now shows that this was part of a wholesale redevelopment of at least the western *praetentura*. The sandstone chippings, which extended across the *via sagularis*, are probably identifiable with a similar deposit found previously in the intervallum area, which formed a surface up to the door of the north west angle tower (Wilmott 1997a, 182, fig 44, context 1774). If this is one and the same deposit, then it demonstrates that the rampart of the fort and the north-west angle tower were still in commission at this time. Similarly, this very characteristic deposit was found to the south of the *praetentura* (Wilmott 1997a, 86), where it respected Building 830, and extended through the *porta principalis sinistra* onto the berm. This deposit was not previously understood as significant, and was published as the latest surface of the first phase of occupation in Period 2 (Wilmott 1997a, 22, table 1). Now, interpreted as mason's chippings, it is more logically (and stratigraphically equally validly) regarded as the first surface of Site Phase 5 and Period 3.

On the north intervallum, the layer of masonry chippings was cut by the outlet drain for the latrine in Building 803, which seems to be the last feature of this phase to be built before the laying of a new road surface upon which short-lived, small scale industrial activity then took place, possibly as part of the continuing building work. Further activity was recorded on the western *via sagularis* at the foot of the rampart. New surfacing and drainage were installed across the areas between the barrack buildings as well as on the *via sagularis* as part of the wholesale remodelling of this part of the fort.

The fact that the remodelling of the western *praetentura* was accomplished as a single large operation is important, as it allows dating evidence from one part of the work to be extended to the whole. The best evidence from a small assemblage is the Commodan coin dated to AD 179 found beneath the flags of the officer's latrine in Building 803. This is supplemented by the pottery from the fill of the drain which was the latest feature of Period 4, the latest of which is a Nene Valley vessel dated AD 160/70–250. In general the assemblage from the whole of Site Phase 5 fits into a late second or early 3rd-century context. This substantial new information strongly confirms the existing evidence that this was a period of major change and rebuilding in the fort. During the excavations of 1987–92 it was shown that stratigraphically the construction of the two *horrea* in the western *latera praetorii* together with a major reconstruction of the *porta principalis sinistra* were part of a second major construction phase designated Period 3 (Wilmott 1997a, 103–10), which synchronises exactly with Period 3 of the present excavations (Fig 321). The construction of the *horrea* clearly post-dated the primary roads and drainage system of the fort, which were truncated to accommodate them. It seemed likely (Wilmott 1997a, 109) that the building to the south of the *horrea* was built at the same time. One of a pair of inscriptions recovered in 1929 (RIB 1909), which had been re-used in a floor in a later 4th-century rebuild of the excavated barrack in the eastern *praetentura* recorded the building of a *horreum* by *cohortes I Aelia Dacorum* and *I Thracum CR* under the tribune Aurelius Julianus and during the governorship of Alfenus Senecio (205–8). It is most likely that this inscription came from one of the two Period 3 *horrea*, and that they were built during the period 205–8. At the *porta principalis sinistra* the south tower was dismantled and rebuilt using in part re-used ashlar masonry of an extraordinarily high quality for Hadrian's Wall (Wilmott 1997a, 103–8). The small group of pottery from the construction cut for this rebuild (Hird 1997, 241, analytical group 4) was consistent with an early third century date, and the group also included a remarkable intaglio, thought by Henig (1997, 285) to have been made by

an imperial workshop operating in Britain between 208 and 212 when Septimius Severus was based in York.

During the 1929 excavation in the eastern *praetentura* (Birley and Richmond 1930, 172) several 'Levels' were identified. 'Level I' comprised the primary Hadrianic buildings of the stone fort. 'Level II' showed considerable alteration in the layout of these buildings, though evidence was patchy. It is fairly clear that the former long narrow building on the *via principalis* frontage, and the barrack block behind it were to some degree merged, as the narrow alley between the structures was overbuilt (Wilmott 1997a, 12). It seems likely that a change in function took place, and hearths and millstones in the eastern end of the southern building indicated to the excavators that it might have been used as a cookhouse. The character of the building(s) is difficult to assess from the fragmentary plan (Wilmott 1997a, fig 6). The alterations in this area were dated with reference to the inscription mentioned above which recorded the construction of the *horrea*. This was held to indicate a fort-wide Severan rebuilding to which Level II was attributed. In fact the *terminus post quem* for the phase, derived from pottery analysis, was *c* 150. Whatever the date, the "walls had to be built from their very foundations, indicating how great a disaster had befallen Hadrian's building" (Richmond 1930a, 308). The assumption was that the rebuilding, which took place on top of a layer of rubble filling subsidence into the Turf Wall ditch, was necessitated by enemy destruction. There is no trace of hostile destruction, as rubble deposits cannot be perceived as evidence for this (Breeze and Dobson 1972, 201), but there is now a great deal of evidence for the wholesale rebuilding of the *praetentura*, remodelling of defences and the construction *de novo* of a pair of *horrea*. The combination of the various *termini post quem* for the alterations of the western *praetentura*, the *porta principalis sinistra*, and the buildings of the eastern *praetentura* with the epigraphic evidence for the construction of the *horrea* near the building in which the inscription was found now demonstrate that Birley and Richmond (1930) were correct in suggesting a major, fort-wide rebuilding in the early 2nd century; broadly the Severan period.

It would appear extremely likely that these works was the result of the arrival at the fort of a new garrison (Wilmott 2001a, 87–90; 2001f, 107). If so, this garrison was the *cohors I Aelia Dacorum*, which is attested on a great many inscriptions throughout the third century, and is the unit listed for Birdoswald in the *Notitia Dignitatum* (Wilmott 1997a, 14, 195–7; 2001f). The *horreum* inscription is one of the two inscriptions of this unit specifically to date to the reign of Severus (the other is an altar, which was rediscovered built into the north byre of Birdoswald farm in 1990; Tomlin 1990, 309).

In addition to the *horreum* inscription (RIB 1909), there is further epigraphic evidence to support the idea of a major building programme between *c* 198–219 (Wilmott 1997a, 197–8). An inscription (RIB 1914) found during the 1852 excavation of the *porta principalis dextra* (Potter 1855, 146–8) commemorates rebuilding at the gate under the governor Modius Julius (219), and is probably one of a pair, the other referring to the emperor Elagabalus and his titles (Daniels 1978, 202). Such a second inscription would probably have suffered defacement or removal after Elagabalus' *damnatio memoriae* in 222. This rebuilding may be associated with the re-used material visible in the *spina* of the gate and in the east face of the curtain wall immediately to the south. It might also account for the secondary road and set of pivot stones found within both carriageways (Gillam 1950, 66) Two further inscriptions record building work during this period; RIB 1910 is a fragmentary dedication slab from a building constructed under Severus (198–209), while RIB 1911, an altar of the reign of Caracalla (212–17), also records building.

To the widespread rebuilding in the *praetentura*, the construction of the *horrea* and the rebuilding of the *portae principales sinistra* and *dextra* in this period, it is probable that we may add evidence from the blocked former *porta quintana dextra*, where reconstruction with large re-used stone blocks took place. It is argued elsewhere (Wilmott 1997a, 183–7) that the blocks were re-used from the demolition of Bridge 2 at Willowford, as the stones and the type of bar-cramp provision were identical to the blocks used in that structure. The blocks would have become available as a result of the replacement of the Wall bridge with a bridge (Bridge 3) designed to carry the Military Way (Bidwell and Holbrook 1989, 96). They could have been re-used at any time after the bridge's replacement, which may in fact have been Severan (ibid, 138–40). A feature of all of the rebuilding at this time was the widespread re-use of building material. This is another factor that suggests a radical reconstruction programme. Re-used stone is reported from all areas including the bridge stones at the *porta quintana dextra*, an inscribed (?) centurial stone (Tomlin 1997, 355, no 2), screen panel, chamfered stones and door jamb in the *horrea* (Wilmott 1997a, 128–31), the blocks of fine masonry at the *porta principalis sinistra*, the decorated slab in a drain in Building 809 (above, p 230). It is also visible in the fabric of the *porta principalis dextra*, and chamfered stones, column bases and a capital were among the material used to make-up subsidence over the Turf Wall ditch for the construction of Level II excavated in 1929 (Richmond 1930a, 308).

The evidence of RIB 1909 demonstrates that the *horrea* are Severan in date. The evidence for the dates of the rest of the early 3rd-century building work is less specific and much of it may have been undertaken somewhat later than the reign of Severus as part of a rebuilding programme extending across the first quarter of the 3rd century. This is consistent with the suggestion made by Gillam and Mann (1970, 44) that the majority of early 3rd-century works on the Wall were carried out under Caracalla (212–17) following the end of the Scottish campaigns. It also suggests that a repair programme begun under Severus was resumed or continued under Caracalla (Jarrett and Mann 1970, 205). Construction and repair works in the fort continued during the reigns of Severus, Caracalla and Elagabalus. Previously (Wilmott 1997a, 197) it was suggested that the alterations seen on the site were more likely to represent a continual process of repair and renovation during these reigns, and not a full-scale recommissioning. The new evidence from the *praetentura* now swings the balance towards the conclusion that the fort was in fact recommissioned in the late 2nd or early 3rd century specifically to receive the *cohors I Aelia Dacorum*, and that the works on the defences were then part of a subsequent process of renovation.

Occupation in the third and fourth centuries (Periods 4 and 5)

Differential truncation in all areas of the site meant that the structural phase or phases following Site Phase 5 (Period 3) were poorly preserved and are consequently poorly understood. Nothing at all survived later than Site Phase 5 over Buildings 813 and 809, and later stratigraphy survived only on the north side of Building 810. There was some structural stratigraphy over Building 802, but the most complete survival existed within Building 803, which appears to have retained its integrity as a separate structure. In those areas where structural stratigraphy survived best, there was evidence for two structural phases. Site Phase 6 is therefore divided into two sub-phases: 6a (Fig 335) and 6b (Fig 341).

Site Phase 6a (Period 4) (= Wilmott 1997a, Site Phase 7/8: Period 4b)

Description

Building 831 fabrica west
(= Wilmott 1997a, 156–61: Building 4401)

This building comprised the remodeled western end of Building 830, which was located on the north side of the *via principalis*. The building went through an intensive period of use as a workshop for industries using heat, including blacksmithing, which was attested by the presence of hammer scale and the fact that the clay floors were scorched or semi-fired. Debris accumulated on the floor, and was removed, leaving at least one clear horizon of truncation, before accumulation began again. The building was remodeled several times during its use, and was rebuilt at least once. An indicative feature of this phase was the presence of numerous short-lived stone lined 'boxes', which were set into the floor within the building. At the end of the phase defined as Period 4a in 1987–92, the building collapsed or was demolished, and a soil layer developed over the rubble. The building was rebuilt in Site Phase 4b of the earlier intervention. It seems to have been used for functions other than metalworking, although what it was used for is not clear.

Building 832 fabrica east (= Wilmott 1997a, 161–3: Building 4402)

The remodeled eastern part of former Building 830 was divided into three rooms. In one the presence of a raised cobbled platform, a work-bench and a drain suggest that it housed an industrial process that did not rely on the use of heat. Another room contained a clay platform. No working debris was recovered to suggest what processes took place in this building. Again a change occurred at the beginning of Period 4b of the 1987–92 excavation. The features apparently associated with

Fig 335
Birdoswald: Site Phase 6a: plan of all excavated walls in north west praetentura *locating Figs 337, 338, 340.*

working processes were not renewed, and the only activity in this phase and later was the laying of new floors.

Building 807: basilica exercitatoria (= Wilmott 1997a, 79–82: Building 4403)
Later phases in the basilica relate to flooring, drainage and subdivision (Fig 336). A surface of compact brown sandy silt (500) was laid as a second floor surface around pier 2N (408). This was cut by a shallow construction trench (499) for a wall (411) 700mm wide faced with coursed rubble, of which part of the lower and

second courses survived beneath the fill of a robber trench (380). The core of the wall comprised small rubble in a red clay bonding matrix. The wall was clearly constructed as a secondary feature in order to wall up the intercolumniation between piers 1N and 2N. After the intercolumniation was blocked, another floor, this time of small cobbles 100mm deep (477 = 495 = 478) was laid. This was cut by a drain laid in the north aisle of the building. The drain (488) was stone slab lined (487), and V-shaped, with a narrow, flat bottom. It was 350mm wide and 300mm deep, ran east–west down the centre of the north aisle, and was laid parallel with the walls and arcade of the building. It appears to have been short lived, and deliberately backfilled with stony clay-silt (476, 479). Further floor deposits (410, 414) followed.

Building 810: ?barrack
Two scraps of east–west walling (1057, 1177) which partly overlay *contubernium* partitions of Site Phase 4 are attributed to this phase as parts of later building(s) (Fig 331).

Building 811: ?barrack
This small building (Fig 337) occupied the western half of the former Building 810, which was completely demolished, and a layer of rubble and orange clay, possibly deriving from its demolition (1143) swathed its internal drain. A pair of bonded walls was constructed above this, one to the east

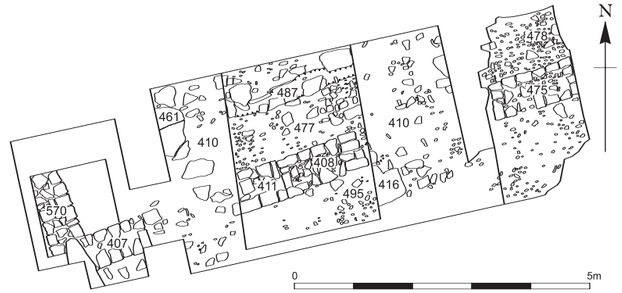


Fig 336
Birdoswald: plan showing deposits of late phases in Building 807.

(1109 = 890), which re-used part of a Site Phase 5 partition wall, and one to the north (1119). Within these walls was a characteristic sandy floor surface (1100). The building would have been in the region of 7.5m 3.9m in internal measurement.

N north of the building, a low, single-leaf wall (1103) was built against the outside of the north wall (1073). This formed the southern side wall of a drain, and supported a number of large capping stones (1087). The northern wall of the drain was formed by re-using the former north wall of Building 810 (1102). It seems likely that this drain discharged into the Site Phase 5 drain (1192) along the north side of Building 810.

Building 803 (Phase ii)
The north wall of the hypocaust room appears to have been demolished (Fig 338), although the east wall (372) was retained, and its northern end was packed around

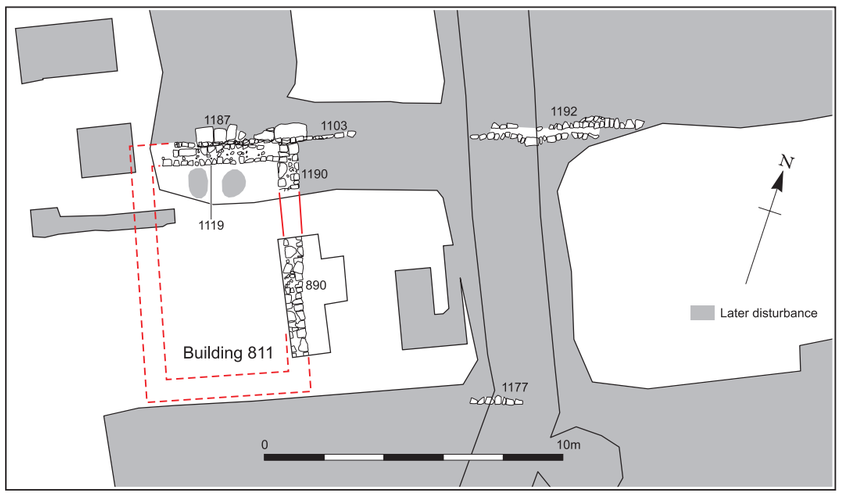


Fig 337
Birdoswald: detailed plan of Building 811, Site Phase 6a.

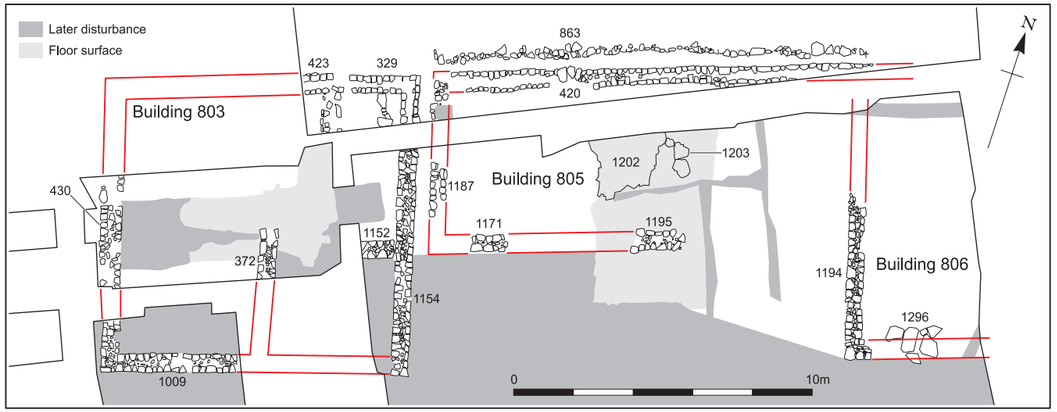


Fig 338
Birdoswald: detailed plan of Buildings 805, 806 and 803, Site Phase 6a.

with two layers of stony clay preparatory make-up like that in the *contubernia* of Building 802 (528, 1010). Above this was a grey silty sand deposit (459 = 518), which was probably the bedding for a flagstone floor (455 = 449). This floor was bounded on the south side by an east–west wall (351), which was only one course in surviving height, and could only be examined on its north face. There was no trace of clay bonding in this wall, which abutted the earlier partition wall (372).

Building 802: demolition of barrack

This building was demolished and its site remodelled for a second time during this phase. On this occasion, the rooms, which existed in Site Phase 5, were backfilled and levelled with deposits of orange-brown clay containing building stone and roof tiles, 500mm thick (*contubernium i*, 865 = 1269 = 1215 (Fig 332a): *contubernium ii*, 420 = 1204: *contubernium iii*, 1257: *contubernium iv*, 1249). The alley between Buildings 802 and 803 appears to have been used for piecemeal dumping as shown by a deposit of sandy clay (869 = 1309) against the side wall of Building 802 (399). After this, however, the alley was filled with two layers of a similar clay and stone deposit to those within the *contubernia* of Building 802 (867 = 1308: 868 = 1304: Fig 332a). It is probable that these clay and stone deposits represent the demolition of Building 802 in preparation for rebuilding, and were laid down in order to create a consistent level between the inside of the building and the exterior alley and road surfaces, which had built up during Site Phase 5 (Period 3).

Above these clay deposits were the walls and other features of at least two smaller buildings (Buildings 805 and 806), which were presumably barrack blocks, but of a different type to the earlier examples (Fig 338).

Building 805: barrack?

Building 802 was replaced in this phase, although the details are far from clear. At the eastern end of the former Building 802, Building 806 was clearly a separate structure. It should be remembered that Building 805 may have been either a single structure or a series of free-standing buildings.

A clay-bonded, coursed-rubble faced, north–south wall (863 = 1187) was built on top of the clay levelling in the alley between Buildings 802 and 803. This appears to have been the western wall of a successor to Building 802, built adjacent to the surviving Building 803. An east–west partition wall (1171) constructed on the surface of the clay levelling above *contubernium i* may have been an internal partition within Building 805 or a southern wall of the building, as only to the north of the wall lay a contemporary floor deposit. This comprised orange-brown clay mixed with grey-brown silt and charcoal (1263). Over the former *contubernium ii* lay an east–west wall, built on top of the clay and rubble *contubernium* fill, of which a fragmentary single course (1195) survived. The wall was built of clay-bonded coursed-rubble 600mm wide and was similar to wall (1171) of which it may have been an extension, though it may have comprised an internal partition of a completely separate building. Flagstones (1203) to the north of this partition may

Fig 339
Birdoswald: Building 806; the long western wall of the building clearly modifies an earlier contubernium *wall. In the foreground it can be seen that the wall crosses the former south barrack wall before returning to the east.*

represent a floor associated with this phase.

It seems likely that a group of features overlying or cut into, the clay levelling represent features in the floor of a successor building to *contubernium iii*. A fragmentary flagstone floor (1257) formed the apparent surface of this phase, and a small, sub-circular patch of fired clay containing charcoal fragments (1261) formed part of this surface. Towards the north west corner of the room was a backfilled rectangular cut measuring 590mm × 400mm (1264). This was apparently lined on at least two sides by flagstones set on edge.

Subsequently, the building appears to have collapsed, resulting in the deposition of a layer of spread building rubble (1165, 1255) over the area of *contubernium i*, and a fragment of fallen sandstone roofing slates (1202) above the flags in the north west corner of *contubernium ii*.

Building 806: barrack?

Above the partition wall between *contubernia iii* and *iv* of Building 802 lay another wall (1194), which was built on top of the clay infill deposit. This wall, which was constructed of clay bonded coursed rubble, was built over the former south wall of Building 802 (1167) and an eastward return which contained a flagstone floor (1296) was found to the south of this wall (Fig 339) represents the conclusive proof that the former barrack was levelled and reconstructed as a series of smaller buildings.

The north intervallum (Fig 340)

The rampart building (Building 804) was demolished during this phase as part of a remodelling of the intervallum area. A demolition deposit of tile, mortar, overlay the charcoal from the firing of ovens and stone (515), which was overlain by stone rubble (502), identical in character to the similar deposits previously found within the building (Wilmott 1997a, 180). It is likely that the rubble served as the base for a reinstated earthen rampart, which sealed the building. A kerb (454) comprising a line of dressed stones, parallel with the north wall of the fort, was laid upon the surface of the Site Phase 5 intervallum road (456). This retained the rubble (502), and a deposit of red-brown sandy silt above it (489) on the south side, but also marked the northern edge of a raised and re-surfaced intervallum

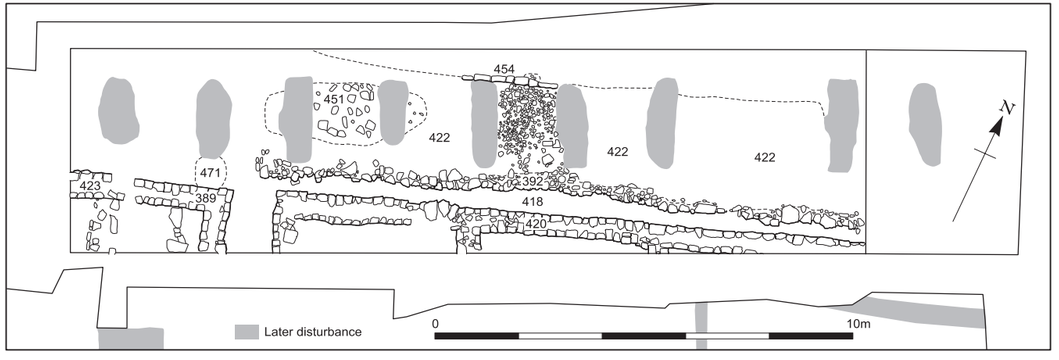


Fig 340
Birdoswald: detail plan of north intervallum, Site Phase 6a.

road (422). This kerb was clearly laid to mark the edge of the intervallum road and the foot of the reinstated rampart. A pothole (452) was later roughly filled with rubble (451).

The drainage on the south side of the intervallum road was remodelled at about this time. A large robbing hole (469) was cut through the road surface (422). This removed the sub-road drain allowing access to the outlet of the centurion's toilet, which was blocked from the outside with loose-packed stones (possibly an aspect of the remodelling of Building 803 during this period). An attempt appears to have been made to cap the rubble and soil fill (470) of the pit with clay (471). This robbing pit had the effect of cutting off the stratigraphy between the two buildings from that of the intervallum, particularly as a new roadside drain was now installed. This took the form of a cut (465) through the fill of the robbing pit, and through road surface (422). The cut was 1.10m wide and 480mm deep. It was made against the former northern wall of Building 802, which was used as the south side of the drain, while the north side was formed by a rough wall of un-bonded, poorly coursed rubble (392) packed in with silty clay (467 = 468). The substantial primary silt of the drain (418) was sealed by a secondary, deliberate rubble fill (393 = 41).

Finds and dating

Two coins (CO12, CO1), both Caracallan, were recovered from the primary silt of the roadside drain on the south side of the *via sagularis* (418), and a late 2nd–early 3rd-century bow brooch (no. 2) was found in the construction material of this drain (392). Phase 6a contained a larger collection of pottery than did earlier phases (p 296); 209 sherds, with 22 contexts containing pottery, mostly of the 3rd century, but including some 3rd–4th-century material.

There were few other finds. From the demolition of Building 802 came a hobnail (no. 23), iron fragments (nos 105, 113), and a copper alloy nail (no. 76). A belt plate (no. 98), a quern (no. 59), stone ammunition (no. 101), and a glass bottle fragment (no. 34) were found in the floor make up in Building 803. The silting of the drain to the south of the *via sagularis* produced vessel glass (no. 45), a stone pot lid (no. 65) and a samian counter (no. 66), while its deliberate backfill contained an iron bit-head (no. 79). A pothole on this road produced from its fill a rolled lead sheet (no. 109).

Site Phase 6b (Period 4) (= Wilmott 1997a, Site Phase 7/8: Period 4b)

Description

Building 812

This structure was built over the demolished Building 811 (Fig 341, 342). The north wall was represented by an east–west wall of large blocks, without bonding (1036), 719mm wide, which included a number of re-used drain stones. This may have returned southwards at the western limit of the excavated area. A small fragment of orange clay floor make-up to the south of this wall (1074) may have been associated with it, as may a fragment of clay bonded wall (1086). The main walls of this phase (1036, 1086) were built on top of a deposit of rubble in clay (1105) which may be the product of the demolition of Building 811.

Building 803 exterior

Rubble collapse in the former alley between Buildings 802 and 803 (400, 868, 1116 = 1206) covered the west wall of Building 805 (863 = 464 = 1187) and represented the collapse of this building. Contexts relating to the access into building 803 post-dated this collapse, demonstrating that the structure continued in use after the demise of Building 805. The collapse was overlain by a flagstone surface (1157 = 1164), level and continuous with flagstones (1155) that formed a threshold through the east wall of Building 803.

Building 803 (Phase iii)

Although disturbed, it was clear that this phase was marked by the construction of a new wall on the line of the north wall of the Phase 5 hypocaust room, but above the flagstones of the floor of the previous phase, which were retained in use. The north wall (353 = 443) abutted wall (372) to the east, and acted as a broadening of wall (351) to the south. This wall was interrupted by a narrow gap, and convincing returns existed to either side of this gap. The walls were well bonded with clay (352 = 507).

Building 806

It seems likely that Building 806 also collapsed or was demolished at this time, producing a mass of rubble (1219) adjacent to its western wall.

In the north intervallum, the final activities were represented by a make-up deposit (421), which prepared the ground for the last road surface (389), and overlay the fill of the roadside drain. During its use, this road was pot-holed (396) and made up with rubble (397).

Finds and dating

All coins from contexts of this phase (CO4, CO4, CO7) were residual. Some 155 sherds of pottery came from this phase from fourteen contexts. Most of this was third–fourth century in date. Importantly, a calcite gritted ware jar of proto-Huntcliff type form from context 352, dated perhaps *c* AD 330–50/70 provides a *terminus post quem* for the apsidal structure of Site Phase 7.

Fig 341
Birdoswald: Site Phase 6b: plan of all excavated walls in north praetentura, *locating Figs 342 and 343.*

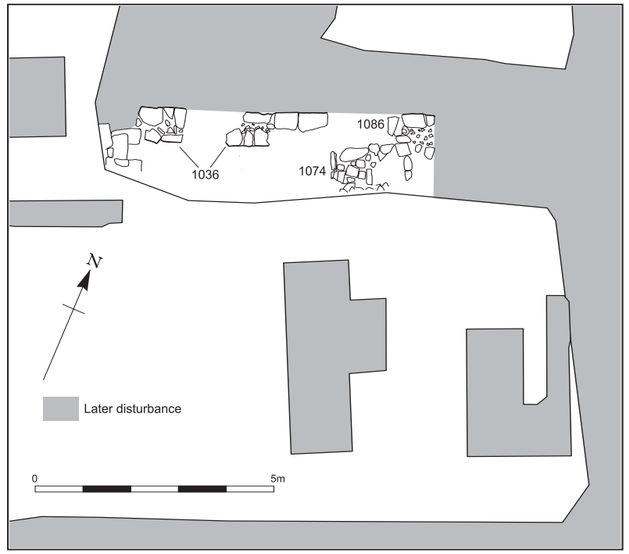


Fig 342
Birdoswald: detailed plan of Building 812.

There were few other finds. An iron hinge staple from Building 803 (no. 93), copper alloy binding (no. 89) and a bow brooch (no. 1) from the *via sagularis*, and vessel glass (nos 37, 38).

Site Phase 7 (Period 5) (= Wilmott 1997a, Site Phase 9/10: Period 5)

Description

Building 803 (Phase iv)

Following the alterations of building Phase iii a further wall (355), faced on the north side, and abutting wall (429) to the west, was inserted across the faces of wall (443 = 353), incorporating the northern end of wall (351), and running on eastwards. This was two courses in height, and a good clay bonding (354) was used to bond the face to all of the earlier walls. An important aspect of this feature is that it was oriented NNW–SSE as opposed to the E–W orientation of the north walls of the earlier rooms. A further new wall (366), this time abutting wall (354) and describing a curvilinear line northwards was installed (Figs 343, 344). This was also clay bonded (444) and survived a single course high. Although this wall was severely robbed, its course was visible in a robber trench that continued the curve seen in the surviving fabric. This structure is interpreted as the apse to a building whose form and function is not now recoverable. This phase goes with a blocking of the flagstone threshold with an unbonded coursed rubble wall.

Discussion of Periods 4–5

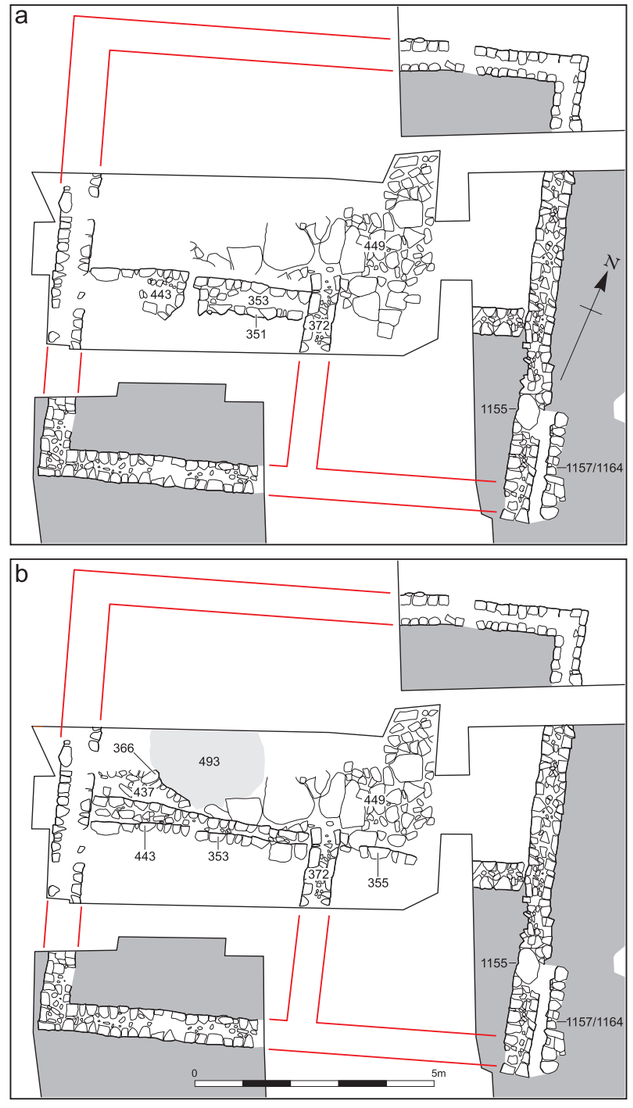
The archaeological evidence for periods after Period 3 is sparse and patchy. It can, however, be linked with known sequences, and a reasonable attempt at phasing can be made.

Period 4 contains Site Phases 6a and b. The difficulty experienced in identifying broad phases was also experienced during the 1987–92 work, where two phases appear as 4a and b. The problem was that the two phases were defined during the continued occupation of a number of buildings where trends were hard to separate. Perhaps the clearest sequences were in the roadside *fabricae* north of the *via principalis*, particularly Building 831. This building saw intensive metal working activity over a period of time, finally collapsing, after which soil developed over it. When rebuilt, it was no longer used for the same purposes as previously. The *terminus post quem* for the collapse was provided by a coin dating to AD 271–84, and a similar date was recovered for a cessation of the metalworking, which took place within the *porta principalis sinistra* (Wilmott 1997a, 199). It is possible that rebuilding took place at the same time as a reordering of the fort defences, particularly the ditch system during the early 4th century. It does not now seem likely that Site Phases 6a and 6b can be identified with the sub-phases identified in Building 831. The evidence is nowhere near as clear-cut. Instead it would appear that there was continual occupation of the barrack buildings, which culminated in their demolition in the late 3rd century. The *terminus post quem* for the demolition of Building 802 rests with a sherd of Crambeck mortarium dated after *c* AD 280–5 from context 528. Although tentative, this seems to suggest that the barracks were demolished about the same time that Building 831 went out of use, and that the rebuilding of Building 831 and the buildings constructed in Site Phase 6a were contemporary. Broadly this would mean that Site Phase 6a here is contemporary with the Site Phase 4b of the 1987–92 work, and that the new structures overlying the barracks were very late 3rd or early 4th century in date.

So what were these structures? We can be sure that they were not the long barrack buildings divided into *contubernia* that occupied the area during the previous periods. Building 803 (the free-standing officer's quarters of the northern barrack) retained its structural integrity, but Building 802 (the men's quarters) was overbuilt with a series of smaller free-standing buildings. Despite the fact that these buildings were so poorly preserved, and that nothing can be said of their plans or internal arrangements, they can be readily identified with trends in barrack buildings in other forts on Hadrian's Wall. This was first identified during Wilkes' excavations on Building XIV at Housesteads in 1959–60, and confirmed during the excavation of Building XIII on the same site (Rushworth forthcoming), when Daniels demonstrated that this building too had been rebuilt in the late 3rd century as a series of free-standing, detached blocks. Following similar findings at Wallsend, Daniels (1980) concluded that these buildings (unfortunately termed chalets) were family accommodation, with each block housing a single soldier and his family. This influential conclusion was followed *inter alia* by James (1984) in deducing that the garrisons of Wall forts in the 4th century were as little as 10% of their 2nd-century strength. More recently, Bidwell (1991) has demonstrated that the 'chalets' were one form of late 3rd- and 4th-century barracks in which the important factor was not the fact that there were smaller building units, but smaller numbers of *contubernia*, usually six, than in earlier barrack types. It is impossible to reconstruct the few walls that represent the chalet-style barracks at Birdoswald, although they may have comprised buildings set in a row, similar to one another in shape and size, and with internal partitions, as seen at Housesteads, Vindolanda and elsewhere (Bidwell 1991; Hodgson and Bidwell 2004, 147–9).

Site Phase 6b seems to represent a period of maintenance of the buildings constructed in Site Phase 6a, with a small amount of remodeling and rebuilding taking place through the early 4th century. There is no indication of later 4th-century activity in this phase.

Period 5, Site Phase 7 is defined only as the last phase of Building 803. It is allocated a separate phase and Period designation as its *terminus post quem* of 330–70 is identical to that of the late 4th-century re-use of the south *horreum* (Wilmott 1997a, 203–6). The most interesting aspect of this period in this building is the apsidal element, which is discussed in context below (p 395)



Post-Roman development in Building 807

Some of the excavated piers of the basilica (1N: 407, 2N: 408) were abutted by the earliest post-Roman layer, a deposit of brown clay, while a third (3N: 475) was overlain by it. This might suggest the survival of elements of the basilica in ruinous condition until the post-Roman period; a conclusion entirely consistent with the re-use of the south wall of the basilica as

Fig 343
Birdoswald: detailed sub-phase plans of Building 803. (a) Site Phase 6b, (b), Site Phase 7.

Fig 344
Birdoswald: Building 803; final phase showing apsidal wall springing from earlier wall to the left, and sitting on earlier flagstone floor.

part of a ?14th-century tower house (Wilmott 1997a, 373), and a 16th-century bastle house (Wilmott 1997a, 379), and as part of an 18th-century drain (Wilmott 1997a, 381, fig 273).

The basilica was not totally sealed until a good cobbled yard surface was laid to the north of the farmhouse. It was confirmed during the present excavation that this surface (381) was contemporary with the remodelling of the farmhouse by Anthony and Margaret Bowman in 1745 (Wilmott 1997a, 383, 399). It appears to have been the formalisation of a yard that had hitherto been surfaced variously with compacted rubble, re-used flagstones, and soil. A wall constructed upon this surface 1.20m to the north of the house front, of which four stones (382, 387) and a line of lime mortar (374) survived, may either represent an early extension, or, perhaps more likely, a walled domestic yard, separating the dwelling house from the farmyard. Above this lay the several remnant floors to the outshot, culminating in the modern concrete floor.

Part 3: Excavations in the eastern *praetentura* of the stone fort 1997–8

A single trench 1m wide and 21m long was excavated north of the eastern *praetentura* in order to install the foundations for a drystone wall along the edge of a new footpath from the site car park. The trench was informative, as it coincided with the

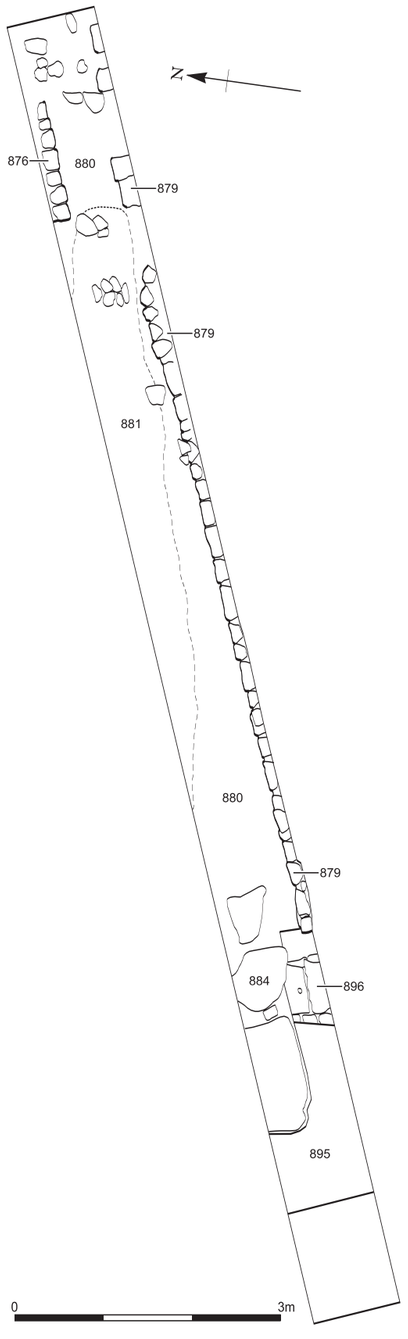


Fig 345
Birdoswald: plan of trench along north edge of north east praetentura.

northern edge of the northernmost building of the eastern *praetentura*, and the edge of the north-east intervallum.

Structures and stratigraphy

There is no doubt that the northern building of the east *praetentura* was a barrack. The plan is clear from geophysical work (Biggins and Taylor 1999, 102, fig 5, no. 5). The northern wall of the barrack (879) was of the familiar clay-bonded, coursed rubble construction. North and west of this building the first phase of the *viae praetoria* and *sagularis* were composed of compacted orange gravel (896). The flagstone-covered drain on the east side of the *via praetoria* (895) associated with this surface was also defined. These features are all associated with the first construction of the stone fort in Site Phase 4 (Fig 345).

Over the road surfaces lay a deposit of orange clay (880), over which was a deposit of clean, greenish coloured sandstone masons chippings (894). These deposits are diagnostic in the western *praetentura* of the rebuilding of Site Phase 5, and are here interpreted as the same. Subsequently, the eastern intervallum saw a series of resurfacings. The first of these consisted of loose cobbles (881) and appears to have been associated with the wall of a building constructed upon the road (878). Subsequent fragments of walling (885, 886) and flagstones (887, 884) may represent rampart buildings in later phases.

Finds and dating

A single coin (CO2), dated AD 69–79 was found in the mason's chippings deposit (894).

Part 4: The Spur Project (Site 590)

Excavations were carried out immediately south of the stone fort in 1996 and 2000, the circumstances and aims of which have been summarised above. This work made it possible to check, expand, and place in context the stratigraphic, spatial and chronological aspects of the 1930s excavations south of the fort (Simpson and Richmond 1930, 1932, 1933, 1934). Features identified during the earlier work were investigated in greater detail, and the recovery of stratified dating evidence has enabled closer and more accurate dating of the sequence.

The 1930s excavations

The plan evidence and excavation method

The 1996 and 2000 trench locations are shown in Fig 346, set against the plan derived from the work of the 1930s. This plan exists in a number of published versions, added to annually as work progressed (Simpson and Richmond 1930, fig 1; 1932, fig 1; 1933, fig 16; 1934, facing p 126). Fig 346 was prepared by digitising the 1934 plan and matching it to a modern survey by scaling it up until the south wall of the fort – the only extant reference point – on both plans matched. This means that any original survey errors have been perpetuated, leading to some doubt in the identification of a number of re-exposed features. The main problem with the original plan is that there is no indication of what was actually excavated and what is interpretation and extrapolation. The original photographs, both published and archived, show that area stripping over a broad area did not on the whole take place, yet no excavation trenches are marked on the plan. The only indication is in the partial plan of 1933, which indicates excavated ditch segments by means of selective areas of hachuring (Fig 347).

The 1996 excavation recovered evidence for the techniques employed by Simpson and Richmond: parallel shallow trenches that penetrated to the top of the natural subsoil, and showed the tops of the fills of cut features. Occasionally, features were partially excavated, principally at points of junction, in order to recover a sequence, or simply followed to their line. Some complex areas were opened up completely, and the Vallum causeway was fully excavated. These evaluative techniques seem effectively to have preserved the archaeology of the spur, while at the same time extracting much information. It can, however, be demonstrated that much was missed and considerable doubt must attend the interpretation of the sequence. This is demonstrated below both by stratigraphic observation and by the analysis of the dating evidence. The one 1930s illustration that does show a trench plan (Fig 348; Simpson and Richmond 1933 – previously re-published as Wilmott 1997a, fig 58) does nothing to allay doubts over interpretation, as it puts into question the method by which the junctions of

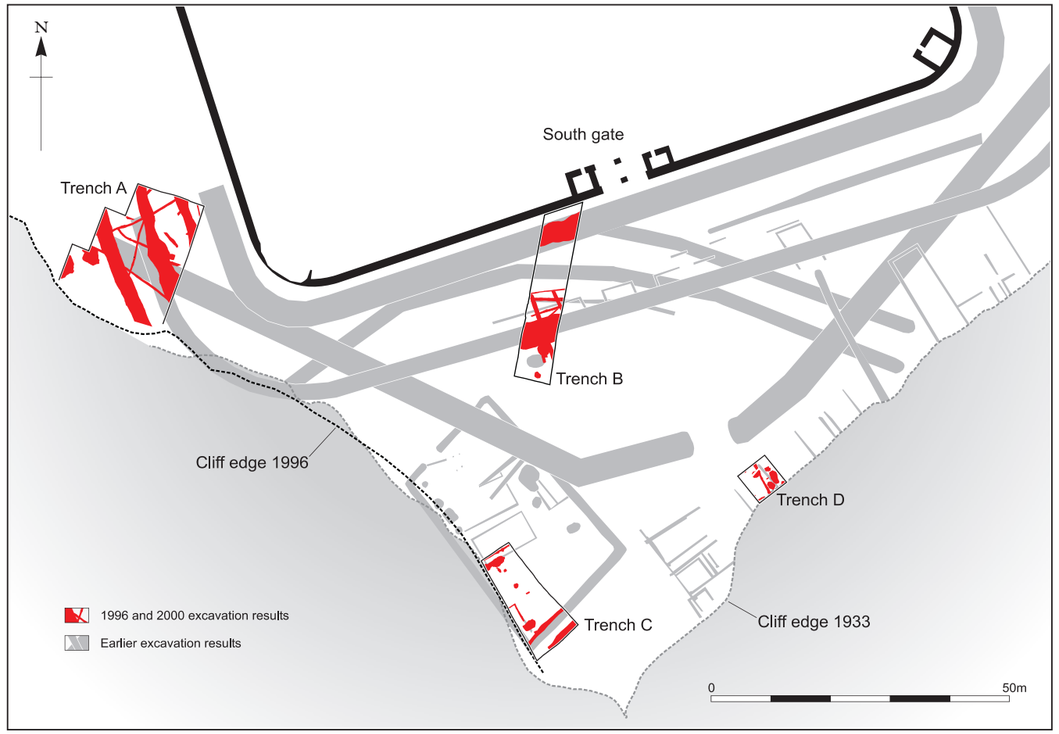


Fig 346
Birdoswald: locations of 1996 and 2000 trenches on the spur at Birdoswald set against the 1930s excavation plan.

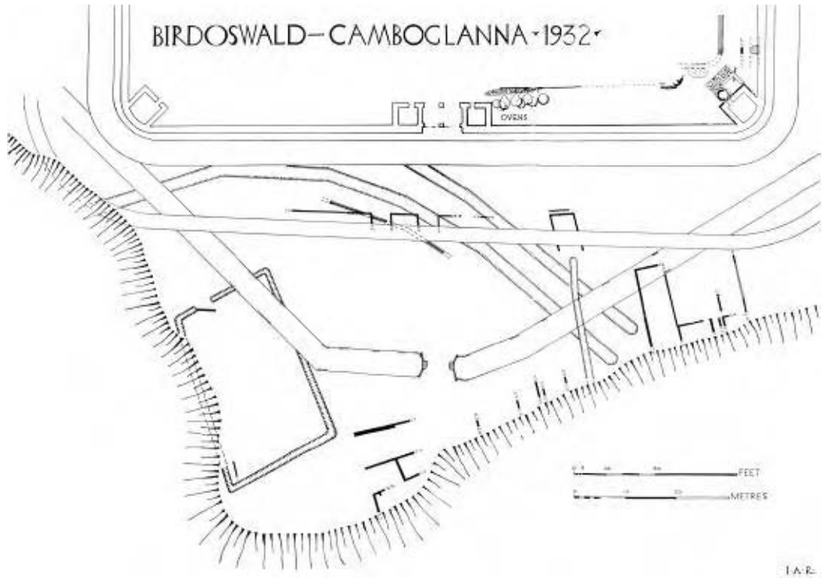


Fig 347
Birdoswald: partial plan of the features excavated in 1933. The hachures visible on the edges of cut features seem to indicate actual trench locations.

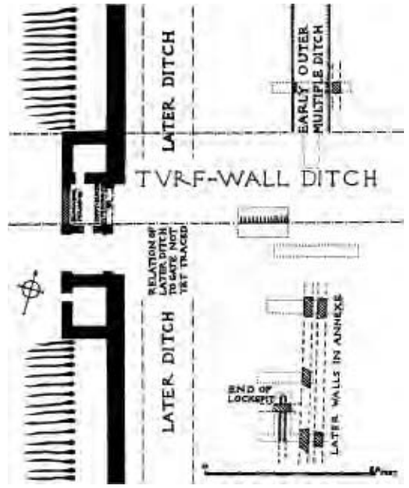


Fig 348
Birdoswald: plan showing the locations of the trenches exploring ditches near the east gate in 1933. Note that the trench exploring the relationship between the outer fort ditch and the Turf Wall ditch is cut in the centre of the fort ditch. If the fort ditch cut the Turf Wall ditch fill then this trench would only have revealed the fill of the fort ditch, and not a valid stratigraphic relationship.

cut features were examined. A T-shaped trench was cut to establish the relationship of an outer fort ditch with the Turf Wall ditch at the *porta principalis dextra*. The east–west trench established both edges of the fort ditch and its width. The north–south stem of the 'T', however, is cut down the centre of the ditch, across the line of the north edge of the Turf Wall ditch, and allegedly into its backfill. No effort seems to have been made to establish the actual edges of the Turf Wall ditch, or the relationship between these and the edges of the fort ditch. The conclusion reached was that the two ditches were open together and filled at the same time. Salway (1965, 97; *see also* Wilmott 1997a, 88) has noted the problems with relation to access through the gate that would attend such an interpretation: if the two ditches were in contemporary use and open at the same time, then the gate would be useless, allowing access to the Turf Wall berm only. It is more likely from a practical viewpoint that the fort ditch was cut into the backfilled Turf Wall ditch. Such a conclusion requires an alternative interpretation of the excavation, which the trench plan allows, namely that the north–south trench was excavated through the fill of the fort ditch as it *cut* the Turf Wall ditch, stopping short of its butt-end against the causeway from the gate. The north–south trench would thus not have encountered the Turf Wall ditch fill at all, as it would have sampled only the fill of the fort ditch.

Received phasing

The phasing conclusions drawn in the original excavations were based on the apparent stratigraphic relationships between linear features, and particularly the relationships with the Vallum ditch. The various components were phased in a chronological order, which varied in the annual reports according to the current broad interpretation. At length, a logical order emerged, some variation and refinement of which became possible as a result of the 1987–92 excavations within the fort. The principal features, in chronological order were:

1. A palisade trench, mirrored by a pair of parallel ditches on the northern (outer) side, describing a polygonal course and cutting off the spur end. In the bottom of these ditches a quantity of well preserved Roman leather, mostly derived from tents, was found within the primary silt (MacIntyre and Richmond 1934). Although these features have frequently been regarded as prehistoric (Birley 1961, 143; Daniels 1978, 204), the tent fragments would appear to confirm their Roman date (Wilmott 1997a, 42). The pollen record from the buried soil beneath the Turf Wall shows that the spur at Birdoswald retained a 95% tree cover until the clearance associated with the construction of the Turf Wall (Wiltshire 1997, 37–9). It is therefore highly unlikely that the enclosure could pre-date Turf Wall construction. It has thus been suggested (Wilmott 1997a, 51) that the ditched and palisaded enclosure may have been a construction camp associated with the building of the Turf Wall. The palisade trench and ditches were stratigraphically cut by the Vallum ditch in two places.

In great part, the identification of the enclosure as prehistoric derived from the discovery, in two areas, of pottery thought to be 'native': an 'occupation layer' noted in the edge of an excavated pit, and in a pit associated with a hearth (Simpson and Richmond 1934a, 123). This hearth was located on the published plan. Subsequent analysis of this pottery showed it to be Housesteads ware (Jobey 1979, 130), a fabric found in 2nd- and 3rd-century contexts, notably at Housesteads. This material reflects Roman and not prehistoric occupation. Furthermore, the lack of any stratigraphic association between the hearth and pits on the one hand and the enclosure ditches on the other means that the claimed connection was at best tenuous.

2. A quadrangular enclosure lay on the cliff edge, its western side largely eroded away by landslips. This has always been seen as a Roman establishment by virtue both of its shape, and of Roman pottery and coins from features within the enclosure (Birley 1961, 143). It is noteworthy that no finds recovered from the fill of the enclosure ditch itself have been published. Originally characterised as a small Roman post inserted into a prehistoric enclosure, it was subsequently proposed (Wilmott 1997a, 41–2) that this was functionally contemporary with the polygonal enclosure itself. The interpretative connection between the polygonal and quadrangular enclosures was based on the fact that both were apparently stratigraphically cut by the Vallum ditch.

3. Vallum ditch: The Vallum was laid out in a regular point-to-point pattern, diverted from a straight course to skirt the fort to the south. Excavations at Birdoswald in 1932 revealed the first Vallum causeway to be discovered (Simpson and Richmond 1933, 247–52), and it was demonstrated that this was part of the original conception of the Vallum. It was formed from a strip of un-excavated soil, revetted on each side with stone walling, and provided with an arch and gate. The causeway lay immediately south of the south gate of the fort, and was built to provide access to the fort from the south. Although the Vallum was laid out to skirt a fort at Birdoswald, the extraordinary closeness of the Vallum ditch to the south-west corner of the stone fort has long suggested that there was an earlier, smaller fort on the site, an idea first advanced by Haverfield (1899). The evidence for a timber fort at Birdoswald pre-dating the present stone fort was summarised by Wilmott (1997a, 42–4), and is further developed above (p 213). In 1928 it was found that the inner ditch of the stone fort cut the deliberate filling of the Vallum ditch. The fill of the Vallum comprised blocks of peat below boulder clay, and was thought to be the mound material of the Vallum pitched back into the ditch (Richmond 1929, 306–8). The botanical evidence taken in 1928 suggested that the Vallum ditch was extremely short-lived concluding: "the Ditch could only have been open a year or two before the re-filling with the peat" (Blackburn, 1928, 308). Wilmott (1997, 52–3) followed Richmond's (1929, 310) comment that the Vallum had "nothing to do with the stone fort", taking the fact that the ditches of the stone fort cut through the fill of the Vallum ditch as evidence that the Vallum ditch was backfilled in preparation for the construction of the fort. This idea assumed, not unreasonably, that the ditches were contemporary with the construction of the stone fort.

Bidwell and Holbrook (1989, 78) suggested that the decommissioning of the Vallum was actually much later and that the botanical evidence for an early filling followed a scouring of the ditch and not its initial cutting. Swinbank and Gillam's (1950) work on the very small group of pottery from the Vallum ditch had appeared to confirm an early filling, and the pottery was published as a securely dated later Hadrianic group of the late 120s or 130s (Swinbank and Gillam 1950, 61). Subsequently, however, the group has been dated to 130–40 (Gillam 1970, group 36) and, as Bidwell and Holbrook (1989, 78) correctly point out, could be Antonine in date. This means that any evidence that might indicate either an early filling or a scouring-out of the ditch followed by backfilling would be crucial, as this would determine whether the Vallum went out of use during the Hadrianic period at Birdoswald, or (for example) after the Antonine return from Scotland. The recovery of more dating evidence from the Vallum ditch was also important, as it would also serve to date the excavation of the fort ditches through the fill of the Vallum.

A further peculiarity of the Vallum at Birdoswald is the fact that between Mcs 49 (Harrows Scar) and 50TW (High House), including the deviation at Birdoswald, the north mound of the Vallum was omitted, leaving a south mound of double size. This was particularly clear immediately west of Mc50TW, where the north mound resumed, and the south mound was reduced in width (Simpson and Richmond 1937, 172–3). The early excavators record that immediately south of the fort there was very little evidence for *any* Vallum mound, assuming that it had been pitched back into the Vallum ditch in its entirety, although the 1934 plan shows the line of two projected Vallum mounds.

4. Timber buildings (first phase): A number of timber buildings of unknown function were identified. These overlay the backfill of the Vallum ditch, yet were apparently cut by the outer (second) ditch of the stone fort. The excavators interpreted them as "open ended sheds for carts or stores" (Simpson and Richmond 1933, 256), and linked them with the building of the Turf Wall. In fact these buildings seemed to reflect a short-lived phase between the backfilling of the Vallum and the construction of the stone fort, or at least the cutting of the ditches of this fort. Wilmott (1997a, 89, table 4) opined that they may have been constructed for the builders of the stone fort.

5. This phase comprised the two ditches that appeared to form the multiple ditch system of the stone fort, both of which cut the deliberate backfill of the Vallum ditch. Although the inner ditch was open throughout the life of the fort and was re-cut on several occasions (Wilmott 1997a, fig 26), it seemed that the outer ditch was never even completed, appearing to the south of the *porta principalis dextra* as a shallow marking-out ditch, termed a 'lockspit' by the excavators. To the south of the *porta decumana* the 1934 plan shows both ditches as continuous across the face of the gate, with no causeway provided, implying that the known blocking of the gate portals (Potter 1855b, 71–4) took place either before the ditches were dug, or before they were re-cut.

6. Timber buildings (second phase): Some of the timber buildings on the spur were of at least two phases, and a group lay to the south of the fort ditch system. The possibility existed that some of these post-dated the stone fort ditches (Wilmott 1996b).

Methods and rationale

The 1996 Birdoswald Spur project (Code 590) involved the excavation of three trenches (Fig 346), each of which was sited to answer a number of management and/or research questions. Trench A was located on the spur edge adjacent to the south-west corner of the fort, and measured 20m × 25m. It was deliberately sited on the part of the site most threatened by erosion, and was intended to examine the threatened archaeology, and to evaluate the extent to which erosion had already removed archaeological deposits. This area was also selected as it would enable an assessment of the potential of the Vallum ditch and mounds to provide evidence for the early environment, in particular in establishing whether any of the south Vallum mound survived, and whether this sealed a buried soil horizon. Trench B was located adjacent to the south gate of the fort (*porta praetoria*), on the west side, and was slanted to run NNE–SSW. It was 5m wide and 27.5m long, and was deliberately sited to cross the most complex series of intercutting features depicted on the Simpson and Richmond 1934 plan. This trench was designed to establish the excavation methods used previously, and to test the accuracy of the 1930s planning. It was also intended to re-examine the stratigraphic sequence in order to assess the earlier interpretation. The plan of the features in the southern and central areas of the trench matched the 1934 plan almost perfectly, although the pit, 136, which appears to be the same feature as Simpson and Richmond's 'Pit A', is some way out. It seems likely, therefore, that the fort wall was used as a surveying base-line, and that one might expect errors to increase farther away from the wall. Trench C was located adjacent to the cliff almost due south of the *porta praetoria*. The trench was 20m long and 8m wide. Here it was intended to establish both how much erosion of the archaeology had taken place, and to what extent the area had been disturbed by Simpson and Richmond.

The 2000 excavation comprised a single trench 6m square, which will, for the sake of convenience, be described here as Trench D. Here the idea was to relocate the pit and hearth that were found in association with Housesteads ware (above, Simpson and Richmond 1933, 123), and to attempt to secure further examples of this ware, within stratified deposits, from the area in which it had been found. These deposits would be examined, and the stratigraphic context of the Housesteads ware was to be clarified. This was carried out in order to assist in the interpretation of Housesteads ware found during the 1996 work.

Trench stratigraphic summaries and phasing

Trench A: description

Four distinct stratigraphic phases were identified (four Roman, one post-Roman), together with a number of features that could not be closely phased.

Phase A1: the Vallum

The earliest feature within the stratified sequence was the Vallum ditch (7), which crossed the trench from NNE to SSW (Fig 349a).

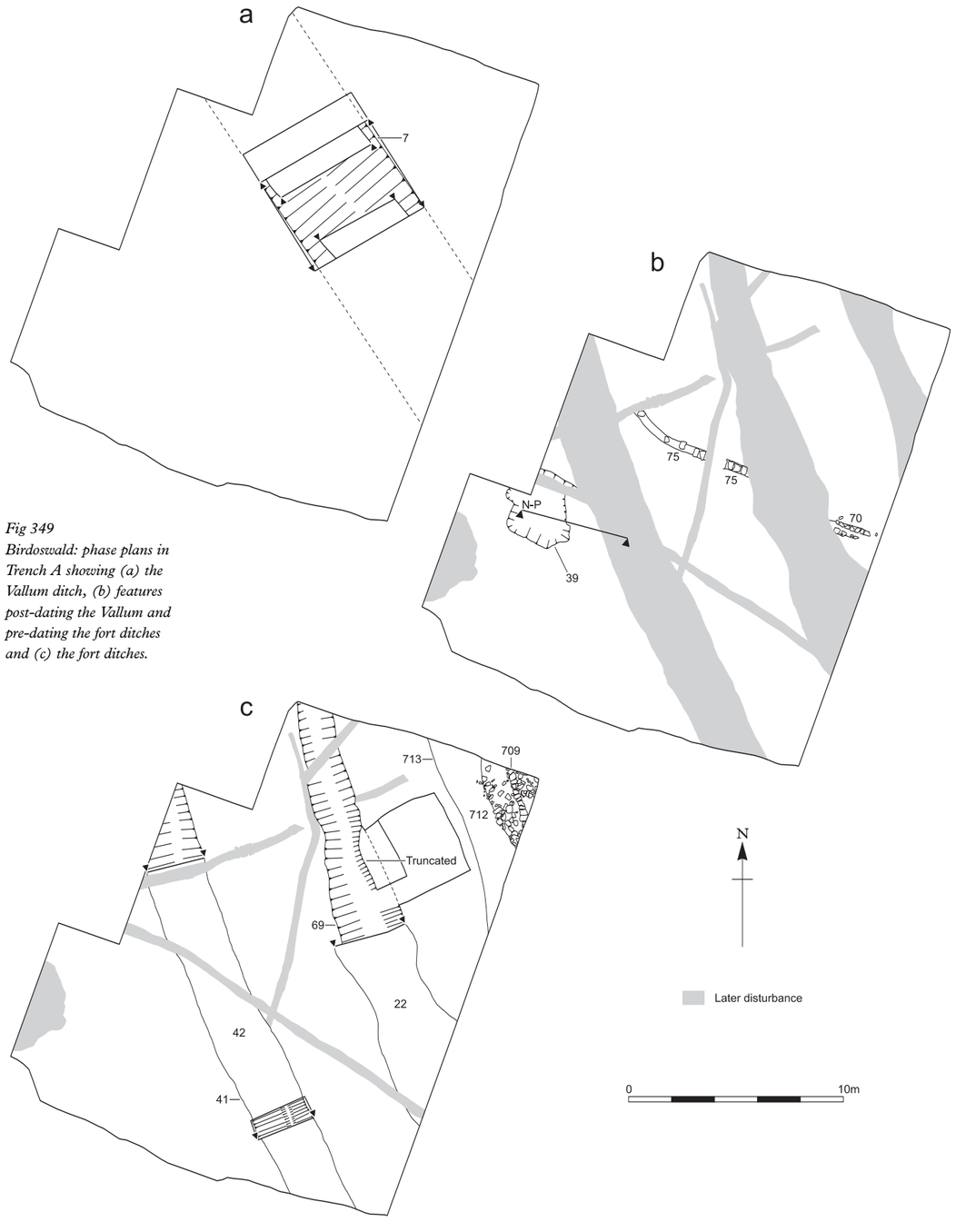


Fig 349
Birdoswald: phase plans in Trench A showing (a) the Vallum ditch, (b) features post-dating the Vallum and pre-dating the fort ditches and (c) the fort ditches.

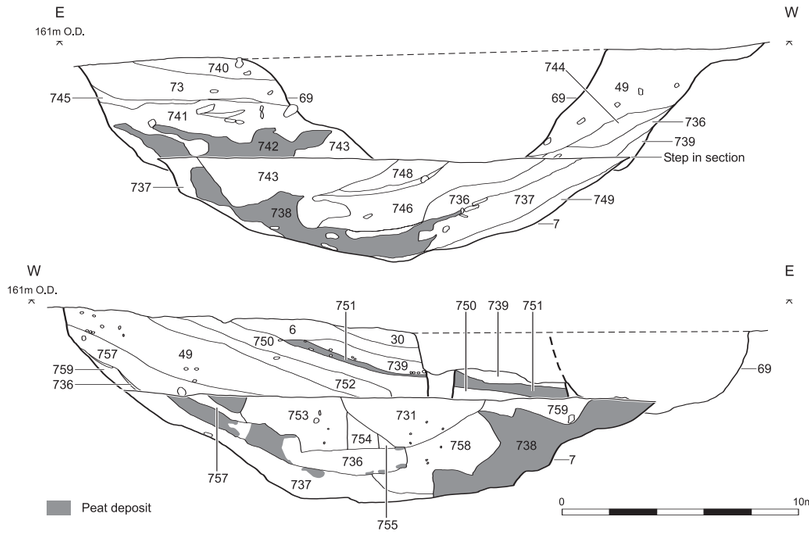


Fig 350
Birdoswald: Vallum ditch sections in Trench A.

The profile and dimensions of the ditch (Fig 349b, 350) did not conform to classic sections cut elsewhere. The width of 5.58m is close to the expected value of about 6m, but the depth of 1.95m is very much short of the 3m, which was the depth of the feature in the vicinity of the Vallum crossing excavated by Simpson and Richmond (1933, 247–52; Wilmott 1997a, 44, fig 21) immediately south of the *porta decumana*. The profile of the ditch was not square-cut, as in those areas where it was cut into rock (for example at Denton [Bidwell and Watson 1996], or at Black Carts, p 97, Figs 202, 208), but formed a gentle, shallow U-shape. This profile, which also occurs at Appletree (p 112, Figs 217, 223), seems to have been adopted in areas of boulder-clay subsoil, as it is impossible to preserve a sharp edge in this material.

The fill of the Vallum ditch (Figs 350, 351) was very much as described by Blackburn (1928) during the earlier work. There was no trace of a uniform natural silting in the bottom of the ditch, but a grey clay-silt (749) that lined part of the base and west side of the ditch certainly comprised an element of primary natural silting.

Fig 351
Birdoswald: Vallum ditch section excavated in Trench A.

Fig 352
Birdoswald: stone-lined drain which was built over the back-filled Vallum and cut-by-one of the fort ditches. Note the construction with a flag base and coursed sides. All post-Roman stone lined drains had flagstone sides.

It is significant that this should have been on the west side, as the ditch would have received substantial amounts of ground water flowing in from the higher ground to the west. It is logical to suppose that this primary material represents the in-wash of silt through excess ground water running off saturated land; a factor that still causes problems on the site. The main body of the fill of the ditch comprised irregularly interleaved dumps of clay and peat (728–43, 746–8, 750–9) and appeared to be a deliberate backfilling. It seems likely that the fill comprised material that had been removed from the ditch in the first place, and it is possible that the mound (or mounds) was re-deposited to fill the ditch. This conclusion is strengthened by the fact that these deposits had no finds. The peat may have originated from turf-built cheeks that served to retain the mound material. Such features have been found at Mc50TW (High House) (Simpson *et al* 1936a, 159), although they were absent at Appletree (Fig 217). The character of the upper 900mm of the fill (above layers 742, 755 and 747) was different. It comprised predominantly re-deposited boulder clay, ranging in colour from grey at the bottom through white to orange at the top, but mixed throughout. Pottery was found in several of these clay deposits (729 = 741, 739, 80 = 49). Towards the top of the ditch, and tipped from the western side was a layer of dark grey-brown clay-silt (6 = 92). This contained a large assemblage of pottery (p 307), and was capped with a final levelling deposit of orange clay (49 = 80 = 740). Although not totally sealed at its western edge, a fact which might account for the presence of a few intrusive sherds, it was clear that the dark deposit was part of the deliberate filling of the top of the ditch with clay. The clay capping of the ditch above the pottery-bearing stratum was cut by all later features, and the material from (6 = 92) thus provided an absolute *terminus post quem* for all later operations in Trench A.

Phase A2: Drain and pits

Stratigraphically, this phase comprises those features, other than the Vallum ditch, that were cut by the ditches of the stone fort (Fig 349b). In one case, that of a stone-lined drain, the feature both cut the fill of the Vallum ditch and was cut by one of the fort ditches. In the other major case, a pit group outside the line of the Vallum ditch was cut by one of the fort ditches (Fig 353). This group of pits lay some 9m south of the south-western edge of the Vallum ditch, and thus occupied the site of the eradicated double-sized south Vallum mound. They were therefore contemporary in phasing terms with the drain.

The stone-lined drain (cut 72 = 76, lining 71 = 74, fills 70 = 75, 716; Fig 352) was built in a vertical-sided, flat-bottomed cut 910mm wide and 260mm deep. The base was formed of large flags, upon which the side walls were constructed. These comprised two courses of small coursed rubble, each 120–40mm deep.

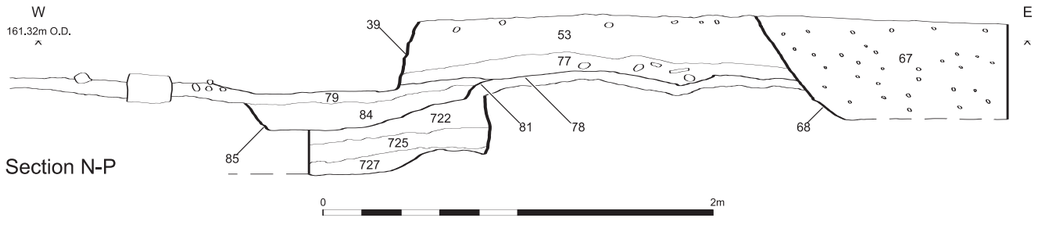


Fig 353
Birdoswald: section showing pit group cut by one of the primary fort ditches.

Some clay bonding survived in these drain walls, and the drain was capped with flagstones. It is important to contrast the structure of this drain with that of post-medieval stone-lined drains in the area, the sides of which were lined with flagstones rather than built courses.

The pit group (Fig 345) began with a sub-circular pit (85) filled with mixed silty clays (721, 725, 726, 727, 84). One element of the fill (722) spilled over into an uneven linear feature that ran eastwards from the pit. Subsequent fill deposits (77, 53) levelled the pit and linear feature with the surrounding clay. The latest fill (53) was cut on the east side by the outermost of the three fort ditches, and on the west side by a further pit (39), which may have been contemporary with the fort ditches.

Phase A3: Fort ditches

Phase A3 relates to the provision of a series of three defensive ditches around the stone fort (Fig 349c). The principal discovery of this phase is the fact that there were three ditches, and not just the two recorded by Simpson and Richmond (1934, plan facing p 126 and Fig 347). The stratigraphic context of the ditches is clear. The outer ditch cut the Phase A2 pit group, and the middle ditch cut the Phase A2 stone-lined drain, which in turn cut the fill of the Vallum (Fig 354).

The inner ditch (713, fill = 712), regarded as 'late' by Simpson and Richmond because of the 3rd- and 4th-century finds it contained, was not explored in 1996, although the outer edge was well defined in the NE corner of the trench. This ditch described a tight curve mirroring the line of the rounded corner of the stone fort. The excavations outside the *porta principalis sinistra* in 1987–92 (Wilmott 1997a) demonstrated that the inner ditch had been re-cut on at least five occasions, with the latest phase containing 4th-century material. This final re-cut was probably what Simpson and Richmond encountered, and was filled with collapsed rubble (709).

The middle ditch (69; Figs 355a, 356) echoed the line of the inner ditch, running on a parallel curvilinear course. The berm between the two ditches was 6.20m wide. Much of the curve of this ditch was lost to cliff-edge erosion. In section the ditch (69) was a broad U-shape 3.6m wide and 1.1m in depth at the centre. The ditch seems to have been open for some time, as 120mm of fine grey clay-silt (47) accumulated at the bottom. Above this on the eastern side, part of the Vallum ditch fill through which the middle ditch was cut slumped into the ditch (48). A deliberate dump (44) was followed by further natural silting (45), after which the ditch was levelled, using dark brown sandy-clay soil (40, 36, 22). There was no evidence that this ditch had ever been re-cut.

The newly discovered outer ditch (5 = 41 = 68: Fig 355c, d) was 2.9m wide and 950mm deep at the deepest point, and described a concentric curve that mirrored

Fig 354
Birdoswald: general view of Trench A to show the line of the two outer ditches. Note the middle ditch to left of shot cutting the stone-lined drain.

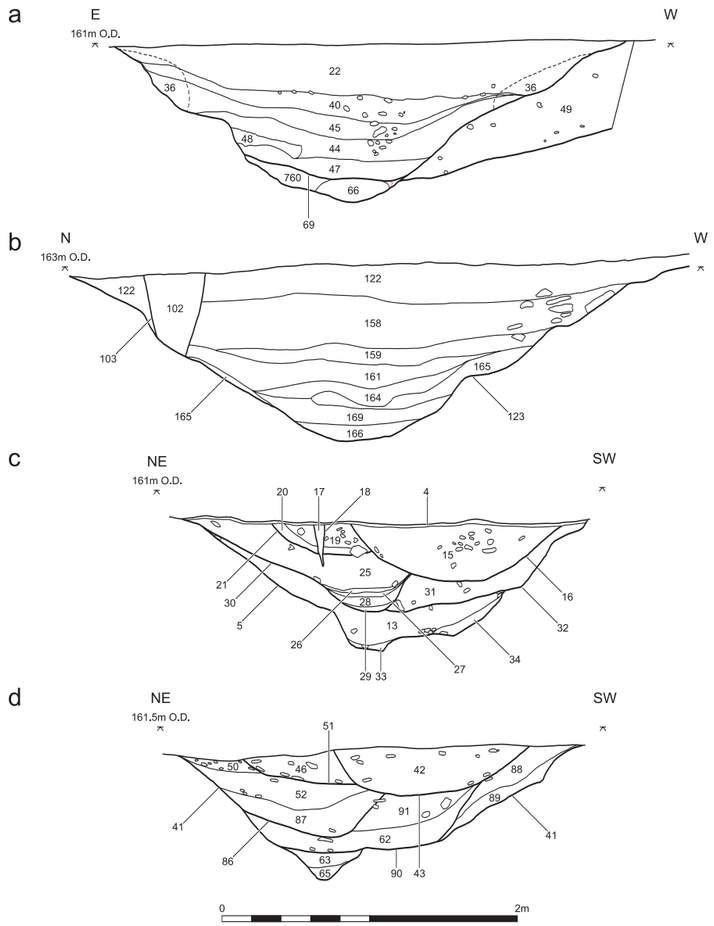


Fig 355
Birdoswald: sections through fort ditches (a) middle ditch, Trench A, (b) middle ditch, Trench B, (c), (d) outer ditch, Trench A.

that of the fort corner and the inner two ditches. Most of the curve was lost to cliff erosion. The berm between the middle and outer ditches was 4.4m wide. Two complete sections 1.5m wide, and one partial section (establishing the relationship with the Phase A2 pit complex, Fig 345) were cut through the fill of this ditch. It measured 2.75m wide and 1.01m deep at the deepest point. Unlike the even U-shaped profile of the middle ditch, the outer ditch had a steep inner slope of *c* 45, and a rather shallower outer slope. The ditch showed signs of having been re-cut on four occasions. The earliest fill was a greyish-brown clay-silt (88, 89, 61, 63, 33, 34, 67), which appears to have been a natural silting. In the northern segment this was followed buy deliberate dumping (13). At this point the ditch was re-cut to a broad, shallow, and almost flat-bottomed profile (cut 32 = 90). Fill deposits in the re-cut (62, 91, 31) comprised well sorted sandy clay-silt, which was probably naturally deposited by water action. The second re-cut (cut 30 = 86) formed a narrow U-shape, 1.4m wide and 650mm deep. The initial silting comprised bands of laminated sandy silts, which were certainly waterlain (26, 27, 28, 29, 87), above which were mixed soil and silt, probably part naturally and part deliberately deposited (25, 20, 19, 52, 50). The penultimate re-cut (cut 21 = 51) is the smallest (at 700mm wide and 260mm deep) and least certain of the sequence. In this phase the ditch is reduced to a gully, and contained silt (20) followed by topsoil and

silt deposits (19, 46). Finally a somewhat larger re-cut 1.4m wide and 400mm deep (cut 16 = 43) was filled with a uniform dark grey-brown silty clay soil (15, 42), which may have been an old topsoil.

Phase A4: post-Roman

The post-Roman period was represented by a slab-lined drain (12, 47, 24, 23), which post-dated the backfilling of the two outer fort ditches. A number of either ceramic (9, 718, 720, 723) or stone-lined (710) field drains were also recovered. The latter, which still functioned during the excavation, was cut into the upper fill of the inner fort ditch (709).

Several pits (3, fill = 2; 39, fill = 35, 38; 96, fill = 95; 702, fill = 701; 704, fill = 703; 708, fill = 705) and a slot (715, fill = 714) were unphased. Fills 2 and 35 contained pottery suggestive of an early 3rd-century date.

The rest of these features contained no datable material.

Finds and dating

Phase A1

The Vallum filling clearly commenced after the early AD 120s, given its historical context. The samian ware evidence seems consistent with this, both from the Vallum fill, and in terms of the site samian list. South Gaulish samian ware is absent from the Vallum fill, and Les Martres material amounts to a mere 1.3%. These figures are very similar to the overall site decorated and stamped list (Dickinson 1997), which produced 0.6% South Gaulish and 1.1% Les Martres, both suggesting a lack of any pre-Hadrianic pottery deposition. The majority of the more closely datable samian dates to the Hadrianic–early Antonine period; however, context 6 includes two Dr 31s, a Dr 31R rim and an East Gaulish, Rheinzabern, bead-rimmed vessel, all dating after AD 150; and the 31R after AD 160. Similarly context 739 contained a Rheinzabern footring base, dated after AD 150. There is a small quantity of intrusive pottery in context 6, namely a (?)Crambeck greyware sherd, a sherd of gritted ware (fabric G14) and a post-medieval fragment, but none from 739. Although there is a small possibility that the later samian is intrusive, particularly the Dr31R, it seems more likely to belong in the deposit. The coarse pottery is consistent with a Hadrianic–early Antonine date for the collection. Notably absent is BB2, dating after *c* AD 150, and Nene Valley colour-coated ware, dating after *c* AD160/70. Assuming the collection is a closed one, then, perhaps, it ought to have been closed shortly after *c* AD 150.

Other finds included a disc brooch (no. 3, hobnails (no. 24, vessel glass (nos 46, 52) a ceramic counter (no. 73) and a shoe (p 374, no. 1)

Phase A2

Phase A2 deposits contained six sherds of samian ware, including a Central Gaulish Dr 31, dated to after AD 150 (from context 722) and a body sherd, dated to after AD 160 (from context 53). The small collection of coarse pottery included a BB1 jar (B01.2) probably of mid-later 2nd-century date (from context 79) and two Nene valley colour-coated ware beaker rims (F01.1 and F01.3), which must date after *c* AD 160/70 (from contexts 77 and 725 respectively). Only a single context (75) contained a single intrusive post-medieval sherd, but this

Fig 356
Birdoswald: view along the excavated middle fort ditch in Trench A.

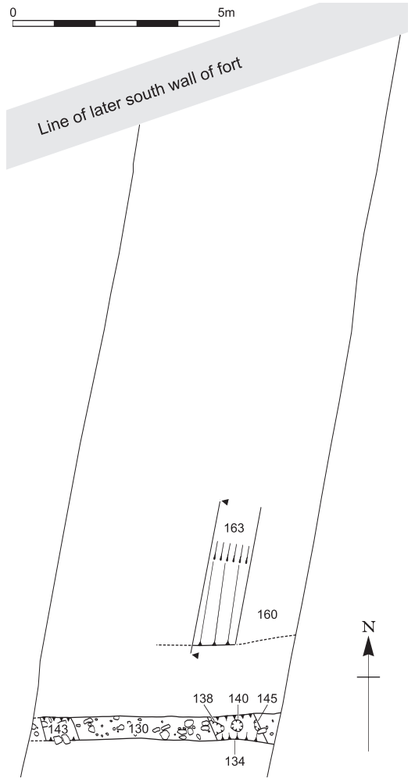


Fig 357
Birdoswald: plan of Phase B1 early palisade and ditch in Trench B.

Fig 358
Birdoswald: original photograph by Richmond and Simpson showing the Phase B1 palisade trench (stone filled) cut by the beam slot of a timber building of Phase B2b.

contained none of the crucial dating evidence. A date range of perhaps *c* AD 150–70 might encompass this small collection, which certainly gives Phase A3 a *terminus post quem* of *c* AD 160/70.

A fragment of a square glass bottle (no. 50) was the only other find.

Phase A3

In the middle ditch sections there was nothing closely datable in the initial deposit (47).

A small group of material from low down in the sequence (44) contained a Central Gaulish Dr 37 of Cinnamus, dated AD 150–200. Above this was a Central Gaulish Dech 72 (45). The latest material from the upper ditch fill (22) contained a Dr 37 dated AD 150–200, and a greyware BB2 jar (B10, J1.1), probably of later 2nd-century date.

The lower fill of the outer ditch included a BB1 incipient BB1 beaded and flange bowl, of early to mid-3rd-century date (B01.9)(67), a greyware jar rim (R01.2) of 3rd-century date, four greyware sherds in fabric R01 with obtuse lattice decoration of 3rd–4th-century date, and a gritted ware jar with everted, slightly lid-seated rim (G14.1) of 3rd- to earlier 4th-century date, along with two sherds of Crambeck greyware (R11), dating to after *c* AD 280 (13).

In the southern excavated segment was a sherd of Nene Valley colour-coated ware (F01) dating to after *c* AD 160/70 (89), and a Central Gaulish Dr 31 or 31R, dating AD 150–200 (52).

The upper fill (50) contained a Mancetter hammerhead mortarium dated *c* 200–220 (M11.4) and a Dales type jar (G12.1) dating to the 3rd–4th centuries and probably of later 3rd–4th-century date. The bulk of the obviously non-residual material from this ditch fill was of later 2nd–earlier 3rd-century date. However, when the Dales type jars and the Crambeck greyware are taken into account it may not have been filled until after *c* AD 280.

Other finds were sparse. A bracelet (no. 18), hobnails (nos 25, 26), vessel glass (nos 32, 48), two ceramic counters (nos 67, 70), an iron scoop or gouge (no. 78), and an iron spatula (no. 108).

Trench B: description

Phase B1: Polygonal enclosure

The two earliest features in Trench B were a ditch and a parallel beam slot (Fig 357). Comparison with the 1934 plan shows that these comprised the inner ditch of the polygonal enclosure, and the polygonal

Fig 359
Birdoswald: photograph taken in Trench B in 1996 showing the same features as excavated by Richmond and Simpson, and shown in Fig 358.

palisade trench within these ditches. The palisade trench was one of a pair of intersecting features that appear on a photograph from the 1932 excavation (Simpson and Richmond 1933, fig 1; Fig 358), which it was possible to replicate in 1996 (Fig 359). Within the area of Trench B, the palisade trench had been cleaned over in the 1930s, but had not been fully excavated. A segment of fill had been removed, and it was possible to re-examine the base of this segment, and also the section. The trench (134) was 600mm wide and 450mm deep, and had a vertical-sided, flat-bottomed profile (Fig 360a, b). In the bottom of the section excavated in the 1930s, a series of postholes (145, 140, 138) that penetrated below the base of the trench itself were defined. It seems clear that the original interpretation was correct, and that the palisade was of post-in-trench construction. The posts were 300mm in diameter, and were positioned with centres 600mm apart. The stones within the trench appear to have comprised packing for the posts. In the section of the trench, each posthole was filled with slightly different material to the rest of the trench (137, 144). It tended to be more grey and silty than the orange-grey clay-silt that formed the majority of the fill (132). In the south-west facing section, it was clear that the post that related to posthole 145 had been replaced, as shown by a second socket (146, fill = 142; Fig 360b)

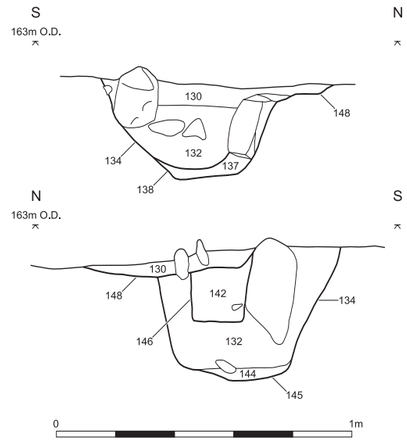


Fig 360
Birdoswald: section through palisade trench and associated posthole, Phase B1.

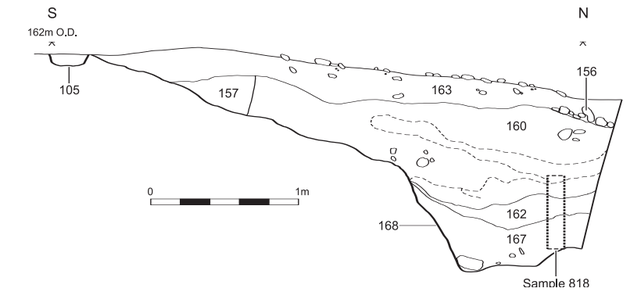
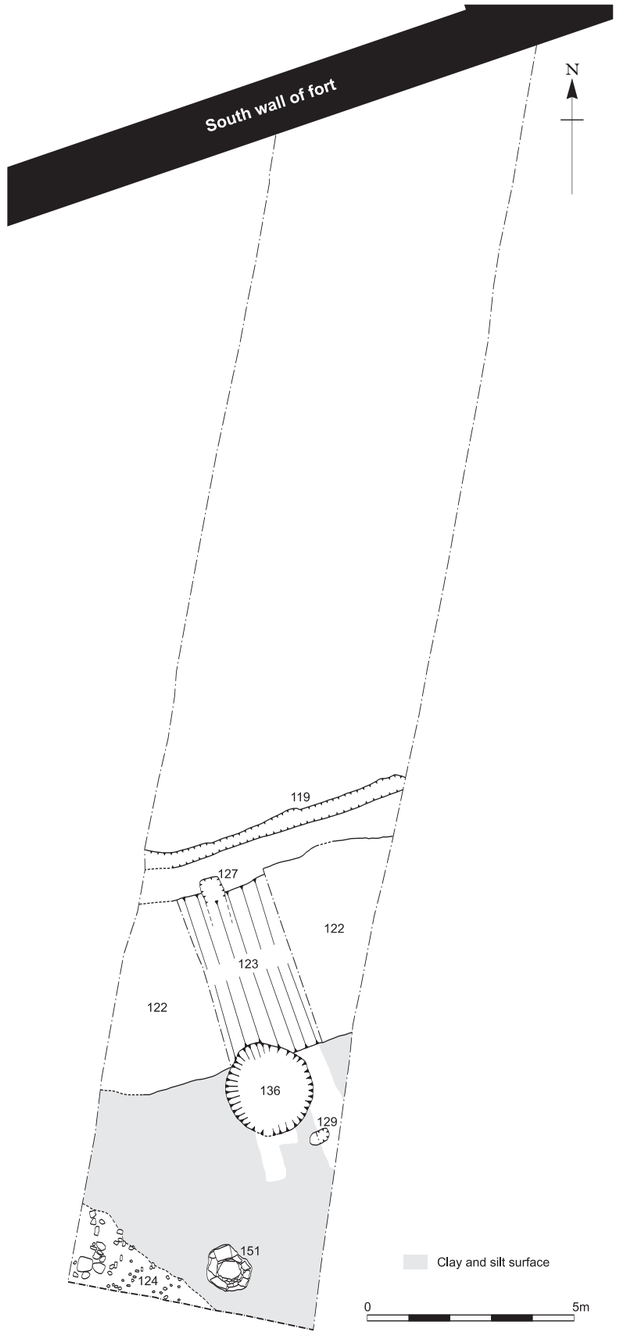


Fig 361
Birdoswald: section through ditch of polygonal enclosure, Phase B1.



cut into the fill of the palisade trench at a higher level. At the top of the sections, a band of mixed soil in the top of the trench (130) replaced the material removed by the early excavators when cleaning and defining the feature.

The inner ditch of the enclosure (168) was sectioned in a small area (Fig 361). The full width was not determined, although the depth of the feature was 1.30m. At the bottom of the ditch wet, organic fill (162, 167) preserved some leather. This is not surprising as the two ditches of the polygonal enclosure produced the fine selection of tent leather published by McIntyre and Richmond (1934). Above this, a layer of brown clay (163) was capped by mixed silty sand (160) and grey sandy, stony soil (157).

Phase B2a: fort ditches

Phase B2a comprised the excavation and filling of the fort ditches. (Fig 362a) The inner ditch (117) was partially overlain by a medieval or later track, but it was possible to see that, as in Trench A, it was filled with rubble and soil (113, 114, 115). It may be presumed that the ditch was constantly re-cut throughout the life of the fort, as it had been at the *porta principalis sinistra* (Wilmott 1997a). The middle ditch (123) was located, and sectioned on the line of the Simpson and Richmond trench, which had done no more than define the upper edges of the ditch to allow planning. The shape, size, and silting pattern of the ditch were the same as discovered in the section cut in Trench A (Figs 353b, 363), with silting deposited in nearly level strata, and no re-cutting.

The bottom fill (166) was sticky clay. It lay beneath a peaty deposit containing some twigs and leather (169). Above this a clay layer (165) was again overlain by peat (164), above which lay a deposit of mottled, silty, sandy clay (161) that may have been water deposited. A further clay deposit (159) was followed by an apparently deliberate deposit of dark grey silty clay containing charcoal and burnt clay and sandstone fragments (158). Above this was a friable clay-silt with a large proportion of building stone as inclusions (122).

Phase B2b: Roman occupation

At the south end of the trench was an extensive deposit of re-deposited natural clay and mixed silty material some 220mm deep (125; Fig 362). The relationship of

Fig 362 (opposite page) Birdoswald: plan of features of Phases B2a and B2b, Trench B.

Fig 363 Birdoswald: north end of Trench B showing fill of middle ditch cut by Pit 136.

this deposit with the fort ditch was, unfortunately, not established. This, as well as the fill of the middle ditch, was cut by a pit (136), which appears to be the feature that appears on Simpson and Richmond's (1934) plan as 'Pit A'. The pit was 2.1m in diameter and 1.2m deep and was deliberately backfilled with mixed material (135, 147, 170; Fig 363). Beyond this again to the north was a small cobbled surface (124), a small posthole (129) and a shallow, stone-lined well (155), 760mm deep (Fig 364).

In the centre of the trench, the palisade trench of Phase B1 was cut by the beam slot of a timber building (119). Simpson and Richmond's trenches too cut this slot, and the feature was partially excavated by them (Simpson and Richmond 1933, fig 1; Figs 358, 359). This slot clearly post-dated the filling of the middle ditch.

Fig 364 Birdoswald: stone-lined well in Trench B.

Phase B3: Post-Roman track

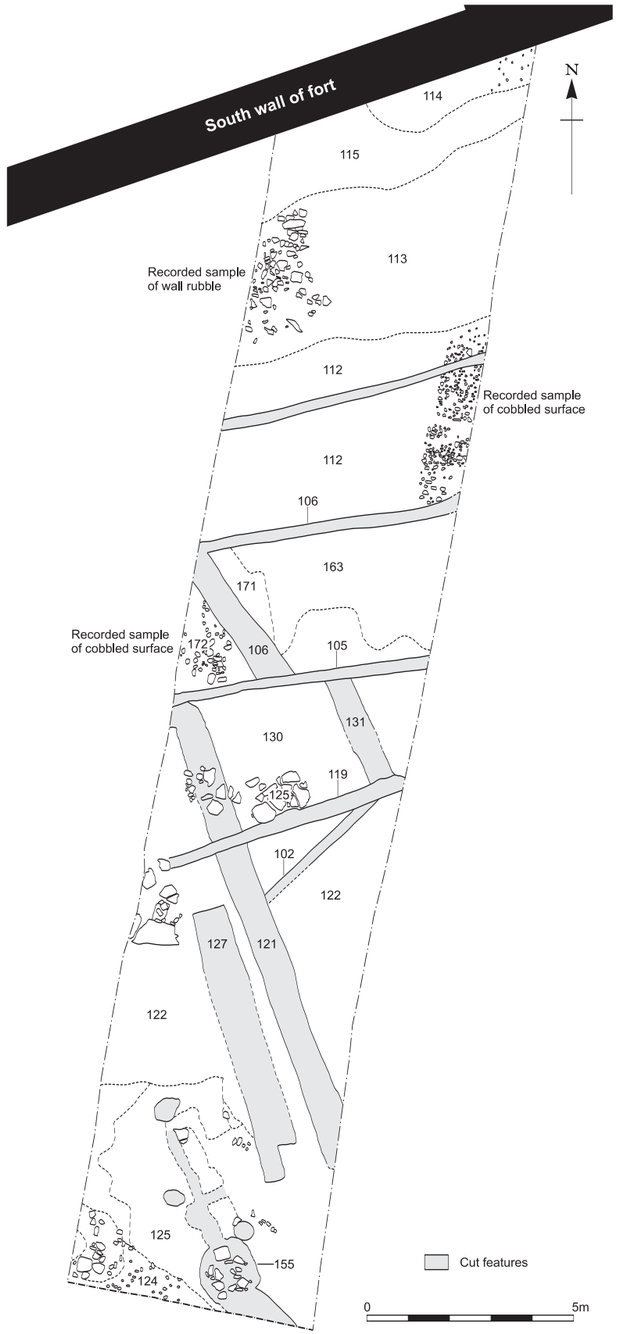
Over the inner ditch of the fort a linear area of cobbling (172; 163; 111; 156; 171; 111) running east–west along the face of the fort wall appears to be a post-Roman track (Fig 365). This appears to lead into a hollowed area to the west of Trench B, and may relate to the medieval building thought to lie in the south-west corner of the fort. In the centre of the trench, a flagstone floor may have been associated with this track. This did not exist in areas crossed by earlier archaeological trenches, and photographs of the 1930s spoil heaps show flagstones lying on them. It seems certain that these surfaces were originally continuous, and part of a medieval or post-medieval building that was not recorded by the earlier excavators.

Phase B4: field drains

This phase comprises the provision of ceramic field drains (102, 106, 105, Fig 365), which crossed the trench from south-west to north-east.

Phase B5: Simpson and Richmond excavations

The final archaeologically defined phase was that of the 1930s excavations. The excavation method employed in the 1930s was based on the excavation of parallel trenches (Fig 365). Three parallel trenches were found (127, 121, 131). These had been excavated to the top of the natural subsoil in a search for cut



features, which were recorded and used as the basis for interpretative plans. Occasionally features were partially excavated at points of junction in order to recover a sequence, or simply followed to establish their line (Fig 358).

Finds and dating

In the polygonal ditch fill of Phase 1, waste leather (p 385, no. 20) was the only find.

In the middle fort ditch the primary deposit (166) included a Central Gaulish body sherd dated AD 160–200, a later 2nd-century BB2 bead-rimmed bowl (B10.2) and a BB1 obtuse-lattice-decorated body sherd, which must be of 3rd-century (or later) date. Other fill deposits contained Nene Valley colour-coated ware (F01), post-dating AD 160/70 (165); a Central Gaulish Dr 31R, AD 160–200; five BB1 obtuse decorated body sherds, 3rd–4th century, and a BB1 jar rim (B01.3) of probably early–mid-3rd-century date (164); a Central Gaulish Dr 31R, dated AD 160–200, along with another BB1 obtuse-lattice-decorated body sherd, of 3rd–4th-century date (161); a Central Gaulish Dr 31R, AD 160–200; a Dr 37 of the same date, and a Mancetter mortarium, dated *c* AD 160–200 (M11.2)(159); Nene Valley scale beaker body sherds, with a date range *c* AD160/70–300; and three sherds of Housesteads Ware (158).

These latter are probably intrusive given that this is an upper fill, cut by pit 136, which contains eight pieces of this fabric as well as a few sherds of Hadrianic–Antonine date. On the evidence from these excavations Housesteads ware should be dated to the later 3rd century or later.

Also from the ditch came a glass bead (no. 8), a bracelet (no. 17) and vessel glass (nos 33, 57, 59), a shoe (p. 379, no. 6) and tent leather (p 384, nos 7, 14, 15, 17).

Of the other pits in Area B, Pit 129 contained a BB1 body sherd, which must be Hadrianic or later; while Pit 155 contained a BB1 developed beaded and flanged bowl, of later 3rd–mid-4th-century date (B01.10). For the later period an unstratified spindle whorl made of Housesteads ware (no. 28) was recovered.

Trench C: description

There were few archaeological features in this trench (Fig 366), and only two stratigraphic phases were identified: prehistoric and Roman.

Phase C1: Prehistoric

At the western end of the trench was a highly unexpected feature: a stone lined pit (208) 1.16m long, 1.2–0.9m wide (tapering in from the northern end) and 1.15m deep. The bottom of the pit was lined with orthostatic slabs, while the upper lining was of thin stones set in drystone courses. The stonework was not Roman, and no Roman stone was found re-used in the construction, *ergo* the feature

Fig 365 (opposite page) Birdoswald: plan of Trench b showing features of Phases B3, B4, and B5.

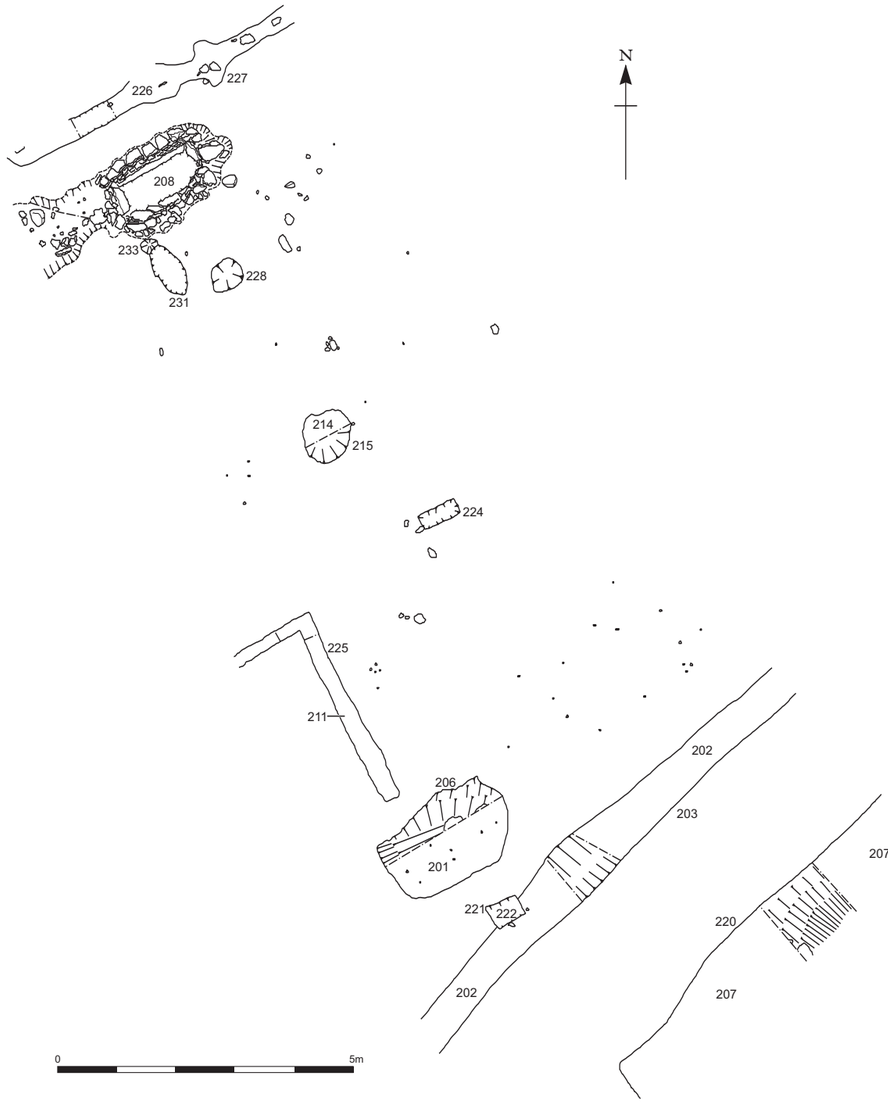


Fig 366 Birdoswald: plan of features of all phases in Trench C.

Fig 367
Birdoswald: eastern side of Trench C showing eastern side of quadrangular enclosure sectioned under the baulk.

must be pre-Roman in date. The feature contained no prehistoric material, but only a very small quantity of Roman pottery. It seems likely that the pit was robbed during the Roman period, possibly during the clearance of the site for the construction of the fort. This feature has been published fully elsewhere (Wilmott 2004)

Phase C2: Roman

The Roman period was represented by a number of slots, ditches and pits. The largest of these (220) was truncated by the eastern edge of Trench C (Fig 367). It was 760mm in depth, and its deliberate, single phase, backfilling (207) produced a substantial ceramic assemblage. Comparison with the 1933 plan suggests conclusively that this constitutes the eastern side ditch of the 'early quadrangular enclosure', which has been associated with the primary polygonal enclosure of the spur end (Wilmott 1997a, fig 24a; Figs 362, 368). A second, parallel feature (202) was 2.5m west of feature 220, and comprised a U-shaped cut 700mm wide and 300mm deep; it was cut by a small, shallow square posthole (222). It is feasible that this might have been a beam slot within the ditched enclosure represented by 220, but no such feature was identified in 1933. To the west again was a large pit (206), and a number of insubstantial slots (225, 227) and postholes (233, 231, 228, 215, 224), which may be tenuously associated with the 1933 evidence for timber buildings on the spur.

Finds and dating

Most of the features in Area C could be dated to the 3rd century or later. Pit 206 contained seven sherds of Housesteads ware, a Nene Valley bag beaker rim, and two sherds of East Gaulish samian ware. Context 207, the fill of the supposedly pre-Vallum quadrangular

Fig 368
Birdoswald: ditch of quadrangular enclosure on west side as photographed by Simpson and Richmond.

enclosure, ditch 220 contained an East Gaulish Lud SMC dated to AD 190–250 and a greyware jar (R01.2) of early 3rd-century date, along with six sherds of Housesteads ware, of later 3rd-century or later date. Context 226, a beam slot adjacent to the robbed cist contained two sherds of Housesteads ware. The fill of the robbed cist included a medieval and post-medieval sherd, which may be intrusive. Otherwise the Roman ceramics include three sherds of Housesteads ware, and a Dalesware jar rimsherd, two developed BB1 beaded and flanged bowls of later-3rd–mid-4th-century date, a Crambeck greyware bodysherd, a greyware developed beaded and flanged bowl of later 3rd–4th-century date, and a Saxon sherd, possibly of Charnwood origin (Williams, *below* p 318). The robbing would thus appear to date to the 5th–7th century.

Trench D: description

Trench D could not be closely phased. Turf and topsoil were stripped to reveal the surface of the natural clay subsoil, in which a number of negative features were revealed and sampled (Fig 369). All of these were of probable Roman date. As noted above (p 255), the trench was sited with reference to Simpson and Richmond's (1934) plan in order to re-examine the feature marked upon that plan as 'native hearth'. The 'hearth' was shown on the plan as a stone edged feature adjacent to a timber slot. These were indeed the two most prominent features excavated in 2000.

Fig 369
Birdoswald: plan of all features in Trench D.

Fig 370
Birdoswald: stone-lined well (10) in Trench D.

The slot, which crossed the trench from north-west to south-east (35) was 260mm wide and 190mm deep. Along the trench at intervals of around 430mm were a series of postholes averaging 220mm in diameter and 190mm in depth (41, 40, 39, 38, 43). South-west of the trench was a pair of exactly similar trenches (12, 45) with similar postholes along them (15, 16, 17, 47, 46). The northern of this pair at least butt ended at a distance of 390mm from the edge of slot (35).

Slot 35 was cut by what appeared to be a semi-circular feature, which was stone-lined on its curved edge (10). This had been previously excavated and the excavation cuts (006, 004) were filled with mixed topsoil material (003, 005). The removal of this backfill revealed that the stone lining continued downwards, and a band of clay which similar to the natural boulder clay ran along the middle of the feature. Further excavation revealed this to be the re-deposited clay fill of a field drain, which had previously been taken for the natural edge of a semi-circular cut feature. The removal of this clay (007) revealed the cut of the field-drain trench (008), which cut through the diameter of a circular stone-lined feature. The feature measured 600mm in diameter and 650mm deep, and was lined with three courses of stone (Fig 370). This feature strongly resembled the shallow stone-lined well in Trench B (155; Fig 364).

Other features in Trench D included a scatter of small postholes that could not readily be interpreted (19, 21, 25, 27, 33) and a series of shallow, amorphous tree holes (23, 29, 30, 31). All finds from trench D were unstratified in topsoil deposits.

Discussion of excavations south of the fort

Prehistory to the early 3rd century (Area phases A1–A3, B1, B2a, C1)

This work has fundamentally altered the received understanding of the archaeology to the south of the fort (pp 253–4). It is now possible to create a comprehensive narrative of the archaeological sequence in this area, and to integrate this into the history of the fort as a whole.

The earliest feature recovered was a prehistoric cist burial (Wilmott 2004). This feature had clearly been emptied in antiquity, as the only finds within it were a few Roman sherds. It seems likely that it was robbed during the construction of the fort. If it had lain under a mound or cairn this may have been levelled.

The earliest Roman feature to be discovered was the polygonal double-ditch and palisade in Area B. This phasing relies on the 1930s observation that the features were cut by the Vallum, as this key relationship was not observed in 1996. Little further can be said on the context of this feature, which is summarised above (p 358). It was, however confirmed that the lowest fill of the ditch contained tent leather. It was also demonstrated for the first time that the palisade was of post-in-trench construction.

On the assumption that the polygonal enclosure was cut by the Vallum, the second overall phase to be identified is the Vallum itself. Variation in the Vallum profile was marked, as the depth of the Vallum ditch in Area A was only two-thirds that of the same feature adjacent to the crossing point found to the south of the fort. There was no sign of any mound, although Area A was designed to sample both mounds if they existed. This work cannot, therefore contribute to the question of whether a single mound only was present at Birdoswald. This interpretation seems likely, however, given that there was only a single mound to the east and west of the fort. It is clear that the line of the Vallum was diverted southwards to skirt a fort, access to which was provided by a gated Vallum crossing. It has been suggested that this fort was an early timber fort, smaller than its stone successor (Wilmott 1997a, 46). This may be the case, but the evidence now available for the date of the filling of the Vallum shows that the stone

fort and Vallum must have co-existed for some time. The presence of some natural silting in the base of the ditch does not help in assessing the length of time that the ditch remained open, as this might have been deposited in a couple of seasons. It is possible that, on the construction of the stone fort, the Vallum gate was dismantled and the mounds thrown back into the ditch. This would account for the bottom fill of interleaved clay and peat, which filled just over half of the ditch. This would have left a broad hollow some 900mm deep, which might have acted as a temporary fort ditch before being levelled. The deliberate levelling of this residual ditch with clean boulder clay incorporated a stratum of rubbish containing a good assemblage of pottery, which was almost completely sealed by clay, and which was deposited from the west side. The rubbish almost certainly came not from the fort, but from an early western extra-mural settlement or *vicus*. The date of this deposit gives an unambiguous *terminus post quem* of *c* 150 for the sealing of the ditch and for the phases that followed.

The first of these was a phase of occupation involving the construction of a well-built stone drain from the direction of the fort across the backfilled Vallum ditch, and the digging of a series of pits outside the line of the ditch, where the Vallum mound would have been. The date range of the small pottery group from these features was *c* 150–70. This is important as it provides the *terminus post quem* for the primary excavation of the three fort ditches that cut both drain and pits. The existence of an occupation phase after the Vallum ditch was backfilled, yet prior to the excavation of fort ditches, has been claimed before in connection with a group of timber buildings immediately south of the fort, excavated in 1932 (Simpson and Richmond 1933, 256; Wilmott 1997a, 89, table 4). The only one of these slots to be rediscovered in Area B had been partially excavated by the previous team, but appeared to cut the fill of the middle fort ditch rather than to be cut by the ditch. Despite this, the evidence from Area A demonstrates that a post-Vallum, pre-fort ditch occupation did occur in the southern extra-mural area in the third quarter of the 2nd century.

It is now apparent that the fort ditch system was not put in place until *c* 160–70. Not only this, but there were also three ditches, not merely the two identified in the 1930s. Evidence for the history of these ditches is also interesting. The inner ditch probably continued in use, constantly re-cut, throughout the life of the fort, as demonstrated at the *porta principalis sinistra* (Wilmott 1997a, 169–73), until it finally silted up during the first half of the 4th century (Wilmott 1997a, 178). Simpson's and Richmond's (1934) plan shows this ditch as continuous across the south gate, implying that the gate, the *porta decumana*, had been totally blocked. The 19th-century excavator (Potter 1855b, 71) described the blocking of the east portal as showing good workmanship, while that of the west portal was cruder. There is no dating evidence for this two-phase blocking, but it confirms the evidence of the continuous ditch (Wilmott 1997a, 191). The middle ditch in both Areas A and B showed a continuous silting pattern with no evidence for re-cutting. It seems to have been allowed to silt up naturally, as there is also no evidence that it was deliberately backfilled. The pottery from the fills of the ditch suggests that this had occurred by the early 3rd century. The middle and inner ditches were symmetrically U-shaped, or as near as possible to this profile given the nature of the boulder clay sub-soil. The outer ditch was originally steep on the inner side and shallower on the outer edge. This is close to the so-called *punic* profile (Johnson 1983, 47) which is often used for the outer ditch of forts, as at Ribchester (Buxton and Howard-Davis 2000, 78); however, it is the reverse of the normal *punic* profile, in which the steeper side is on the outer side. Unlike the middle ditch, it was maintained, being re-cut on at least four occasions, although the 'reverse-*punic*' profile was not retained in the re-cuts. The final re-cut did not completely disappear until the late 3rd or early 4th century, showing that the outer ditch lasted in use a century longer than the middle ditch, and it is possible that throughout the 3rd century the inner and outer ditches only were in use. It seems likely that to the south of the fort the outer ditch also went out of use, if indeed it was ever provided.

The dating of the ditches, and the maintenance of only two of them, reducing to a single ditch in the 4th century, provides some data to contribute to the problem of the reasons for multiple fort ditches on sites that do not apparently require them for defence (Breeze 2002a).

The 3rd century: a separate numerus settlement on the spur?

by Tony Wilmott and Jeremy Evans

Following the filling of the middle ditch in Area B (and perhaps the filling of the outer ditch if it existed on the southern side of the fort) the area to the south of the fort was used for occupation from the 3rd century onwards. Evidence for this phase was found in Areas B, C and D. The settlement on the spur is characterised by two distinctive elements: timber buildings using sill-beam construction and the presence of the pottery known as Housesteads ware.

The settlement evidence comes largely from the 1933 excavation, the results of which have been corrected in the light of the 1996 work, making the morphology of the settlement better appreciated (Fig 371). The first point to make is that the quadrangular enclosure, previously thought to be an early Roman feature associated with the polygonal ditches and palisade (p 254) belongs to this 3rd-century phase. The ceramic evidence from the fill of the enclosure ditch is unambiguous in its content of 3rd-century material, especially Housesteads ware. The 1930s excavators stated that the ditch of the enclosure was cut by the Vallum ditch. Given the doubts expressed above (p 251) about the techniques of the original excavators, it must now be assumed that this relationship was wrongly recorded, and

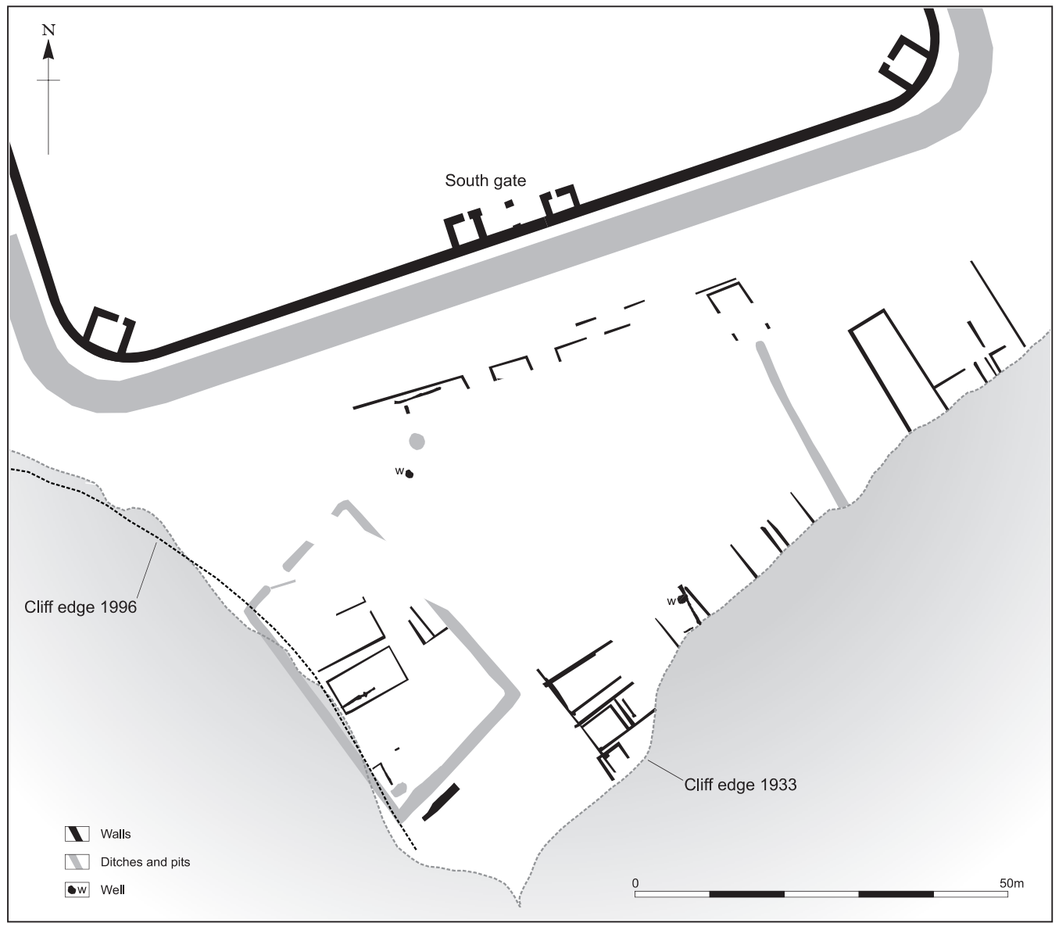


Fig 371
Birdoswald: Possible numerus fort.

that the enclosure ditch cut the filled Vallum ditch. A similar conclusion is necessary for the various timber buildings on the spur. There is no typological distinction between any of the linear beam slots that comprise the evidence for these buildings. All of the beam slots excavated in 1996 that produced dating evidence showed a date in the 3rd century. The balance of probability is that there are not two phases of timber buildings separated in time by the existence of the Vallum, but that there is a single phase of such buildings, which features episodes of rebuilding. This is confirmed by the fact that the previously excavated beam slot in Area B was found in 1996 to cut the fill of the middle fort ditch, which in turn cuts the backfilled Vallum.

At least five timber buildings are aligned along the line of the inner fort ditch. All are *c* 5m wide and at least 7m long, and the beam slot re-excavated in Area B is the east wall of the westernmost of these. Further timber buildings occur within the quadrangular enclosure, including the slots and postholes found within Area C. The timber buildings of a second row are truncated by the erosion of the cliff edge. These include the slots and postholes in Area D. One of these slots is cut by the stone-lined well, which was misinterpreted in 1933 as a native hearth, and in association with which Housesteads ware, including two complete vessels, was found (Richmond and Simpson 1934, 123). In Area B, pit 136 was associated with this phase, as were the two shallow stone-lined wells in Areas B and D.

The features of this phase were associated with what later became known as Housesteads ware, a type of pottery found at four sites on Hadrian's Wall: Housesteads, Vindolanda, Birdoswald and Burgh-by-Sands (and possibly also at Castlesteads; Jobey 1979, 132). The vast majority of the material was found during the 1930s, and its stratigraphic context has hitherto been far from secure. As a result it has been dated largely by inference from historical assumptions based upon epigraphy. Paradoxically, Housesteads ware was first found at Birdoswald. It was discovered in the area to the immediate south of the fort in 1933 (Simpson and Richmond 1934). Two complete Housesteads ware vessels came from a pit containing the ash and charcoal debris from a small, stone built, and 'heavily burnt' hearth, which lay adjacent to a wall of one of the timber buildings. The excavators reported that the hearth was cut by this wall. Largely due to the explanation of the pottery as 'native', the hearth was interpreted as part of an Iron Age phase cut by the wall line of a Roman timber building. Re-excavation of the area in 2000 (Area D) during a project aimed at contextualising Housesteads ware showed that the hearth was in fact a stone-lined well (the burnt material had been removed by the excavators, and it is possible that the top of the well had been re-used as a hearth). Since this time further finds caused it to be recognised as later in date. At Housesteads all but three sherds found in the 1930s came from outside the fort, in areas of the *vicus* excavated between 1931 and 1934 (Birley *et al* 1932; 1933; Birley and Charlton 1934; Birley and Keeney 1935). The records of this excavation were lost during World War II. Professor Eric Birley who excavated the site, informed Jobey (1979) that the material was found in deposits assignable to Wall Periods II and III, implying a 3rd-century origin for this material.

Although a couple of sherds have been found within the fort since the 1930s the fact remains that the majority of this ware from Housesteads was found outside the fort (Rushworth forthcoming). For Vindolanda, Jobey (1979, 130) implied that the apparent association of the ware with early 2nd-century structures at Vindolanda was unsafe, and that the groups in which it appears have been misinterpreted as pre-Hadrianic. The pottery specialist who worked on the material would not now support the early date either (L Hird, pers comm 1999). Most of this ware from Vindolanda has come from above a 4th-century floor, and in unstratified contexts above the floor of the *mansio* courtyard. All of the Housesteads ware published from Vindolanda originates from outside the fort, and extensive recent excavations in 2nd- to 5th-century deposits within the walls have produced none of this characteristic material (R Birley, pers comm).

It was not until 1979 that the material received thorough treatment by Ian Jobey (1979) in his article '*Housesteads ware: a Frisian tradition on Hadrian's Wall*'. Jobey recognised the lack of LPRIA parallels to this material, and followed the suggestion of J P Gillam that the forms shared features with vessels from the Netherlands.

He found that the closest parallels were to be found on sites on the *terpen* of Friesland and Groningen, and concluded convincingly that Housesteads ware was a locally manufactured material based upon a Frisian handmade ceramic tradition. The historical context within which Housesteads ware has traditionally been placed relates to the garrisoning of Housesteads (hence the accepted name of the ware). The regular 3rd-century garrison was the *cohors I Tungrorum milliaria*, which was supplemented by a *numerus Frisiorum Ver*. The Frisian *numerus* dedicated two altars (RIB 1593, 1594), and on one was styled Severus Alexander's, suggesting a date of 222–35. Both altars were dedicated by tribesmen of the *Tuihantes*, which Clayton (1885, 148) identified with the modern region of Twenthe in Over-Ijssel. A third altar (RIB 1576) from the same temple is dedicated by a *numerus Hnaudifridi*, a unit named for its commander, usually rendered as Notfried. This unit is thought to come from the area of Frisia by virtue of the association in the same building of these altars. He is certainly likely to come from Free Germany, but the assumption that Notfried was Frisian remains merely an assumption.

Further, Jobey noted that the possible homeland of the *Tuihantes*/Twenthe, lies well outside the area of distribution of the Housesteads ware analogues in the Netherlands. Jobey (1979, 140) concluded that the ware probably comprised locally made copies of traditional vessels of Frisian type, which had been made for the use of these troops. The local origin of the ware has been confirmed by means of petrological analysis of the material from the current excavations (Williams, *below* p 319).

Some 36 sherds of Housesteads ware were found in 1996 on the Spur. It was absent from the Vallum fill and was not generally found in the fort ditch fills; three sherds are from the penultimate fill of the middle ditch in Area B, where it was probably intrusive, this feature having been later cut by pit 136, which contained eight sherds of Housesteads ware. Most Housesteads ware came from Areas B and C, and was associated with the timber buildings. The date of the filling of the middle ditch gives the buildings an early–mid-3rd-century *terminus post quem*. The absence of 4th-century pottery on the site is of note, and helps to tie down the date of Housesteads ware to the 3rd century. The scarcity of other contemporary Roman pottery in the area suggest that this ware constituted a very high proportion of the pottery in use on the spur in the later 3rd century.

It is very striking, therefore, that not a single sherd among the 12,952 from the 1987–92 excavations was of this type, none came from the excavations on the Study Centre site reported here, nor was any published from the 1929 barracks excavations inside the fort. To date 21% of the fort interior has been excavated, and from this large sample not a single sherd of Housesteads ware has been recovered. Even more surprisingly, no Housesteads ware was recovered from the Time Team interventions in the western *vicus*, which shared the almost total lack of 4th-century material. By contrast, all the previous reported examples of the ware come from Simpson's and Richmond's excavations on the Spur (1934), and as soon as excavation re-commenced on the spur in 1996, Housesteads ware began to be found. There is thus an absolute and demonstrable separation in terms of the distribution of this ceramic type at Birdoswald. If the complete blocking of the south gate (Potter 1855b, 71–4) had been carried out before this settlement was established there would be no easy way for the pottery to enter the fort other than by being carried to the east or west gate, and this might help explain the very stark difference. It is, however, clear that Housesteads ware was used outside the fort to the south but not inside. The implication of the Time Team work is that this ware did not enter the western extra-mural settlement either.

The context of the material becomes even stranger when the contemporary finds assemblage from Birdoswald Spur is considered. There is no later 3rd-century glassware (H Cool, pers comm), there is little contemporary Roman pottery, and only one 3rd-century radiate coin – hardly the finds assemblage to be expected from most forts or *vici*.

As more work takes place at Birdoswald, it becomes clearer that the apparent spatial relationship of Housesteads ware and timber buildings indicates a real chronological and stratigraphic association between these two anomalous elements in the archaeology of the site. Until recently there was no knowledge of the

extra-mural area to compare with the buildings to the south. A combination of large-scale geophysical survey across the whole site (Biggins and Taylor 2004), and evaluative trenches excavated as part of the Time Team project in 1999, has demonstrated that to the east and west of the fort lie extensive extra-mural settlements, dating to the 2nd to late–3rd centuries. These settlements comprise tightly packed buildings, but these buildings have stone foundations. They are as dissimilar to the timber buildings on the spur as are the stone buildings of the fort itself. This suggests that the timber buildings may have been squeezed into an area free of settlement in a period after the eastern and western *vici* were established.

The curious 'cultural apartheid', which excludes the Housesteads ware from the fort may indicate that the settlement on the spur was occupied by people who preferred to use their own building style and their own pottery, both of which were dissimilar to anything in either the fort or the civilian settlement. A further indicative element is the alignment of the timber buildings. It is interesting that these are not aligned on the south wall of the fort, but more nearly on the quadrangular enclosure, indicating perhaps some status for this enclosure and the buildings within it as a focus of the settlement It is difficult to avoid the conclusion that these people were the members of a *numerus* of irregular troops of Frisian origin. It is unfortunate that we do not have the plan of any of the timber buildings. Even the length of these buildings is as yet unrecorded. Though the Housesteads ware, though locally produced, harks back to Frisian archetypes, we do not have evidence to suggest whether the same is true of the buildings (cf Hamerow 2002, 50–1).

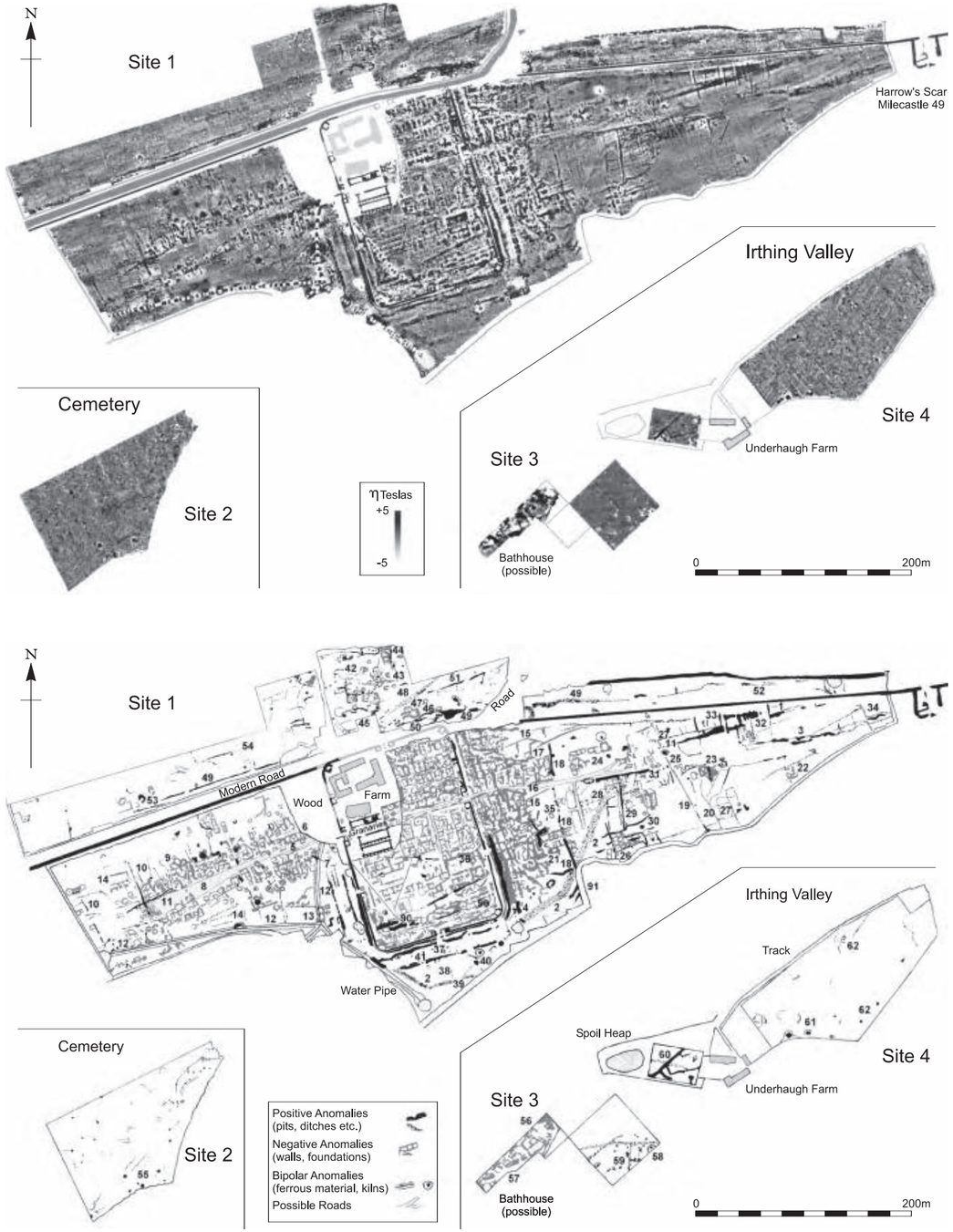
The construction of a new timber extra-mural settlement is so far unique in the frontier zone. However, it has long been recognised that Housesteads ware is generally found outside the walls of the fort sites at which it appears (Jobey 1979; Crow 1995, 72). The evidence is not so definite as at Birdoswald, but the trend is clear. Crow (ibid) has suggested that an area of the *vicus* at Housesteads close to the Knag Burn gate comprised the accommodation and administrative buildings for a Frisian unit that may have been effectively billeted in the *vicus*.

Part 5: Evaluation by Time Team within the western extra-mural settlement and cemetery 1999

by Tony Wilmott and Katie Hirst

The extra-mural area at Birdoswald has been discussed elsewhere, in the context of a widespread geophysical survey by Biggins and Taylor (2004). The survey and its interpretation are reproduced here as Figs 372 and 373. This work has shown that the archaeology of the site is far more complex and extensive than ever previously thought. The survey shows very clearly extensive areas of buildings, streets and earthworks to the east and west of the fort. Despite the spectacular nature of this new evidence, it should be noted that the survey does not show the totality of the archaeology of the site. The truth is even more complex. This is clear from the survey to the south of the fort, where the only features visible are the deepest ditches – the Vallum ditch and those of the fort. The early polygonal enclosure, the rectilinear 3rd-century enclosure and timber buildings do not show up. What certainly emerges here is that, however much more extensive the escarpment may have been during the Roman period (Biggins and Taylor (2004, 174) suggest that it may have extended 100–200m farther south), no extensive plan of stone-founded buildings was built here. It is possible that apparent blank areas on the survey might be occupied by the traces of buildings of timber construction.

East of the fort occupation is extremely intensive (Biggins and Taylor 2004, 165–7). In an area 100m from the east wall of the fort, delimited to the north by the Wall and to the south by the Vallum, is an area of intensive occupation, probably reflecting the construction, demolition and reconstruction of stone buildings over a very long period. Beyond this100m strip further anomalies reflect field systems, enclosures and buildings running along both sides of the road that runs east from the *porta principalis dextra* of the fort. Apart from the excavation of a probable signal tower in 1930 (Richmond 1931, 130), and the discovery of a stone building in 1898 (Haverfield 1899, 353) which may or may not be Roman in date, this area has yet to be excavated, so conclusions on the nature, date and development of the area must remain speculative. Despite this, it is clear that a complex palimpsest of features reflecting



intensive extra-mural development over a long period exists in this area. North of the fort geophysical evidence shows the presence of buildings and enclosures apparently respecting the Maiden Way (Biggins and Taylor 2004, 167–8).

The survey has encapsulated areas on the river flood plain below the fort to the south, and it has been suggested (Biggins and Taylor 2004, 169) that a structure in the area might have been the fort bath-house. It has long been thought that a riverside position was the most likely for this facility, and that the convenience of a constant water supply might outweigh the inconvenience of the climb back up the hill to the fort. It is certain, however, that the formation of the spur in the Roman period was very different than it is today, and it is perhaps possible that there was an easier and more gentle slope, and the suggestion of a zig-zag approach from the region of Underheugh Farm (Biggins and Taylor 2004, 175) is probable.

The western extra-mural settlement appears more organised than the eastern. A road emerges from the *porta principalis sinistra*, which opens out into a long elliptical area, which has the appearance and feel of a medieval market within a small town. It is possible that this area served a similar function in the Roman period. The elliptical space is enclosed on both sides by stone-founded buildings, which are ranged along it, with their narrow frontages (where discernible) on the roadside. There is a limited spread of buildings to the north and south of the roadside groups.

Beyond the western extra-mural settlement, on a suitably elevated point on the edge of the river escarpment, lies the fort cemetery. Discovered in 1959, what was known of the cemetery was published by Wilmott (1993). This comprised seven cremation burials represented by complete urns with some surviving bone and iron nails. The pottery suggests that the cemetery dates broadly to the 3rd century.

Eight evaluation trenches were cut in these areas in 2000 (Fig 374).

Fig 372 (opposite top) Birdoswald: geophysics (reproduced by kind permission of Alan Biggins and David Taylor, Timescope Archeological Surveys).

Fig 373 (opposite bottom) Birdoswald: geophysics (reproduced by kind permission of Alan Biggins and David Taylor, Timescope Archeological Surveys).

Fig 374 Birdoswald: location of Time Team trenches 1–7 to the west of the fort.

The cremation cemetery

by H E M Cool, Jeremy Evans, Katie Hirst, Jacquline I McKinley and Tony Wilmott

Trench 1

Trench 1 (Fig 375) was placed over an area in New Field that had visibly been churned by modern farm vehicles, in order to assess the damage, if any, to archaeological features below. The trench measured 3.80m 4.68m and was excavated to a depth of 0.52m. The area was very disturbed, with cobbles (105), clay (107, 104), timbers (122) and a large iron object, all used by recent farmers to consolidate a very boggy patch. These had been dug into the ground, disturbing underlying archaeology. Other recent features included a shallow hollow (113).

There were two Roman features. The first was a small pit (120), very disturbed by ploughing, containing ash (110) and three pot sherds, the other was a disturbed cremation burial.

Cremation

1. A small east–west aligned ovoid pit (112) was lined with two upright stones set at right angles to one another. A pot had been placed within the pit. The pot contained two distinct deposits (114, 115), both of which contained a high percentage of burnt bone and charcoal flecks. The material appears to have consisted of cremation material placed into the urn before burial. The pit fill around the urn was a mid-grey sandy silt (108), and around the outside of the stones was a dark grey/black silt, (109), which contained a high percentage of charcoal flecks and occasional semi-rounded stones. Other pit-fill contexts were 110, 103, 108. The cremation was truncated and very disturbed by later ploughing.

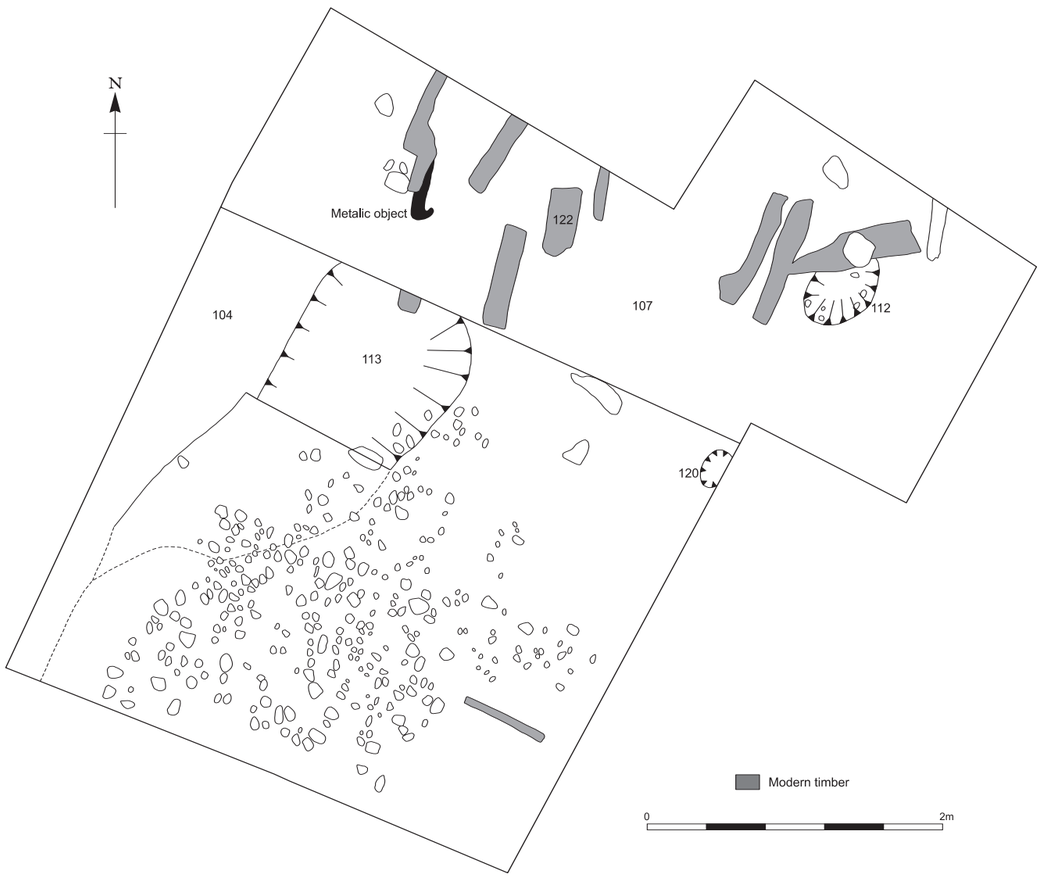


Fig 375
Birdoswald: plan of Time Team Trench 1.

Cremated bone (by Jaqueline I McKinley)

While it is not impossible that the small amount of bone from 115, the lower fill of a disturbed urn burial, represents the remains of a different individual than that from 114 (the upper fill), there was no duplication of identifiable skeletal elements and no osteological evidence to suggest they represented the remains of different individuals. If the division between the two contexts is based solely on minor variation in soil texture and colour rather than in bone distribution and density, it may reflect different episodes of silting within the vessel fill rather than different burial deposits. The small quantities of bone from pit-fill contexts 103, 108 and 116 are all likely to derive from the same cremation as the remains in burial 114/115, representing pyre debris redeposited in the backfill of the grave and material re-deposited from the grave as a result of disturbance.

The burial is that of an adult ?female, aged *c* 18–45 years. Several fragments of long bone, certainly tibia, had plaque-like periosteal new bone over the side of the shaft. Such lesions, formed in response to infection within the periosteal membrane covering the bone, is most commonly observed in the tibia shaft and may develop in consequence of a number of conditions, including direct injury to the bone, spread of infection from foci elsewhere in the body, or as part of a specific disease process. The presence of osteomylitis (infection within the bone) in a fragment of fibula from 116 suggests this may have been the cause of the lesions in 114. Several small cuts were observed in the shafts of two long bones from 103. The cuts were made before the body was cremated and must have been made peri- or post-mortem. In both cases the cuts are short *c* 4.8mm long, passing a maximum of 4.4mm into the cortex of the bone. In one case two adjacent cuts were at opposing angles across the shaft; in the other the cut extended along the shaft. Each appeared to have been inflicted with a small, short, sharp blade held at an angle. Unfortunately, as the fragments of bone on which the marks were observed were so small (*c* 20 10mm), it is not possible to be sure exactly which bone was cut and where, or why the cut would have been made, eg physical assault, medical reasons, post-mortem ritual.

Finds

The cremation vessel (Fig 376, no. 1) was fragmentary, and was recovered as 57 body sherds and two rim sherds. It was a BB1 jar with acute lattice, and dated to the Hadrianic–Antonine period.

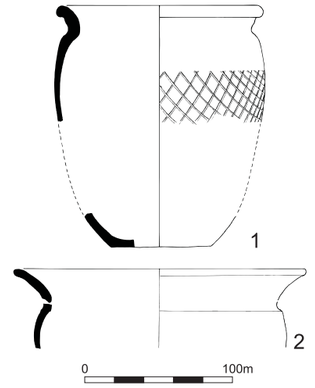


Fig 376
Birdoswald: pottery from Cremation 1 (Time Team Trench 1).

Finds from the pit included two BB1 body sherds with acute lattice of Hadrianc–Antonine date and a BB1 jar rim fragment, possibly Antonine (Fig 376, no. 2). There were also 14 complete and fragmentary hobnails including three corroded together. These had pyramidal heads, some flattened through wear, and were 9–14mm long. (BRD 99: sf1156, sf1158, sf1164, sf1102, sf1103, sf1105, sf1126, sf1129, sf1131, sf1132, sf1167–9, sf1173–5). There was also a fragment of burnt bird bone, possibly goose.

Twelve further nail fragments were not parts of hobnails. These, together with two fragments of bone veneers (*below*) from the pit fill, probably represented parts of pyre furniture.

Finds and dating

Finds from disturbed deposits and topsoil in this trench included a range of pottery, mostly BB1, and ranging in date from the mid-2nd century to the mid-4th. The vast majority of the material centered on the 3rd century. It is likely that all this material derived from plough-disturbed cremations. Two melted fragments of glass beads from the topsoil in this trench were probably also from cremations (BIRD 99: sf1143 bead?, opaque blue, melted fragment; and sf1133 bead?, translucent deep blue, melted fragment).

Trench 4

This trench (Fig 377) was excavated to explore a geophysical anomaly thought to represent a ditched cremation. The feature detected was actually the western edge of a

Fig 377
Birdoswald: plan of Time Team Trench 4.

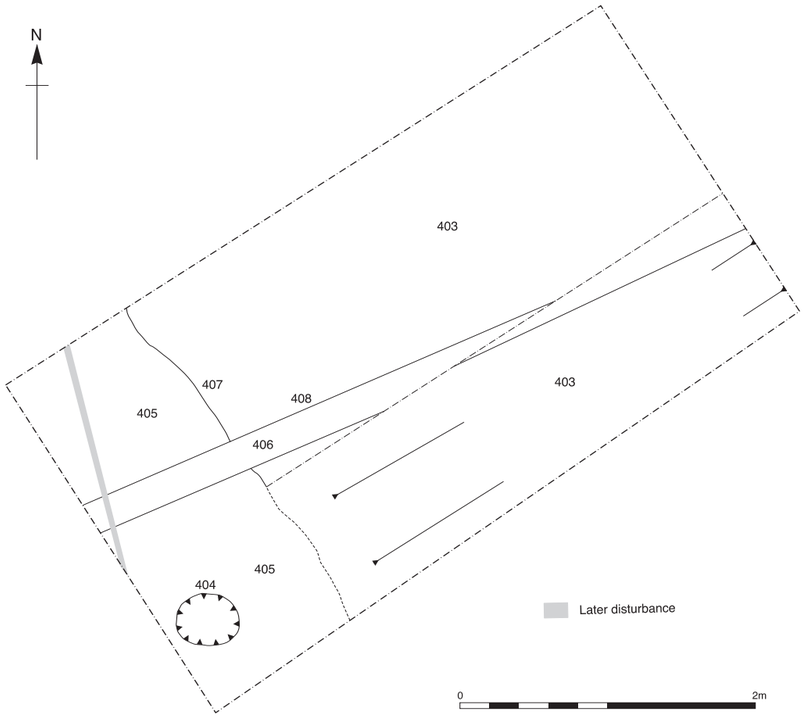
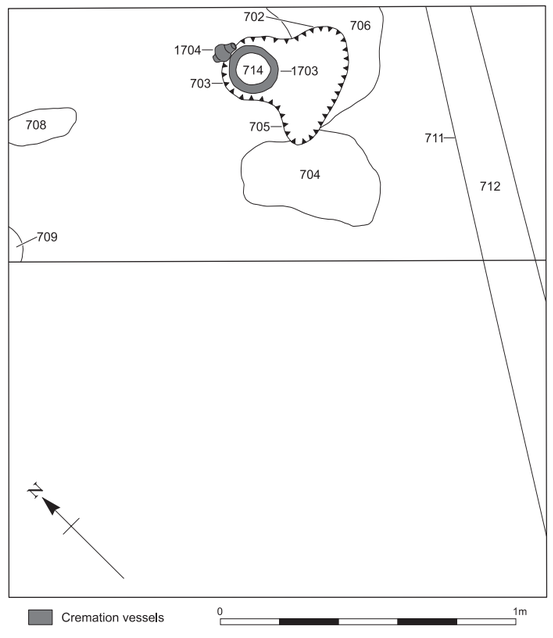


Fig 378 (below)
Birdoswald: plan of Time Team Trench 7.



furrow (407); part of a ridge and furrow system detected in earlier geophysics (Biggins and Taylor 1999). A modern drain (408) and steel pipe cut across the north west corner of the trench.

Cremation
2. On the western side of the trench a sub-circular pit (404) survived on the ridge adjacent to the furrow. The pit measured 350mm 310mm and was 40mm in surviving depth. Within its fill (403) was a high concentration of burnt bone fragments and some charcoal flecks as well as iron hobnails and one pottery sherd.

Finds
The single pottery sherd was a Nene Valley body sherd dated AD 160–70 or later. With it were found two iron hobnails with worn heads (BRD 99: sf1401, sf1402).

Trench 7

This trench (Fig 378) was excavated in an area that was not obviously ploughed or disturbed by modern vehicles. On removal of the topsoil (701) a number of mid-grey loam patches were noted in the east and north of the trench. An ovoid pit (703) containing an *in situ* cremation burial cut a similar pit to the south (707) whose fill was almost indistinguishable from that of (701). A further shallow pit (705) was truncated by both (707) and (703).

Cremation
3. The cremation (Fig 379) lay within an ovoid pit (703) with steep sides and a wide flat base some 0.42m × 0.25m and 0.11m deep. An urn (704) stood upright in the pit, and an ancillary vessel lay on its side to the north-east, level with the top of the urn. Both vessels lay within a light grey loam (702) with dark orange flecks and a high concentration of charcoal flecks within the matrix may indicate that this was the remains of pyre material.

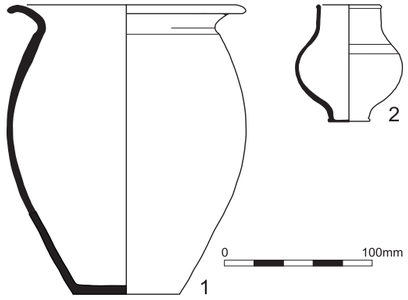


Fig 379 (far left)
Birdoswald: Cremation 3 in situ in Time Team Trench 7.

Fig 380 (left)
Birdoswald: pottery from Cremation 3, Time Team Trench 7.

The pottery (Fig 380)
Two pots were recovered from the pit:

1 (BRD 99 sf1704) 38 sherds from a BB1 jar with everted rim about even with the maximum girth, complete apart from one side of the rim, worn, possibly burnt on the same side, with obtuse lattice decoration; *c* 240–70; diam 166mm, RE 60%, base diam., 67mm, BE 100%, wt 728g

2 (BRD 99 sf1703) Nine joining sherds from a complete 'Rhenish' Trier beaker; *c* AD 200–50; diam 74mm, RE 100%, base diam. 25mm BE 100%, wt 67g. The burial dates to the mid-later 3rd century.

The excavation of the urn (by J Jones)
The BB1 cremation vessel was lifted from site by the excavator. It was swathed in crepe bandages to support it during the lift and was received damp in the Conservation Lab at Durham immediately following the excavation. Many of the rim fragments had become detached during burial, and these were received separately packed. The vessel was full to the rim with soil with some visible bone fragments.

As the pot was damp and little could be seen of the body to assess its condition, it was decided to leave most of the bandages in place around the vessel for support during the excavation of the contents. The bandages were unwound to just below the rim, and cracks could then be seen in the vessel fabric.

Before excavation, the vessel was X-rayed to try to determine whether any metal was included in the contents. An X-ray plate was fitted around the outside contours of the vessel using elastic bands, and the vessel was X-rayed on its side. The results were not very informative, possibly owing to the density of the fill, but it was clear that there was no metal present.

The pot contents were excavated in 30mm spits, the soil and bone of each spit being kept separate. Large pieces of bone were measured before removal from the pot, where possible. After air-drying, the larger pieces were bagged separately, the smaller pieces were grouped several to a polythene bag, in spits. From Spit 2 onwards, pieces of decorated artefactual bone were found. These also appear to have been cremated. All fragments of this decorated material were kept separate from the human bone. There was a large amount of cremated bone throughout the fill of the pot, and it seemed to be fairly evenly distributed throughout the vessel's fill.

Cremated bone (by Jaqueline I McKinley)
Bone was recovered throughout the 0.18m depth of the vessel, but the density of distribution varied considerably; 61% of the

bone was recovered between 60–100mm depth – not surprisingly, as this is where the vessel has its greatest girth. As the writer did not empty the vessel, the orientation of fragments is not known, but it was noted (J Jones, pers comm) that in spits 1 and 2, containing 11% of the bone, the bone was concentrated in one half of the vessel. As it was observed in excavation that the vessel was slightly angled to one side, this distribution could reflect a shift in the bone as the vessel tipped during or shortly after deposition (but not long after, as there would have been no soil infiltration). More likely, however, is that the bone was inserted into the vessel from one side, probably while it was held at a slight angle.

The maximum sized fragments were recovered from spits 3 (skull) and 6 (long bone). There was no obvious fall in fragment size towards the lower levels of the vessel, possibly owing to the absence of many smaller pieces, which have a tendency to work their way down.

There was no significant difference in the distribution of skeletal elements within the urn fill, which appeared more or less random; fragments of supra-orbital skull fragments from spits 1 (left) and 3 (right) joined fragments in spit 5. Fragments of decorated bone pyre goods (*below*) were recovered in all spits, *c* 33% of it from spit 7 (ie from *c* 11% of the fill), 65% within 60mm of the fill (spits 6–8). This suggests that much of the item was picked up in one go, but since one would expect a discrete item to have been laid on one part of the pyre its distribution throughout the fill is significant with respect to the nature of the item, its collection and deposition within the burial. The fragments of cremated animal bone were confined to the central (4–5) and lower (7–9) spits. In contrast, the fragments of charcoal (2.6g) and fuel ash slag (2 fragments) were confined to the upper half of the fill, the former predominantly in the upper three.

The distribution of the various skeletal elements and other archaeological components within the burial indicates there was no ordered deposition of remains for burial. The different skeletal areas, fragments of animal bone and artefacts are generally spread throughout. Together with observation on the lack of small bones this suggests that bones were collected individually from the pyre after cremation, by one or more persons. The bone may not have been placed in the vessel immediately, but gathered together into a pile or within some other receptacle and later transferred into the urn for burial. Alternatively, the larger bits could have been raked off the surface. The inclusion of a small quantity of pyre debris – confined to the upper layers – indicates this was a later addition, possibly infiltrating into the burial from the grave fill (701).

This was the only burial recovered where it was possible to be confident that no bone had been lost due to disturbance, and that the 937.3g of bone recovered is truly representative of the original weight of bone included in the burial. The bone represents a maximum of 94% of the total weight of bone expected from an adult cremation (McKinley 1993a). However, an assessment of the skeletal elements recovered suggests a lower percentage of *c* 59%. The weight is in the upper range previously noted from Romano-British urned burials, eg an average of 619.2g was recovered from the undisturbed burials at Baldock Area 15 (McKinley 1991) and 899.6g from St Stephens, St Albans (McKinley 1992). No bone weights are available for the burials removed in 1959 (Wilmot 1993), but the descriptions given do not suggest a substantial amount was recovered. A wide range of evidence (McKinley 2000) indicates that at no time during which the rite of cremation was practised was it considered necessary to included the entire cremated remains within the burial, what is still unclear is why bone weights varied so widely. It has been suggested elsewhere by the writer that this may be a reflection of 'status' or it may be partially indicative of the mode of recovery of bone for burial after cremation (McKinley 1997a).

c 72% of bone fragments from the undisturbed burial were recovered from the 10mm sieve fraction, with maximum fragment sizes of 65mm for skull and 95mm for long bones. These figures are within the medial range of maxima recorded from modern crematoria prior to cremulation (pulverisation) of the remains of 45–95mm for skull and 68–195mm for long bone (McKinley 1993a). The role of the urn in providing protection to the cremated bone has been discussed elsewhere (McKinley 1993b, 1994b), as has the amount of undetectable fragmentation that may occur because of disturbance and during excavation. The much smaller maximum fragment sizes – between 10–35mm – recorded in bone from the other deposits admirably demonstrates the increase fragmentation to unprotected and disturbed bone. There is no evidence to suggest deliberate fragmentation of bone prior to burial.

The remains were of an adult female aged *c* 18–40 years. As in Cremation 1, fragments of long tibia had plaque-like periosteal new bone over one or two sides of the shafts, though in the absence of supportive evidence from other skeletal lesions no diagnosis can be made.

Skeletal elements from all areas of the body were included in the undisturbed burial, with no detectable bias towards particular parts. However, there were no tooth roots, other than part of one remaining *in situ* in the mandible; and although a few of the finger phalanges were recovered, there were none of the small foot phalanges. This lack of small bones from the general spread recovered suggests that the more easily recovered large fragments were collected individually from where they lay on the pyre rather than being raked-off and/or sieved-out in some way, which would have been likely to result in the inclusion of more small bones/fragments. The evidence may also suggest that the bone was recovered relatively soon after cremation – leaving the pyre for some time before collection would be more likely to result in complete combustion (*see above*) and the removal of much of the fuel ash –blowing away in the wind – thereby exposing more of the small bones/fragments for easy recovery. Alternatively those collecting the bone may have been making for the easiest bits to pick-up quickly!

Bone veneers (Fig 381) ***(by H E M Cool)***

A substantial quantity of pyre debris was recovered from the primary cremation urn (1704). In addition to cremated human and animal bone, many fragments of burnt decorated bone from one or more artefacts were recovered during the initial excavation of the urn and the analysis of the cremated bone. These had smooth decorated fronts and unworked backs where cancellous tissue was often visible. They varied in size from a complete plaque measuring 33mm × 56mm and a strip 66 mm long, to tiny fragments. In total it was possible to catalogue just over 200 pieces and assign them to different types, and the discussion that follows is based on these. The fragments that were not catalogued are all small and relatively featureless, retaining no decoration and only very occasionally part of an original edge. This catalogue is presented in the form of four tables and for the precise patterns being discussed, the reader is referred to the illustrated examples of the different types in Fig 381. A full catalogue detailing each piece is deposited in the archive. As fragment count is a notoriously unreliable method of quantification for fragmentary material such as this, the area has also been calculated. For the strips with relatively evenly broken ends this has been achieved by multiplying the length by the width. For the irregular fragments, the area was calculated with the aid of calibrated squared paper.

It is clear that the fragments come from worked-bone inlays or veneers that are conventionally interpreted as decorating small wooden boxes such as those found at Richborough (Henderson 1949, 152 no. 276, pl LVII; Wilson 1968, 106 no. 225 LXI–LXII). The closest parallels for this group, however, also come from funerary contexts within the 3rd-century cemetery at Brougham, Cumbria (Greep 2004), and it seems distinctly possible that such veneers could have decorated some form of pyre furniture, such a bier (*see below*). The close parallels between the Birdoswald and the Brougham veneers strongly suggest they are contemporary, and thus the Birdoswald group too will date to the mid- to late-3rd century.

The typology developed for the Brougham veneers has been followed here, and I am most grateful to Dr Greep for allowing me access to his report in advance of publication. At Brougham more than 1,000 fragments were initially catalogued, and many more are now known; 51 sub-groups could be defined, and these fell into 7 major groupings. At Birdoswald there are examples of Group A (strips), Group B (triangles), Group C (diamonds) and Group E (squares and rectangles). It has not been possible to identify any examples of Group D (spatulate shapes) or Group F (decorative and figural pieces), although the broken fragments catalogued in the tables as disc and plaque fragments might come from the latter group. They are fragmentary and the full shape and pattern cannot be identified, but they clearly do not come from strips.

Fragments from strips dominate the assemblage, both when quantified by count and by area (*see* Table 6). In the Brougham material it was often possible to sub-divide the types quite minutely because there were more longer fragments than were found at Birdoswald. Thus a distinction could often be

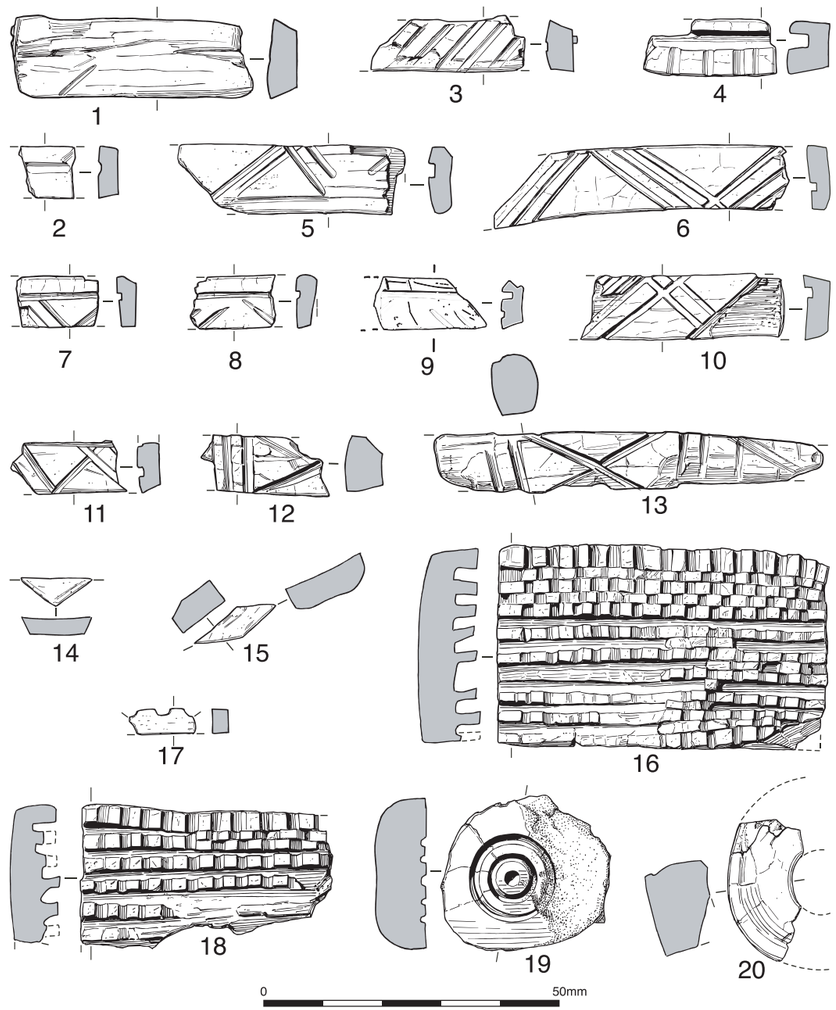


Fig 381
Birdoswald: bone veneers from Cremation 3, Time Team Trench 7.

made between those of, for example, A5.3 (where the zig-zag was composed of paired grooves) and A5.4 (where it was made of groups of three grooves). In the Birdoswald assemblage this is not always possible, and where doubt as to the precise attribution exists, the fragments have been tabulated as a combination (for example A5.314). The fragments simply described as grooved almost certainly come from strips of types A2–A5, but cannot be more closely identified.

At Birdoswald there is a single fragment of an undecorated strip (A1: Fig 381, no. 1) and a small amount of veneer that is decorated by grooves parallel to the long edges (A2: Fig 381, no. 2). The commonest types at both Brougham and Birdoswald are fragments with diagonal grooves arranged in a variety of herringbone and zig-zag patterns (A4 & A5: Fig 381, no. 3). Two of the Birdoswald patterns do not appear to be paralleled among the Brougham material. One is a strip with a groove parallel to the long edge and the other side crenellated with squared notches (here termed A4.4: Fig 381, no. 4). The other has groups of three and two diagonal grooves arranged in a zig-zag so that the ends overlap and form a

cross-hatched pattern (here termed A5.7: Fig 381, nos 5–11). Strips with cross patterns (A6) are relatively uncommon at Birdoswald, with the exception of a pattern of diagonal crosses separated by paired verticals (Fig 381, nos 12, 13). This pattern does not occur at Brougham and has been designated type A6.3.

Table 6 shows the average width of the strips. Width has been calculated within each sub-group where appropriate. As can be seen, the single plain fragment and sub-groups A5.3 and A5.4 tend to be wider than the others. Only five terminals of strips can be recognized: four have slanting diagonal ends and one has a straight-cut vertical end. Where the type of strip can be recognised, the slanting ends are found on strips of A5.4 (two examples) and the straight-cut piece is on an A6.3 strip.

With one exception, the examples of Groups B and C are all small and undecorated. The examples of triangles (B4: Fig 381, no. 14) range in maximum length from 13mm to 8mm, while the lozenge shapes (C2: Fig 381, no. 15) vary from 18mm to 8mm in length. It is noticeable that at Brougham a selection of larger diamond and triangular plates often decorated by ring and dots were found. These patterns are absent from the Birdoswald group.

A very intricate veneer was made in rectangular plates, of which one virtually complete example was recovered (Type E2.1: Fig 381, no. 16), as well as numerous fragments (Fig 381, nos 17, 18). Here the plate had been regularly grooved to form parallel angular channels *c* 2mm wide. The tops of the upstanding ridges had been grooved across to leave small square blocks. Narrow strips had then been cut with the upper edge crenellated (Fig 381, no. 17). These strips were then inserted into the empty channels in such away that the blocks on the base plate and the strips were offset against each other to form a chequerboard pattern. These pieces are remarkably finely worked and very distinctive. The form is also found relatively commonly at Brougham.

While the material was being conserved, it was observed that traces of red, blue and black colouring could be detected on some fragments. Of the catalogued pieces, colour is present on 36 fragments (*see* Table 7), red being most frequently observed. It would seem likely that the colour was applied mainly to the strips. The small diamonds and triangles were, with one exception, plain. Contrasting colours have occasionally been noted on worked bone. This has generally been black material rubbed into grooves, and is thought to have been ivory black mixed with beeswax (Crummy 1983, 121 no. 4097). Green staining of entire artefacts is also sometimes reported, especially on early Roman hair pins and needles (Crummy 1983, 20, 65). Other colours, such as the reds and blues noted here, are not often noted, although it seems likely that some of the Brougham pieces might have had black and pink colouring as well (S Greep, pers comm). In discussing the veneers from Brougham, Greep commented on the unusual thickness of the pieces, which ranged from 1mm to 7mm, as opposed to the more normal average of 2mm. A similar phenomenon can be noted in the veneers from Birdoswald. They range from 2.5mm to 14mm in thickness, with an interquartile range of 3.5 to 5mm and a mean of 4.8mm. A double cremation burial at Oslesbury, Hants has also produced bone veneers (Brougham Types A7, B2, C1 and square and

Table 6 Summary of the catalogued bone veneers from Cremation 3.

type	*number of fragments*	*area (mm^2)*	*average width (mm)*	*length (mm)*	*minumum number*
A1	1	520	13	40	–
A2	16	231	9.25	25	–
A4	3	472	8.5	56	–
A4.1	2	421	9.25	46	–
A4.4	2	447	9	57	–
A5.3	6	1450	12.25	118	–
A5.314	12	1355	–	108	–
A5.4	11	2864	12.8	224	–
A5.4/5	1	75	–	8	–
A5.5	8	1235	9.5	130	–
A5.6	4	357	9.5	38	–
A5.7	2	525	8	66	–
grooved	79	3190	–	319	–
A 6	1	93	6	12	–
A6.1	1	144	8	16	–
A6.3	11	2068	9	229	–
B	1	75	–	–	1
B1	7	191	–	–	7
B1/C2	1	50	–	–	1
C2	8	320	–	–	8
E2.1	24	4998	–	–	3
bordered	1	50	–	–	1
disc	1	548	–	–	1
plaque fragment	1	75	–	–	1
plug	3	225	–	–	3
totals	*207*	*22,004*	–	*1,492*	*26*

Table 7 Distribution of colour on the veneers.

type	*black*	*?black*	*blue*	*?blue*	*red*	*black & red*	*none*	*totals*
A1	–	–	–	–	1	–	–	1
A2	–	–	–	–	–	–	16	16
A4	–	–	–	–	3	–	–	3
A4.1	–	–	–	–	2	–	–	2
A4.4	–	–	–	–	–	–	2	2
A5.3	–	1	–	–	–	–	4	6
A5.3/4	–	–	1	–	1	–	10	12
A5.4	–	–	1	–	5	–	5	11
A5.4/5	1	–	–	–	–	–	–	1
A5.5	–	–	2	1	–	–	5	8
A5.6	–	–	–	–	–	–	4	4
A5.7	–	–	–	–	–	–	2	2
grooved	1	2	1	1	4	–	70	79
A6	–	–	–	–	1	–	–	1
A6.1	–	–	–	–	1	–	–	1
A6.3	–	–	–	–	–	2	9	11
B	–	–	–	–	–	–	1	1
B1	–	–	1	–	–	–	6	7
B1/C2	–	–	–	–	–	–	1	1
C2	–	–	–	–	–	–	8	8
E2.1	–	–	–	–	1	1	22	24
bordered	–	–	–	–	–	–	1	1
disc	–	–	–	–	–	–	1	1
plaque fragment	–	–	–	–	–	–	1	1
plug	–	–	–	–	–	–	3	3
totals	*2*	*3*	*6*	*2*	*22*	*1*	*171*	*207*

rectangular plates decorated with ring and dots). These too appear to be much thicker than normal veneers. The complete group has not been published, but the 15 illustrated in the Oslesbury report range in thickness from 6mm to 20mm (Collis 1977, fig 11).

At all three sites none of the pieces appear to have any perforations, and thus they cannot have been pegged in place like many of the thinner veneers. In the light of these observed differences, it is worth exploring the possibility that veneers from sepulchral contexts may have served a purpose different to those of the domestic veneers.

Prior to this, however, it is worth considering how much of the original veneer is represented. McKinley notes that *c* 59% of the cremated human bone appears to have been collected and placed in the urn with a bias towards the larger fragments, suggesting hand collection from the pyre rather than any form of sieving. As the largest fragments of bone veneers are smaller than the largest pieces of human bone, it is likely that the collection bias will have led to less than 60% of the veneer fragments being collected. The extant terminal strips also make it obvious that a substantial proportion was not collected. There are, after all, only five terminal pieces, despite there being about a dozen different strip patterns. Twenty-four terminals would be needed even if each type was only represented once. It is clear from the differing widths represented in the more numerous types such as A5.3, A5.4, A5.5 and A6.3, however, that multiple examples are present. In the light of this, it is not unreasonable to suggest that 10% or less of the strip fragments may have been collected.

One avenue for exploring what sort of item the veneers were applied to is to examine the area the fragments cover, as clearly a small box would have a much smaller surface area available for decoration than a bier would have. As can be seen from Table 4 the total area of the fragments in the urn is 2,200mm². If the 10% or less collection figure is correct then the total area would have been more than 22,000mm². If they were being applied to a box, this would be sufficient to entirely cover the top and sides of a box 210mm square and deep. This would have been a

sizeable item. It is difficult to judge what sizes of box the thin veneers found on domestic sites were applied to. Even when large numbers of veneers are found together suggesting the whole box may originally have been present as was the case in the two groups found at Richborough (Henderson 1949, 152 no. 276, pi LVII; Wilson 1968, 106 no. 225 LXI–LXII), the recording and publication of the pieces does not allow the boxes to be reconstructed. Some indication of the scale may, however, be provided by two wooden boxes found during the excavation of Graves 69 and 519 in the Butt Road cemetery, Colchester. These had been provided with copper alloy and iron fittings (Crummy 1983, 85–8). It was not possible to reconstruct a scale replica of them but it may be noted that the remains of the larger in grave 69 covered a maximum area of *c* 200mm 140mm (Crummy *et al* 1993, fig 2.77), indicating a substantially smaller piece than the postulated Birdoswald box.

The area covered by the fragments can also be explored by looking at the likely total length of the strips. The area of each strip type has been divided by the average length of each type, as this allows fragments that do not retain their whole width to be included. For the fragments that can merely be described as grooved, the area has been divided by the mean width of all the fragments retaining their width. This calculation indicates that just under 1.5m is present. Again, following the suggesting that the fragments may represent 10% or less of the total, this might indicate that the complete item was being decorated by 15m or more of these strips. This seems disproportionate if only a box, was being decorated.

The location of the fragments from within the fill of the urn is instructive. McKinley (p 282) draws attention to the fact that the worked bone is found throughout the fill of the urn and that this 'is significant with respect to the nature of the item, its collection and deposition within the burial'. If the veneers had decorated a box one would have expected them to remain in one part of the pyre and to have been collected and placed in the urn together. A closer examination of the position of the various

Table 8 Distribution of the veneer through the urn fill quantified by area (mm²).

type	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*total*
A1	–	520	–	–	–	–	–	520
A2	–	81	–	–	–	–	150	231
A4	–	472	–	–	–	–	–	472
A4.1	–	221	–	–	–	–	200	421
A4.4	216	231	–	–	–	–	–	447
A5.3	–	250	110	–	288	802	–	1,450
A5.3/4	208	–	252	700	–	170	25	1,355
A5.4	252	–	497	455	352	885	423	2,864
A5.4/5	–	–	–	–	–	–	75	75
A5.5	–	177	125	323	–	–	610	1,235
A5.6	–	95	182	–	–	–	80	357
A5.7	–	–	–	–	168	357	–	525
grooved	150	320	1,250	335	150	325	660	3,190
A6	–	–	–	–	–	93	–	93
A6.1	–	–	–	–	–	–	144	144
A6.3	352	170	557	130	–	859	–	2,068
B	–	–	–	–	–	–	75	75
B1	–	45	66	25	55	–	–	191
B1/C2	–	–	50	–	–	–	–	50
C2	–	–	110	175	–	25	35	320
E2.1	–	–	130	100	2,148	2,130	490	4,998
bordered	–	–	50	–	–	–	–	50
disc	–	–	–	–	–	548	–	548
plaque fragment	–	–	75	–	–	–	–	75
plug	–	75	–	–	–	150	–	225
total (area)	*1,178*	*2,657*	*3,454*	*2,243*	*3,161*	*6,344*	*2,967*	*22,004*
total (%age)	*5*	*12*	*16*	*10*	*15*	*29*	*13*	–

types throughout the urn fill shows there is no significant clustering of types in particular spits (*see* Table 8), as might be expected if the veneers had been attached to different small objects. The degree of burning seen on the fragments that can be assigned to particular types is also instructive (*see* Table 9). The material ranges from a blackened charred appearance, through a stage where it takes on blue/grey tones to the white/cream colour of completely oxidised bone. A range of burnt states is seen on many of the different types. Again this may be indicative of the veneers having been burnt in various positions on the pyre rather than in one discrete area.

As should now be apparent, the quantity of the veneers recovered, their position within the urn and the varying degrees of burning all suggest that they decorated something larger than a box. The possibility that they decorated more than one box placed in different positions on the pyre cannot, of course, be ruled out. However, it seems equally likely that they could have decorated some large piece of pyre furniture such as a bier. Biers do appear to have been in use in the north-west as one was found *in situ* at Beckfoot, Cumbria (Bellhouse 1955, 51–3). This had a nailed oak frame, and the description of the nails suggests that some, at least, may have been applied with decorative intent. Long ones are recorded in the corners of the frames and 'short ones, with large flat heads, along the frame' (Bellhouse 1955, 52). These latter sound very much like Manning (1985, 135) Type 7 nails, which would be ideal for upholstering but would be of little structural use. The possibility that the bier was upholstered is an intriguing one, as Bellhouse (1955, 52) notes, 'Incredible though it may sound, I have also identified to my satisfaction masses of charred feathers, and other rather puzzling stuff which can only be wool, lying close to the bed-frame.' An upholstered bier would suggest that it was felt appropriate to have elaborate pyre furniture, and so it seems possible that biers could have been decorated in other ways too.

Table 9 Degrees of burning seen on the veneers (by fragment count).

type	*black*	*blue/grey*	*white*	*total*
A1	–	1	–	1
A2	–	–	16	16
A4	–	–	3	3
A4.1	–	–	2	2
A4.4	1	1	–	2
A5.3	–	2	4	6
A5.3/4	–	2	10	12
A5.4	1	1	9	11
A5.4/5	–	–	1	1
A5.5	1	–	7	8
A5.6	–	–	4	4
A5.7	–	–	2	2
A6	–	–	1	1
A6.1	–	–	1	1
A6.3	–	3	8	11
B	–	–	1	1
B1	–	2	5	7
B1/C2	–	1	–	1
C2	–	1	7	8
E2.1	1	7	16	24
bordered	–	–	1	1
disc	–	1	–	1
plaque fragment	–	–	1	1
plug	1	–	2	3
totals	*5*	*22*	*101*	*128*

Other pyre small find ***(by H E M Cool)***

Fig 381, no. 20: hinge or handle?, burnt bone; curved fragment; all edges broken; small circular perforation; 38mm 13mm (BIRD 99: sf1718 from cremation pit fill 702). None of the veneers from Birdoswald or Brougham have perforations and so this is like to come from a different sort of item. Possibilities include a handle or a hinge, but the fragment is too small to identify.

Finds and dating

The finds from the topsoil in Trench 7 included 12 pottery sherds including one samian sherd and a quantity of BB1, some of it showing traces of burning. The vessels probably derive from disturbed cremations, as does a melted glass bead (BIRD 99: sf1711 bead?, translucent deep blue, melted fragment) from the topsoil.

Trench 8

Geophysical survey located a large bi-polar anomaly in the location of this trench, but excavation proved that this was the result of a dolerite boulder in the natural subsoil at a depth of 0.42m below the turf.

Discussion

The evaluation added a further three cremation burials to the known sample of seven (Wilmott 1993). The cremated bone

Table10 Summary of cremated bone from trenches in the cemetery area.

context	*type*	*total bone wt*	*age*	*sex*	*pathology summary*	*pyre goods*	*comments*
Trench 1							
101	redep in topsoil	13.4g	adult + ?immature	?			origin unknown
102	redep in ploughsoil	3.6g	adult/subadult	?			origin unknown
103	redep in ditch fill	6g	adult/subadult	?	pbn – humerus/ femur; cuts – long bone shafts	blue glass	?from grave 112
105	redep	0.6g	adult/subadult	?			? from grave 112
106	redep fuel ash						no bone, FAS & precipitate
108	?redep in grave fill	83.3g	adult	?	pnb – tibia		?spill/dist from grave 112: charcoal & FAS
109	?rpd in grave fill	16.3g	adult/subadult	?			lining of grave 112; bone worn
109/ SF 1113	?redep	1.4g	?	?			?animal/?human
110	crd	1.4g	?			glass	human bone; FAS & charcoal
111	redep	5.5g	subadult/adult	?			charcoal & fired clay
114	urned burial; upper fill	97.7g	adult *c* 18–45yr	??female	pnb – tibia		grave 112; common charcoal flecks
115	urned burial; lower fill	85.1g	adult	?		bird bone – ?goose	grave 112; common charcoal flecks
116	redep	48.9g	adult	?	osteomylitis – fibula		FAS
Trench 2							
207	redep in ditch						burnt animal bone, burnt clay
208	pit fill						burnt animal bone
Trench 3							
301	redep in topsoil	0.5g					
Trench 4							
402	truncated ?urned burial	120g	adult	?		hobnail	bone worn
Trench 7							
701	redep in topsoil	11.5g	adult	?			?from 702, 704/706
702	rpd in grave fill	12.1g	subadult/adult	?		2.6g worked bone; pot frag	grave 703; 2.9g charcoal
704/706	?crd	4.5g	adult	?			?mortar, 8.4g charcoal
714	urned burial	937.3g	adult *c* 18-40yr	female	pnb – tibia shaft	263 frags (138.9g) decorated animal bone plaque; 24.8g animal bone – immature sheep & ?bird	2.6g charcoal, 2 frags FAS

KEY: rpd = redeposited pyre debris; crd = cremation-related deposit; redep = redeposited
subadult = 13–18 yr; adult >18 yr; pnb = periosteal new bone

from the cemetery trenches is summarised in Table 10. Cremations 1 and 2 were very heavily disturbed by ploughing, as those previously excavated had been, and showed similar evidence – a fragmentary vessel or vessels with a small group of human bone and iron nail fragments. Two complete vessels were

excavated by the farmer when the cemetery was discovered in 1958, but the contents were emptied out, and the pots were retained in private hands.

It should be noted that the geophysical survey of the field did not pick up many features, probably due to the disturbance of the ground by ploughing from the Middle Ages onwards. There are strong bipolar anomalies in the field (Biggins and Taylor 2004), but not all are cremations: during excavation two identical anomalies were chosen for sampling in Trenches 7 and 8. In Trench 7 the complete Cremation no. 3 was the cause of the anomaly, while in Trench 8 the cause was a large erratic lump of dolerite, an igneous mineral.

Cremation 3 is an important find. Remarkably it is the only complete cremation burial to have been excavated from any Roman cemetery on the line of Hadrian's Wall. However, the presence of the bone veneers links the burial firmly into a milieu including the cemetery at Brougham, Cumbria (Cool 2004), where many fragments of such veneers have been found. The fact that the bone veneers were found inside the urn is of the first importance, as this supports the conclusion that the veneers were derived from biers rather than from smaller boxes (Cool 2004, 274, 439).

Elaborate funerary couches in bone and ivory were in use in Italy in the 1st century BC and 1st century AD (Caravale 1994, 33–66). Their use spread into the provinces, but occurrences are rare in northern Europe. In Britain the only example appears to be one from the famous child's grave with figurines at Colchester, which has been dated to the Neronian period (Eckardt 1999, 77). These couches consisted of decorative turned elements to form the legs and could have elaborately carved three-dimensional figural elements (*see* for example Caravale 1994, figs 1 and 2).

Clearly the bone veneer types found at Brougham and Birdoswald differ from these Italian examples both in date and in construction. The veneers were designed to decorate something and were not structural elements (which would have been provided by something else, probably wood). The couches were designed to present the body of the deceased in a splendid setting prior to the cremation. To a certain extent, the veneers can be seen in a similar way. A bier decorated with them would have been brightly coloured and elaborately decorated. An element of conspicuous consumption would have been visible in the ceremonies leading up to the cremation. Although bone is a relatively humble material, it is unlikely that a bier decorated with such veneers would have been inexpensive. The care taken in carving the pieces, especially the elaborate Type E2.1 plates, and in colouring them and attaching them to the bier suggests the expenditure of considerable resources.

If there was a fashion for decorating biers in this way, the evidence at present points to it being primarily a 3rd-century phenomenon, and possibly predominantly one associated with the military and their families. The burial at Owlesbury has been dated to the 2nd century and has no obvious military associations. Fragments of veneer are also recorded in a 3rd-century cremation burial at Usk (Greep 1995), again with no obvious military associations.

The veneers at Brougham and Birdoswald, however, occur within a military context, as does a likely fragment from a 3rd-century cremation burial in a cemetery outside the fort of Low Borrowbridge, Cumbria (McKinley 1996, 120). If such biers were fashionable among 3rd- century military communities in the north, it would be tempting to think that it stemmed from emulation of an imperial funeral that many soldiers based there may have seen. Septimius Severus died at York in 211. Herodian (111.15.7) and the epitome of Cassius Dio (LXXVI1.15.3) records that he was cremated in Britain and his ashes taken to Rome for burial. Herodian (IV. 1–2) then goes on to describe the elaborate ceremonies that were conducted around a wax, life-size effigy of the emperor displayed on an ivory couch after the arrival of the court in Rome. The effigy was eventually placed in the second storey of a five-storey pyre, and cremated together with many gold hangings, ivory figures, portraits, spices, fruits etc. Cavalry manoeuvres were conducted around the pyre prior to it being torched (for this account *see* Toynbee 1971, 59–60). Given the elaboration of the obsequies surrounding the effigy in Rome, Severus's actual cremation would surely have been as splendid, especially to provincial eyes. Indeed, if Cassius Dio is to be believed, the cremation at York had many of the trappings of an imperial funeral.

The whole question of burial rite on the frontier is little understood, and in 1985 the Society for the Promotion of Roman Studies

regarded the location and excavation of cemeteries as the most urgent research priority for the military sites of Roman Britain. The most extensive cemetery excavation within the area was undertaken under rescue conditions between1966 and 1967 at Brougham, Cumbria. This excavation with its large numbers of finds has now been published by Cool (2004), and the volume provides a benchmark for studies of Roman military cemeteries in the north. The cemetery at Low Borrowbridge, Cumbria (Lambert 1996, 87–125), although not as rich as the cemetery at Brougham, has also demonstrated a variety of funerary practices. Other published evidence comes from Milefortlet 4 at Herd Hill on the Cumberland Coast (Bellhouse 1954, 54–5), the fort of Beckfoot (Hogg 1949; Bellhouse 1954, 51–3), and from the outpost fort of High Rochester (Charlton and Mitcheson 1984). The burial rite used is predominantly cremation, and this rite continued into the mid–late 4th century. At High Rochester, cremations took place over prepared pits. The pyre was constructed over the pit, with a bier upon it from which the nails in the graves probably derived. The bones were then deposited into a pottery vessel, which was buried in the pit along with the ashes. This rite is also attested at Herd Hill and Beckfoot, and it had been suggested (Wilmott 1993) that the evidence from the ploughed up material at Birdoswald indicates that it was used here also, although there was no evidence for this from the 1999 work. The High Rochester graves were covered by low, sometimes ditched, mounds, and evidence for this has now been found at Beckfoot (excavations 2006; R Newman, pers comm), where ring ditches have been found around cremations. Barrow cemeteries of low mounds also occur at Great Chesters (Daniels 1978, 182) and at Bewcastle (Sainsbury and Welfare 1990, 145). Such mounds only survive where ploughing has not taken place. No such mounds survived as earthworks at Birdoswald. The limited work that has been undertaken on these burial sites, particularly at Brougham, now shows the complexity and variety that might be expected on these sites.

The western extra-mural settlement

Three trenches were opened in the area of the western extra-mural settlement, and the location of these trenches was guided by the geophysical survey results.

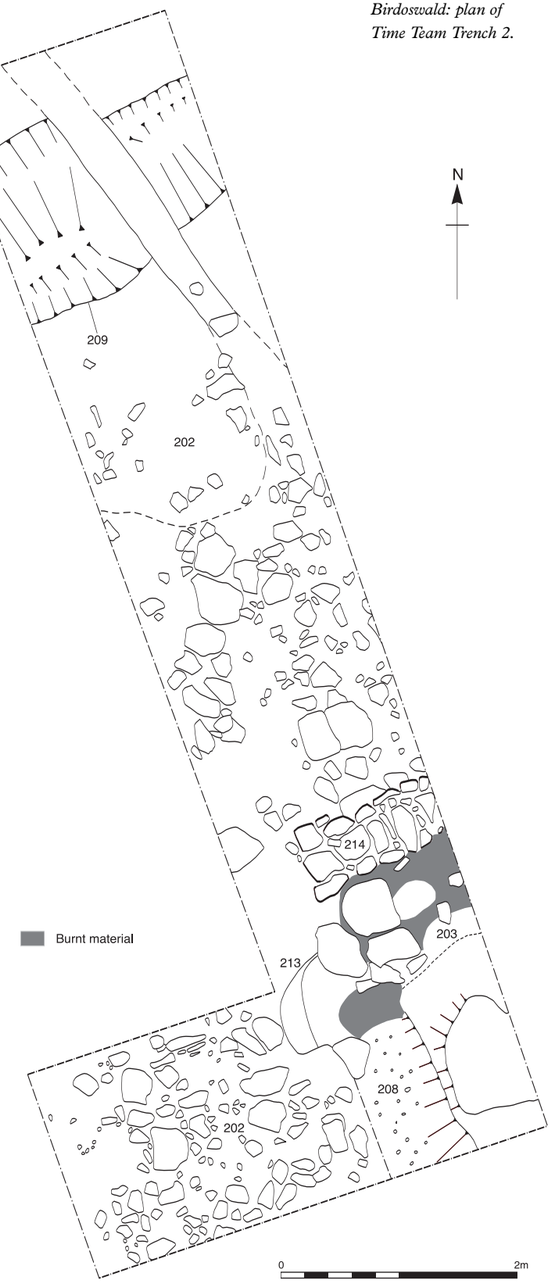


Fig 382
Birdoswald: plan of Time Team Trench 2.

Trench 2

The trench measured 10m 2m and was orientated so that it cut across the western neck of a sub-elliptical space, which appears from geophysical survey to open up between ranges of buildings in the western *vicus*. It was intended to establish the nature of any surfacing in the area, to characterise the possible structures and other anomalies ranged around it, and the stratigraphic relationships between these elements.

The earliest deposits exposed in Trench 2 (Fig 382) were that of a hearth consisting of two rough limestone slabs (211) set in an L-shape within a pale orange clay matrix. The hearth floor was of compact red clay with a large flat stone set flat between the stones of (211). Slag found within the clay may have been a lining for the hearth floor. A grey-black clayey silt laminated with pink lenses (204) was removed from within the hearth and sampled. The hearth was built against the side of an east–west wall (214), which was constructed of roughly faced limestone and terminated in a squared-off butt end in the west. This may be the result of robbing but may equally indicate the presence of a doorway. It is not clear if the wall was a partition within a structure or an outside wall.

In the south of the trench an ovoid cut (213), was exposed with irregular, steep sides and a flat base, 200mm deep. It was filled with a dark grey-brown clayey silt deposit with charcoal patches and a high concentration of pot, tile, a few fragments of burnt bone and an intaglio. Some upright stone slabs on a north–south alignment were also noted, but they did not appear to line the cut or to divide it. Cut (213) was truncated by a second irregular cut (203). Again, the nature of the pit is unclear and its fill (202), a mid-dark brown silty clay with a high percentage of cobbles within its matrix gave no real indication of a specific function. A possible robber trench or shallow ditch (209) was excavated in the north of the trench on an east–west alignment. The cut was 70mm deep with a wide flat base. This appeared to run parallel with the elliptical area and may have served to drain away run off water. A modern drain (216) truncated many of the features, above which the top soil was a dark grey brown clay silt.

Trench 3 (Fig 383)

As with Trench 2 this trench was placed over the elliptical area, but farther east, near the western entrance of the fort. The natural subsoil was not exposed in this trench. The earliest deposit was a limestone wall (310) consisting of four large roughly dressed blocks orientated on a north south alignment with an outer face on the west side. The wall was at least 0.6m wide and 1.20m long. Two courses of the wall survived. Wall (310) was keyed into a second wall (309) which was aligned at virtual right angles to (310). Again, only a limited area of the wall was exposed with three roughly

Fig 383
Birdoswald: plan of Time Team Trench 3.

dressed limestone blocks, 1.45m long and 0.35m wide. A small sondage was excavated to the north of 310 where a high concentration of cobbles (303) indicated the presence of a metalled surface, either of a road or a courtyard. The cobbles were overlain by a rubble deposit (302), which may be debris resulting from the collapse of the walls; a similar rubble spread lay west of wall (307), probably as a result of the same collapse.

Wall (307) was revealed north of (309) and appears to form an L-shape, aligned east–west in the south and approximately NNW–SSE in the north. The relationship with (307) is unclear, but as they are only 0.3m apart it would seem unlikely that they are contemporary. A further wall (305) with pink orange clay bonding material (306) may have existed in the south-west corner of the trench on an east–west alignment, but, as with the other walls, its function is uncertain. This was overlain by an orange clay deposit (308) with occasional rounded pebble inclusions. The colour of the clay would suggest that an episode of burning took place; if there was a furnace or kiln here no obvious structural remains were seen.

Large angular limestone collapse material (304) was seen west of the walls. All the above deposits were overlain by a dark-brown sandy silt topsoil (301)

Trench 5 (Fig 384)

The natural subsoil was not reached in this trench. The earliest deposits located were three spreads of metalled surface (507, 505, 510), which consisted of loam matrices within which were compacted semi-rounded cobbles. Whether these were remnants of roads or courtyards is difficult to determine, as little was exposed. A rubble deposit (506) lay above (505), and was in turn cut by a probable ditch (504). The actual cut of the ditch was not defined, but the rubble deposit (508) sloped down steeply towards the south, suggesting that it was lying above a cut. If the area that the rubble covered is any indication of the dimensions of the cut it can be seen to have been at least 2.40m × 1.80m and 0.340m deep, but the southern extent was not revealed. The location of the rubble within the trench is consistent with a linear anomaly, detected by geophysics, that may have been part of a rectangular structure. The ditch may have divided the two areas of metalled surface.

Finds and dating

Trenches 2, 3 and 5 sampled very little of the site stratigraphy, and most finds were recovered from topsoil deposits. The pottery recovered was the first dating evidence to come from the extra-mural settlements at Birdoswald. This material shows a date range from the Hadrianic period to the late 3rd century. While BB1 types of the later 3rd to early 4th century are present, there is no Crambeck greyware, and not a sherd of East Yorkshire calcite gritted ware. Given the reasonable size of the assemblage, the former might have been expected in a collection with any intensity of pottery deposition in the last two decades of the 3rd century, and the latter would

Fig 384
Birdoswald: plan of Time Team Trench 5.

definitely be expected in the 4th century. Both types are represented for these periods in deposits within the fort walls. The bulk of pottery deposition is of 2nd-century date, as shown by the preponderance of acute lattice decorated BB1 over obtuse lattice, the greater frequency of 2nd-century BB1 types, and the absence of any 3rd-century BB2 forms.

The same trend is visible in the coin assemblage. Despite an extensive programme of metal detecting during the Time Team evaluation, the three coins recovered were all early. Two (CO32, CO33) were pre-Hadrianic, being coins of Domitian and Trajan, while the third (CO34) dated to the reign of Marcus Aurelius. Third- and 4th-century coins are frequently found within the fort, and would be expected as topsoil finds in the western extra-mural area.

Of very few datable small finds, the glass bead (no. 5), probably dating to the 1st century (*below* p 355), and two 2nd–3rd-century intagliones (nos 21, 22) also show an early date.

Discussion

The results of the exercise were to demonstrate that the geophysical anomalies were indeed representative of buried structures, mostly stone-founded buildings including hearths, cobbled surfaces, pits and ditches. The work demonstrated that these features had complex structural histories, and could not be understood in small exposures.

Part 6: The Roman and Saxon pottery

by Jeremy Evans and S H Willlis with contributions by A G Vince, D F Williams and K F Hartley

Introduction

Approximately 2,343 pottery sherds were recovered from the of the Study Centre excavations (Site 585, of which *c* 516 came from stratified Roman contexts), 1,515 sherds recovered from excavations on Birdoswald Spur (Site 590, of which *c* 1,210 came from well stratified contexts) and 645 sherds from the Time Team evaluation of the western vicus and cemetery. Despite their small numbers, it has been decided to report on them in detail, because the groups principally provide 2nd- and 3rd-century data, whereas pottery previously recovered in any quantity from these sites and published to a modern standard (Hird 1997) has been principally of 4th-century date. Thus the two reports complement each other.

Table 11 Quantities of pottery by phase from the Study Centre site (585).

Phase	*no. of sherds*	*Phase*	*no. of sherds*
1	42	5	50
2	0	6A	207
3	0	6b	55
4	63	8	395

Table 11 shows the pottery quantities from the Study Centre excavations in each phase. Most of the pottery is of 2nd-century date, with a reasonable representation of early 3rd-century pottery and only a single, later 4th-century Huntcliff type jar. However, most of this pottery is residual in its contexts. For this reason only pottery that provides dating evidence is presented; otherwise only to examine the assemblage in general terms to provide some quantitative date on its general characteristics. Forms occurring in the stratified Roman sequence are tabulated in Appendix 5, table 71 and illustrated along with the pottery from the Spur (Site 590) below.

Table 12 shows the quantities of material on the Spur by phase. The pottery from the Vallum group is Hadrianic–early Antonine and does not date after *c* AD 160–70 (ie it is not post-Antonine Wall). The material from Phase A2 seems to be Antonine and therefore post-dates *c* AD 160–70. The fort ditch fills contained a range of pottery, but seem to be mainly Antonine–mid-3rd century. The ditches were clearly still receiving material in the later 3rd century.

Table 12 Quantities of pottery by phase from the Spur site (590).

Phase	*no. of sherds*
A1 Vallum fill	405
A2 drains	84
A3 fort ditches	447
B2 Area B pits	34
C2 pits	170
Roman	261
Neolithic cist fill	105

The latest material from the outer ditch fills is late 3rd century, although the middle ditch fills would seem to have been filled by the early–mid-3rd century. The pits in area A, contain material of 2nd–3rd-century and Saxon date, the best datable group being 3rd century. Pits in area B, contained little Roman pottery, of later 3rd century date. The Phase C2 pits and features, which contained much more datable Roman pottery, seem to be of later 3rd century (or later) date and contained most of the Housesteads ware. There is only a single calcite-gritted ware sherd from the entire stratified collection and Huntcliff type jar rims and Crambeck painted-parchment ware are entirely absent. It is clear, therefore, that there was no pottery deposition in the later 4th century and there is scant evidence of earlier 4th century activity. Minimally, pottery deposition on the site could have ended by the end of the 3rd century. The majority of the pottery from the site is 2nd century, most of it probably Antonine, plus smaller quantities of 3rd-century pottery (most of it of the first half of the 3rd century).

Layout of the report

Pottery from each site is described separately, then discussed together more generally. Rim sherds from the Vallum fill, fort ditches and intermediate phase between the filling of the Vallum and the excavation of the ditches are illustrated in groups in Figs 387–90. Otherwise the forms are illustrated in a type series, which is laid out in the Spur report below. The forms are catalogued there, including those from the Study Centre site (which are only coded to fabric class).

Study Centre (Site 585): praetentura

Chronology

Phase 1: early pits

Contexts 1145, 1146, 1283 and 1289 contained pottery: 11 sherds of CG samian ware and a Les Martres Dr 36? sherd; and coarse wares include a greyware BB copy jar from 1146 [R00.3] and 9 sherds of BB1, including a flange rimmed dish with acute lattice from 1146 [B01.14] of Hadrianic–early Antonine date. Thus pottery of this phase seems to be of Hadrianic (or later) date, the small size of the assemblage precluding any determination of whether it might extend into the early Antonine period.

Phase 4: primary buildings

Phase 4 represents the first Stone Fort. Pottery came from 13 contexts: clay preparation deposit (1035), Building 830 construction and floor deposits (1092, 563, 514), Building 808 construction deposits (1271, 1081), Building 801 floor (872), primary drain fill (1030), road make-up and surfaces (1208, 1055, 1279, 1117) and fill of drain (566) re-using north wall of Building 801. Context 1279 also contained a Central Gaulish Dech 72 jar and a Dr 37 bowl, both AD 150–200 and a stamped Mancetter mortarium rim (see MS1 below) dated *c* AD 135–65/70. This context was an upper road surface and therefore relates to the use of the buildings and roads, rather than to their construction. This pottery is therefore potentially later than the construction deposits from which most of the other material from the phase derived.

There is also a BB1 jar rim (B01.1; perhaps Hadrianic–early Antonine) from 1092 and a Nene Valley colour-coated ware beaker (F01.1, a fabric not found on the Antonine Wall [Swan, pers comm]) from 566, dated AD 160/70–250. This context (the filling of the drain that was constructed into the north wall of Building 801) was among the latest in Phase 4 and is therefore stratigraphically the latest deposit, providing a *terminus post quem* for rebuilding in Phase 5.

The 1987–92 excavations produced two groups of pottery relevant to the date of this phase. Analytical Group 1 was the equivalent of Phase 1 material here, most of which appears to be Hadrianic, although the lattice decoration on BB1 dish no. 5 (Hird 1997, fig 155) would more likely be mid-2nd century rather than earlier. Analytical Group 2 formed the equivalent of Phase 4, with most pottery (including all the samian) is Hadrianic–early Antonine, but BB2 was present in the group, dating after *c* AD 150 and dish no. 34 on Gillam's (1976) dating should post-date *c* AD 180.

Phase 5: second major construction phase

Fifty pottery sherds were recovered from 15 contexts: levelling for Building 809 (1175, 1226), Building 810 construction and floors (874, 1104), Building 813 preparation (1128), Building 803 hypocaust fill (1015), road surfaces, pits and ovens on

via sagularis (456, 490, 491, 511, 520), verandah surfaces Building 803 (1302, 1303), alley fill between Buildings 809 and 810 (1234) and alley fill between Buildings 802 and 803 (1298).

There is very little contemporary pottery in this phase. There is a BB1 jar rim (B01.1; perhaps Hadrianic–early Antonine) from 1175 and a greyware BB copy jar (Hadrianic–Antonine) from 1175. The latest pieces are an East Gaulish Dr 18/31R/31R from 874, dated 150–220 and a greyware BB copy jar (R00.3; Hadrianic–Antonine) from 1015.

Phase 6a

Phase 6a contained a larger collection of 207 pottery sherds from 16 contexts: Basilica floors (410, 414, 477/478, 500), Building 809 wall (1177), Building 805 wall (464), Building 803 floor make-up (455), roadside drain fill (1192), demolition of Building 802 (420, 528, 1215, 1304), *via sagularis* (422), construction of drain south of *via sagularis* (392, 466, 467), drain silt (418), deliberate drain fill (41, 393, 1106) and fill of pothole (452).

Context 1304 contained two Central Gaulish Dr 37s dated AD 150–200; context 1215 an East Gaulish Dr 31R(?) sherd dated AD 160–220; context 422 an East Gaulish Dr 38 dated AD 140–220, plus a Central Gaulish Dr 31R dated AD 160–200; context 418 another Central Gaulish Dr 31R of the same date; and context 467 a Central Gaulish Walters type 79 dated AD 160–200.

Three contexts (393, 418 and 1215) contained BB1 jar body sherds with obtuse burnished lattice decoration, suggesting a 3rd-century or later date. Contexts 393 and 418 contained BB1 developed beaded and flanged bowls (B11, B1.1) of later-3rd–mid-4th-century date. Context 528 had a Crambeck mortarium body sherd, dated after *c* AD 280/5; context 418 a 3rd-century BB1 jar from 418 (B01.3), and context 393 two of 3rd-century date (B01.3).

Phase 6b

This phase had 155 pottery sherds from 14 contexts: Building 803 (Phase ii) wall (352), beneath flagstones of Building 803 (518, 1157), make-up for latest intervallum road (421), Building 812 floor (1105), collapse of Building 805 (400, 419, 1019, 1165, 1206, 1255), collapse of Building 806 (1219) and *via sagularis* pothole fills (397, 1050).

Context 421 contained a BB1 developed beaded and flanged bowl of later-3rd–mid-4th- century date (B11, B01.10). There is also a calcite gritted ware jar of proto-Huntcliff type from context 352, dated *c* AD 330–50/70, and another from context 1206 (G01.1).

General fort supply – 2nd–3rd centuries

Given the lack of any groups of usable size in the fort sequence before Phase 6, and the largely residual material in that group, Table 13 presents only the general ware proportions from all stratified Roman features, Phases 1–6. This pottery gives a general impression of 2nd- and 3rd-century use of the fort.

Two types of amphorae occurred on the site: Dressel 20s and a Dressel 7–11, a fish sauce container from Phase 8. Bidwell and Speak (1994b) have demonstrated that the absence of wine amphorae from Hadrian's Wall reflects the supply of wine to the Wall in barrels from the Rhineland. These Birdoswald data confirm that interpretion. No data are available for the types of

Table 13 Fabric proportions from stratified Roman deposits the Study Centre site (585).

	% Nosh	% wt	% EVE #
A01	10.3	41.7	0
B01	20.1	11.4	13.5
B10	0.4	0.4	0
F01	3.6	1.2	12.0
F02	0.8	0.1	0.3
F04	0.4	0.3	0
F05	0.2	0.1	0.8 4
F06	0.4	0.1	1.2
G01	0.4	0.6	1.6
G11	0.2	0.2	0.6
M01	0.6	2.0	2.1
M03	0.4	1.2	1.5
M04	0.2	0.6	0.5
M11	1.0	1.9	0.6
M12	0.2	0.2	0
M13	0.2	0.6	0
M49	0.2	0.1	0.2
O00	13.3	12.8	12.5
Q00	0.2	0.0	0
R00	27.4	13.5	26.2
S20	15.1	7.3	19.1
S21	2.8	3.1	5.9
S30	0.6	0.4	0
S31	0.4	0.2	0.7
S32	0.2	0.1	0.3
W00	0.4	0.1	0
n	503	13664	1910

– EVE calculated from RE and BE measures

amphorae from the 1987–92 excavations (Hird 1997), but the overall proportion of amphorae in the total collection was also quite high at 6.7% by count and 31.3% by weight. Comparatively high proportions of Gauloise amphorae from the fort at Thornborough, Catterick (Evans 2002a) and Binchester (Evans and Rátkai in prep a) suggest that the north-east was not being supplied by the same quartermasters as the Wall. However, the north-west north of the Mersey seems to have been supplied on a similar basis as that to Hadrian's Wall (Evans and Rátkai in prep b).

BB1 numbers were still low, reflecting the 2nd-century date of so much of the pottery. The peak of BB1 Wall supplies was in the later 3rd century (Evans 1985). Numbers in this group are similar to those at Walton-le-Dale (Evans and Rátkai in prep b).

Table 14 shows the functional analysis of BB1 vessels from stratified deposits. The BB1 assemblage has a large component of tablewares. Explaining the variations in the composition of BB1 assemblages from military and urban sites is problematical. It is suggested that sites with high amounts of BB1 tablewares had a good supply of the fabric, jars being preferred. This interpretation would explain the Birdoswald data. However, this does not really explain the fact that sites in the north-east – such as Binchester (Evans and Rátkai in prep a), Catterick (Bell and Evans 2002), Castleford (Evans 1985) and Greta Bridge (Evans 1985) – have more BB1 tablewares than jars, when the fabric was presumably being supplied to them over the Pennines from the north-west, whereas sites with much closer access to BB1 supplies – at Bewcastle and Vindolanda – have jar-dominated assemblages.

Numbers of BB1 jars might also reflect amounts of cooking vessels. Such amounts might be expected to correlate with the overall functional composition of the assemblages, which it does well for the Vindolanda groups examined (Evans 1985), but it does not explain amounts at Bewcastle and Catterick Bridge (Evans 1985; Evans 1993).

BB2 proportions are much lower than BB1, as might be expected. Most of the rest of the BB jar market was taken up by ubiquitous greywares, as is generally the case in north-east England in the 2nd to mid-3rd centuries (Evans 1985). BB2 numbers were probably quite a bit higher than the numbers in this group in the early

Table 14 Functional analysis of BB1 vessels from phase 1–6 deposits from the Study Centre site (585).

dishes	*jars*	*bowls*	*beakers*	*n*
29%	41%	24%	6%	17 rims
21%	44%	25%	10%	150%

3rd century, when much of this material seems to have reached the site.

Colour-coated wares are also represented, forming 5.4% of the group. Nene Valley wares (F01 and F06) dominate, followed by 'Rhenish' wares (both Central Gaulish and Trier), including a fine Central Gaulish ware bowl found in 1929 (Birley 1930, no. 51). Colour-coated wares were clearly the major fine ware in the later 2nd–earlier 3rd century here. There are also small components of a brown-slipped, oxidised, colour-coated ware (F04) representing earlier-2nd-century fine wares. Other early fine wares include NG1 (present in the first fort deposits in the 1987–92 excavations) and a Rhineland(?) rough-cast vessel. Oxfordshire colour-coated ware (F03) appears in post-Roman Site Phase 8 deposits, represented by Young (1977) type C84 and an unlisted flagon type (Nos F03.A and F03.B). Previously, Oxfordshire wares were recovered from the later 4th century Analytical Group 15 (Hird 1997). The evidence from Binchester (Evans and Rátkai in prep a) suggest that Oxfordshire colour-coated ware only appears in any quantity in assemblages in the region in the last quarter of the 4th century.

Gritted wares are poorly represented in the group, reflecting its predominantly 2nd–early-3rd-century date. There is a single jar in what appears to be Derbyshire ware (G11), which has Antonine parallels, from Phase 6b. East Yorkshire calcite-gritted ware (fabric G01) also occurs in small quantities in Phase 6b, represented by a proto-Huntcliff type jar, dated *c* AD 330–50/70.

Other gritted wares from the fort include Dalesware and Dales types, found in the 1987–92 excavations in Analytical Group 9 and later, and appear to have a later-3rd–4th-century date range. There is a single rim fragment from a jar with an everted rim in a quartz- and granitic-tempered Saxon jar, perhaps of Charnwood origin (see Williams below, p 385), of 5th–7th-century date from Phase 8, post-Roman deposits (1006).

Table 15 Functional analysis of greywares from the Study Centre site (585).

constricted-necked jars	*jars*	*bowls*	*lids*	*n*
8%	79%	8%	4%	24 rims
6%	90%	3%	1%	369%

Mortaria are discussed in detail below (p 320).

The comparatively high proportion of oxidised wares, compared with Hadrianic– 3rd-century groups from the north-east probably reflects the continuing oxidised ware tradition seen in the north-west throughout the 2nd century, which is the dominant fabric at Lancashire sites such as Wilderspool and Walton-le-Dale. Most of these are probably residual here by the 3rd century.

Reduced wares form the largest component of the assemblage, more than BB1. This large reduced-ware proportion, dominating the 2nd- and at least earlier-3rd-century assemblage, gives it a composition similar to those in north-east England – similar to Wall forts east of Birdoswald, for example Vindolanda (Bidwell 1985b). As in the north-east most of the reduced wares are in BB copy forms, mostly jars (Table 15). The jar forms present demonstrate that some shapes continued to be produced at least into the 3rd century (R00.4, R00.5). There is a single example of a rustic ware jar (R00.11); and several BB2 associated Gillam type 151 jars (R00.10) (Bidwell 1985b, 177), as at the previous site, make this the most westerly occurrence of the type (Hird 1997, 237).

Whitewares are of minimal significance in the assemblage.

Overall functional composition

Table 16 shows the functional composition of the recorded stratified assemblage. On the usual measure by minimum numbers of rims (Evans 1993) jars are well represented, as are tablewares (dishes and bowls) and beakers. The assemblage falls within the range expected of a military or urban site: fairly high numbers of beakers and tablewares, and jar numbers at the higher end of the range, which may reflect the location of the site on the periphery of the fort. The RE data show a similar picture, although they emphasise the comparatively high jar proportion. Data accounted for by this method generally shows a higher value for more constricted-necked vessel types (Evans 1991).

Fine ware also represents what is expected at an urban or millitary site. Numbers are high at 24.5% by count, and 12.9% by weight (although this figure is depressed by the high amphora proportion by weight). The samian proportion is also high: 19.1% by count, 11.1% by weight – the latter figure falling well within the range of military and major town sites tabulated by Willis (1998, Table 1). This is not as high as on some military sites, for example Binchester (Evans and Rátkai in prep a), although the assemblage there is associated with a high-status 'commandant's house'.

The proportion of decorated samian ware is also high: 31.6% of all samian rimsherds are decorated forms, again similar to decorated ware proportions from other military sites tabulated by Willis (1998, table 3).

The high amphorae proportion – 10 .3% by count and 41.7% by weight – is rarely found except on military and military-associated sites. It can be compared with 4.5% by count or 29.4% by weight from Flavian–Hadrianic phases 1–5 at Binchester, and with 2.5% by count or 13.1% by weight from Severan–late 4th-century phases 6–9. In contrast, the amphorae proportion from the Antonine fort at Thornborough Farm, Catterick produced 9.0% by count and 34.4% by weight; and similar amphorae proportions were found at Vindolanda (31.6% by weight in the total collection; Bidwell 1985b, 182), at the Flavian Brithdir fort (10.5% by count; 63.6% by weight; Evans 1997), and from late-2nd-century period 9 at Carlisle, Castle Street (7.4% by count; 44.0% by weight; Taylor 1991, table 49).

Table 16 Functional analysis for the Study Centre site (585) phases1–6 (by minimum numbers of rims and RE).

flagons	*constricted-necked jars*	*jars*	*bowls*	*dishes*	*beakers and cups*	*mortaria*	*lids*	*n*
0	2.4	39.3	23.8	17.9	11.9	3.6	1.2	84 rims
0	2.4	52.2	18.9	10.0	13.5	2.7	0.2	957%

Samian ware

by S H Willis

The samian collection from the Study Centre site forms an exceptionally high proportion of the pottery from the site, includes a high percentage of decorated vessels and provides chronological information.

The Study Centre samian is in better overall condition than that from the Spur (see below), although it is fragmented and shows degrees of chemical weathering. While contexts yielding samian were numerous, on the whole, only modest numbers of samian sherds occurred in each context, particularly in the case of the earliest phases. Much of the material is residual, and 40% of the sherds came from unstratified context 1006. Nonetheless, it provides a range of useful quantified information on the chronology and character of the Birdoswald site, as well as on cultural and other processes. Consideration of the samian from post-Roman deposits provides valuable evidence in examining a range of archaeological questions regarding the site.

365 samian sherds were recovered from 68 contexts. The aggregate weight was 4,238gm. The total RE (Rim Equivalence) value was *c* 7.72.

The chronology of the assemblage is consistent in date with the coarse ware. The pattern of sources of the samian and the representation of these particular sources is consistent with that identified from the previous excavations at the site (Dickinson 1997): the bulk is 2nd-century Lezoux samian. East Gaulish ware is present in small proportion. There is some earlier samian: Les Martres-de-Veyre ware, but no La Graufesenque ware.

An amount of samian in contexts of Phases 1–6a occurs, and a Hadrianic start date for activity, at least in earnest, at the site is indicated.

A full catalogue by Site Phase is given in Appendix 5, table 72. Significant vessels from well stratified Roman deposits are described and illustrated within the following chronological discussion.

Chronology and sources

The earliest samian is from Les Martres and, with a single possible exception, is Trajanic to early Hadrianic (*c* AD 100–30) in date. Late 1st- to early 2nd-century South Gaulish samian and pre-Hadrianic Lezoux ware are absent. There is a strong presence of Les Martres ware from the Study Centre when compared with the samples from elsewhere at Birdoswald. This matter is of particular interest given the date of the material. For example, there are more Les Martes vessels here (33 sherds accounting for 9.1% of sherd total) than from the Spur site (only 1% of the sherd total), despite the presence of Spur contexts that would have been laid down in the years immediately following its main floruit.

Les Martres samian formed a similar tiny proportion (*c* 1%), of the samian assemblage recorded by Dickinson and Mills from the 1987–92 work (Dickinson 1997, 256) at the fort; and of the 94 samian sherds from the extra-mural areas investigated by Time Team in 1999 only 3 sherds were Les Martres, one of which was Hadrianic rather than Trajanic or Trajanic–Hadrianic (Willis 2000).

The Les Martres sherds (Table 17) derive from *c* 15–17 vessels: by weight 15.6% of the samian assemblage; by RE 13.3%. Several groups of sherds come from single vessels.

One of these vessels, a Drag 37 from context 1006, may be an example of the later output from this production site, and possibly of later-Hadrianic/mid-2nd-century date. Vessels of this later phase of the Les Martres industry are recorded at some sites on the northern frontier, for example at Strageath (Frere and Hartley 1989) and previously at Birdoswald (cf Dickinson 1997, 256).

The bulk of the assemblage is 2nd-century Lezoux ware, as also is the case with the assemblages from the 1987–92 work, the Spur and the Time Team excavations (p 258; Dickinson 1997).

A small number of East Gaulish sherds present are mid-2nd- to mid-3rd-century date.

Table 18 summarises the samian chronology by imperial period. Approximately 277 vessels are represented in the assemblage.

Several chronological trends emerge. There are 18 Trajanic–Hadrianic and Hadrianic items, and 20 further items specifically Hadrianic to *c* AD 150. Most chronologically diagnostic samian belongs to the second half of the 2nd century. A dip in the consumption of samian in the mid-2nd century is suggested by the limited amount of material dateable to *c* AD 140–50. Any trend in this respect is not as marked as that shown by

Table 17 Les Martres samian from the Study Centre site (585): numbers of vessels represented (see catalogue for details). (Where sherds from the same vessel occur in contexts of more than one phase, they are counted only once, namely in the phase of their earliest occurrence).

form type	*site Phase:*	*Phase 1*	*Phase 4*	*Phase 5*	*Phase 6a*	*Phase 8*
decorated bowls						
Drag 30 or 37		–	–	1	–	–
Drag 37		–	–	1	1	5
plain bowls						
Curle 11		–	1	–	–	–
Culre 23		–	–	–	–	1
bowl or dish						
indeterminate		–	–	–	–	1
dishes						
Drag 18/31		–	–	–	1	–
Drag 18/31R		–	–	–	–	2
Drag 36?		1	–	–	–	–
totals		1	1	2	2	9
form not identifiable		–	–	1	–	1
aggregate totals		1	1	3	2	10

Table 18. Summary of the chronology of the samian from the Study Centre site (585).

period	*no. of vessels represented*
Trajanic–early Hadrianic	16
Trajanic–mid-Antonine	1
Hadrianic	2
Hadrianic–early Antonine	20
Hadrianic–mid-Antonine	7
Hadrianic–Antonine	150
late Hadrianic–mid-3rd century	8
early–mid-Antonine	2
Antonine (after 140)	5
Antonine (after 150)	25
Antonine–early 3rd century	5
mid-Antonine–late Antonine	29
mid-Antonine–mid-3rd century	5
late Antonine–mid-3rd century	1
early–mid-3rd century	1
total	277

Dickinson's 1997 graph (Dickinson 1997, fig 177), although the material in that case included more items that could be more precisely dated.

Fig 385 shows a plot of the samian assemblage by date. The number of items of a given date range are summed and then this total is divided by the number of years of the date range to give a value per calendar year. The process is repeated for all items/date ranges and the values for each year are added up and plotted. All items are plotted, including the less precisely dated 2nd-century items assigned to the broad Hadrianic–Antonine 'envelope'.

The method provides a quick guide to the chronology of the assemblage. The chart shows the presence of the early-2nd-century Les Martres vessels presumably in use in the AD 120s, and a dramatic rise *c* AD 120 associated with the debut of Lezoux samian's main export period. The graph shows an early peak in the 120s: a Les Martres / Lezoux 'overlap' is followed by a general increase in the frequency of samian through the 2nd century.

It is debatable whether this pattern can be taken to reflect any hiatus in occupation during the mid-2nd century Antonine occupation in Scotland. In fact, such a pattern broadly reflects trends seen at other sites occupied during the 2nd century that display peaks in their samian proportions in the later 2nd century (Willis 1998). Generally in Britain, specifically Hadrianic samian is far less prominent than samian of the second half of the 2nd century AD (Willis 1998). There is a sharp decrease in the frequency curve for samian dating later than *c* 200. This represents the East Gaulish vessels, which

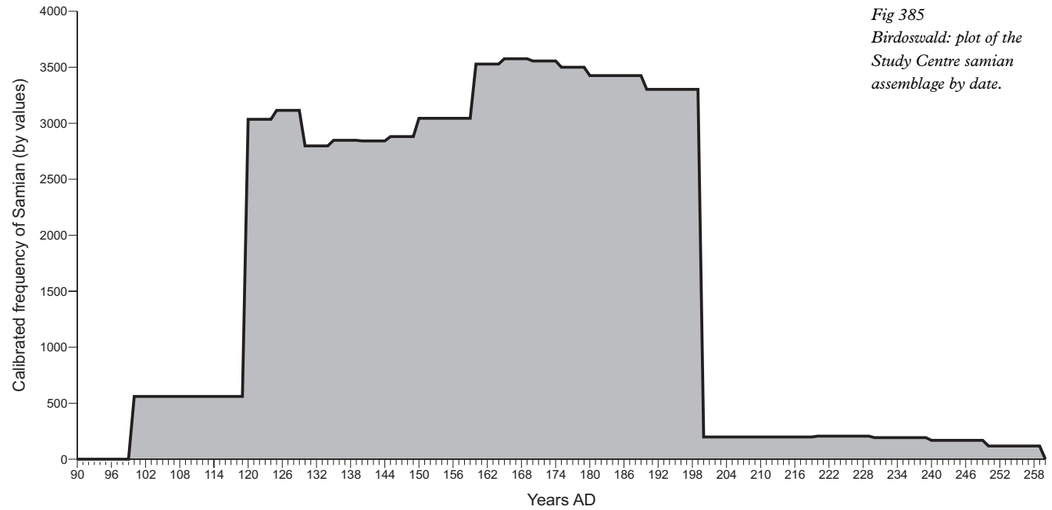


Fig 385
Birdoswald: plot of the Study Centre samian assemblage by date.

continued to be imported into Britain during the early and mid-3rd century, but in much smaller numbers than had been the case with 2nd-century Lezoux samian. The sudden drop in the graph is a function of existing samian dating conventions: in practice, a proportion of Lezoux samian will have continued in use into the early 3rd century alongside some of the East Gaulish items.

The assemblage includes *c* 20 vessels from Eastern Gaul, accounting for 7.2% of the samian vessels. This is an identical proportion to that represented by East Gaulish ware at the Spur, while Dickinson records that 10.6% of the decorated and stamped items from the 1987–92 work is from East Gaul (a figure that probably increases by 2–3% when plain vessels are added; cf Mills 1997).

Table 19 Summary of the East Gaulish samian from the Study Centre site (585) (see catalogue for details).

context	*source*	*form*	*date*
Ph 5 context 874	Rheinzabern	Drag 18/31R or 31R	*c* AD 150–220
Ph 6a context 418	?Madel'e or Argonne	Curle 15	*c* AD 130–260
Ph 6a context 422	Trier	probably Drag 38	*c* AD 140–220
Ph 6a context 528	EG	not identifiable	*c* AD 220–260
Ph 6a context 1215	Trier	probably Drag 31R	*c* AD 160–220
Ph 8 context 388	?Madel'e or Argonne	bowl or dish	*c* AD 130–250
Ph 8 context 1005	?Madel'e or Argonne	Walters 79	*c* AD 160–240
Ph 8 context 1006	EG	Drag 31R	*c* AD 160–260
Ph 8 context 1006	Trier	Drag 36	*c* AD 175–260
Ph 8 context 1006	Rheinzabern	probably Drag 37	*c* AD 150–260
Ph 8 context 1006	?Madel'e or Argonne	Drag 37	*c* AD 160–240
Ph 8 context 1006	EG	Drag 37	*c* AD 150–230
Ph 8 context 1006	EG	not identifiable	*c* AD 130–260
Ph 8 context 1006	EG	??bowl	*c* AD 130–260
Ph 8 context 1006	EG	not identifiable	*c* AD 130–260
Ph 8 context 1006	EG	??bowl or dish	*c* AD 130–260
Ph 8 context 1006	EG	not identifiable	*c* AD 130–260
Ph 8 context 1006	EG	not identifiable	*c* AD 140–260
Ph 8 context 1025	Rheinzabern	Drag 31R	*c* AD 160–220
Ph 8 context 1165	?Madel'e or Argonne	plain bowl	*c* AD 130–250

An eclectic variety of samian types is present from the Study Centre (Table 19), but nothing unusual is present and the fabrics are similar to those from the Spur. Doubtless a proportion of these vessels arrived at the site in the 2nd rather than the 3rd century.

The incidence of the samian by phase at the Study Centre sheds some light on the chronology of the earlier contexts.

Phase 1 deposits had 6 samian vessels (see Appendix 5, Table 72). All are 2nd century: the earliest item is from a Les Martres vessel of *c* 100–30; of the remaining vessels three date to *c* 120–50, and one is a Hadrianic dish. Of these items nothing need be later than *c* 130, and the date of the Study Centre samian of this phase is therefore firmly in accord with a Hadrianic date.

1. Drag 37: 3 rim sherds and 4 body sherds, all conjoining. CG Lezoux, 72g, RE 0.25, diam 190mm. Dec: the ovolo is indistinct; below is a festoon with alternating crane O.2196 and dog O.2020 or 2021; *c* AD 125–50 (Phase 1, context 1280) (Fig 386)

Phase 4 deposits had sherds from 9 samian vessels, (including several from a vessel represented in Phase 1). Therefore items are consistent with a Hadrianic to early Antonine date.

2. Déch 72: rim sherd. CG Lezoux, 4g, RE 0.07, diam 80mm, burnt; *c* AD 150–200 (Phase 4, context 1279) (Fig 386)

Phase 5 is dated by Evans as Antonine to early 3rd century. It yielded a little more samian than the earlier phases but several items at least were evidently residual (see Catalogue and Table 20). This is probably also the case with Phase 6a, dating to the 3rd century (Table 21).

3. Drag 37: 2 rim sherds, 1 body sherd and 1 base sherd. CG Les Martres, 261g, RE 0.18, diam 180mm; BE 0.59, diam 90mm. Dec: so-called Medetus-Ranto style; the ovolo is blurred but otherwise the design, in panels, is well moulded; represented are the dancer O.354, Diana O.109 and the hare cf O. 2057; within a medallion is a star constructed from five bud motifs; all these features appear, in a similar arrangement, on a bowl from Corbridge (Stanfield and Simpson 1958, pl 29 no 353), while several motifs typical of Ranto also appear (Stanfield and Simpson 1958, fig. 9 nos 2, 5 and 21); the slip is characteristically matt; not stamped; *c* 100–25. Vessels in this style have previously been noted from Birdoswald (eg Detsicas 1962) (Phase 5, context 1128 and context 1116) (Fig 386)

4. Small Déch 72: rim sherd. CG Lezoux, 2g, RE 0.16, diam 50mm; *c* 150–200 (Phase 6a, context 418) (Fig 386)

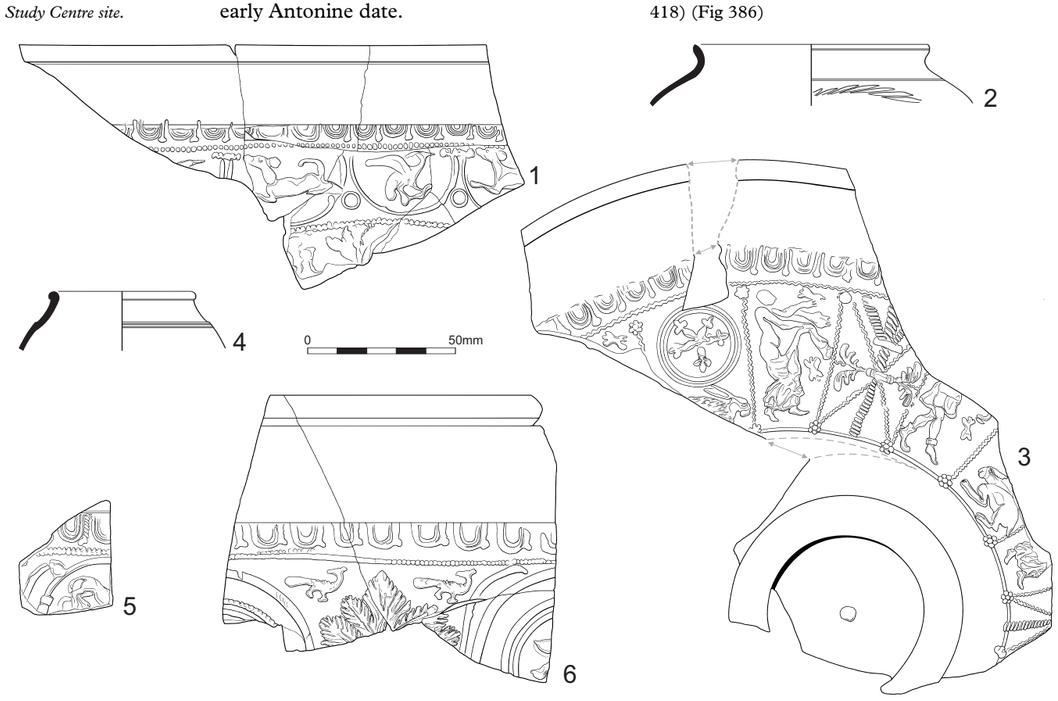


Fig 386 Birdoswald: illustrated samian ware from the Study Centre site.

Table 20 The composition of the samian by form and fabric from Phase 5 contexts from the Study Centre site (585) (ie the number of vessels represented attributable to specific form classes).

form type	*CG Les Martres*	*CG Lezoux*	*EG Rheinzabern*
cups			
Drag 33	–	1	–
decorated bowls			
Drag 30 or 37	1	–	–
Drag 37	1	2	–
plain bowls			
Drag 31R	–	1	–
bowls			
indeterminate	–	1	–
bowl or dish			
Drag 18/31R or 31R	–	–	1
dishes			
Drag 18/31	–	1	–
Drag 31	–	1	–
totals	2	7	1
form not identifiable	1	1	–
aggregate totals	3	8	1

5. Drag 37 body sherd. CG Lezoux, 10g. Dec: likely to be the work of Cinnamus ii; the ovolo, above a bead border, resembles Stanfield and Simpson's type 2 for this producer (1958, 264, fig 47 no 2); there is a scroll design with the hind quarters and back of a panther O.1518; *c* 135–75 (Phase 6a, context 1304) (Fig 386)

6. Drag 37: 2 rim sherds and 1 body sherd, all conjoining. CG Lezoux, 105g, RE 0.15, diam 190mm. Dec: style of Laxtucissa and Paternus, perhaps more likely the work of the latter on the basis of the ovolo; the ovolo and tongue pattern is somewhat blurred but it is clear that these two elements are contiguous with a generous spacing between each ovolo and tongue motif; the terminal of the tongue seems to be a simple rounding to the right (cf Stanfield and Simpson 1958, 194, type 4, fig 30); below a bead border is a leafy scroll with a peacock O.2365 used both by Laxtucissa and Paternus and a leaf type typical of Paternus (eg Stanfield and Simpson 1958, fig 30, no. 8); part of a medallion motif occurs, perhaps containing the cupid O.440; *c* 145–90 (Phase 6a, context 420 and context 317) (Fig 386)

Overall the chronological profile of the samian indicates a start date for military occupation in the period AD 120–35, and most probably in the middle years of that range, *c* 125–30. Samian of the period *c* 120–50 is comparatively well represented. Among the early main export period Lezoux potters attested at the Study Centre are Potter X-6 and Quintilianus i/Quintilianus i group (see below). These vessels pre-date *c* 150 and so equate to the Birdoswald 'Alley group' (Birley 1930). The products of these workshops have been recorded during other excavations at Birdoswald (Birley 1930; Detsicas 1962, 39; Dickinson 1997, 256; Willis 2000). Quintilianus i and Quintilianus i group vessels occur at the Spur, while a 37 bowl there may be a product of Potter X-6. Unfortunately, neither item is stratified.

Table 21 The composition of the samian by form and fabric from Phase 6a contexts from the Study Centre site (585).

form type	*CG Les Martres*	*CG Lezoux*	*EG Rheinzabern*
cups			
Drag 27	–	1	–
Drag 33	–	3	–
decorated bowls			
Drag 37	–	7	–
plain bowls			
Drag 31R	–	2	1
Drag 38	–	–	1
bowls			
indeterminate	–	2	–
bowl or dish			
Drag 18/31R or 31R	–	1	–
indeterminate	–	4	–
dishes			
Curle 15	–	1	1
Drag 18/31R	–	1	–
Drag 31	–	2	–
Drag 36	–	1	–
dec beakers/jars			
Déch 72	–	1	–
indeterminate	–	1	–
platters			
Walters 79	–	1	–
Walters 79 or Lud Tg	–	1	–
totals	–	29	3
form not identifiable	–	7	1
aggregate totals	0	36	4

The Birdoswald 'Alley group' has remained important in Wall and pottery studies for more than 70 years. That the date of the samian within this group is essentially pre-*c* 150 cannot be challenged with conviction. The samian vessel called by Birley the latest in the group, attributed to Cinnamus and dated *c* 150–60 (Birley 1930, 181, fig 6), in fact seems more likely on the basis of the ovolo, large leaf (Rogers H33) and other decorative details, to be a bowl of Sacer i (cf Stanfield and Simpson 1958), and therefore of an earlier date – *c* 135–45 (see Stanfield and Simpson 1990, 206).

When it was actually deposited, as with the other pottery of the group, is another question. The published samian from the alley forms a coherent group and seems to include nothing later than *c* 140.

The emphasis of the assemblage from the Study Centre site, however, is mid- to late-Antonine, *c* 160–90, which underscores a pattern noted previously at the fort (Dickinson 1997, 256; Mills 1997; cf Detsicas 1962). The emphasis is reflected in the list of samian potters whose work is present, such as Paternus v (see below, Table 72). He and potters of his group are also prominent among the decorated ware from previously reported goups (Detsicas 1962; Dickinson 1997, 257). This seems consistent with comprehensive re-occupation of the fort following the military withdrawal from Scotland (cf Hartley 1972). However, it should be borne in mind that the period *c* 160–90 was one of major samian importation into Britain, which one would expect to see as a peak in any graph plotting numbers of samian vessels at a site over time. The intriguing question as to whether there was an abandonment of the fort during the mid-2nd century, or occupation by a reduced garrison (cf Hartley 1972), is one that cannot be answered firmly on the basis of the present samian assemblage. Mills (1997) came to a similar conclusion in her evaluation of the plain samian from the 1987–92 work.

There is little in the way of specifically early Antonine samian from the Study Centre. Mid-century decorated bowls of Cinnamus (or Cerialis-Cinnamus group) occur (see Catalogue), while the work of other potters whose vessels are dated *c* 130–60/65, for instance, is also attested at Birdoswald. In her report on the samian from 1987–92 Brenda Dickinson noted that vessels of mid-2nd century Cinnamus (or Cerialis-Cinnamus group) attribution could have arrived at the site in late Hadrianic times, or in the mid-Antonine period (all together) and so do not necessarily indicate sustained occupation. The Study Centre samian moves us no further forward than Dickinson's apposite evaluation: "the samian evidence for a reduced occupation, rather than complete abandonment of the fort in the early Antonine period, is inconclusive, but it would not necessarily rule out some occupation" during the era of the Antonine presence in Scotland (Dickinson 1997, 257).

While much of the present samian assemblage was, like that from the 1987–92 work at the fort, residual, several small groups came from phased contexts with which they were evidently contemporary. In these cases the dates for the samian were in good agreement with the chronology of the other pottery recovered. These phased groups proved not as instructive, in terms of dating, as those from the Spur. The latest samian present includes some of the East Gaulish items. A proportion of these will have been in use at the site in the 2nd century.

Composition

The Study Centre samian comprises 11% of the pottery by weight (19% when amphora sherds are excluded). This figure is much higher than the equivalent percentages for the samples from the Spur, which are themselves on the high side (see below). An examination of equivalent data collected for a recent study of samian distribution (Willis 1998; 2005) shows that, discounting various apparent 'structured deposits' (Willis 1997, 46–50), only Carlisle among British sites has similar proportions of this ware. This marks the samian from the Study Centre as a highly significant assemblage, not least in light of the fact that there is little in the way of quantitative data available about samian from earlier work at Birdoswald (see below for discussion).

Table 22 records the composition of the samian from the Study Centre by fabric, form and functional type. It includes all the material, stratified and unstratified. Given its 'all in' nature, it is far from being an ideal sample of samian consumption at Birdoswald, and can be only a guide. It is worth presenting because such records have not been published for Birdoswald before.

Approximately 277 vessels are represented, of which 228 are identifiable to form/functional class. Among the Les Martres material, decorated bowls form half the vessels. In such a small sample this may not be a

Table 22 The composition of the samian assemblage by fabric, form and functional type from the Study Centre site (585).

form type	*CG Les Martres*	*CG Lezoux*	*EG*	*EG Rheinzabern*	*EG Trier*
cups					
Drag 27	–	5	–	–	–
Drag 27 or 35	–	1	–	–	–
Drag 33	–	20 + ?1	–	–	–
indeterminate	–	4	–	–	–
decorated bowls					
Drag 30 or 37	1	1	–	–	–
Drag 37	7	71	2	1	–
plain bowls					
Curle 11	1	–	–	–	–
Curle 11 or Drag 38	–	2	–	–	–
Curle 23	1	1	–	–	
Drag 31R	–	13	1	1	1
Drag 38	–	3	–	–	1
indeterminate	–	–	1	–	–
bowls					
indeterminate	–	8	–	–	–
bowl or dish					
Drag 18/31R or 31R	–	4	–	1	–
Drag 18/31R, 31 or 31R	–	6	–	–	–
Drag 18/31, 31 or 31R	–	1	–	–	–
Drag 31 or 31R	–	2	–	–	–
indeterminate	1	17	1	–	–
dishes					
Curle 15	–	1	1	–	–
Drag 18/31	1	5 + ?1	–	–	–
Drag 18/31 or 18/31R	–	2	–	–	–
Drag 18/31R	2	2	–	–	–
Drag 31	–	15	–	–	–
Drag 36	1?	1	–	–	1
Drag 42T	–	1	–	–	–
dec beakers/jars					
Déch 72	–	3	–	–	–
indeterminate	–	1	–	–	–
platters					
Walters 79	–	1	1	–	–
Walters 79 or Tg	–	1	–	–	–
Ludowici Tg	–	1	–	–	–
mortaria					
Drag 45	–	4	–	–	–
closed forms					
indeterminate	–	1	–	–	–
totals	15	200	7	3	3
form not identifiable	2	40	7	–	–
aggregate totals	17	240	14	3	3

reliable figure for the fort overall. Among the Lezoux samian, decorated forms (especially the 37) account for 38% of the vessels identifiable to form. This figure is high even for a fort (cf Willis 1998, table 3; 2005), although it is lower than in the samples from the Vallum and the middle fort ditch on the Spur.

Overall, unusually high proportions of decorated ware, when compared with other sites, are present throughout the Birdoswald complex. Moreover, this high proportion of decorated ware is evident through time, being a characteristic of the whole of the 2nd-century samian. This might be taken to imply that the site, or at least the area investigated, was one with important status or associated with persons of status. In fact there is some evidence of this in the ranks of some of the individuals likely to have lived in parts of the area. Carlisle similarly has sites with exceptionally high proportions of decorated, as opposed to plain samian, sustained over time, and it might be that Birdoswald was receiving similar consignments, possibly supplied via Carlisle (cf Willis 2005). Recently, J Evans (pers comm) has suggested that there appears to be a particular military supply 'finger-print' discernible among pottery assemblages from Roman sites in north-west England. Certainly there are similar patterns in samian con-sumption at these two Cumbrian sites. That decorated ware proportions are higher outside the fort at Birdoswald than within it is of particular interest, especially given that several other extra-mural sites outside forts in Britain have likewise produced exceptionally high proportions of decorated ware by any comparison (cf Willis this volume; 2005).

Among the 58 vessels identified to form from the stratified samian of Phases 1–7 at the Study Centre, 48.3% is decorated; of 142 vessels identified to form of Phase 8, is 42.3% is decorated.

Two further points arise from an examination of Table 22. First, the main later-2nd-century plain dish and bowl types Drag 31 and 31R amount to *c* 30 vessels among the Lezoux samian, while their antecedent equivalents, Drag 18/31 and 18/31R amount to only 10 examples. This is a further indication of mid-to-late Antonine emphasis among this assemblage. Second, *c* 50% of the (2nd-century) Lezoux vessels are bowls, which is a relatively high fraction for this functional class.

The composition of the samian collection forming Analytical Group 1 from the 1987–92 excavations is presented in Table 23 for comparison. The group is approximately Hadrianic (*c* 125–40) and pre-dates the Stone Fort phase. Its composition is broadly equivalent in date range to that of Phase 1 from the Study Centre. Analytical Group 1 is not an ideal sample, given its contextual circumstances (Wilmott 1997), and Evans notes (above) the presence of coarse ware of probable post-Hadrianic date, suggesting a more likely date of 125–40/55. Two sherds of Drag 31 form, which would normally post-date AD 150, are documented as belonging to this group in the 1997 report (Wilmott 1997, 260), but do not appear anywhere in the archive catalogue (Mills 1997), and so are not included in the table. These latter two sherds excluded, the samian of this group appears coherently Hadrianic. Les Martres ware is well represented, not surprising given the early date of the group that overlaps the later currency of this particular ware (only a few sherds of the source occurred in other 1987–92 contexts). The two most common forms from Les Martres imported into Britain were the Drag 18/31 dish and the Drag bowl 37; 6 examples of the former occur in this group while form 37 is not represented. As it happens this is the reverse of the picture at the Study Centre, where 7 form 37s occur and only one 18/31. These two forms are the best represented Lezoux forms in Analytical Group 1. Decorated vessels form 36.4% of this small sample, a figure that is consistent with the proportions noted above for the Study Centre.

Table 23 The composition of the samian by fabric, form and functional type in Analytical Group 1 from Birdoswald 1987–92 (ie the number of vessels represented attributable to specific form classes; see Wilmott 1997, 257–66, though this inventory uses Mills' archive catalogue (Mills 1997) and includes context 473.18)

form type	*SG La Graufes*	*CG Les Martres*	*CG Lezoux*
cups			
Drag 27	–	1	–
Drag 33	–	–	1
Drag 27 or 35	–	–	1
decorated bowls			
Drag 30	–	–	1
Drag 37	–	–	7
plain bowls			
Curle 11	–	–	1
dishes			
Drag 15/31 variant	–	–	1
Drag 18/31	–	6	4
Drag 18/31 or 31	–	–	1
Drag 18/31 or 18/31R	–	–	1
Drag 18/31R	–	–	3
indeterminate	–	1	–
platters			
Drag 15/17	–	1	–
platters or dishes			
Drag 15/17R or 18/31R	–	1	–
Drag 18 or 18/31	1	–	–
totals	1	10	21
form not identifiable	–	2	3
aggregate totals	1	12	24

Taphonomy

As noted above, the samian is fragmented and shows degrees of chemical weathering. Detsicas had noted that the samian from south of the fort recovered in 1929–32 was badly weathered: "owing to the acid conditions of the ground" (1962, 31). There is a correlation between the context of the finds and their condition. Sherds from Phases 1 and 4 are reasonably well preserved, with their original surfaces undamaged. Sherds in Phase 5 contexts are generally poorly preserved, which conforms with Dr Evans' observation that much of the pottery of this phase is residual. The condition of samian fragments from Phase 6a and 6b contexts varies, but on the whole they are in a better state than those of Phases 5 and 8, despite their being on the whole residual or old when passing into the 'death assemblage' (cf Orton 1989). Typically, sherds from Phase 8 contexts show the greatest abrasion and weathering, presumably because they were unsealed, near the surface, or subject to disturbance, re-deposition or re-working.

Table 24 shows average sherd weight. These data largely correlate with trends in sherd condition. Average sherd weights for Phases 1 and 4 are *c* 20g, higher than normal average sherd weight of *c* 13–15g for stratified samian in contemporary deposits at other sites in Britain. Average weights fall in Phases 5 and 6a, presumably reflecting their residuality.

Table 24 The average sherd weights for samian pottery from stratified Roman deposits from the Study Centre site (585).

group	*broad date range of group*	*no. of sherds recovered*	*average sherd weight (grams)*
Phase 1	*c* AD 125/130–40/155	12	18.3g
Phase 4	*c* AD 135–170	14	20.1g
Phase 5	*c* AD 160/170–220/235	19	13.7g
Phase 6a	*c* AD 220–280	45	10.5g
Phase 6b	*c* AD 280–360	18	18.5g
all sherds		363	11.7g

The Spur Project (Site 590)

The Spur represents the area south of the fort, including the Vallum and the fort ditches.

As for the Study Centre the chronology of this group is dicussed, then fabric types described. Forms for the Spur and the fort excavations are illustrated by a type series for each fabric. Unclassified ware groups from the fort (greywares, oxidised wares etc) follow. Important A1 Vallum pottery, A2 drain pottery and A3 fort ditch pottery is illustrated in Figs 387–90.

Chronology

Vallum fill, Phase A1 (Fig 387)

The Vallum fill commenced early after AD 120, judging by its historical context. The samian ware evidence seems consistent with this conclusion, both from the evidence of the Vallum fill and from the overall site samian list: there was no South Gaulish samian in the Vallum fill, and Les Martres material amounts to only 1.3% of the assemblage. This evidence is similar to the decorated and stamped samian list for the whole site (Dickinson 1997): 0.6% South Gaulish and 1.1% Les Martres; and both suggest a lack of any pre-Hadrianic pottery deposition.

The majority of the more closely datable samian is Hadrianic–early Antonine. However, context 6 includes two Dr 31s and an East Gaulish, Rheinzabern, bead rimmed vessel, all dating after AD 150, and a Dr 31R rim dating after AD 160. Similarly context 739 contained a Rheinzabern footring base, dated after AD 150. There is some intrusive pottery in context 6: a (?)Crambeck greyware sherd, a sherd of gritted ware (fabric G14) and a post-medieval fragment; but none from context 739. Although it is possible that the later samian is intrusive, particularly the Dr31R, it seems more likely to belong in the deposit, although more data on its location within the deposit is desirable.

The coarse pottery is consistent with a Hadrianic–early Antonine date for the samian pottery. Notably absent is BB2, dating after *c* AD 150, and Nene Valley colour-coated ware, dating after *c* AD160/70. The collection is a closed one, and was probably closed shortly after AD 150.

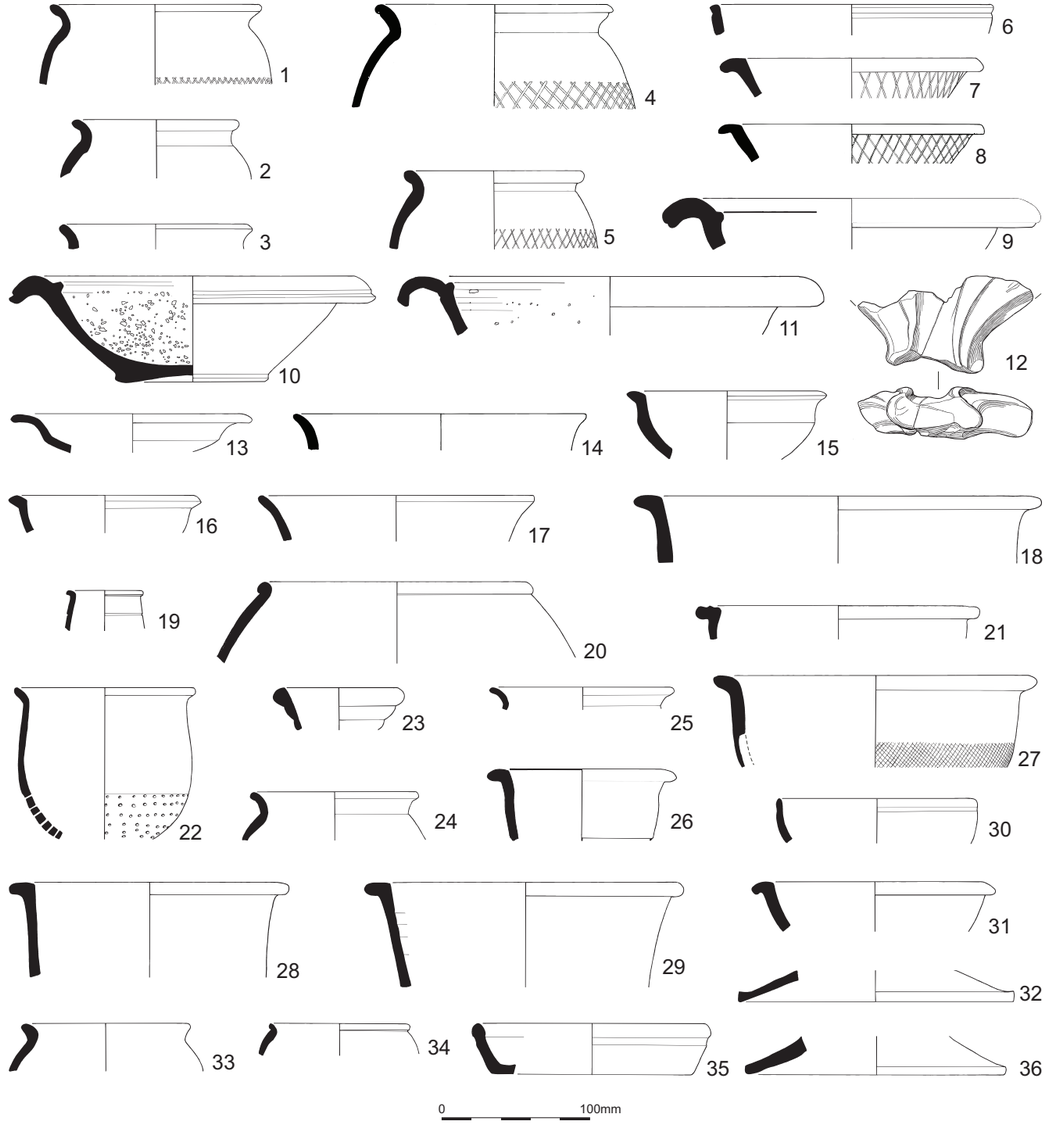


Fig 387
Birdoswald: pottery from the fill of the Vallum Ditch, Spur site, Phase A1, Nos 1–36.

As noted above (p 391), the group was deposited into the Vallum from the west, and was therefore probably derived from the occupation of an early fort *vicus*.

Catalogue of Vallum fill pottery
(Table 25; Fig 387)

1–4. B01.1 BB1 jars with acute lattice decoration; Hadrianic–mid-2nd century: (1) with wavy line around rim, Hadrianic–mid-Antonine; (2–3) Hadrianic–mid-Antonine; (4) acute lattice, Hadrianic–mid-Antonine (context 6)

5. B01.5 BB1 jar with beaded rim; Hadrianic–mid-2nd century (context 6)

6. B01.12 Groove-rimmed dish (cf Gillam (1976) nos 68–70); Hadrianic–Antonine (context 6)

7–8. B01.14 Flange-rimmed dish; Hadrianic–early 3rd century: (7) decorated with acute lattice, probably Hadrianic–mid-2nd century (context 6); (8) decorated with acute lattice, probably Hadrianic–mid-2nd century (context 729)

9. M15.1 M1.1 Beaded and flanged buff-yellow mortarium with flange rising above bead, evenly curving, grooved on the distal end; earlier 2nd century; northern, possibly Corbridge (context 739)

10. M41.2 Beaded and flanged mortarium with flange rising well above bead, flange outcurving, grooved at the end; AD 120–30 (KFH); stamp MS3; probably Scalesceugh (context 739)

11. M45.1 Beaded and flanged mortarium with flange rising well above bead; Hadrianic; unidentifiable stamp fragment MS4 north-western (context 739)

12. Beaded and flanged mortarium spout in fabric M45; Hadrianic (context 6)

13. O03.2 Carinated dish with everted, rising rim, internally grooved; probably Hadrianic–Antonine (context 8)

14. O04.1 Jar(?) with everted, rising rim (context 80)

15–16. O05.2 Carinated bowls with everted, tapering, triangularly-sectioned rim; 2nd century (context 6)

17. O05.3 Carinated(?) bowl with outcurving, rising rim; probably 2nd century (context 6)

18. O05.4 Flange-rimmed dish, probably a BB copy; Hadrianic–Antonine (context 6)

19. O06.1 Small bag beaker with beaded rim; probably 2nd century (context 6)

20. O12.1 Bead-rimmed jar; probably 2nd century (context 6)

21. O12.2 Reeded-rimmed carinated bowl rim; Flavian–Trajanic (context 6)

22. O19.1 Strainer jar with everted rim; 2nd century (context 6)

23. Q02.1 Ring-necked flagon with prominent upper bead; later 1st–early 2nd century (context 6)

24–5. R01.1 Greyware BB jar copies with acute lattice; Hadrianic–Antonine (context 6)

26–9. R01.7 Flange-rimmed bowl, a BB copy; Hadrianic–early 3rd century (26, 29 context 739; 24–5 context 6)

30. R01.12 Curving-walled dish(?) with grooved rim (context 6)

31. R01.13 Curving-walled dish with flanged rim, probably a BB copy; Hadrianic–Antonine (context 6)

32. R01.15 L1.1 Lid with triangularly-sectioned rim (context 6)

33. R03.2 Everted-rimmed jar, probably a BB copy; perhaps Hadrianic–early Antonine (context 739)

34. R03.5 Small jar/beaker with beaded rim (context 6)

35. R03.7 Grooved-rim dish; probably a Hadrianic–Antonine BB copy (context 739)

36. R03.8 Simple, rimmed lid (context 6)

Table 25 Fabric quantification for Phase A1 Vallum fill.

fabric	*% by count*	*% by weight*	*% by MNR*	*% by EVE*
A01	1.0	2.4	–	–
B01	17.3	14.6	14.9	18.8
F08	0.7	0.1	–	–
F11	1.2	0.3	–	–
G14	0.3	0.2	–	–
M00	0.3	0.1	–	–
M01	0.5	0.9	1.5	0.5
M02	0.5	0.3	–	–
M13	0.3	0.2	–	–
M15	0.7	5.2	1.5	2.9
M41	1.5	9.2	1.5	7.1
M44	0.3	0.1	–	–
M45	5.7	8.8	4.5	3.5
M46	1.7	6.9	1.5	1.5
M48	0.7	0.8	–	–
O01	0.5	0.4	–	–
O03	4.2	3.7	1.5	2.2
O04	0.3	0.2	1.5	0.4
O05	4.9	3.9	9.0	4.2
O06	1.2	0.3	1.5	1.6
O08	0.3	0.4	–	–
O11	1.0	1.1	–	–
O12	5.2	2.9	3.0	1.2
O13	1.0	0.3	1.5	2.2
O19	2.7	2.1	1.5	2.1
O20	0.2	0.1	–	0.8
Q02	3.7	2.2	1.5	1.4
Q04	0.3	0.2	–	–
R01	11.9	13.1	16.4	13.8
R02	0.7	0.1	–	–
R03	7.2	3.5	6	8.5
R07	0.3	0.1	–	–
R10	0.3	0.1	–	–
R11	0.3	0.9	–	1.9
R15	0.5	0.2	–	–
R17	0.3	0.1	–	–
R20	0.7	1.0	–	–
S20	17.5	10.6	28.4	21.7
S21	0.3	0.3	–	–
S22	0.5	0.2	1.5	1.3
S32	0.5	0.2	1.5	2.5
W03	1.0	1.7	–	–
W05	0.3	0.1	–	–
n	405	5660	67	1302

Phase A2

Phase A2 contexts are post-Vallum and pre-Stone Fort ditch drain fills, containing 6 samian sherds, including a Central Gaulish Dr 31 (dated after AD150, context 722) and a body sherd (dated after AD 160, context 53). The small collection of coarse pottery included a BB1 jar (B01.2), probably of mid-later 2nd century

date (context 79), and two Nene Valley colour-coated ware beaker rims (F01.1 and F01.3), which must date after *c* AD 160/70 (contexts 77 and 725, respectively). Only context 75 contained a single intrusive post-medieval sherd, and no other dating evidence. A date range of *c* AD 150–70 probably encompasses this small collection, which gives Phase A3 a *terminus post quem* of *c* AD 160/70.

Phase A2 pottery (Fig 388)

1. B01.1 BB1 jar with acute lattice decoration; Hadrianic–mid-2nd century (context 722, mid–later 2nd century)

2–3. B01.2 BB1 jars with acute lattice decoration; mid–later 2nd century (2 context 79; 3 context 722)

4. F01.1 Nene Valley bag beaker with beaded rim (cf Howe *et al* 1980, nos 26 and 28–9); *c* AD 160/70–250 (context 77)

5. F01.3 Nene Valley necked beaker or jar (cf Howe *et al* 1980, nos 40–1); *c* AD 160/70–250 (context 725)

6. R01.13 Curving-walled dish with a flange rim, probably a BB copy; Hadrianic–early 3rd century (context 79)

7. R01.14 Straight-walled dish with a flange rim, a BB copy; Hadrianic–early 3rd century (context 79)

Phase A3

The fort ditch fills post-date Phase A2 and therefore start no earlier than *c* AD 160/70. Pottery was recovered from two ditches – the middle ditch and the outer one.

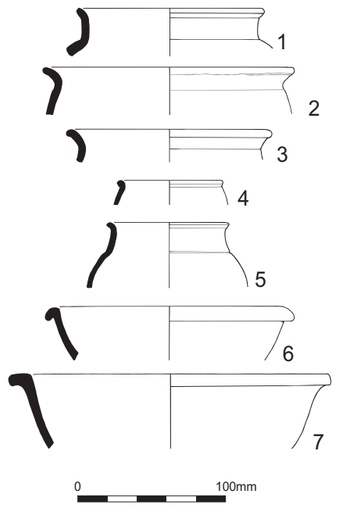


Fig 388
Birdoswald: pottery from the fill of the drain post-dating the Vallum Ditch fill and pre-dating the fort ditches, Spur site, Phase A2.

Two sections were cut through the middle ditch, one in Trench A and one in Trench B. In Trench A there is nothing closely datable in the initial deposit (context 47); there is a small group of pottery from context 44, low down in the sequence, which contained a Central Gaulish Dr 37 of Cinnamus, dated AD 150–200. Above this was a Central Gaulish Dech 72 from context 45. In the Trench A sequence the latest material only comes from context 22, the upper ditch fill, which contains a Dr 37 dated AD 150–200, and a greyware BB2 jar (B10, J1.1) probably of later-2nd-century date.

In Trench B the primary deposit (context 166) included a Central Gaulish body sherd dated AD 160–200, a later-2nd-century BB2 bead-rimmed bowl (B10.2) and a BB1 obtuse-lattice decorated body sherd, which must be 3rd century (or later). Above this, context 165 included Nene Valley colour-coated ware (F01), post-dating AD 160/70. Above context 165, context 164 included a Central Gaulish Dr 31R (AD 160–200), 5 BB1 obtuse-decorated body sherds (3rd–4th century) and a BB1 jar rim (B01.3) (probably early–mid-3rd century) Above this, context 161 also included a Central Gaulish Dr 31R (AD 160–200), along with another BB1 obtuse-lattice decorated body sherd (3rd–4th century). Above this, context 159 contained a Central Gaulish Dr 31R and a Dr 37 (both AD 160–200), and a Mancetter mortarium (M11.2) (*c* AD 160–200). The penultimate fill, context 158, included Nene Valley scale beaker body sherds dating between *c* AD160/70 and 300, and 3 sherds of Housesteads ware. These latter are from an upper fill and probably intrusive, deposited when pit 136 cut into context 158, which contains 8 pieces of Housesteads ware.

Overall, the evidence from these ditch sections consistently suggests a 3rd-century date, probably earlier 3rd century, for the sequence.

Three segments of the outer ditch fills were excavated. In the first only fill context 67 contained pottery, which included a BB1 incipient BB1 beaded and flanged bowl (B01.9) (early to mid-3rd century). In the north segment only fill context 13 contained pottery, close to the bottom of the sequence – a greyware jar rim (R01.2) (3rd century), 4 greyware sherds in fabric R01 with obtuse-lattice decoration (3rd–4th century), a gritted-ware jar with everted, slightly lid-seated rim (G14.1) (3rd–earlier 4th century), and 2 sherds of Crambeck greyware (R11) (after *c* AD 280).

In the south segment the primary fill context 89 contained a sherd of Nene Valley colour-coated ware (F01) (after *c* AD 160/70). Above this, context 52 contained a Central Gaulish Dr 31 or 31R (AD 150–200). Sealing this, context 50 contained a Mancetter hammerhead mortarium (M11.4) (*c* AD 200–20) and a Dales type jar (G12.1) (probably later 3rd–4th century). Above this, the latest fill, context 42, included an early–mid-3rd-century greyware jar rim (R01.2).

The bulk of the obviously non-residual material from this ditch fill is later 2nd–earlier 3rd century. However, when the Dales type jars and the Crambeck greyware is taken into account it may not have been filled until after *c* AD 280. The general lack of material dating later than the mid-3rd century from the Spur may explain this small amount of material of this date in the outer ditch fill.

A3 pottery (Table 26; Figs 389–90)

1. B01.1 BB1 jars with acute lattice decoration; Hadrianic–mid-2nd century (context 164)

2–5. B01.2 BB1 jars with acute lattice decoration; mid–later 2nd century (2 context 52; 3 context 166; 4 context 13; 5 context 159, probably mid–later 2nd century)

6. B01.3 BB1 jars with obtuse lattice and strongly everted rims; 3rd century (context 164).

7. B01.7 BB1 flange-rimmed bowl; Hadrianic–Antonine (context 161, mid–later 2nd century)

8. B01.11 Simple rimmed dish; 2nd–4th century (context 164)

9–10. B01.14 Flange-rimmed dish; Hadrianic–Antonine (9 context 159, later 2nd century; 10 context 158, later 2nd century)

11–12. B10.1 BB2 jar, Gillam (1970) type 144; later 2nd century (11 context 22; 12 context 13)

13–14. B10.2 BB2 bead-rimmed bowl with triangular section, Gillam (1970) type 222; *c* AD 150–210 (13 context 166; 14 context 161)

15. F01.1 Nene Valley bag beaker with beaded rim (cf Howe *et al* 1980, nos 26 and 28–9); *c* AD 160/70–250 (context 169)

16. F06.2 Beaker or small jar with rising rim (context 40)

17. G14.1 Dales type jar, slightly lid-seated (cf Catterick- Bell and Evans 2002, type J12.5) (context 13)

18. G30 Jar rim fragment in Housesteads ware (G30) penetrated by a suspension hole, probably made post-firing, exterior burnished (perhaps cf

Table 26 Fabric quantification for Phase A3, fort ditch fills.

fabric	*% by count*	*% by weight*	*% by MNR*	*% by EVE*
A01	3.6	20.3	–	–
B01	18.0	18.5	16.9	26.1
B10	2.3	3.7	3.6	5.3
F01	1.6	0.4	1.2	4.6
F02	0.9	–	–	–
F06	0.5	0.2	1.2	0.7
F07	0.2	0.2	–	–
F10	0.2	0.1	–	–
F11	0.2	–	–	–
F12	0.7	0.3	–	–
F13	0.2	0.1	–	–
G12	0.2	0.1	1.2	0.3
G13	0.2	1.0	–	2.0
G14	0.7	0.6	1.2	1.1
G30	0.7	0.2	1.2	0.3
M01	0.7	1.4	3.6	1.1
M03	0.5	1.5	–	–
M04	0.2	0.1	–	–
M07	0.2	0.3	1.2	0.2
M11	1.6	3.0	2.4	1.2
M31	0.2	1.8	–	–
M41	0.2	0.1	–	–
M43	0.2	0.3	–	–
M44	0.2	0.4	–	–
M46	0.5	5.1	2.4	1.9
M47	0.2	0.2	–	–
O01	2.3	1.1	3.6	1.8
O03	2.7	1.3	1.2	0.9
O04	1.1	0.8	–	–
O05	2.0	1.9	1.2	0.5
O06	0.7	0.2	–	–
O07	0.5	0.4	–	1.4
O08	1.1	0.6	–	–
O09	0.2	0.2	–	–
O11	0.2	0.2	1.2	0.5
O12	1.6	0.8	1.2	0.8
O13	0.2	0.4	–	–
O14	0.5	0.8	–	–
O15	0.2	0.4	1.2	0.4
O18	0.2	0.1	–	–
O19	0.2	0.5	–	–
Q02	0.2	0.1	–	–
Q03	0.2	–	–	–
R01	20.9	13.9	24.1	23.4
R02	1.8	1.0	2.4	1.3
R03	10.9	7.6	7.2	9.8
R06	0.2	1.2	2.4	1.2
R08	0.2	0.1	–	–
R09	0.5	0.5	–	–
R10	0.2	0.1	1.2	0.2
R11	0.5	0.2	–	–
R12	0.2	0.2	–	–
R14	0.5	0.4	–	1.2
R17	0.5	0.2	–	–
S10	0.5	0.1	–	–
S20	10.5	4.1	13.3	7.4
S21	0.2	0.1	–	3.3
S31	0.2	–	1.2	0.2
S32	0.5	0.1	1.2	0.3
W02	0.2	–	–	–
n	440	7473	83	1293

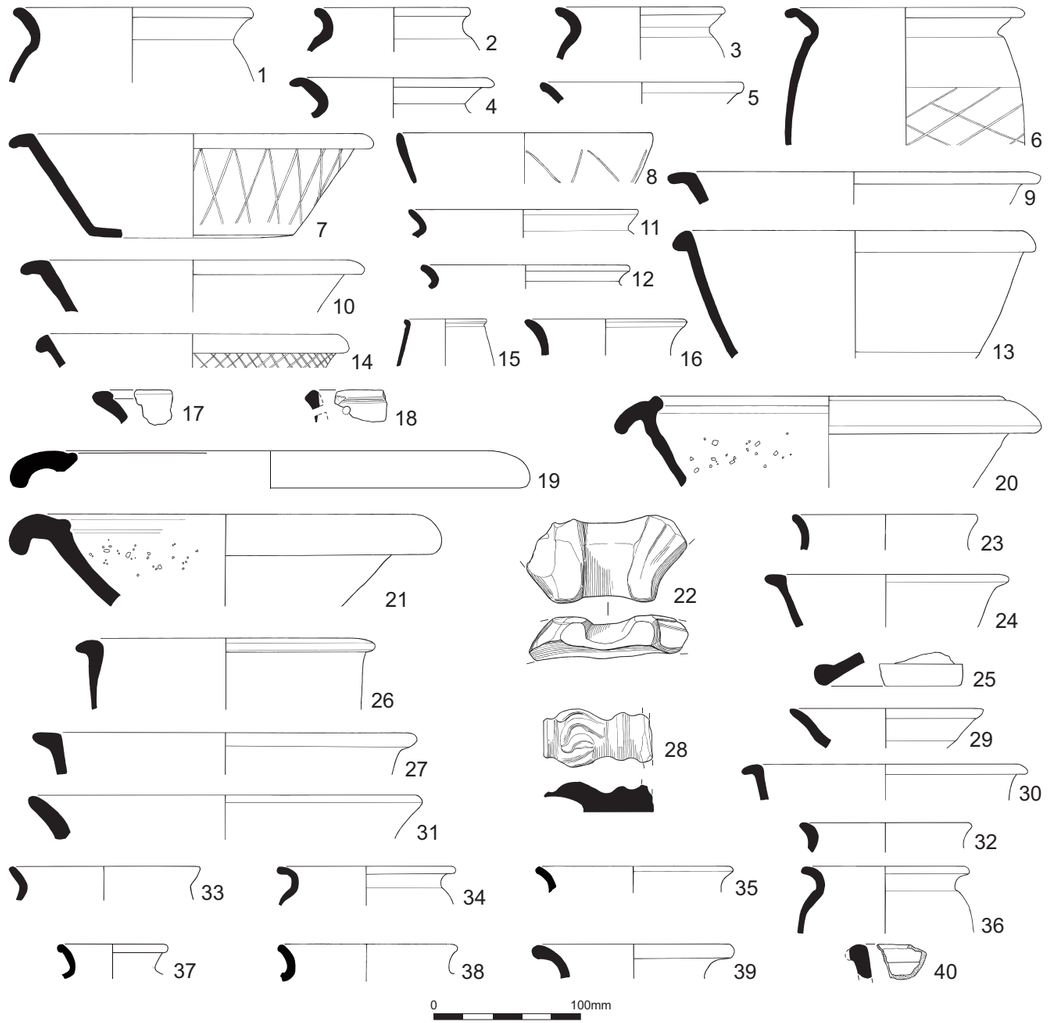


Fig 389
Birdoswald: pottery from the fill of the fort ditches, Spur site, Phase A3, Nos 1–40.

Jobey 1979, fig 2, no. 22) (context 158)

19. M01.1 Beaded and flanged mortarium with bead and flange about level, with evenly curving flange; perhaps Hadrianic–early Antonine; possibly Walton-le-Dale/Wilderspool (context 12)

20. M11.2 Beaded and flanged mortarium with bead above flange which is outcurving but fairly straight; *c* AD 160–200 (context 159)

21. M46.1 Beaded and flanged mortarium with flange rising above bead, evenly curving and down-turned, probably Hadrianic–early Antonine; north-western, possibly Walton-le-Dale/Wilderspool (context 44)

22. Beaded and flanged mortarium spout; 2nd century; north-western, possibly Walton-le-Dale (context 22)

23. O01.1 Constricted-necked jar with everted, rising rim (context 22)

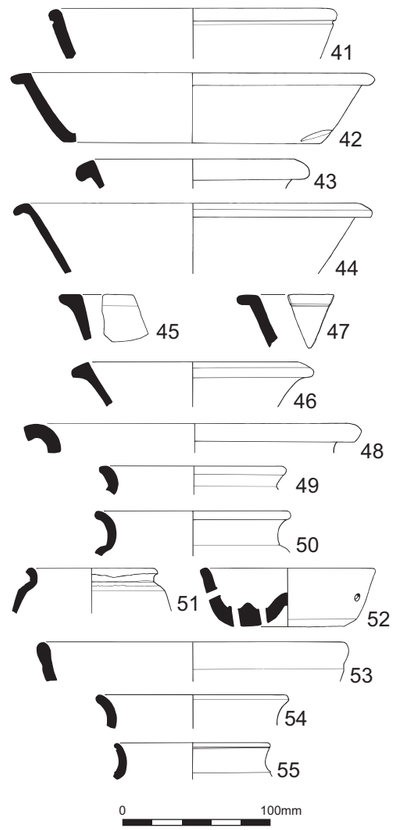
24. O01.2 Flange-rimmed dish, probably a BB copy; probably Hadrianic–Antonine (context 13)

25. O01.3 Lid with a beaded rim (context 166)

26. O03.1 B1.1 Flange-rimmed bowl, probably a BB copy and Hadrianic–Antonine (context 52)

27. O05.4 Flange-rimmed dish, probably a BB copy; Hadrianic–Antonine (context 13).

28. O05 Patera handle (context 13)



29 O11.1 Carinated dish with everted rim, internally grooved, similar to OO3.2; probably 2nd century (context 22)

30. O12.3 Flange-rimmed dish, probably a BB copy; Hadrianic–Antonine (context 13)

31. O15.1 Fragment of everted, rising storage jar(?) rim (context 40)

32–3. R01.1 J1.1 Greyware BB jar copies with acute lattice; Hadrianic–Antonine (32 context 13; 33 context 122)

34–8. R01.2 J1.2 Greyware BB jar copies; early–mid-3rd century (34, 36–7 context 13; 35 context 42; 38 context 122)

39. R01.3 Everted-rimmed jar with thickened rim (context 122)

40. R01.6 B1.1 Bead-rimmed bowl(?) rim fragment (context 40)

41. R01.10 Groove-rimmed dish; probably a Hadrianic–Antonine BB copy (context 161)

42–7. R01.14 Straight-walled dish with a flange rim, a BB copy; Hadrianic–early 3rd century (42 context 166; 43–6 context 13; 47 context 122)

48. R02.2 Jar rim fragment with squared end (context 122)

49. R02.4 BB copy jar rim; perhaps Hadrianic–early Antonine (context 13)

50. R03.1 BB copy jar rim; Hadrianic–Antonine (context 13)

51. R03.6 Greyware jar, probably a copy of a BB small jar/beaker; Hadrianic–Antonine (context 161)

52. R03.9 Cheese press, Gillam (1970) type 350, with parallel dated AD 140–200 (context 122)

53. R06.1 Groove-rimmed dish, much eroded (context 40)

54. R07.1 Everted-rimmed jar; perhaps a later 2nd century BB copy (context 13)

55. R07.2 Everted-rimmed jar rim, grooved on the tip and with cordoned shoulder (context 13)

Fig 390
Birdoswald: pottery from the fill of the fort ditches, Spur site, Phase A3, Nos 41–55.

Discussion: pits and associated features

Several interesting features emerge from the evidence from these cut features.

First, there is a concentration of Housesteads ware in the area of Trenches B and C, which was also the case in Simpson and Richmond's excavations (1934). Most of the pits in Trenches B and C seem to be contemporary – later 3rd century or later; and despite the lack of Housesteads ware, the evidence of the Roman pottery from Trench A seems to indicate that two of the three features were probably of similar date. However, in Trench C the robbing of the Neolithic cist fill has 5th–7th century associated material. Similarly, pit 3 in Trench A is also 5th–7th century. There is also a red glass bead from the topsoil in Trench B of 5th–7th-century date. Thus it seems that there are two phases of pit digging on the Spur, or, just possibly, all are post-Roman, a date when many pits might lack contemporary dating evidence.

Second, it is clear that the quadrangular enclosure, far from being pre-Vallum as Simpson and Richmond believed (1934), post-dates the fort ditch backfilling, and is broadly contemporary with the pits. This is demonstrated because the outer fort ditch would probably have cut it were it not later, and by the content of the enclosure's fill, which included 6 sherds of Housesteads ware.

Tables 25 and 26 show the fabric proportions in the two main pottery groups of Phase A1 and A3. Given the low level of earlier occupation on the site there is little evidence of residual material in Phase A1, nor is there much in Phase A3, although the bulk of the material is probably later 2nd century rather than later.

Fabric Series

Class A: amphorae

Fabric descriptions

A01 Dressel 20; Baetican, 1st–3rd centuries; Hird (1997) fabrics 100 and 101

A11 Dressel 7–11; Spain or southern Gaul; 1st century BC–early 2nd century AD

As discussed below (*see* 'Function', p 347) amphora numbers on the Spur are lower than for deposits coming from within the fort. The composition of the assemblage, however, is no different: all the sherds are from Dressel 20 olive oil amphorae. The assemblage as a whole contains only Dressel 20s and a single Dressel 7–11 fish sauce container. As noted above, this confirms Bidwell and Speak's (1994b) conclusion that the absence of wine amphorae on Hadrian's Wall shows that wine came to the Wall in barrels, which they suggest come from the Rhineland. Given the lack of wine amphorae in north-west England, north of the Mersey (Evans and Rátkai in prep b), the wine source of the north-west seems more likely to be the Bordeaux region.

Amphorae rims and stamps (Fig 391)
by D F Williams

1. A01 Part of Dressel 20 rim; form suggests a date in the second half of the 1st century AD (cf Martin-Kilcher 1987, Beilage 1, no. 65) (Study Centre Phase 8, context 852)

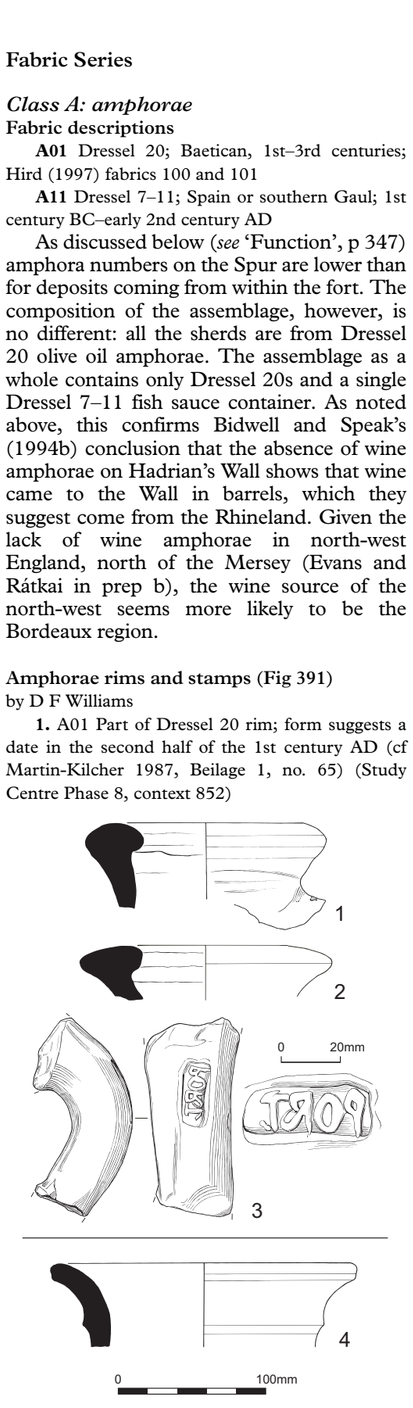


Fig 391
Birdoswald: pottery fabric series: amphorae rims and stamps.

2. A01 Part of Dressel 20 rim; form suggests a slightly later production date than No. 1 above, perhaps the first half of the 2nd century (cf Martin-Kilcher 1987, Beilage 1, no. 81) (Study Centre Phase 1, context 563)

3. A01 Most of Dressel 20 handle with complete stamp near summit. The stamp is in retrograde and reads 'PORT[us]'. This unusual stamp may be allied to an amphora stamp from Colchester, also on a Dressel 20 handle, and in retrograde 'POR' (Callender 1965, no. 1370, 30; Funari 1996, no. 187). Both stamps may be an abbreviated form for 'PORTVS', which as Callender points out, probably refers to a store or warehouse (Callender 1965, 214). The dating of these stamps is difficult, although the short, sharply curved form of the Birdoswald handle suggests an Antonine or later date (Study Centre Phase 8, context 1165).

4. A11 Part of rim of Dressel 7–11 amphora in a buff-coloured sandy fabric with conspicuous mica flecks. Possibly a Dressel 9 form, as the Golfe de Fos example illustrated by Sciallano and Sibella (1991, Dressel 9) shows a very similar rim. This amphora type, which transported fish-based produce from the end of the 1st century BC to the first part of the 2nd century AD, was produced in Spain and southern France, particularly Lyon (Peacock and Williams, 1986, Class 16; Dangreaux and Desbat 1988) (Study Centre Phase 6, context 1298).

Class B: black-burnished wares (Fig 392)

BB1 representations in the Vallum fill and the fort ditches are fairly low, at 17.3% and 18.0% (by count) respectively, and are close to the 20.8% from the Study Centre collection. They are also similar to proportions at other sites: Walton-le-Dale in the 2nd century (Evans and Rátkai in prep b), 10% at Hardknott (Bidwell *et al* 1999); 14% at Carlisle Blackfriars Street, (building 2, period 8b–j); 12%, 22%, and 17% (by RE) at Carlisle Castle Street (periods 8a, 8b and 9, respectively) (Taylor 1991).

BB1 is more common at Ambleside, forming 27% by count (although 14% by weight) of the 2nd-century group there (Leech 1982). Interestingly not only are BB1 proportions throughout north-west England fairly low in this period, compared with those in the later 3rd and earlier 4th centuries (Evans 1985), but there no sign of a fall-off in proportions from the coastal sites to Birdoswald.

Table 27 shows the functional analysis of BB1 vessels from the three key groups. Jars dominate the assemblages from the Vallum and the fort ditches, but the later pits are dominated by dishes. Table 28 shows the functional analysis of BB1 vessels

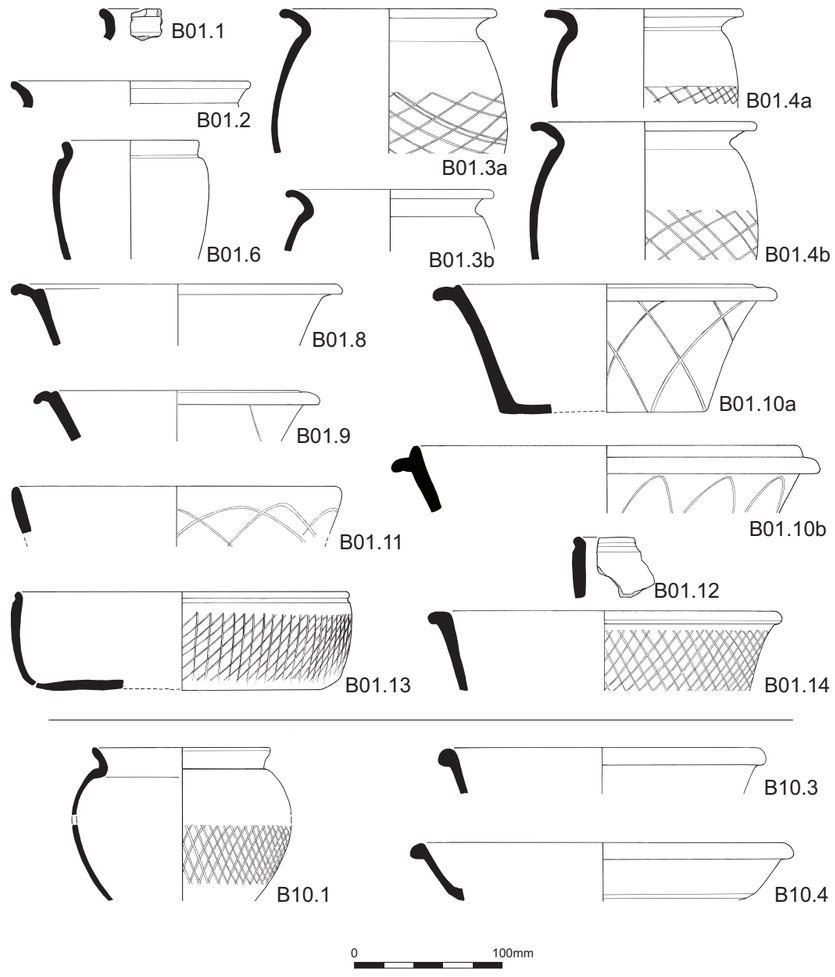


Fig 392
Birdoswald: pottery fabric series: Class B, Black-burnished wares.

from the entire assemblage from the Study Centre and the Spur. This assemblage is dominated by tablewares.

BB2 is absent from the Vallum fill, as, given its date, is expected, but represents 2.3% in the fort ditches. This is parallelled by 1.2% from Analytical Group 9 (Hird 1997, table 12, mislabeled group 8), one of the few groups from the fort of adequate size to produce reliable data (Hird 1997, 243). BB2 does occur west of Birdoswald, for example at Walton-le-Dale (Hird forthcoming) and at Carlisle (Taylor 1991), but at proportions below 1%. The BB2 associated type (Bidwell 1985b, 177), Gillam (1970) type 151, lid-seated jar, possibly

Table 27 Functional analysis of BB1 vessels from the Spur site (590).

dishes	*jars*	*bowls*	*beakers*	*phase*	*n*
50%	50%	–	–	A1, Vallum	10
29%	57%	14%	–	A3, fort ditches	14

Table 28 Functional analysis of BB1 vessels from the Study Centre (585) and Spur sites sites (590).

dishes	*jars*	*bowls*	*beakers*	*n*
38.7%	45.2%	14.5%	1.6%	62

produced at Mucking, is common at Birdoswald, although not at the Spur, which is its most westerly find spot to date, with several examples previously from the fort (Hird 1997, 237), supplemented by two examples from the Study Centre.

Fabric B01, BB1

B01.1 BB1 jars with acute lattice decoration; Hadrianic–mid-2nd century (see Groups A1 Fig 387, Nos 1–3; A2 Fig 388, No. 1; A3 Fig 389, No. 1) (Study Centre Phase 4, context 1092, Hadrianic–mid-Antonine)

B01.2 BB1 jars with acute lattice decoration; mid–later 2nd century (see Groups A2 Fig 388, Nos 2 and 3; A3 Fig 389, Nos 2, 3 and 5) (Study Centre Phase 5, context 1175, mid–later 2nd century)

B01.3 BB1 jars with obtuse lattice and strongly everted rims; 3rd century (see Group A3 Fig 389, No. 6) ((a) Spur unphased, context 2, early–mid-3rd century; (b) Spur Phase C2, context 207, early–mid-3rd century)

B01.4 BB1 jars with oversailing strongly everted rims; later 3rd–early 4th century ((a) Spur unphased, context 2, later 3rd–early 4th century; (b) Study Centre Phase 6a, context 393, 3rd century)

B01.5 BB1 jar with beaded rim; Hadrianic–mid-2nd century (see Group A1 Fig 387, No. 5)

B01.6 BB1 small jar or beaker (cf Gillam 1976, nos 19–21 and 24–29); Hadrianic–Antonine (Study Centre Phase 6b, context 1206)

B01.7 BB1 flange-rimmed bowl; Hadrianic–Antonine; the drawn example is probably mid–later 2nd century (see Group A3 Fig 389, No. 7)

B01.8 BB1 incipient beaded and flanged bowl with flange rising above bead (cf Gillam 1976, no. 42); later 2nd–early 3rd century (Study Centre unphased, context 205)

B01.9 BB1 incipient beaded and flanged bowl (cf Gillam 1976, no. 43); early–mid-3rd century (Study Centre Phase 6a, context 418)

B01.10 BB1 developed beaded and flanged bowl; later 3rd–4th century ((a) Study Centre Phase 6b, context 421; (b) Spur, unphased (Neolithic cist), context 223)

B01.11 Simple rimmed dish; 2nd–4th century (see Group A3 Fig 389, No. 8) (Study Centre Phase 6b, context 419, later 2nd–mid-4th century)

B01.12 Groove rimmed dish (cf Gillam 1976, nos 68–70); Hadrianic–Antonine (see Group A1 Fig 387, No. 6) (Spur Phase C2, context 207, later 2nd century)

B01.13 Grooved-rimmed dish with chamfered base (cf Gillam 1976, no. 52); probably early–mid-2nd century (Study Centre Phase 6a, context 1304)

B01.14 Flange-rimmed dish; Hadrianic–Antonine (see Groups A1 Fig 387, Nos 7 and 8; A3 Fig 389, Nos 9 and 10) (Study Centre Phase 1, context 1146, decorated with acute lattice, probably Hadrianic–mid-2nd century)

Fabric B10, BB2

B10.1 BB2 jar (Gillam 1970, type 144); later 2nd century (see Group A3 Fig 389, Nos 11 and 12) (Study Centre Phase 5, context 1303)

B10.2 BB2 bead-rimmed bowl with rather triangular section (Gillam 1970, type 222); *c* AD 150–210 (see Group A3 Fig 389, Nos 13 and 14)

B10.3 BB2 bowl (Gillam 1970, type 225); prob early–mid-3rd century (Spur unphased, context 38)

B10.4 Bead-rimmed dish with chamfered base (cf Gillam 1970, type 310); Antonine (Study Centre Phase 8, context 1006)

Class F: colour-coated wares (Fig 393)

Fabric descriptions

F01 Nene Valley colour-coated ware (Howe *et al* 1980); parchment ware fabric; Hird (1997) fabric 6

F02 Central Gaulish 'Rhenish ware' (Symonds 1992); Hird (1997) fabric 7a

F03 Oxfordshire colour-coated ware (Young 1977); Hird (1997) fabric 37

F04 Oxidised clay pellet roughcast ware; very hard, with grey core and orange-brown margins and surfaces, with occasional sand *c* 0.3-0.5mm; possibly Hird (1997) fabric 29

F05 Trier 'Rhenish ware' (Symonds 1992); Hird (1997) fabric 7b

F06 Nene Valley colour-coated ware (Howe *et al* 1980); oxidised ware fabric; Hird (1997) fabric 6

F07 Indented beaker bodysherd in an oxidised fabric with a thin orange-brown colour-coat; fabric has a blue-grey core and buff-orange margins, with common-abundant very fine sand < 0.05mm

F08 Oxidised fabric with a black colour-coat with an orange core and margins, with occasional-some sand *c* 0.1–0.2mm; Anderson's North Gaulish fabric 1 / 2

F09 Oxidised fabric with a thin matt dark brown colour-coat, with an orange core and brownish-orange margins and surfaces, with common fine silver mica and very occasional fine gold mica, 'clean', with common very fine white inclusions < 0.05mm, non-reactive to HCl

F10 Oxidised fabric with thin orange-black slip, probably burnished, with orange core and margins; 'clean', with rather laminar fabric

F11 Oxidised clay pellet roughcast fabric with a thin brown slip, rather 'soapy' with some sand *c* 0.2-0.3mm; perhaps Wilderspool (or possibly Walton); Hird (1997) fabric 29

F12 Brown colour-coated oxidised fabric with grey core and orange-brown margins, with occasional -some sand *c*0.05mm; probably Hird (1997) fabric 17

F13 Fine thin oxidised fabric; 'clean' and 'soapy'; rather laminar, with occasional fine sand *c* 0.1mm

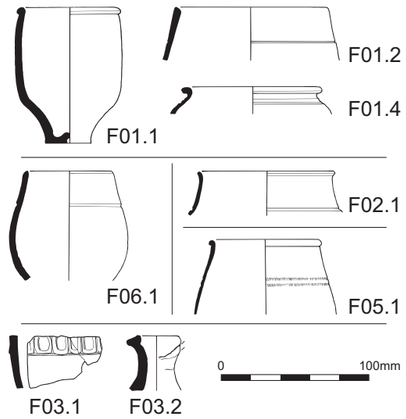


Fig 393
Birdoswald: pottery fabric series: Class F, Colour-coated wares.

Two fine ware fabrics appear in the Vallum fill (F11, F08). Nene Valley colour-coated wares F01 and F06 appear in Phase A3, along with Central Gaulish 'Rhenish' ware (F02). A series of minor brown/black oxidised colour-coated wares (F07, F10, F12 and F13) also appear in this phase. These latter are all probably of 2nd-century date.

The Spur pit groups produce the first occurrence of Trier 'Rhenish' ware (F05) although it is residual in this phase, along with Central Gaulish 'Rhenish' ware (F02) and a noticeable increase in the quantity of Nene Valley pottery. This proportion is comparable with the 3–5% that Nene Valley fabrics represent in the fort pottery assemblage (Hird 1997).

Hird does not tabulate the occurrence of oxidised roughcast fabrics (1997, fabric 29), but it may be presumed that they were of much more minor significance than the Nene Valley pottery, once that was available in the mid/later Antonine period. Nene Valley pottery easily outnumbers the 'Rhenish' wares as usual; but it is of note, given that Nene Valley pottery was arriving from the east coast, that it is still dominant here, whereas colour-coated roughcast wares, probably of north-western origin, are of more minor significance. Given the low proportion of 'Rhenish' wares from Walton-le-Dale, it seems likely that 'Rhenish' wares were also transmitted from the east coast.

Nene Valley wares and Rhenish wares did reach Lancashire sites, such as Walton-le-Dale, but there they were of minor significance compared with local fine ware from Wilderspool (and possibly from Walton), although they seem to have been of greater importance on Cumbrian coastal sites such as Carlisle (Taylor 1991). Ten Nene Valley rimsherds are represented in the recorded pottery from both sites, nine are beakers and one is a jar.

Fabric F01, Nene Valley colour-coated ware, parchment ware fabric

F01.1 Nene Valley bag beaker with beaded rim (cf Howe *et al* 1980, nos 26 and 28–9); *c* AD 160/70–250 (see Groups A2 Fig 388, No. 4; A3 Fig 389, No. 15) (Study Centre Phase 4, context 566)

F01.2 Nene Valley bag beaker with simple rim (cf Howe *et al* 1980, no. 44); *c* AD 160/70–250 (Spur Phase C2, context 219)

F01.3 Nene Valley necked beaker or jar (perhaps cf Howe *et al* 1980, nos 40–4); probably *c* AD 160/70–250 (see Group A2 Fig 388, No. 5)

F01.4 Small globular jar with everted rim and grooved shoulder (Spur unphased, context 38)

Fabric F06, Nene Valley colour-coated ware, oxidised fabric

F06.1 Bag beaker with a simple rim, grooved on the shoulder (cf Howe *et al* 1980, no. 44); *c* AD 160/70–250 (as F01.2) (Study Centre Phase 6b, context 419)

F06.2 Beaker or small jar with rising rim. See Group A3 Fig 389, No. 16

Fabric F02, Central Gaulish 'Rhenish' ware

F02.1 Necked 'Rhenish' ware beaker (cf Gillam 1970, type 45–46); *c* AD 150–200 (Study Centre Phase 6b, context 1206)

Fabric F05, Trier 'Rhenish' ware

F05.1 Ovoid beaker with beaded rim and rouletted line on shoulder (cf Gillam 1970, type 47); *c* AD 200–250 (Study Centre Phase 6a, context 418)

F03, Oxfordshire colour-coated ware

F03.1 Oxfordshire colour-coated body sherd, cordoned with alternating fingertip impressions and vertical strokes (perhaps cf decoration on Young 1977, type C84.3); probably 4th century (Study Centre Phase 8, context 1006)

F03.2 Oxfordshire colour-coated ware flagon with single handle and everted simple rim; type not in Young (1977); AD 240–400 (Study Centre Phase 8, context 1006)

Class G: gritted wares (Fig 394)

Fabric descriptions

G01 East Yorkshire calcite gritted ware, a reduced fabrics with abundant mineral calcite temper; Hird (1997) fabric 3

G11 Very hard fired reduced fabric with abundant angular translucent quartz temper *c* 1mm; possibly Derbyshire ware; Hird (1997) fabric 24

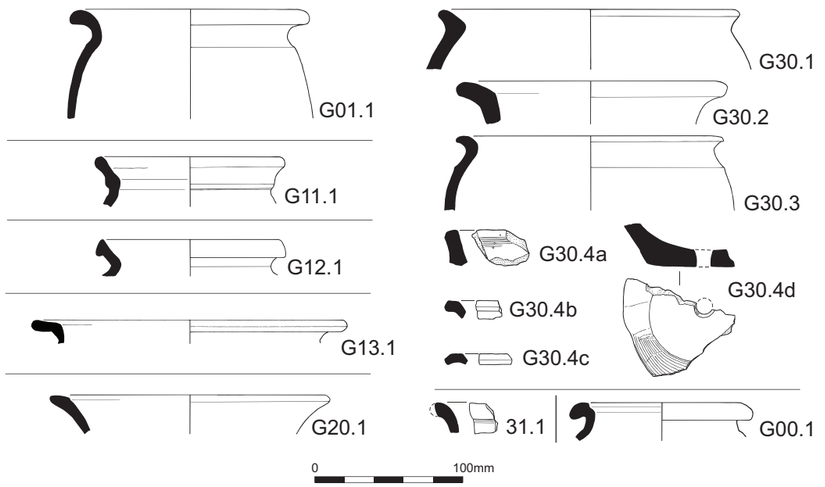


Fig 394
Birdoswald: pottery fabric series: Class G, Gritted wares.

G12 Reduced fabric with a dark grey core, light grey-brown margins and dark grey surfaces, with occasional-some coarse sand *c* 0.5mm. Dales type ware; possibly Hird (1997) fabric 16

G13 Reduced fabric with mid grey core, margins and surfaces with abundant sub-rounded translucent quartz *c* 0.5–0.7mm

G14 Handmade reduced gritted ware with grey core, margins and dark grey surfaces with common coarse quartz *c* 0.5–1mm and occasional sub-angular dark grey-black stone inclusions *c* 1–2mm

G20 Handmade reduced fabric with common shell-temper voids up to 8mm; Dalesware

G30 Handmade reduced fabric with black core, margins and brown-black surfaces with abundant very fine sand temper 0.05mm and occasional sand 0.5mm; Housesteads ware

G31 Handmade reduced fabric with black core, margins and surfaces, sometimes burnt brown, with common angular white quartz 1–2mm, some with gold mica attached, and common large gold mica *c* 0.5–1mm; granitic source of the temper unclear – Vince has suggested Charnwood, but a more local source seems likely; Anglo-Saxon, later 5th–7th century (Powesland and Haughton pers comm)

Gritted wares were rare at Birdoswald before the 4th century, and consequently throughout the sequence found in the excavations. Only one fabric of this class is recorded from the Vallum fill, a sherd of fabric G14 from context 6, which is intrusive. Gritted wares – small quantities of fabrics G12, G13 and G14 – first appeared non-intrusively in Phase A3. Fabric G12 was used for Dales type jars and G13 and G14 for lid-seated jars. The source of these fabrics is uncertain, but they seem likely to have an origin in north-east England. In Phase C2 a little Derbyshire ware occurs. Dalesware also occurs on the site, but not in any of the key groups; and from the 1987–93 fort excavations. It occurred first in the early–mid-4th century Analytical Group 9 (mislabeled on Tables 12–13 as Group 8). It is of note that no East Yorkshire calcite gritted ware comes from stratified deposits on the Spur. This demonstrates the lack of Roman pottery deposition here in the 4th century, as does the lack of Crambeck greyware, which only occurs intrusively.

Fabrics G30, Housesteads ware and G31, Saxon

There are 36 sherds of 'Housesteads ware' (G30) from the Spur. It is absent from the Vallum fill and is not generally found in the fort ditch fills (3 sherds from context 158, the penultimate fill of the middle ditch, where it is probably intrusive, as this feature is cut by the Phase C2 pit; and 8 sherds from context 136). Housesteads ware was also recovered on the Spur by Simpson and Richmond (1934). Most Housesteads ware comes from Trenches B and C. The significance of this material is discussed above (p 272–4).

Some post-Roman activity on the Spur is attested by the sherd of Charnwood Forest(?) Saxon pottery from pit 3 in Trench A and the other from the robbing of the Neolithic cist.

A small fragmentary jar rim sherd in the Charnwood Forest(?) Saxon fabric G31 was also recovered from Phase 8 deposits from the fort interior.

Petrology of Birdoswald Housesteads ware
by D F Williams

A previous thin section analysis of this ware revealed that it contained small inclusions of white felspar, although no more details were given and it was not said whether the pottery was likely to be local or imported (Jobey, 1979, 127 and 32). This latter point is particularly important as it could suggest a likely date for 'Housesteads ware'.

All 36 sherds were initially examined with a binocular microscope (20). Detailed individual sherd descriptions appear in the Project Archive.

Ten thin sections were examined. All show a very similar range of non-plastic inclusions and can be regarded as a cohesive fabric group. The clay groundmass contains frequent ill-sorted subangular to subrounded, and sometimes rounded, quartz grains (average size 0.10–0.80mm), together with small flecks of mica (mostly muscovite). Also present are moderately frequent small discrete laths of plagioclase felspar, sometimes with graphic texture, and, to a slightly lesser extent, small grains of pyroxene (mostly clinopyroxene).

In all thin sections there were several small pieces of a moderately basic crystalline igneous rock with dominant lath-shaped grains of plagioclase felspar, occasionally accompanied by crystals of pyroxene, and a little quartz, alkali felspar and rare biotite mica. In a larger piece of rock of similar composition in one sample these can be identified as quartz-dolerite. The discrete plagioclase and pyroxene grains that characterize these thin sections no doubt derive from this parent rock.

Fragments of quartzose-sandstone, pieces of a silica-rich rock (possibly chert), occasional siltstone/mudstone and opaque iron oxides are also present in a number of the samples. In addition, a large fragment of compact fine-grained volcanic rock and a small piece of metamorphic rock appear in Sample 8, and a large grain of tourmaline(?) in Sample 2.

There are also distinctive elongated voids, which once contained organic material, in all the samples, and in the hand specimen. Some of these voids still retained the carbonized material.

The non-plastic inclusions in these thin sections indicate an origin in an area dominated by quartz-dolerite rocks, but also of sedimentary rocks such as sandstones and siltstones/mudstones. The volcanic and metamorphic inclusions in Sample 8 and the grain of tourmaline(?) in Sample 2 suggest that Boulder Clays were used or were in the vicinity. On this basis, an origin in Friesland in the northern Netherlands, as suggested by Ager (1980), an area mostly covered with Quaternary deposits, seems unlikely. Instead, the range of rocks and minerals described above closely mirrors the geology of the central sector of Hadrian's Wall, where the three main find-sites for Housesteads Ware – Housesteads, Birdoswald and Vindolanda – are situated.

This stretch of country is dominated by the natural landform of the Great Whin Sill (a quartz-dolerite formation) and associated dykes. Local quartz-dolerite was used for much of the Wall fill between Sewingshields and Greenhead (Johnson 1997, 13 and fig 1). Outcrops of the Whin Sill occur two and a half miles south-east and south of Birdoswald (Geological Survey 1-inch Map of England Sheet 18; Trotter and Hollingworth 1932) and just to the north of Vindolanda (Geological Survey 1-inch Map of England Sheet 19). Housesteads fort is actually situated along the scarp of the Whin Sill itself (Johnson 1997, 48; Geological Survey 1-inch Map of England Sheet 13) and Whin Sill dolerites are said to be 'abundant' in the local Boulder Clays (Frost and Holliday 1980, 75). If there was just one production site supplying this pottery to these sites, then the area immediately around Housesteads was in the best position regarding these rock and mineral inclusions. Further work is needed before a more precise position can be suggested, but for the present the available evidence points to an origin along the central section of Hadrian's Wall for Housesteads ware.

A further interesting feature found in the Birdoswald sherds, heretofore unreported, is the presence of organic material in the pottery. This is visible in the hand specimen but more conspicuous in thin section. The thin elongated voids suggest grasses, and the carbonized material in some vesicles might be wood. It is uncertain whether these inclusions occurred naturally in the clay or were added as temper. Finally, as Housestead ware forms resemble some Frisian forms, it would be useful to examine contemporary Frisian pottery for such 'organic tempering'.

Fabric G01, East Yorkshire calcite gritted ware

G01.1 Proto-Huntcliff type jar (Gillam 1970 type 161), *c* AD330–350/70. (Study Centre Phase 6b, context 1206)

Fabric G11, Derbyshire(?) ware

G11.1 Collared everted-jar rim in fabric suggesting Derbyshire ware (cf Rocester; Leary 1996, no. 125); probably Antonine (Study Centre Phase 6b, context 421)

Fabric G12, Dales type ware

G12.1 Dales type jar; probably later 3rd–4th century (Spur Phase A3, context 50)

Fabric G13

G13.1 Lid-seated necked jar; probably 3rd–4th century (Spur unphased, context 223)

Fabric G14

G14.1 Dales type jar, slightly lid-seated (cf Catterick; Bell and Evans forthcoming, type J12.5) (see Group A3 Fig 389, No. 17)

Fabric G20, Dalesware

G20.1 Dalesware Dales type jar (Loughlin 1977); 3rd–4th century (Spur unphased, context 205)

Fabric G30, Housesteads ware

G30.1 Jar with everted rim and fingertip decoration on rim edge (cf Jobey 1979, fig 4, no. 14 and fig 5, no. 17) (Spur Phase B2, context 147)

G30.2 Wide-mouthed jar (or bowl) with everted rim, burnished internally and externally (Spur Phase C2, context 207)

G30.3 Jar with everted rising rim and cordoned shoulder, externally burnished (Spur Phase C2, context 207)

G30.3 (a) Jar rim fragment with everted rising, squared rim (perhaps cf Jobey 1979, fig 2, no. 22) (Spur Phase B5, context 126)

G30.3 (b) Jar rim fragment (perhaps cf Jobey 1979, fig 4, no. 7) (Spur Phase C2, context 204)

G30.3 (c) Jar rim fragment (Spur Phase C2, context 226)

G30.3 (d) Jar base sherd with post-firing hole neatly drilled through the base (Spur Phase C2, context 226)

(see Group A3 Fig 389, No. 18)

Fabric G31, Saxon

G31.1 Rim fragment from an everted rimmed jar; perhaps later 5th–7th century (Powesland and Haughton, pers comm), probably Charnwood Forest (A Vince, pers comm) (Study Centre Phase 8, context 1006)

Fabric G00

G00.1 Huntcliff type jar rim, later 4th century, in a fabric with calcite voids (common) and coarse sand (common) and flint (occasional) (possibly Evans 1985, fabric 282) (Study Centre Phase 8, context 1005)

Fig 395
Birdoswald: pottery fabric series: Class M, Mortaria stamps.

Class M: mortaria (Fig 395, 396)

Fabric descriptions

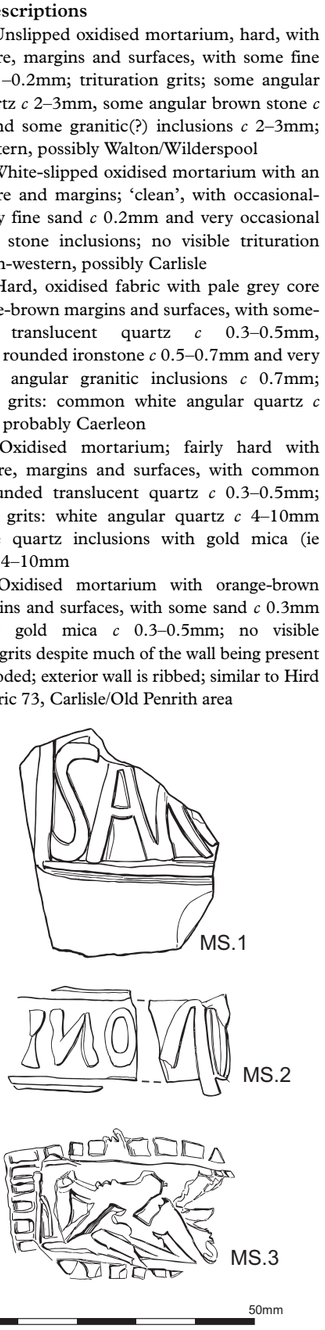
M01 Unslipped oxidised mortarium, hard, with orange core, margins and surfaces, with some fine sand *c* 0.1–0.2mm; trituration grits; some angular white quartz *c* 2–3mm, some angular brown stone *c* 2–3mm and some granitic(?) inclusions *c* 2–3mm; north-western, possibly Walton/Wilderspool

M02 White-slipped oxidised mortarium with an orange core and margins; 'clean', with occasional-some fairly fine sand *c* 0.2mm and very occasional granitic(?) stone inclusions; no visible trituration grits; north-western, possibly Carlisle

M03 Hard, oxidised fabric with pale grey core and orange-brown margins and surfaces, with some-common translucent quartz *c* 0.3–0.5mm, occasional rounded ironstone *c* 0.5–0.7mm and very occasional angular granitic inclusions *c* 0.7mm; trituration grits: common white angular quartz *c* 1–3.5mm; probably Caerleon

M04 Oxidised mortarium; fairly hard with orange core, margins and surfaces, with common coarse rounded translucent quartz *c* 0.3–0.5mm; ttituration grits: white angular quartz *c* 4–10mm and white quartz inclusions with gold mica (ie granitic) *c* 4–10mm

M05 Oxidised mortarium with orange-brown core, margins and surfaces, with some sand *c* 0.3mm and some gold mica *c* 0.3–0.5mm; no visible trituration grits despite much of the wall being present and not eroded; exterior wall is ribbed; similar to Hird (1997) fabric 73, Carlisle/Old Penrith area

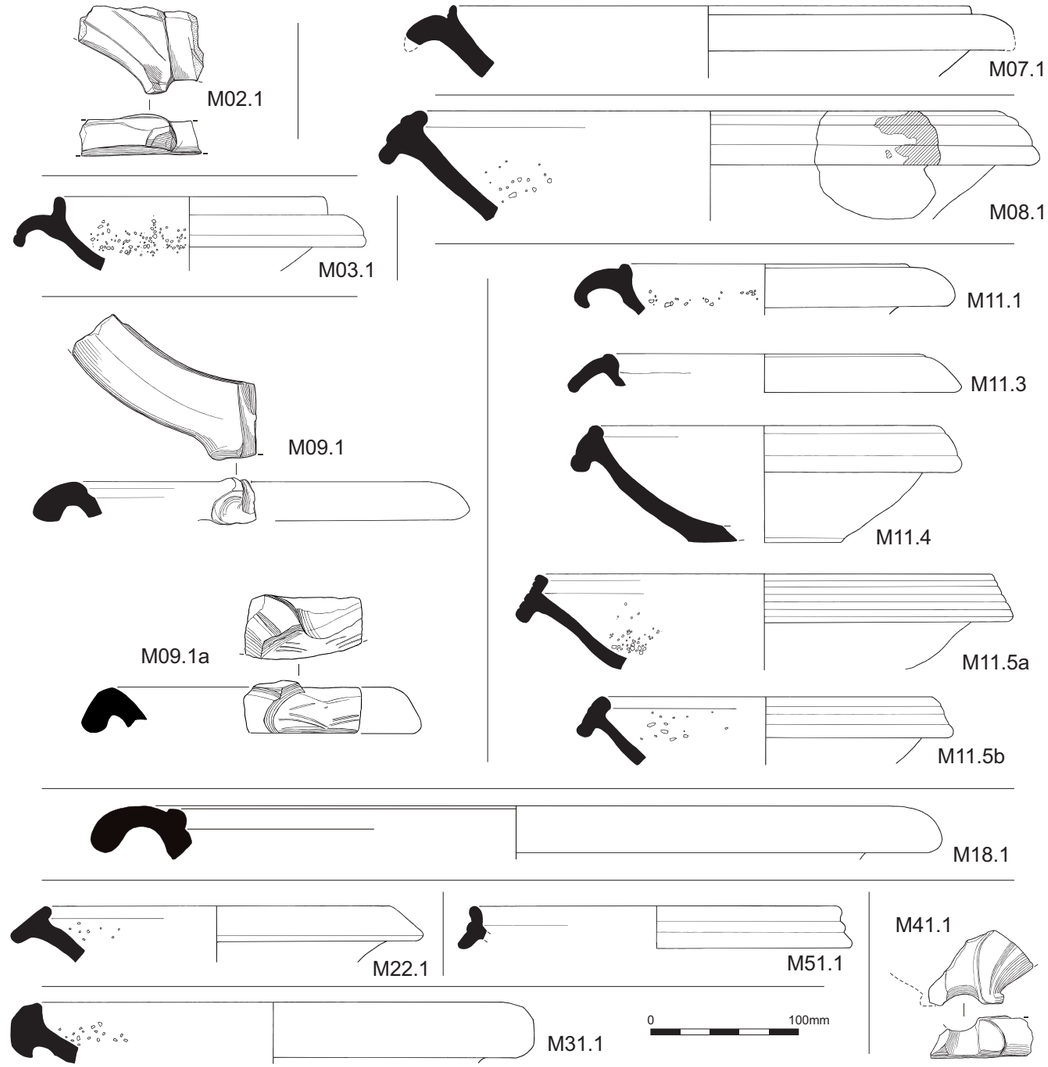


M06 Oxidised mortarium with brownish-orange core, margins and surfaces, with very occasional sand *c* 0.3mm, occasional-some fine organics *c* 0.3mm and some very fine silver mica; fabric similar to O12; trituration grits: angular translucent and white quartz and feldspar and occasional angular black stone *c* 1.5mm and sub-rounded brown stone *c* 1.5mm and sub-rounded white stone *c* 1.5mm; north-western

M07 Oxidised mortarium with brownish-orange core and orange margins and surfaces with common-abundant fine sand *c* 0.1–0.2mm and very occasional red rounded ironstone *c* 1mm, occasional fine silver mica and very occasional coarse sandstone inclusions with cemented sand grains *c* 0.2mm trituration grits: white sub-angular quartz *c* 2mm and very occasional granitic inclusions *c* 3mm; north-western

M08 Oxidised mortarium; a sub-Raetian type, with orange-brown core, margins and surfaces with red slip on the rim, with common sand *c* 0.2–0.3mm and occasional sub-rounded sand *c* 0.5mm; trituration grits: common rounded white and translucent quartz *c* 1mm and some angular

Fig 396
Birdoswald: pottery fabric series: Class M, Mortaria.



red-brown ironstone *c* 1.5–2.5mm and very occasional sub-rounded granitic inclusions *c* 5mm; as Hird (1997) fabric 57, Carlisle area

M09 Oxidised mortarium; a Raetian type with red slip on the rim, with an orange-brown core, margins and surfaces, with occasional-some sand *c* 0.2–0.5mm; probably same source as M08; as Hird (1997) fabric 54, Carlisle area

M11 Whiteware mortarium in a white pipeclay fabric; Mancetter-Hartshill; trituration grits: common red/black angular grog

M12 Whiteware mortarium, with abundant fine sand temper *c* 0.05–0.1mm; Crambeck early fabric, perhaps *c* AD 285–350/70; trituration grits: common angular black slag *c* 1–5mm

M13 Whiteware mortarium with buff-white core, margins and surfaces, with some sub-rounded quartz *c* 0.3–0.6mm and common fine silver mica; trituration grits: common sub-rounded quartz *c* 1.5–3mm (generally *c* 1.5mm), some sub-angular red ironstone *c* 2mm and some brown rounded granitic(?) inclusions *c* 2mm; probably north-eastern (KFH)

M14 Whiteware mortarium fabric, with buff-white core, margins and surfaces, with occasional-some rounded orange grog(?); inclusions *c* 0.25mm and occasional rounded red ironstone *c* 0.2-0.5mm; Nene Valley mortaria, 3rd–4th century; trituration grits: angular black slag *c* 0.5–3.5mm

M15 Buff fabric with pale yellow-brown core, margins and surfaces, with occasional-some sand *c* 0.25mm; trituration grits: sub-angular brown stone inclusions *c* 2.5mm and brown sub-angular granitic inclusions *c* 2.5–3.5mm; trituration grits appear to be water-worn, perhaps from a river gravel; northern, possibly Corbridge, perhaps early 2nd century

M16 Whiteware mortarium with white core, margins and surfaces, with common fine sand temper *c* 0.1mm; trituration grits: common fine angular black slag *c* 1–2mm; later 4th century Crambeck parchment ware

M17 Whiteware mortarium with a pale grey core and buff-white margins and surfaces, with abundant fine sand *c* 0.1–0.2mm; trituration grits: sub-angular orange grog *c* 1.5–3mm and some angular red ironstone *c* 1–1.5mm; perhaps a Coal Measures clay; northern

M18 Buff-whiteware with buff-yellow core, margins and surfaces, 'soapy' and 'clean'; no visible trituration grits; north-western (KFH)

M21 Oxfordshire colour-coated ware mortaria (Young 1977); oxidised fabric with orange core and margins and eroded red slip on surfaces, with occasional sand *c* 0.1–0.2mm; trituration grits: polycrystalline white, translucent and pink quartz *c* 1.5–3mm; Hird (1997) fabric 67

M22 White-slipped oxidised fabric with brownish-orange core and margins, with thin white slip, with abundant sand *c* 0.2–0.25mm; probably Catterick, possibly Binchester (or Cantley); trituration grits: angular black slag *c* 1–2mm; Hird (1997) fabric 58

M23 White-slipped oxidised fabric with an orange core and margins, with white-slipped surfaces, with common-abundant sand *c* 0.2–0.3mm; possibly Catterick or Cantley; no trituration grits visible

M31 Whiteware with a cream-white core, margins and surfaces, with occasional sand *c* 0.5mm; trituration grits: sub-rounded quartz *c* 1.5mm; Colchester

M41 Hard white-slipped oxidised fabric with orange core, grey margins and orange surfaces coated with a thick white slip, with common coarse sand *c* 0.3–0.4mm and occasionally *c* 0.5–0.8mm; trituration grits: common rounded brown stone *c* 1.5–2mm, some angular translucent quartz *c* 1.5mm and occasional granitic(?) inclusions *c* 1.5–2mm; Hird (1997) fabric 74, Hird no 260 in this fabric being stamped by a potter working in the Petteril Valley, probably at Scalesheugh

M43 Oxidised white-slipped fabric with orange core and margins, 'soapy', hard, very 'clean'; trituration grits: sub-angular brown granitic inclusions *c* 1.5–3mm and occasional angular quartz *c* 2.5mm

M44 White-slipped oxidised fabric with grey core and orange margins, with common coarse translucent sand *c* 0.4–0.5mm; trituration grits: sub-angular white quartz *c* 1.5–3mm

M45 Oxidised fabric with grey core and buff-orange margins and surfaces, fairly 'soapy' with some sand *c* 0.1mm and occasional ironstone *c* 0.2–2mm; trituration grits: sub-angular white quartz *c* 1.5–2.5mm; north-western (KFH)

M46 Oxidised fabric with orange core, margins and surfaces, 'soapy' with occasional sand *c* 0.2mm and occasional rounded brown ironstone *c* 0.4–1.5mm; trituration grits: sub-angular white quartz *c* 1.5–2mm and occasional rounded red-brown micaceous sandstone *c* 3mm; north-western, possibly Walton-le-Dale/Wilderspool

M47 Oxidised fabric, hard, with a grey core, orange-brown margins and surfaces with a Raetian red slip on the rim, with some sand *c* 0.3–0.4mm; no visible trituration grits; similar to Hird (1997) fabric 57; Carlisle area

M48 White-slipped oxidised fabric with orange core and margins with thin white slip on surfaces, with common-abundant very fine sand *c* 0.05mm; surfaces finely micaceous; trituration grits: angular white quartz *c* 0.5–1.5mm

M49 White-slipped oxidised mortarium with an orange core and margins, 'clean', with occasional-some fairly fine sand *c* 0.2mm and very occasional stone inclusions; no visible trituration grits; Cantley or north-eastern England

M51 Reduced ware mortarium with grey core, margins and dark grey slipped surfaces, with abundant coarse sand *c* 0.3–0.7mm; no visible trituration grits

All the mortaria, both stratified and unstratified, from the fort and Spur excavations have been examined in detail. Given the date range of most of the excavated deposits, and the high level of residuality of excavated material in the fort, most of the mortaria are 2nd century, some 3rd century, and a few 4th century. The previous fort excavations, with mainly late Roman groups, give a good idea of mortarium supply to the site in the later 3rd and 4th centuries (Hird 1997).

Table 29 shows the proportions of fabrics recorded. There is a wide range of fabrics represented, particularly of 2nd-century date. Among the 2nd-century oxidised mortaria most seem to be of north-western origin, although some material from north-eastern England is also present.

Three specific sources can be identified in north-western fabrics: Walton-le-Dale (/Wilderspool), Carlisle and Scalesceugh, as well as much that probably comes from the region but cannot be specifically attributed to source. It is of note that Brampton mortaria (readily identifiable in form) are absent, despite the proximity of its kiln site, and the presence of coarse wares that might be from that source (below, Fabrics O04, O05).

Much possible Walton pottery is present from the earlier 2nd century, as it is present in the Vallum fill, as might be expected given the dating evidence from Walton itself. Other mortaria are possibly from Scalesceugh; and an equal number from the Carlisle area. Scalesceugh mortaria appears exclusively in the earlier 2nd century, while many of the Carlisle examples are Antonine Raetian types. It is of note that there is no Antonine Raetian Walton fabric (Evans and Rátkai in prep b, fabric M31). Small amounts of mortaria are from the north-east and possibly Corbridge, in the early–mid-2nd century; also some from Cantley or the north-east, exemplified by the stamped piece of Sarrius (MS1).

Mancetter mortaria represent a major element of supply from the mid-2nd century. They are absent from the Vallum fill, and the typological indications suggest most of the 2nd-century examples in the assemblage are mid–later 2nd century. At this date little north-western oxidised pottery remains, although the Carlisle Raetian forms appear at this time. Other notable later-2nd-century vessels are from Colchester and Caerleon. Colchester mortaria were imported by sea to the east end of the Wall, as the distribution of stamped vessels demonstrates (K F Hartley paper at Carlisle SGRBP conference 1999).

The presence of Caerleon mortaria is surprising, as it is not generally found in the north-west. It is, however, complemented by a stamped Caerleon vessel from Birdoswald recorded by Hartley (K F Hartley paper at Carlisle SGRBP conference 1999), the only such piece recorded on Hadrian's Wall. (A link between Birdoswald and Caerleon is also indicated by the metalwork – see Cool, this volume p 362, 365 – possibly movement between sites and legionary deployment.)

Table 29 Mortaria fabric proportions in the whole Study Centre (585) and Spur (590) sites assemblage.

fabric	*source*	*% no. of sherds*	*% wt*
M01	NW, Walton/Wilderspool	8.0	7.4
M46	NW, Walton/Wilderspool?	6.3	9.5
M02	NW, prob Carlisle area	2.8	2.3
M08	NW, Carlisle	0.6	2.2
M09	NW, Carlisle	2.2	4.4
M47	NW, Carlisle	0.6	0.2
M05	NW, Carlisle/Old Penrith area	0.6	1.0
M41	NW, Scalesceugh	5.7	7.6
M43	NW	2.3	1.3
M44	NW	1.7	1.1
M45	NW	13.1	5.7
M04	NW	3.4	2.6
M06	NW	0.6	0.3
M07	NW	2.8	3.0
M18	NW	0.6	1.1
M15	North, poss Corbridge	2.8	3.6
M17	North	0.6	1.5
M13	NE	1.1	1.0
M22	Catterick/Binchester	0.6	1.0
M23	Catterick	0.6	0.2
M49	Cantley/NE	0.6	0.2
M12	Crambeck, earlier 4th century	1.1	1.0
M16	Crambeck, late 4th century	0.6	0.3
M03	Probably Caerleon	2.3	3.2
M11	Mancetter-Hartshill	33.0	33.5
M14	Nene Valley	0.6	0.5
M21	Oxford colour-coated	0.6	0.3
M31	Colchester	1.1	3.0
M51	E England	1.1	0.5
M48	?	1.7	0.5

This mortaria assemblage has limited 3rd-century evidence, but it is clear that 3rd-century supply was dominated by Mancetter products (cf Hird 1997). There are also small numbers of Nene Valley whiteware mortaria and of Catterick (or possibly Binchester) Cantley tradition hammerhead vessels. There is little evidence in this assemblage of 4th-century date, but it is clear from Hird's analytical groups (Hird 1997) that the Mancetter material is joined by Nene Valley and Crambeck products in the early 4th century, although Mancetter appears to remain dominant.

In the later 4th century, as on sites throughout the region, Crambeck was the dominant supplier, with little other material (Hird 1997). A sherd of Oxfordshire colour-coated ware is probably later 4th century, as Oxfordshire colour-coats generally only arrive in the north late in the 4th century.

How does mortaria supply at Birdoswald compare with regional patterns?

In general, in the north-east and north-west, early 2nd-century supply is dominated by oxidised, sometimes white-slipped, vessels, usually from small workshops. Numbers decline markedly in the mid-2nd century and Mancetter mortaria (sometimes present in small numbers in the early 2nd century) became the dominant supplier in most areas by the late Antonine period. In the north-west, however, Raetian tradition mortaria continued to be made at Wroxeter, Wilderspool, Walton-le-Dale and Carlisle. Mancetter mortaria are almost universally dominant in the 3rd century, except at Catterick, where Cantley-tradition mortaria were made, and supplied to other sites in small quantities. In the earlier 4th century Mancetter supply was largely replaced by Crambeck products in the north-east, but probably less so in the north-west. In the later 4th century Crambeck mortaria dominate. Thus the Birdoswald mortaria supply is broadly typical of the region.

Hartley has pointed out that north-western mortaria do not penetrate east of Birdoswald and north-eastern mortaria very rarely reach east of the site, based on a tabulation of the mortarium stamps occurring along Hadrian's Wall (KF Hartley paper at Carlisle SGRBP conference 1999). Thus Birdoswald seems to be the boundary in supply zones along the Wall. The distribution of Gillam type 151 (1970) also seems to follow this division, but BB1 does not.

Hartley's stamp evidence also reinforces the importance of Walton/Wilderspool and Carlisle in Birdoswald's mortaria supply, and, to a lesser extent, Scalesceugh (K F Hartley paper at Carlisle SGRBP conference 1999). There are so far no mortaria stamps from Lincoln, Aldborough or Wroxeter from Birdoswald.

Mortaria stamps (Fig 395)
by K F Hartley

MS1 Flange fragment in a fine-textured orange-brown fabric with cream slip; moderate, very ill-sorted, tiny to medium sized quartz, quartz sandstone, opaque cream (non-reactive), and grey inclusions. The fragmentary stamp SAR is from a rarely used die of Sarrius, now recorded from Birdoswald, Birrens, Carlisle and Corbridge (2 stamps probably from the same vessel). Only the Birrens and Corbridge fragments are large enough to have trituration grit, but examination of these suggest that the die concerned was used at an unknown centre in the north-east, possibly in Yorkshire (see Hartley forthcoming a).

Sarrius was the most prolific potter stamping mortaria in the 2nd century, but he was most exceptional in having at least four workshops – in the midlands, the north of England and Scotland. His workshop (or workshops) in the Mancetter-Hartshill potteries in Warwickshire was of major importance and the evidence suggests that mortaria were being produced there throughout the period of his activity. His subsidiary workshops were at Rossington Bridge, near Doncaster (Hartley forthcoming a), Bearsden on the Antonine Wall (Hartley forthcoming b) and at an unlocated site in north-east England.

The date of Sarrius's activity is assessed from the abundance of his work at forts on the Antonine Wall, its absence from forts unoccupied *c* AD 120–60, his rim forms and his probable association with Iunius at one of his Mancetter kilns. A stamp from Verulamium is dated *c* AD 155–60 (Hartley 1972, no. 35), and one from a Period 1A deposit at Birdoswald suggests that he was at work before AD 140 (Birley 1930, 187, no. 2, 'with illegible stamp'). The evidence points to his overall activity being between AD 135 to 165–70. The date of his activity at Bearsden must have fallen within the period AD 142–58, possibly AD 150–58, the preferred date for the occupation of the fort (Breeze forthcoming), but there is no such evidence to date the activity of his other workshops in the north. Nor is there any evidence to show how far they functioned simultaneously. However, they must all have been active within the period AD 140–70. Compared with his Warwickshire potteries, his northern workshops are poorly represented, so that we may reasonably assume that none of these had a long life. (Study Centre Phase 4, context 1279, fabric M49)

MS2 Two joining sherds in a fine-textured cream fabric with self-coloured slip; moderate, ill-sorted, quartz and few opaque orange-brown inclusions. Few trituration grits survive, all blackish ?brown, and probably a representative sample.

This broken stamp is from a die that reads MINOM retrograde, when complete. Sixty of his mortaria have now been noted from occupation sites in England and Wales, and five from sites in Scotland (Bearsden, Mumrills, Newstead (2), and Rough Castle). One of his kilns has been excavated at Hartshill, Warwickshire. It is believed that Bearsden was occupied for only a short period, perhaps even as short as AD 150–58. The optimum date for his work is AD 130–160, and the range of his rim profiles would best fit an early Antonine date. (Study Centre Phase 4, context 1279, fabric M11, form M11.1)

MS3 Six joining sherds and two other joining flange fragments from the same mortarium in a hard fabric varying from orange-brown at the base to a sandwich fabric in the flange and body, consisting of orange-brown with blackish core and almost chocolate brown inner core; cream slip. The moderate to fairly frequent, random and ill-sorted inclusions are mostly, if not solely, quartz. The trituration grit consists of mixed quartz (main constituent), quartz sandstone, sandstone, opaque red-brown and black material. The incompletely impressed but clear stamp is of the trademark type and otherwise unrecorded. The form with distal bead in this fabric indicates a source in the western sector of Hadrian's Wall and the Stanegate, the pottery at Scalesceugh would obviously be a possibility. The rim-profile would best fit a Trajanic–Hadrianic date and would be unlikely to be later than Hadrianic. (Spur Phase A1, context 739, fabric M41, form M41.2)

MS4 Sherd in a fine-textured, orange-brown fabric with a thin grey core; moderate, extremely tiny quartz inclusions with some orange-brown material. No slip survives and the mortarium may have been self-coloured; the fabric is powdery to the touch. Few trituration grits survive, all quartz. There are 13 fragments; two or possibly three bear what is probably the right-facing stamp; two other fragments join and a single sherd has part of what is presumably the left-facing stamp. Unfortunately, neither stamp, nor any other fragment can be joined to the single substantial sherd that shows the rim profile and part of the body. Both stamps are so eroded that only the plain border is visible. The fabric and form would best fit with manufacture in the north, probably the north-west, within the period AD 120–160. (Spur Phase A1, context 739, fabric M45, form M45.1)

Mortaria petrology
by D F Williams

Eight mortaria sherds were studied macroscopically with a binocular microscope (20), then examined in thin section under the petrological microscope. Munsell Colour charts are referred to together with free descriptive terms.

The petrological results described below suggest that two of the mortaria (M45.1 and M46.1) are similar enough to have been made at the same production centre; possibly MO1.1 also, which may be a more sandy version. While the other five vessels share some points in common, either in the texture of the groundmass or the range of non-plastic inclusions present, no two are an identical fabric match.

The range of non-plastic inclusions in MO9.1 and two further samples of unillustrated vessels (see project archive for detail) include fragments of plutonic and volcanic igneous rocks and associated minerals. Sourcing, however, is not easy: the fragments are small and weathered, making close attribution difficult; the plutonic and volcanic igneous inclusions are accompanied by sandstone, siltstone, shale, mudstone and chert; and little petrological work has been done on mortaria fabrics.

This particular range of inclusions/temper does not seem to have been described previously. The varied range and texture of these inclusions, both in the vessel fabrics and in the trituration grits, suggests a source utilizing glacial drift or river gravels. Birdoswald is in an area of Lower Carboniferous Limestone with sandstone; and quartz diorite outcrops are near by. There are large deposits of Sherwood Sandstones and Mercian Mudstone to the

west, and much of the region is covered with Boulder Clays (Geological Survey 1-inch Map of England Sheet 18; Johnson 1997). Local glacial deposits contain many igneous erratics, including material derived from Scottish suites and the Borrowdale Volcanic Series of the Lake District (Trotter and Hollingworth, 1932).

This range of materials is to some extent mirrored in the Birdoswald mortaria fabrics, and it is possible that some or all of the eight mortaria fabrics were made in the vicinity. With no clay sampling or comparative work on locally made pottery, however, this is speculation.

(Comments below by K F Hartley acknowledged as 'KFH'.)

Fabric M01

M01.1 Beaded and flanged mortarium with bead and flange about level; evenly curving flange in a very hard-fired sandy fabric; reddish-buff outer surfaces (7.5YR 7/4), grey core (2.5Y 5/). Thin sectioning shows frequent ill-sorted subangular quartz grains ranging up to 0.60mm in size. Also present are small flecks of muscovite mica, some small discrete grains of plagioclase felspar, a single grain of microcline felspar, a few rounded grains of chert, a little shale, sandstone, some small worn pieces of an acid igneous rock, possibly a diorite and opaque iron oxide. Perhaps Hadrianic–early Antonine; possibly Walton-le-Dale/Wilderspool. (see Group A3 Fig 389, No. 19)

Fabric M02

M02.1 2nd-century mortarium spout; north-western, probably Carlisle (Study Centre Phase 6a, context 500)

Fabric M03

M03.1 Caerleon Beaded and flanged mortarium with high bead rising well above the outcurving flange, which is grooved at the end. 'The rim-profile with high bead and rounded flange with distal bead, when combined with the fabric and trituration grit, is typical of mortaria made in the 2nd century potteries at Caerleon (Hartley 1993, 411–14 and 392. These potteries appear to have been active within the period AD 110–80 and while there is insufficient evidence to date its forms closely, this one is more likely to be AD 130–80 than earlier (Hartley 1993, fig 194, nos 16–19)' (KFH). (Study Centre Phase 4, context 1279)

Fabric M07

M07.1 Beaded and flanged mortarium with a high bead rising above an outcurving flange, broken at the distal end, Antonine; north-western (Study Centre Phase 8, context 1006)

Fabric M08

M08.1 Raetian type hammerhead mortarium with reeded rim and Raetian slip on rim (cf Hartley 1997, fig 2, type F); *c* AD 180–220; probably Carlisle (Study Centre Phase 8, context 1006)

Fabric M09

M09.1 Raetian type mortarium of Hartley's (1997) class E; probably Antonine; probably Carlisle. A hard sandy fabric, light reddish-buff outer surfaces (2.5YR 6/8 – 7.5YR 7/8) and light grey core (7.5YR N7). Thin sectioning shows a slightly finer-textured, more micaceous groundmass than sample MO1.1, containing silt-sized quartz grains and frequent flecks of mica. Also present are moderately frequent, fairly well sorted quartz grains generally below 0.40mm diam, small fragments of siltstone, a small weathered piece of volcanic rock, one or two small discrete grains of plagioclase felspar, a little chert and opaque iron oxide. (Study Centre Phase 8, context 852)

M09.1(a) Mortarium spout fragment with a Raetian slip (possibly Hartley 1997, class F); north-western, probably Carlisle area (Study Centre Phase 8, context 1005)

Fabric M11

M11.1 Mancetter-Hartshill beaded and flanged mortarium with bead above evenly curving flange, hooked at the distal end; *c* AD 140–80. Stamped with MS2 retrograde, Milomelus. (Study Centre Phase 4, context 1279)

M11.2 Beaded and flanged mortarium with bead above flange, which is outcurving but fairly straight; *c* AD 160–200 (see Group A3 Fig 389, No. 20)

M11.3 Beaded and flanged mortarium with bead over straight outsloping flange; *c* AD 170–200 (Study Centre Phase 8, context 14)

M11.4 Hammerhead mortarium with cordon at the top and bottom of the flange; *c* AD 200–220/30

M11.5 Reeded hammerhead mortarium; *c* AD 220–350 ((a) Spur Phase C2, context 207; (b) Study Centre Phase 8, context 1007)

Fabric M15

M15.1 Beaded and flanged buff-yellow mortarium with flange rising above bead, evenly curving, grooved on the distal end; earlier 2nd century; northern, possibly Corbridge (KFH) (see Group A1 Fig 387, No. 9)

Fabric M18

M18.1 Beaded and flanged mortarium with bead and flange about level with evenly outcurving, thickening flange; probably early–mid-2nd century; north-western (KFH) (Spur Phase B5, context 101)

Fabric M22

M22.1 Reeded, hammerhead mortarium (cf Catterick (Hartley and Evans forthcoming) type M92-7); probably *c* AD 250–350; Catterick area or possibly Binchester or Cantley (Study Centre Phase 8, context 1006)

Fabric M31

M31.1 Mortarium with a heavily beaded flange (perhaps cf Gillam 1970, type 355); AD 150–70; Colchester (KFH) (Study Centre Phase 8, context 1006)

Fabric M41

M41.1 Spout from a beaded and flanged mortarium, early 2nd century; probably Scalesceugh. A very hard-fired sandy fabric, reddish-buff outer surfaces (7.5YR 7/4), grey core (2.5Y 5/). Thin sectioning shows frequent ill-sorted subangular quartz grains ranging up to 0.60mm in size; also small flecks of muscovite mica, some small discrete grains of plagioclase felspar, single grain of microcline felspar, a few rounded grains of chert, a little shale, sandstone, some small worn pieces of an acid igneous rock, possibly a diorite and opaque iron oxide. (Study Centre Phase 8, context 303)

M41.2 Beaded and flanged mortarium with flange rising well above bead, flange outcurving, grooved at the end, AD 120–30 (KFH). Stamp MS3 Probably Scalesceugh (see Group A1 Fig 387, No. 10)

Fabric M45

M45.1 Beaded and flanged mortarium with flange rising well above bead; Hadrianic. Unidentifiable stamp fragment MS4 north-western. Both this and M46 fabric appear similar in the hand specimen and in thin section. They have a soft, fairly fine-textured fabric, light red throughout (2.5YR 6/8). A scatter of well rounded pieces of mudstone are visible in the fabric. The trituration grits are mostly composed of large quartz grains, but there is also some weathered igneous and sedimentary material. Thin section shows groundmass containing frequent silt-sized quartz grains and flecks of muscovite and biotite mica; also scatter of larger grains of quartz, well rounded pieces of red mudstone, several very small grains of clinopyroxene, a few discrete grains of plagioclase and potash felspar, a little chert and some opaque iron oxide. (see Group A1 Fig 387, Nos 11 and 12)

Fabric M46

M46.1 Beaded and flanged mortarium with flange rising above bead, evenly curving and down-turned; probably Hadrianic–early Antonine; north-western, possibly Walton-le-Dale/ Wilderspool (see Group A3 Fig 389, Nos 21 and 22)

Fabric M49

M49.1 Stamped mortarium flange fragment, Stamp MS1, 'SAR', Sarrius, north-east England; *c* AD 135–70. Fig 395 (Study Centre Phase 4, context 1279)

Fabric M51

M51.1 An unusual reduced ware hammerhead mortarium, with central cordon; 3rd–4th century; eastern England (Study Centre Phase 8, context 1006)

Class O: oxidised wares (Fig 397)

Fabric descriptions

O01 Oxidised fabric with orange core, margins and surfaces with common-abundant moderate sand *c* 0.3mm

O02 Oxidised fabric with purplish-orange core, margins and orange surfaces, with common fine sand *c* 0.1mm and some fine silver mica

O03 Oxidised fabric with orange core, margins and surfaces, 'soapy', 'clean' with very occasional sand *c* 0.3mm

O04 Oxidised fabric with orange core, margins and surfaces, 'soapy', fairly 'clean' with very occasional sand *c* 0.5mm and occasional white and red angular stone *c* 2mm and very occasional angular sandstone up to 2mm; fabric is similar to that of Brampton mortaria

O05 Oxidised fabric with an orange core, margins and surfaces, often soft and 'soapy' with some moderate sand temper *c* 0.3mm; Brampton fabric no. 1

O06 Oxidised fabric, sometimes with a grey core, with orange margins and surfaces, with common fine sand *c* 0.2mm

O07 Oxidised fabric with a buff core, margins and surfaces, soft, 'soapy', with some sand *c* 0.2mm

O08 Oxidised fabric with orange core, margins and surfaces, with abundant coarse sand temper *c* 0.5–1mm

O09 Oxidised fabric with a grey core and orange margins and surfaces, with common fine organic voids *c*0.4mm, very occasional sand *c* 0.3mm and very occasional angular white quartz up to 2.5mm; probably Severn Valley ware

O10 Oxidised fabric with orange core, margins and surfaces, with common fine white inclusions *c* 0.05mm, non reactive to HCL; interior appears slipped

O11 Oxidised flagon fabric with buff-brown core, margins and surfaces, with common moderate sand temper *c* 0.2–0.3mm and some rounded red ironstone *c* 0.5–1mm

O12 Oxidised fabric with orange-brown core, margins and surfaces, with occasional moderate sand *c* 0.3mm and some fine organic inclusions *c* 0.5mm; possibly Brampton fabric no. 2, although that is sandier

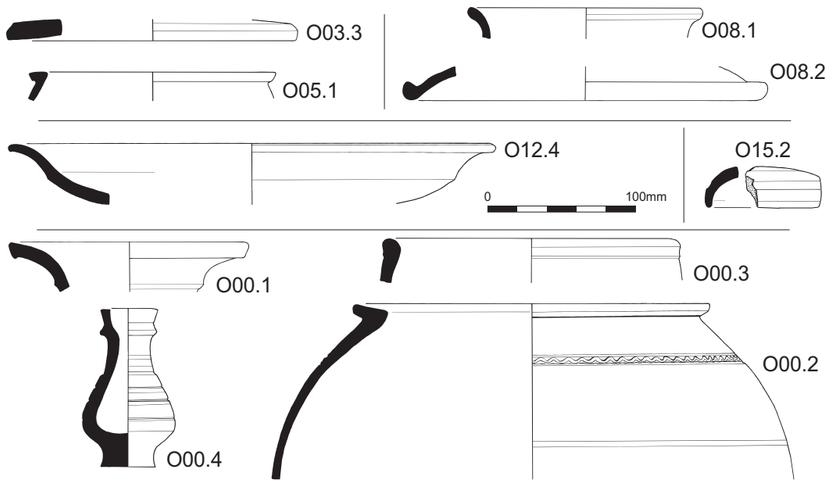


Fig 397
Birdoswald: pottery fabric series: Class O, Oxidised wares.

O13 Oxidised fabric with orange-buff core, margins and surfaces, with some coarse sand *c* 0.3–0.5mm

O14 Hard oxidised fabric with thin grey or orange core, orange-brown margins and surfaces, with common angular coarse quartz *c* 0.5–2mm

O15 Soft oxidised fabric with buff-brown core, margins and surfaces, with common coarse quartz sand temper *c* 0.4–0.5mm

O18 Oxidised fabric with orange core, margins and surfaces, fairly 'soapy', 'clean', some very fine sand *c* 0.05mm, very occasional sand *c* 0.5mm and occasional-some fine vegetable voids up to 3mm

O19 Oxidised fabric with an orange-buff core, margins and surfaces, with occasional-some sand *c* 0.3mm and occasional-some rounded orange grog/clay pellet inclusions *c* 0.5–2mm

O20 Oxidised fabric with an orange-buff core, margins and surfaces, soft, 'soapy', 'clean' with some rounded red ironstone *c* 0.5–2mm

Oxidised wares are strongly represented in the Vallum fill group, comprising 21.5% (by count), 15.4% (by weight), but decline to 10.7% (by count), 9.7% (by weight) in the fort ditches, and 14% in the pits on the Spur (all of which is probably residual). Oxidised ware proportions from the Study Centre is 13.8% (by count), 13.1% (by weight). In the primary fort occupation from the 1987–93 excavations it is 27.2% (by count), 16.6% (by weight), and in Analytical Group 1 – representing pre-Stone Fort material – it is 30.7% (by count), 30.0% (by weight, excluding amphorae and samian).

These data suggest that proportions of oxidised ware were falling significantly between the Hadrianic and later Antonine periods at the site. The data from the Spur suggest that oxidised wares were being replaced by greywares, the latter increasing from 22.2% of the Vallum fill to 39.7% of the fort ditches. These data probably reflect a real trend, but the pre-Stone Fort group from the 1987–93 excavations produced 49.5% greywares (by count, excluding amphorae and samian).

Four main fabrics are represented: O03, a 'soapy', 'clean' fabric; O05, a 'soapy' fabric with moderate sand, possibly Brampton; O12, a fabric with occasional moderate sand and fine organic voids; and O19, a fabric with moderate sand and some clay pellets. There is no indication

Table 30 Functional analysis of oxidised wares from the Study Centre (585) and Spur (590) sites.

flagons	*constricted-necked jars*	*storage jars*	*jars*	*beakers*	*bowls*	*dishes*	*lids*	*other*
3.1%	6.3%	3.1%	25.0%	6.3%	18.8%	25.0%	9.4%	3.1%

n = 32 rims

from the A1 to A3 sequence of any major changes in sources of supply through time. The one potentially later type is fabric O18 – Severn Valley ware – which appears first in Phase A3. Fabrics O14 and O15 also do not appear before Phase A3, whereas fabrics O02, O07 and O10 appear only residually in Phase A3/A4.

The form range in these fabrics includes BB dish and bowl copies, a few constricted-necked jars, simple rimmed carinated dishes and bowls, a single reeded-rimmed bowl, and a strainer jar. This last is an unusual vessel, unlike the usual 'wine cooler' bowl form (Gillam 1970, type 349; Martin forthcoming). Another unusual piece, in fabric O05, is a *patera* handle (O05.A).

Table 30 shows the functional composition of vessels in oxidised fabrics from the Study Centre and from the Spur. The majority of forms are tablewares (44%), plus 25% jars, and remainder flagons, other liquid containers, beakers and lids.

Fabric O01

O01.1 Constricted-necked jar with everted, rising rim (see Group A3 Fig 389, No. 23)

O01.2 Flange-rimmed dish, probably a BB copy; probably Hadrianic–Antonine (see Group A3 Fig 389, No. 24)

O01.3 Lid with a beaded rim (see Group A3 Fig 389, No. 25)

Fabric O03

O03.1 Flange-rimmed bowl, probably a BB copy; Hadrianic–Antonine (see Group A3 Fig 389, No. 26)

O03.2 Carinated dish with everted, rising rim, internally grooved; probably Hadrianic–Antonine (see Group A1 Fig 387, No. 13)

O03.3 Simple rimmed lid (Spur Phase A4, context 12)

Fabric O04

O04.1 Jar(?) with everted, rising rim (see Group A1 Fig 387, No. 14)

Fabric O05

O05.1 Jar with horizontal rim (possibly cf Gillam 1970, type 27); 2nd century (Spur Phase A4, context 1)

O05.2 Carinated bowl with everted, tapering, triangularly-sectioned rim; 2nd century (see Group A1 Fig 387, Nos 15 and 16)

O05.3 Carinated(?) bowl with outcurving, rising rim; probably 2nd century (see Group A1 Fig 387, No. 17)

O05.4 Flange-rimmed dish, probably a BB copy; Hadrianic–Antonine (see Group A1 Fig 387, No. 18; A3 Fig 389, No. 27)

Patera handle (see Group A3 Fig 389, No. 28)

Fabric O06

O06.1 Small bag beaker with beaded rim; probably 2nd century (see Group A1 Fig 387, No. 19)

Fabric O08

O08.1 Jar with everted, rising rim (Spur Phase A4, context 12)

O08.2 Lid with beaded rim (Spur unphased, context 35)

Fabric O11

O11.1 Carinated dish with everted rim, internally grooved (similar to OO3.2); probably 2nd century (see Group A3 Fig 389, No. 29)

Fabric O12

O12.1 Bead rimmed jar; probably 2nd century (see Group A1 Fig 387, No. 20)

O12.2 Reeded-rimmed carinated bowl rim, Flavian–Trajanic (see Group A1 Fig 387, No. 21)

O12.3 Flange-rimmed dish, probably a BB copy; Hadrianic–Antonine (see Group A3 Fig 389, No. 30)

O12.4 Carinated dish with everted, horizontal rim (Gillam 1970, type 338); *c* AD 130–60 (Spur Phase A4, context 1)

Fabric O15

O15.1 Fragment of everted, rising storage jar(?) rim (see Group A3 Fig 389, No. 31)

O15.2 Flange fragment (Spur Phase U/S, context 707)

Fabric O18

O18.1 Severn Valley type ware constricted-necked jar with slightly hooked rim (Spur Phase C2, context 207) (not illustrated)

Fabric O19

O19.1 Strainer jar with everted rim; 2nd century (see Group A1 Fig 387, No. 22)

Fabric O00

O00.1 Constricted-necked jar with long everted rim and cordoned shoulder (Study Centre Phase 6a, context 500)

O00.2 Jar with flange rim, as O05, J1.1 (Study Centre Phase 5, context 1234)

O00.3 Bowl with beaded rim and curving wall (Study Centre Phase 6a, context 422)

O00.4 O1.1 Fairly complete unguentarium (cf Gillam 1970, type 36); *c* AD 90–160, in a 'clean' buff fabric (Study Centre Phase 8, context 852)

Class Q: white-slipped flagons

Fabric descriptions

Q01 White-slipped oxidised fabric with orange core, margins and surfaces with common fairly fine sand *c* 0.2mm; fabric very similar to O05

Q02 White slipped(?) oxidised fabric with orange core, margins and surfaces, 'clean', with very occasional sand *c* 0.5–0.8mm

Q03 White-slipped oxidised fabric with an orange core, margins and surfaces, with abundant very fine sand < 0.05mm

Q04 White-slipped oxidised fabric with orange core and margins, with some moderate sand temper *c* 0.3–0.5mm

White-slipped, oxidised flagon fabrics are rare throughout the sequence, although commoner in Phase A1, after which they may be residual. In Phase A1 they comprise 4.0% (by count), 2.4% (by weight) and in Phase A3 0.4% (by count), 0.1% (by weight). Similarly, a proportion of 0.2% at the Study Centre suggests little use of these fabrics after the Hadrianic–early Antonine period.

Fabric Q02

Q02.1 Ring-necked flagon with prominent upper bead; later 1st–early 2nd century (see Group A1 Fig 387, No. 23)

Class R: reduced wares (Fig 398)

Fabric descriptions

R01 Reduced fabric with a grey core, sometimes grey-brown margins and grey-dark grey surfaces with some-common moderate sand temper *c* 0.3mm and occasional larger quartz up to 1mm; similar to Brampton fabric no. 7

R02 Reduced fabric, generally with a grey core, margins and with grey-dark grey surfaces with common fine sand *c* 0.1mm; possibly Brampton

R03 Reduced fabric with a grey core, margins and generally mid grey surfaces, 'soapy', 'clean', with occasional fine sand *c* 0.1mm and occasional-some organic voids *c* 0.1–1mm; probably Brampton fabric no. 9

R06 Hard reduced fabric with a grey core, white margins and mid grey surfaces, 'clean' with some fine sand temper *c* 0.1mm

R07 Hard reduced fabric with a grey core, margins and surfaces, with a 'crisp' break with some-common moderate sand *c* 0.2–0.3mm

R08 Fine reduced greyware with a dark grey core, buff-brown margins, and dark grey surfaces, 'soapy', with some rounded ironstone *c* 0.3mm; Hird (1997) fabric 15

R09 Reduced fabric with mid grey core and margins and black slipped surfaces, 'soapy' with some fine silver mica and occasional sand *c* 0.2mm

R10 Reduced fabric with a dark grey core, pale grey margins and dark grey surfaces, with some angular sand *c* 0.3–0.5mm

R11 Reduced fabric with white or pale grey core, margins and mid-dark grey surfaces, with abundant fine sand temper *c* 0.05–0.1mm; Crambeck greyware; Hird (1997) fabric 4

R12 Hard reduced fabric with a 'crisp' break with a mid grey core, margins and surfaces, with occasional-some angular translucent sand *c* 0.3–0.5mm

R14 Reduced fabric with orange or mid grey core and grey margins and surfaces, 'soapy', with common rounded ironstone *c* 0.5mm and some fine silver mica

R15 Reduced fabric with a grey core, grey-brown margins and grey surfaces, with abundant fine sand *c* 0.05mm and common fine silver mica

R17 Reduced fabric with mid grey core, margins and dark grey surfaces, with common coarse angular translucent quartz temper *c* 0.3–1mm

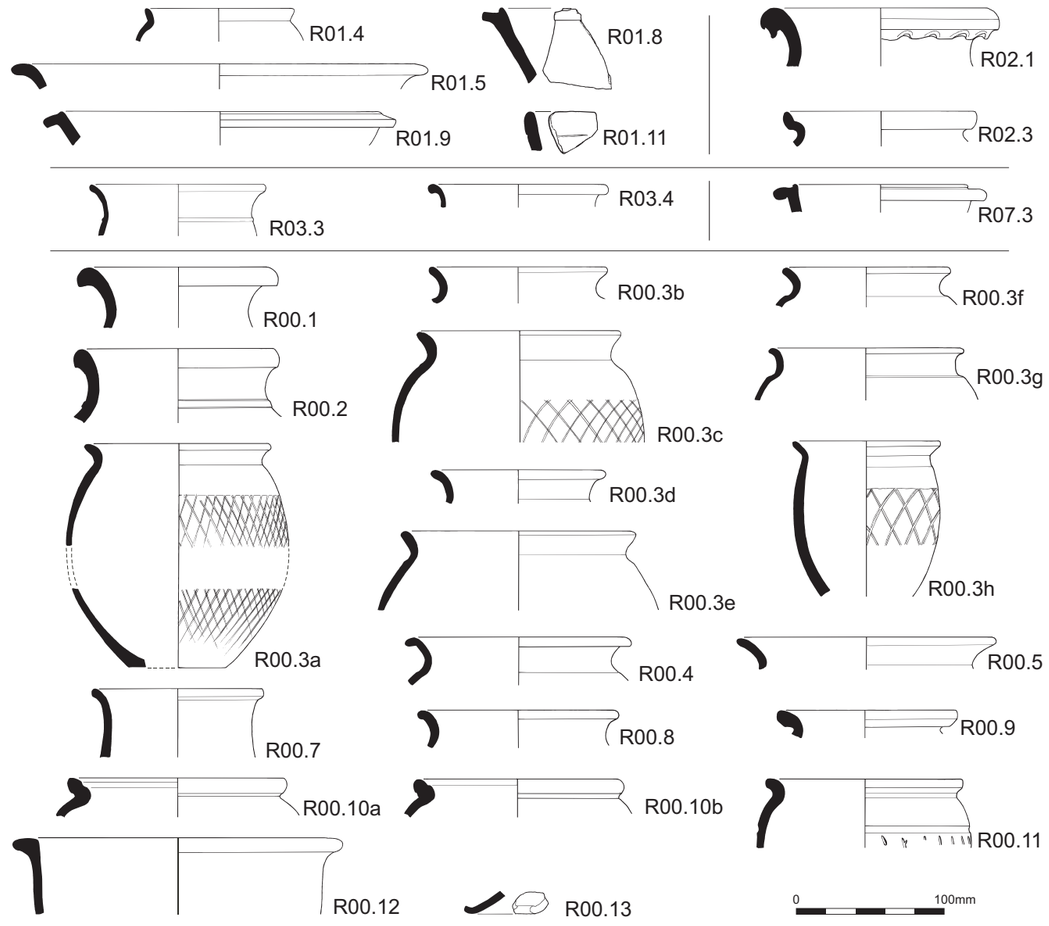
R19 Reduced fabric with a blue-grey core with mid grey margins and surfaces, with abundant sub-angular and rounded brown ironstone *c* 0.2–0.3mm and common large ironstone *c* 1–3mm, and occasional very fine silver mica; perhaps Brampton fabric no. 7

R20 Hard, overfired, reduced sand roughcast fabric with a dark blue-grey core, margins and surfaces, with some-common sand temper *c* 0.3mm

Reduced wares comprise a major element of the assemblages, as might be expected: 21.9% (by count), 19.0% (by weight) of the Phase A1 assemblage and 39.2% (by count), 25.7% (by weight) of the Phase A3 one.

Greywares continued to be supplied to the site in the later 3rd century. A few examples occur in developed beaded and flanged bowl forms from late contexts on the Spur and in the fort, although their proportion in the pottery assemblage was fairly low, while BB1 increased its proportion of the market. Analytical Group 14 (Hird 1997, Tables 12–13, labelled group 13) provides some data with greywares as little as 9.0% by the mid-4th century.

This pattern of greywares, mainly in BB copies, dominating supply in the Hadrianic–Antonine period and the early 3rd century, is typical of north-eastern England. The main fabrics are R01, with common moderate sand; R02, with common fine sand; R03, a 'soapy', 'clean' fabric with occasional organic voids; and R07, a hard fabric with a 'crisp' fracture and



common moderate sand temper.

R01, R02, R03 and R07 are present in all three groups. R01 and R03 – and perhaps R02 and R19 also – seem to originate at the Brampton kilns, eight miles from Birdoswald. R01, the commonest group comprising 11.9% of A1 and 20.9% of A3, consists mainly of BB copy jars, dishes and bowls, of 2nd- to the later3rd/early 4th-century date. Forms in R02 include a 2nd-century BB copy jar, but also a 3rd-century bell-mouthed jar and a 3rd-century constricted-necked jar with piecrust rim, while R03 includes an early 2nd-century poppyhead beaker and Hadrianic–Antonine BB copies.

If the identification of these fabrics with the Brampton kiln is correct, the assemblage suggests that there are other kilns at Brampton that post-date those excavated. Forms in R07 include a 2nd-century BB copy jar and a later 3rd–4th-century developed beaded and flanged bowl.

Table 31 shows the functional analysis of greywares from the Spur. Unusually, the Phase A1 group is dominated by tablewares, probably reflecting the

Fig 398
Birdoswald: pottery fabric series: Fabric Class R, Reduced wares.

Table 31 Functional analysis of reduced wares by phase from the Spur site (590).

Phase	*dishes*	*jars*	*bowls*	*beakers*	*lids*	*other*	*n*
A1	53%	27%	7%	–	13%	–	15
A3	38%	50%	3%	6%	–	3%	32
pits	30%	70%	–	–	–	–	10

overall dominance of tablewares in this assemblage. Subsequent assemblages are dominated by jars, as is usually the pattern in the north, and as in the Study Centre assemblage.

Fabric R01

R01.1 Greyware BB jar copies with acute lattice; Hadrianic–Antonine (see Group A1 Fig 387, Nos 24 and 25; A3 Fig 389, No 32)

R01.2 Greyware BB jar copies; early–mid-3rd century (see Group A3 Fig 389, Nos 34, 35, 36, 37 and 38)

R01.3 Everted-rimmed jar with thickened rim (see Group A3 Fig 389, No. 39)

R01.4 Small globular jar with everted rim (cf Gillam 1970, type 102); probably Flavian–Trajanic (Spur unphased, context 205)

R01.5 Wide-mouthed jar with everted, rising rim (Spur Phase C2, context 207)

R01.6 Bead-rimmed bowl(?) rim fragment (see Group A3 Fig 389, No. 40)

R01.7 Flange-rimmed bowl, a BB copy; Hadrianic–early 3rd century (see Group A1 Fig 387, Nos 26, 27, 28 and 29)

R01.8 Greyware developed beaded and flanged bowl; later 3rd–mid-4th century, probably later 3rd century (Spur unphased, context 229)

R01.9 Incipient beaded and flanged bowl; probably early–mid-3rd century (Spur Phase C2, context 207)

R01.10 Groove-rimmed dish; probably a Hadrianic–Antonine BB copy (see Group A3 Fig 390, No. 41)

R01.11 Simple rimmed dish (Spur unphased, context 229)

R01.12 Curving-walled dish(?) with grooved rim (see Group A1 Fig 387, No. 30)

R01.13 Curving-walled dish with a flange rim, probably a BB copy; Hadrianic–early 3rd century (see Group A1 Fig 387, No. 31; A2 Fig 388, No. 6)

R01.14 Straight-walled dish with a flange rim, a BB copy; Hadrianic–early 3rd century (see Group A2 Fig 388, No. 7; A3 Fig 390, Nos 42, 43, 44, 45, 46 and 47)

R01.15 L1.1 Lid with triangularly-sectioned rim (see Group A1 Fig 387, No. 32)

Fabric R02

R02.1 Constricted-necked jar with beaded rim with piecrust decoration; probably 3rd century or later (Spur Phase C3, context 200)

R02.2 Jar rim fragment with squared end. (See Group A3 Fig 390, No. 48)

R02.3 Bell-mouthed lid-seated jar rim; probably 3rd–4th century (Spur unphased, context 205)

R02.4 BB copy jar rim; perhaps Hadrianic–early Antonine (see Group A3 Fig 390, No. 49)

Fabric R03

R03.1 BB copy jar rim; Hadrianic–Antonine (see Group A3 Fig 390, No. 50)

R03.2 Everted rimmed jar, probably a BB copy; perhaps Hadrianic–early Antonine (see Group A1 Fig 387, No. 33)

R03.3 Jar with fairly tall, everted rim and cordoned shoulder, possibly a poppyhead beaker; early 2nd century (Spur unphased, context 38)

R03.4 Necked jar with everted, slightly beaded rim (Spur Phase C2, context 201)

R03.5 Small jar/beaker with beaded rim (see Group A1 Fig 387, No. 34)

R03.6 Greyware jar, probably a copy of a BB small jar/beaker; Hadrianic–Antonine (see Group A3 Fig 390, No. 51)

R03.7 Grooved-rim dish; probably a Hadrianic–Antonine BB copy (see Group A1 Fig 387, No. 35)

R03.8 Simple rimmed lid (see Group A1 Fig 387, No. 36)

R03.9 Cheese press (Gillam 1970, type 350), with parallel dated AD 140–200 (see Group A3 Fig 390, No. 52)

Fabric R06

R06.1 Groove-rimmed dish, much eroded (see Group A3 Fig 390, No. 53)

Fabric R07

R07.1 Everted-rimmed jar; perhaps a later 2nd century BB copy (see Group A3 Fig 390, No. 54)

R07.2 Everted-rimmed jar rim, grooved on the tip and with cordoned shoulder (see Group A3 Fig 390, No. 55)

R07.3 Greyware developed-beaded and flanged bowl; later 3rd–4th century, probably later 3rd century (Spur Phase B2, context 150)

Fabric R00

R00.1 Constricted-necked jar with everted, slightly undercut rim (Study Centre Phase 6a, context 418)

R00.2 Constricted-necked jar with slightly undercut rim and cordoned shoulder (Study Centre Phase 6a, context 418)

R00.3 BB copy greyware jars with acute lattice decoration; Hadrianic–Antonine ((a) Study Centre, Phase 1, context 1146, black slipped; (b) Study Centre Phase 6a, context 1177; (c) Study Centre Phase 5, context 1175; (d) Study Centre Phase 5, context 1015; (e) Study Centre Phase 6b, context 1116; (f) Study Centre Phase 6a, context 1192, black slipped; (g) Study Centre Phase 6b, context 397; (h) Study Centre Phase 8, context 1006).

R00.4 BB copy greyware jars with cavetto-like rim; probably early–mid-3rd century (Study Centre Phase 6a, context 393)

R00.5 BB copy greyware jar with strongly everted rim; 3rd century (Study Centre Phase 6a, context 422).

R00.7 Carinated (?) Jar with slightly everted rim (Study Centre Phase 6a, context 393)

R00.8 Carinated(?) Jar with everted rim (Study Centre Phase 6a, context 393)

R00.9 Jar with everted, triangularly-sectioned rim (Study Centre Phase 6a, context 393)

R00.10 Jar of Gillam type 151, a BB2 associated type, probably from Mucking (Bidwell 1985); early–mid-3rd century ((a) Study Centre Phase 6a, context 422; (b) Study Centre Phase 6b, context 421)

R00.11 Rustic ware jar with short everted rim (cf Gillam 1970, type 97); *c* AD 80–130 (Study Centre, context 526, Phase 4)

R00.12 Bowl with a flange rim, Hadrianic–early 3rd century BB copy (Study Centre Phase 6b, context 421)

R00.13 Lid with slightly everted rim (Study Centre Phase 4, context 1035)

ClassW: white wares (none illustrated)

Fabric descriptions

W01 'Clean' whiteware with some fine silver mica and some fine voids *c* 0.3mm and occasional rounded orange inclusions *c* 0.5mm

W02 Whiteware with some fine sand temper *c*0.1mm and occasional rounded orange inclusions *c* 0.3–0.5mm; possibly Brampton fabric no. 5

W03 Whiteware with a rather laminar fabric with occasional sand *c* 0.3mm

W04 Buff-white fabric with common fairly coarse sand temper *c* 0.4–0.5mm

W05 AWhiteware with common very fine sand temper < 0.05mm, occasional red ironstone *c* 0.3mm and some fine silver mica

samian ware

by S H Willis

315 sherds of samian pottery were recovered from the excavations on the Spur, representing a total weight of 2072gms. Samian items were recovered from 53 Spur contexts. The assemblage has a total RE value of *c* 3.40. The chronology of the assemblage is consistent with the dates of the coarse ware reported above. Overall, sources of the samian and the representation of particular sources is as might be predicted. The bulk is Central Gaulish Lezoux ware, plus some earlier Les Martres ware, consonant with an early Hadrianic date for the start of concerted Roman activity in this area.

A few La Graufesenque vessels are also represented, being curated items at the end of their life-spans in the earlier Hadrianic period. The East Gaulish ware present has a strong 2nd-century emphasis, with little necessarily dating to the 3rd century.

The samian sherds from the Spur are in a poor state of preservation. A high degree of fragmentation is manifest and sherds have been subject to chemical weathering, with the loss of their gloss surfaces in many instances. These taphonomic aspects hinder refinement in typological identification and dating. Many items from Lezoux can only be assigned to a comparatively broad date of *c* AD 120–200.

The Spur samian, nonetheless, is extremely important. It provides significant dating information for understanding of the development of the Birdoswald complex, and is relevant to Wall studies more generally.

A full catalogue, by phase, is given in Appendix 5, Table 72.

Chronology and sources

The samian catalogue for the Spur (Appendix 5, Table 74) provides information on the date of each item. Important vessels chronologically are fully described and illustrated within assemblage discussions below.

The earliest activity identified during the excavations was the cutting and filling of the Vallum, which, on historical evidence, should date from the Hadrianic period. The date of the samian from this feature, and from the excavations as a whole, agrees with this.

The earliest samian from the site comprises five sherds of South Gaulish ware from La Graufesenque, all of Flavian–early Trajanic date (see Catalogue). In other words these items are all late products for this source. All five sherds are residual in their contexts and derive from several form types. They are likely to represent vessels that arrived at Birdoswald near the ends of their lives, perhaps as individual possessions among kit and accoutrements. The continued use of some South Gaulish La Graufesenque samian vessels into the early decades of the 2nd century is strongly attested elsewhere (cf Willis 1998).

There are only three sherds of Les Martres samian, dating *c* AD 100–130. Their proportion in the assemblage is low, which is comparable to the sample from the 1987–92 Birdoswald excavations. One sherd, probably from an 18/31 dish, came from the Vallum fill (context 6). The other two were residual, probably examples of Drag 18/31R and 27. That Les Martres ware is so meagrely represented in this sample suggests that there was no

concerted activity or an occupied fort complex at Birdoswald until after the main floruit of Les Martres. It seems that there were few consignments from Les Martres reaching Birdoswald in the early Hadrianic period.

In sum, the low proportions of La Graufesenque and Les Martres samian shows no pre-Hadrianic activity at Birdoswald and a concerted presence only from *c* AD 125 or later, after Les Martres had been largely superseded by Lezoux as the main source of samian used in Britain. If the military at the site were receiving fresh issues of the most recently manufactured Lezoux ware, then the date might have been marginally earlier (*c* AD 120).

Lezoux ware dominates the samian assemblage. There are two items of late first- or early 2nd-century date – that is, preceding the main export period of Lezoux: a Déchelette 67 (*c* AD 70–120) and a Drag 18 or 18/31 (*c* AD 90–120). Notably, both 'early' types come from Phase 1 – the Vallum fill, context 6. The bulk of the Lezoux samian, however, dates from *c* AD 120–200. Unfortunately, because of its poor preservation, a fair amount of this samian can only be generally dated to *c* AD 120–200. Nonetheless, a number of chronological trends are observable.

Table 32 Summary of the chronology of the samian from the Spur site (590).

Period	*no. of vessels represented*
Flavian–early Trajanic	5
Flavian–Trajanic	1
late Flavian–Trajanic	1
Trajanic–early Hadrianic	3
late Trajanic–Antonine	1
Hadrianic	2
Hadrianic–early Antonine	24
Hadrianic–mid-Antonine	2
Hadrianic–Antonine	160
late Hadrianic–mid-3rd century	8
early Antonine	2
Antonine	23
Antonine–early 3rd century	10
mid-Antonine–late Antonine	20
late Antonine	4
late Antonine–mid-3rd century	3
early–mid-3rd century	1
total	*270*

Fig 399 plots the date of the samian assemblage independent of context, showing frequency by date, using the same formula as for Fig 385 (p 301). Incidence by Imperial period is listed in Table 32.

Fig 399 shows a stark 'n' curve, and some subtler trends. It shows the presence of the few pieces of late 1st–early 2nd-century La Graufesenque, Les Martres and early Lezoux wares. Then the dramatic increase, from *c* AD 120, of Lezoux samian. The top of the curve to AD 200 shows two trends, for which more refined datings are possible. First, an apparent general increase in samian through the 2nd century, a pattern consistent with trends at other sites occupied during the 2nd century (cf Willis 1998). Second, a dip in frequency *c* AD 150–160, possibly reflecting a hiatus in occupation (or minimal garrison) coincident with Antonine occupation of Scotland. After *c* AD 200 there is a mere

Fig 399 Birdoswald: plot of the Spur site samian assemblage by date.

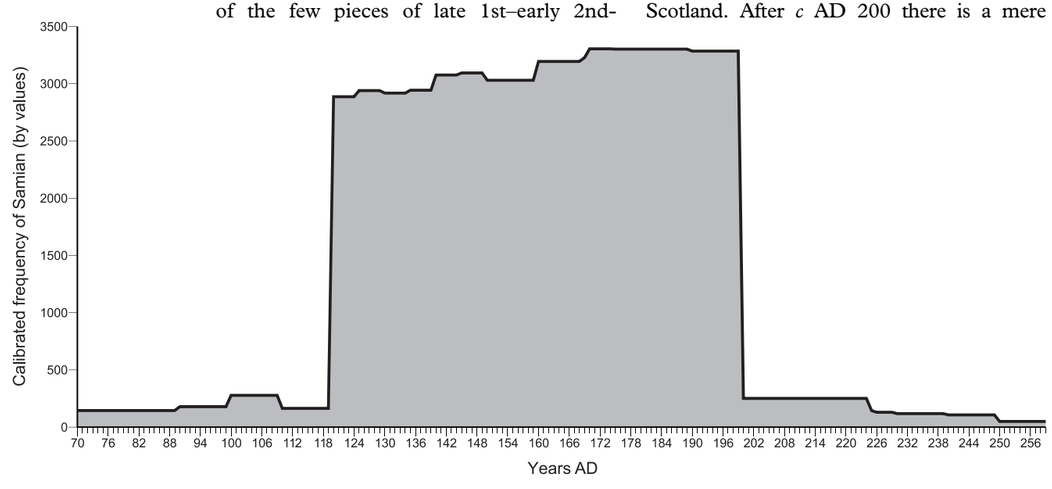


Table 33 Summary of the East Gaulish samian from the Spur site (590).

context	*source*	*form*	*date*
Phase 1 Vallum fill	Rheinzabern	?	*c* AD 150–225
Phase 1 Vallum fill	Rheinzabern	?	*c* AD 150–240
Phase 2 drains	Rheinzabern	?	*c* AD 150–225
Phase 3 outer fort ditch	Trier	?Drag 37	*c* AD 200–260
Phase 3 mid fort ditch	Rheinzabern	?	*c* AD 150–225
Phase 3 mid fort ditch	Rheinzabern	Drag 33	*c* AD 150–225
pits, etc	EG	?	*c* AD 130–250
pits, etc	?EG	?	*c* AD 130–250
pits, etc	?Madel'e or Argonne	?	*c* AD 130–250
pits, etc	?Madel'e or Argonne	?	*c* AD 130–250
pits, etc	?Madel'e or Argonne	Drag 33	*c* AD 130–260
pits, etc	?Madel'e or Argonne	?	*c* AD 130–260
pits, etc	?Madel'e or Argonne	Drag 38	*c* AD 130–260
pits, etc	Rheinzabern	Drag 31	*c* AD 150–225
pits, etc	Rheinzabern	Drag 33	*c* AD 150–225
pits, etc	Trier	?	*c* AD 160–225
pits, etc	EG	Ludowici SMc	*c* AD 190–250
'cist' fill from E sample	Rheinzabern	?Drag 30 or 37	*c* AD 150–220
modern/unstratified	?Madel'e or Argonne	?	*c* AD 130–250
modern/unstratified	Rheinzabern	?	*c* AD 150–225
modern/unstratified	Rheinzabern	?	*c* AD 150–225
modern/unstratified	Lezoux or EG	Drag 37	*c* AD 150–230
modern/unstratified	EG, ?Trier	Drag 45	*c* AD 170–260

residue of samian consumption and discard, representing the East Gaulish vessels, partly overlapping the late 2nd century, but essentially 3rd century. Doubtless a diminishing proportion of Lezoux samian continued in use into the early 3rd century alongside East Gaulish items.

In sum, Fig 399 verifies the start date of Roman activity at Birdoswald, emphasizes the Hadrianic–Antonine character of the samian assemblage, displays some subtle trends and agrees with patterns noted by Evans for the general pottery assemblage.

A single sherd in Montans fabric was found in the topsoil – from Southern Gaul – and dates to the 2nd century. Montans samian occurs widely at northern frontier sites, but only in very small quantities (cf Hartley 1972; Willis 2005). Some 21 vessels (*c* 8% of all the vessels represented) are from Eastern Gaul; another vessel is either East Gaulish or Lezoux; and another from an East Gaulish vessel was recovered in the environmental sampling (see Catalogue). These items are from several sources, occuring in various forms, and are not closely dateable. Some are likely to have arrived at the site during the 2nd rather than the 3rd century (see Table 33).

Composition

The Vallum fills: Phase A1

The samian composition is summarised in Table 34.

Six fills (contexts 6, 49, 80, 92, 728 and 739) yielded samian, representing *c* 60 vessels (excluding sherds from the environmental samples). The group includes several Antonine items. The forms of about a third of the items are not identifiable. Of the *c* 40 vessels for which the form is identifiable, half are from decorated types. This is a high percentage for decorated ware, even for a military site (cf Willis 1998, Table 3), yet it is mirrored by the later group of Phase 3 from the Middle Fort Ditch (Table 35). This pattern is not unique to the Spur – a similar trend, by degree, is apparent elsewhere at Birdoswald.

High proportions of decorated samian are sometimes associated with structured 'termination' deposits at some military sites in Britain (cf Willis 1997). This does not seem to be the case here, and other extra-mural areas outside military installations have also yielded high proportions of decorated ware (eg at Melandra, Derbyshire (Willis 1998, Table 3) and the *canabae* at Caerleon (Hartley 2000)). The fact that the material was dumped into the Vallum from the west would imply that this assemblage

Table 34 Composition of the samian from Vallum deposits on Spur site (590) (ie the number of vessels represented attributable to specific form classes).

form type	*CG Les Martres*	*CG Lezoux*	*EG Rheinzabern*
beakers			
Déch 67	–	1 (early)	–
cups			
Drag 27	–	3	–
Drag 35	–	1	–
decorated bowls			
Drag 30 or 37	–	3	–
Drag 37	–	16	–
bowls			
indeterminate	–	7	–
plain bowls			
Drag 31R	–	1	–
dishes			
Drag 18/31	1	2	–
Drag 18/31R	–	1	–
Drag 31	–	2	–
Drag 18/31, 31 or 18/31R	–	1	–
dish or bowl			
Drag 18/31R or 31R	–	1	–
dish or platter			
Drag 18 or 18/31	–	1	–
totals	1	40	–
form not identifiable	–	15	2
decorated form not identifiable	–	2	–
aggregate totals	1	57	2

Table 35 Composition of the samian from the middle fort ditch on the Spur site (590) (ie the number of vessels represented attributable to specific form classes).

form type	*SG La Graufesenque*	*CG Lezoux*	*EG Rheinzabern*
beakers			
Déch 67	1	–	–
cups			
Drag 33	–	–	1
decorated bowls			
Drag 30	–	1	–
Drag 31R	–	7	–
plain bowls			
Drag 31R	–	3	–
dishes			
Drag 36	–	1	–
Drag 36 or Curle 23	–	1	–
dish or bowl			
Drag 18/31R or 31R	–	1	–
Drag 31 or 31R	–	1	–
indeterminate	–	2	–
totals	1	17	1
form not identifiable	–	7	1
decorated form not identifiable	–	3	–
aggregate totals	1	27	2

derived from an early extra-mural *vicus*, and this is consistent with the implications of the Caerleon and Melandra evidence.

Possibly higher-status military personnel and officials (and their 'families') lived outside the fort; or perhaps social entertainment was more common outside the fort, using decorated samian bowls perhaps often as drinking vessels.

1. Drag 37 body sherd. CG Lezoux, 9g. Dec: badly damaged, but sufficient to show that the usual ovolo band has been replaced by a band of roundels, comprising small continuous rings, with a circle of petals on the exterior and a small rosette on the interior; the roundels are truncated above to produce an ovolo-style effect, and are reminiscent of those employed in the designs of the Quintilianus, Bassus, Ianuaris i and Paterclus group (Stanfield and Simpson 1958; 1990, fig 17, no. 5); *c* AD 120–150 (context 6) (Fig 400)

2. Drag 37 body sherd. CG Lezoux, 3g. Dec: a lyre and part of a knee – representing Apollo; this is Oswald's type 83, which is previously recorded from Birdoswald (Deonna 1925–8, no. 107); *c* AD 120–150 (context 80) (Fig 400)

3. Drag 37 body sherd. CG Lezoux, 22g. Dec: broad, doubled bordered ovolo, with twisted tongue on right-hand side, rosette terminal turned slightly to left; below a wavy-line border the upper frieze contains small medallions formed by two plain circles; the only medallion interior that is represented contains a pygmy warrior, O.691; between the two medallions is a goose; the design shows affinity to work of Avitus and Vegetus; *c* AD 120–150 (context 728) (Fig 400)

Drain fills (Phase A2)

Six samian sherds from the Phase 2 drains (contexts 53, 79 and 722) are listed in the Catalogue. Three of these sherds post-date *c* AD 150, including one that post-dates *c* AD 160.

Fort ditch fills (Phase A3)

The middle fort ditch section contained sherds from 30 samian vessels (contexts 22, 36, 40, 44, 45, 122, 159, 161, 164 and 166). Collectively the pottery was dated Antonine to early 3rd century. Decorated vessels, predominantly bowls, again form a high proportion (Table 35).

The outer fort ditch produced sherds from 21 samian vessels (contexts 13, 52, 67 and 91) overall the pottery dated Antonine to later 3rd century; some of the samian is residual. Decorated bowls are prominent (Table 36).

4. Drag 37: 3 body sherds, 2 conjoining. CG Lezoux, 30g. Dec: abraded; in the style of Sacer; lower zone appears to be a continuous freestyle design with plant motifs, including Rogers K20, ?Rogers G54 and the three-leaf motif on a bowl illustrated by Stanfield and Simpson (1958, pl 82 no. 8); hind quarters of animal running to the right – possibly a deer similar to that on the Stanfield and Simpson bowl; above, upper band divided from lower band by fine bead line and takes the form of a festoon containing a bird (O.2298), again possibly identical to that on Stanfield and Simpson bowl; *c* AD 125–150 (context 36)

5. Drag 37 body sherd. CG Lezoux, 11g. Dec: torso, upper legs and left arm of male figure – almost certainly Perseus; design is close to O.235, but the legs are together in this case; *c* AD 120–140 (context 166)

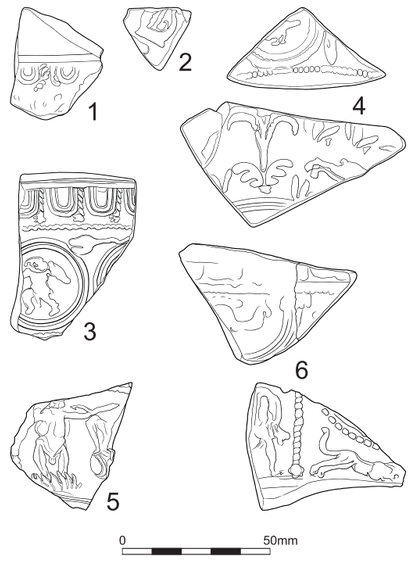


Table 36 The Composition of the samian from the outer fort ditch on the Spur (590) (ie the number of vessels represented attributable to specific form classes).

form type	*SG La Graufesenque*	*CG Martres*	*CG Lezoux*	*EG Trier*
cups				
Drag 27	–	1	1	–
Drag 33	–	–	1	–
indeterminate	–	–	1	–
decorated bowls				
Drag 37	1	–	3 +?1	?1
bowls				
indeterminate	–	–	1	–
dishes				
Drag 18/31	–	–	1	–
dish or bowl				
Drag 18/31R or 31R	–	–	1	–
Drag 30 or 37 or Curle 23	–	–	1	–
Drag 31 or 31R	–	–	1	–
totals	1	1	12	1
form not identifiable	–	–	6	–
aggregate totals	1	1	18	1

6. Drag 37: 3 body sherds, 2 conjoining. CG Lezoux, 34g. Dec: almost certainly a product of Doeccus; design is panelled, with male figure O.673 (figure O.673 appears on a bowl from Corbridge assigned to Doeccus (Stanfield and Simpson 1958, pl 150 no. 44), divided by heavy vertical bead line ending in large bead from a medallion (Rogers E8) (for border and medallion see Stanfield and Simpson 1958, pl 148 no. 19); below medallion is a dog running right; ovolo fully abraded; below is a festoon containing an eroded figure; *c* AD 160–200 (context 207)

samian proportions in pottery groups

Table 37 shows the samian proportions (by weight) within groups.

The proportion in the Vallum group is high. That for the fort ditches is also comparatively high, despite its later date range (extending several decades later, during which samian was arriving in Britain much less frequently (Marsh 1981)); doubtless some of this group is residual.

Evans has noted above the high proportion of samian consumption at the site as evidenced by the quantitative data. The figures can be compared with similar data for military sites in Britain (Willis 1998, table 1). The average percentage for samian within groups from military sites of the 1st and 2nd

Fig 400
Birdoswald: illustrated samian ware from the Spur site.

Table 37 samian as a percentage within pottery groups by weight on the Spur site (excl amphorae).

site and group	*date of group*	*sample size*	*% samian by wt*
Birdoswald Spur, the Vallum fills	*c* AD 125/130–150/160	5.5kg	11.4
Birdoswald Spur, the fort ditch fills	*c* AD 160/170–290	6.0kg	6.6

Table 38 samian as a percentage of pottery groups on the Spur site (590) by EVE (where EVE combines RE=rim equivalence and BE=base equivalence totals; excl amphorae).

group	*date of group*	*sample size BE+RE*	*samian BE*	*samian RE*	*% samian in group by EVE*
Vallum fills	*c* AD 125/130–150/160	13.02	2.12	1.18	*c* 25.3%
fort ditch fills	*c* AD 160/170–290	12.93	0.94	0.75	*c* 13.1%

centuries in Britain is 7.9% (Willis 2005), although this figure comes from samples from inside forts and fortresses. Thus, the Spur percentages are not without parallel at military sites. Nonetheless, they are on the high side, given that they come from an extra-mural zone and that the later group extends beyond the main period of samian import. Generally, these percentages indicate an unusual level of samian use and turnover.

Table 38 shows samian proportions within groups when EVE is the measure. The present paucity of data of these types from northern frontier sites or elsewhere precludes further comment and it is to be hoped that more EVE data will become available soon (cf Evans and Willis 1997, sections 3.1 and 3.8).

Taphonomy

Table 39 shows sherd average weights by feature. Samian sherds from the Spur are fragmented and comparatively small – many weigh *c* 1g. Compared with groups from other sites the Spur average weights are low (cf Fitts *et al* 1999; Willis 2007).

The best-preserved group comes from the earliest phase – the Vallum. Conjoining pieces or cases of more than one sherd from a particular vessel are few. The character of the groups suggests that much of this collection is 'secondary refuse', with a residual component. It is likely that many sherds were deposited in their contexts some while after the vessel was broken, and that they were abraided before deposition. Low average weights indicate that 'optimum point of breakage' (Taylor 1996) has been reached – that further breakage was unlikely unless deliberate.

Three vessels display protracted wear – all Drag 27 cups dating *c* AD 120–160: 2 from the Vallum (contexts 6 and 739) and one from context 1. They have worn interiors, presumably from mixing or grinding substances in them. Generally, decorated samian bowls almost never show such wear, although smaller plain bowls, cups and sometimes dishes do so with regularity: at Godmanchester, as series of plain bowls show interior wear (Willis 2004); and interior wear on many Drag 27 and 33 cups from Heybridge, Elms Farm, Essex has been noted by Ed Biddulph, who suggests that they may have been used for mixing and stirring beverages, including honey (pers comm).

Table 39 Average sherd weights for samian pottery from excavated features on the Spur site (590).

group	*group date range*	*no. of sherds recovered*	*average sherd wt (g)*
Phase 1 Vallum fills	*c* AD 125/130–150/160	70	9.0
Phase 2 drain fills	*c* AD 150–170	6	2.7
Phase 3 middle fort ditch fills	*c* AD 160/170–240	37	7.5
Phase 3 outer fort ditch fills	*c* AD 160/170–290	21	5.5
pits, cist & quadrangular ditch	*c* AD 270/280–?	77	7.6

Three Spur samian vessels show repair (see Catalogue). A Hadrianic–early Antonine Drag 37 from Vallum fill contexts 1 and 92 has two, possibly three, cleat holes; another Drag 37 of similar date from the Middle Fort Ditch context 22 has a cleat cut; and a Drag 18/31R or 31R dish or bowl dated *c* AD 120–200 from Outer Fort Ditch context 13 has two drilled holes for repair by riveting.

Indicators of site type

Table 40 shows the functional analysis of the three main pottery groups from the site, by minimum numbers of rims (MNR) per context and by Rim Equivalent (RE). As usual the RE figures produce higher values for closed vessels and lower values for open forms (Evans 1991). As the RE series is not large enough for comparison, further discussion is limited to the MNR data.

All three sets of data fall well within the usual range for forts and urban sites, and a rise in jar numbers in the earlier 4th century is part of a regional pattern (Evans 1993; Evans 1995), although from most of the pits Roman material is probably later 3rd century. Numbers of mortaria in the Vallum fill and fort ditches are higher than numbers from the fort interior (which are more typical for this type of site). Vallum fill and fort ditch mortaria numbers are as high as those at Walton-le-Dale, where mortaria were being manufactured, although there is no suggestion of mortaria making at Birdoswald. It might be that mortaria were used more in the vicinity of this part of the site. Where cooking and food preparation is performed within forts is not clear, but ovens, at least, generally have rampart-back locations, and possibly the mortaria concentration is associated with this.

The simple quantity of pottery from the Vallum fill, along with a functional composition that is highly dominated by tablewares, gives a strong indication that this derives from the putative turf Hadrianic fort. The high tableware amounts and the low jar amounts in the Vallum contrast to an extent with the figures from the marginal location of Site 585 within the fort (Table 006), which has more jars. Were the material from the Vallum associated merely with a wall turret (or even a milecastle) a strong jar-dominated assemblage could be expected (Evans 1993), but there is no trace of this. The level of finewares, 20.7% by count, from the Vallum also argues for a fort in the immediate vicinity.

There are other interesting contrasts among the assemblages from the fort interior, both from the Study Centre and the area excavated in 1987–92 (Hird 1997). Amphorae proportions are high at the Study Centre (10.3% by count, 41.7% by weight) and from the 1987–92 area (6.7% by count 31.3% by weight), whereas at the Vallum they are only 1.0% by count 2.4% by weight, and from the fort ditches 3.6% by count and 20.3% by weight; and from the Spur 2.8% by count and 16.4% by weight. These data suggest that amphora use and deposition was concentrated within the fort, with comparatively little disposed of beyond the defences. Willis notes above that, like the functional composition of the Vallum fill, the Spur has a high proportion of decorated samian (50%). He also records high proportions from fort Phases 1–7 (48.3%), and a 44.0% proportion of decorated samian in the total assemblage.

Willis notes 'These consistent percentages show that an unusually high proportion of the samian assemblage was formed by decorated vessels, even for a military site; these levels for decorated ware are similar to the high percentages among the Spur groups, suggesting that high proportions of decorated vessels were being supplied to (or at least consumed at) the fort generally.'

Proportions of decorated ware greater than 30% seem to be typical of many north-western military sites: there are proportions

Table 40 Functional analysis of pottery from the Spur site (590).

flagons	*constricted-necked jars*	*jars*	*bowls*	*dishes*	*dish/bowl*	*beakers & cups*	*mortaria*	*lids*	*other*	*n (MNR & RE)*	*Phase*
3.0	–	19.4	19.4	26.9	13.4	3.0	11.0	3.0	1.5	67 rims	A1
5.9	–	28.4	15.1	19.4	3.3	4.2	18.0	2.0	3.5	783%	A1
–	1.2	33.7	14.5	26.5	3.6	7.2	9.6	1.2	1.2	83 rims	A3
–	1.3	39.4	15.6	20.4	1.6	9.5	7.3	0.7	3.8	771%	A3
–	–	38.2	2.9	35.3	5.9	11.8	–	5.9	–	34rims	pits
–	–	51.2	1.4	27.4	1.8	14.0	–	4.2	–	285%	pits

of 45.6% at Carlisle, Blackfriars Street (Taylor 1990), 30.3% in the *vicus* at Lancaster, Mitchell's Brewery (Ward in Evans and Rátkai in prep c), 52% at Walton-le-Dale (Evans and Rátkai in prep b) and over 30% at Middlewich (Evans 2002a). These proportions are high compared with the data tabulated by Willis (1998, table 3) for military sites, and *vici* and are generally higher than those from major towns. It may be that high proportions of decorated ware are a regional feature of military supply in the north-west.

Overall fine ware proportions from the fort and Spur are also remarkably similar (24.5% by count from the Study Centre and 24.5% from the Spur).

Taphonomy

Tables 41 and 42 show average sherd weights and percentages of rims from the key groups examined in this report. Average sherd weights are higher from deposits from within the fort, although, as has been discussed above, the higher proportions of amphorae provide much of this difference. Nevertheless, even with amphorae excluded from the fort figures it is clear that sherd weights are much higher there, although this is not true for rims. It might be that these higher figures reflect pottery deposited in primary contexts rather than the material on the periphery of the fort (ie the Vallum or fort ditches). Were this the case, however, 'more primary' merely means that it has been less broken and dispersed, rather than that it is of less residual deposition.

Table 41 Study Centre site (585) average sherd weight and average percentage of rim.

group	*average sherd wt (g)*	*average vessel RE*
Site 585	27.6 (17.7 excl amphorae)	11.5%

Table 42 Spur site (590) average sherd weight and average percentage of rim.

group	*average sherd wt (g)*	*average vessel RE*
A1	14.0 (13.8 excl amphorae)	11.5%
A3	17.0 (14.1 excl amphorae)	9.3%
A pits	9.0 (7.2 excl amphorae)	8.4%
B2	20.2 (13.0 excl amphorae)	–
C2	13.1 (11.7 excl amphorae)	26.2%
NEOCIS	11.8 (11.0 excl amphorae)	–

Certainly Hird's (1997) data produce a comparable figure for a much larger collection from the fort interior: 16.4g (excluding amphorae).

Average sherd sizes from the Spur are smaller than those from the fort interior. Sherd weights from the Vallum and the fort ditches, however, are broadly comparable, although not by RE. There is a marked fall in the average sherd weight for material from Trench A pits, possibly suggesting that it had been more dispersed; and the absolute sherd weight (7.2g,) is low for northern urban and military sites, where levels are greater than 10g (Evans 1985). The presence of a post-Roman sherd in Pit 3 might mean that all the material from this phase is a post-Roman deposit, and the Roman material in the context therefore residual, but this is not clear.

The pottery from the Trench B2 pits has a rather higher average sherd size and the level from Phase C2 is similar.

Graffiti

Four graffiti were found (Fig 401): three from the fort and one from the Spur, giving graffiti-to sherd ratios of 1:781 sherds for the fort and 1:1,515 for the Spur. These ratios are too great to be useful. Tomlin's (1997) ratio from previous excavations in the fort is 1:1,177. It should be noted, however, that these are literate graffiti, and it could well be that illiterate graffiti have been excluded.

The high graffiti ratio of 1:781 in the fort is comparable to 1:630 from Binchester fort (Evans and Rátkai in prep a) and to 1:230 from Catterick, Thornborough fort, and to 1:800 from the military supply centre at Walton-le-Dale (Evans and Rátkai in prep b). All these figures emphasise the high rate of graffiti on military sites, suggesting that it may have been even higher than was previously estimated by Evans previously (1987).

Urban sites produce much lower ratios: 1:1,400–1,500 at Bainesse Farm, Catterick, 1:1,676 at Catterick Bridge (Site 240),

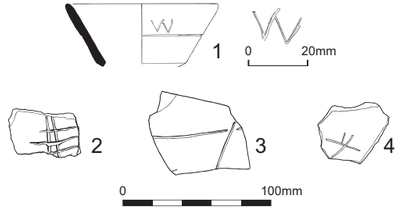


Fig 401
Birdoswald: graffitti on pottery.

1:5,028 at the rural town-edge site at Catterick Racecourse (Site 273), 1:1,825 at the small-town Gas House Lane site in Alcester and 1:1798 at the vicus or mining administrative site at Plas Coch, Wrexham.

If graffiti sherds from the fort and Spur are counted with Tomlin's 1997 examples, then, in rounded figures , amphorae amount to 7% of vessels with graffiti from Birdoswald, samian 67% and BB1 27%. The disproportionate marking of samian plainware (as opposed to decorated) forms is typical of elsewhere in Roman Britain and the levels here match the provincial pattern (Evans 1987).

All the Birdoswald graffiti probably date to the 2nd and 3rd centuries; the latest piece from the 1987–92 excavations (Tomlin 1997, no.14; Hird 1987, fig 167, no. 152) is an early–mid-3rd century BB1 jar. Similar dating is observed at Binchester (Evans and Rátkai in prep a), with no graffiti among the large quantity of 4th-century pottery, but in contrast a large number of 1st-century graffiti.

1. Dr 33 CG rim, AD120–200: 'VV' inscribed on upper outer wall in capitals; presumably a pair of personal initials (Study Centre Phase 4, context 1279)

2. BB1 dish base sherd with graffito scratched on base interior: a grid pattern of three parallel lines intersected at right angles by two parallel lines; probably an illiterate mark of ownership (Study Centre Phase 8, context 1006)

3. Dressel 20 amphora body sherd with two intersecting strokes from a pre-fired graffito made before the slip was applied to the vessel (Study Centre Phase 8, context 398)

4. BB1 dish base sherd with graffito scratched on base interior: 'X'; probably an illiterate mark of ownership rather than a number (Spur unphased, context 2)

Rivets

Two sherds from the Spur and six from the fort show evidence of riveting. All of these are samian ware. The only other vessel with a post-firing perforation is a Housesteads ware jar with a suspension hole drilled into its rim. This is a little unusual, but probably reflects the small assemblage size. The vast majority of riveted sherds on lowland zone sites are also usually samian.

More unusual is that, except for one sherd from the Spur with remnants of a cleat hole, all others are drilled circular holes. Repair with lead rivets, connected by unsightly strips, was probably stronger, but much less aesthetic than the more common cleat repairs typically used on samian.

Of the eight repaired samian vessels, six (75%) were decorated Dr 37s, presumably the most valuable and expensive forms. This pattern is similar to that at Walton-le-Dale (84% of riveted samian is decorated ware). These data re-affirm the point that decorated samian was more valuable than plain ware, and emphasise that the absence of graffiti from decorated ware vessels must be because matching patterns recurred so infrequently at a site that they could be used to recognise and identify vessels.

Rivetting is 0.13% by count on the Spur and 0.26% in the fort. The proportions at Binchester are 0.087% from the Flavian–Hadrianic deposits and 0.083% from the Antonine–4th century deposits. There are similar proportions from the rural site at Chepstow (0.08%; Evans 1996), the rural site at Shiptonthorpe (0.12%; Evans forthcoming b), the urban site of Bainesse Farm, Catterick (0.16%; Evans 2002b) and the rural site of Worberry Gate, Somerset (0.1%).

Thus, it is clear that proportions from the Birdoswald fort are comparatively high. Sites producing comparable data are Walton-le-Dale (0.304%; Evans and Rátkai in prep b), Plas Coch, Wrexham (0.58%; Evans forthcoming c) and three north Welsh rural sites (2.5%, 0.6% and 0.24% respectively; Longley *et al* 1998; Evans forthcoming e). At Wrexham and the Welsh rural sites this pattern is interpreted as poor access to pottery supplies relative to demand, whereas at Walton-le-Dale it suggests a poor community, possibly servile, rescuing breakages from transit. The latter explanation seems unlikely for Birdoswald, but the high rivetting rate for samian does possibly reflect difficulties in getting as much Samain as was wanted.

Pottery from the western cemetery and vicus (Time Team project 1999)

645 sherds of pottery were recovered from the trenches excavated in the cemetery and western *vicus*. Most of the pottery is from unstratified deposits, and it is important, with the Vallum assemblage from the Spur, as the first assemblage to be recovered from extra-mural areas at Birdoswald. Those vessels interpreted as primary cremation vessels in the cemetery are described above (p 278–82).

Chronology

The cemetery (Fig 402)
Besides primary cremation vessels (p 281, Fig 380, cemetery Trench yielded pottery that may be from burials disturbed by ploughing. Trench 1 pit 108 contained 2 BB1 Hadrianic–Antonine body sherds with acute lattice.

1. BB1 jar rim fragment; Hadrianic–Antonine, possibly Antonine (cemetery Trench 1 pit 108)
2. Greyware BB copy jar with cavetto rim; mid–later 3rd century (cemetery Trench 1, context 105)
3. BB1 jar rim (2 joining sherds); early–mid-3rd century (cemetery Trench 1, context 105)

Context 105 also contained 3 Nene Valley colour-coated ware body sherds, of AD 160/70+, a 3rd-century BB1 burnt jar rim, 33 BB1 body sherds (many very burnt, perhaps from a disturbed burial or pyre) and one 3rd–mid-4th-century BB1 body sherd with obtuse lattice.

This context was cut by a feature whose fill (context 110) contained a 3rd–4th-century greyware body sherd with obtuse lattice, 3rd–mid-4th-century a BB1 body sherd with obtuse-lattice and a Nene Valley hunt cup body sherd, of AD 160/70–250.

The western vicus (Fig 402)
The Western *vicus* trenches contained little stratified pottery. When unstratified material is taken into account it is clear that, as noted above, East Yorkshire calcite-gritted wares are absent from the stratified and unstratified assemblage, as are Crambeck greywares. BB1 types of later 3rd to, perhaps, earlier 4th century data are present. Given the reasonable size of the collection some Crambeck greyware might have been expected in a collection that had any intensity of pottery deposition in the last two decades of the 3rd century, while calcite-gritted wares would definitely be expected in the earlier 4th century. Thus pottery deposition seems to cease on the site by the AD 280s.

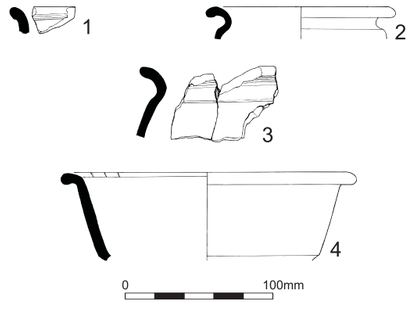


Fig 402
Birdoswald: illustrated pottery from the Time Team excavation on the cemetery and western Vicus.

4. BB1 flange-rimmed bowl with pointed arcs and incised graffito of three parallel lines on top of flange, perhaps the number 3 or an illiterate mark; perhaps mid-2nd century (context 503)
5. BB1 flagon rim (cf Wallace and Webster 1989, no. 9); 2nd century (context 503)

samian ware

by S H Willis
There are 94 samian sherds, weighing 538g. About 85 vessels are represented, being a significant collection, although rim equivalence (EVE) is just 0.84. The sample helps to shed light on the chronology and nature of settlement and activity in the area west of the fort, and is particularly valuable data given the hitherto limited archaeological examination of *vici* associated with forts on Hadrian's Wall. Despite fragmentation, about two-thirds of the assemblage could be attributed to form type.

Table 43 The incidence of samian from the Time Team excavations at Birdoswald, 1999.

trench or provenance	*no. of sherds by context*	*totals*
Trench 1		
Context 101	4	
Context 103	6	
Context 107	2	12
Trench 2		
Context 201	10	
Context 202	11	
Context 205	4	
Context 208	5	
Context 210	1	
unstratified	3	34
Trench 3		
Context 301	10	
Context 302	10	20
Trench 5		
Context 501	10	
Context 503	4	14
Trench 7		
Context 701	9	9
unstratified "Met Det"	5	
grand total		94

The overall potential date range is *c* AD 60–260, but it is predominantly 2nd century, Hadrianic and Antonine, and from Lezoux. The assemblage is consistent with other samian assemblages from Birdoswald, although one or two sherds could be of earlier date, and some East Gaulish sherds may be 3rd century. Its chronology is comparable to that of the other two assemblages reported above, (summarised in Table 43; full catalogue Appendix 5, Table 72).

Chronology and sources
Generally, this samian assemblage is dominated by 2nd century material from Lezoux (see Table 44). This is expected, reflecting the samples from the 1987–92 excavations (Dickinson 1997) and the work reported above. There are no examples of La Graufesenque fabric (*c* AD 40–110) in this assemblage. There are two sherds of South Gaulish ware from Montans (Trenches 2 and 5), but their forms are not closely indicative of date; they could be 1st century, but are more likely 2nd century arrivals. There is a floruit of Montans imports into Britain in the mid-2nd century, and a sherd from the Spur is mid-2nd century. Hence there are no sherds necessarily of 1st century AD date.

Table 44 Summary of the dates of all the samian vessels from the 1999 Time Team excavations at Birdoswald.

date range	*period*	*no.*
c AD 60–135/140	Neronian/Hadrianic	1
c AD 60–200	Neronian/Antonine	1
c AD 100–130	Trajanic/early Hadrianic	2
c AD 120–140	Hadrianic	2
c AD 120–140/145	Hadrianic/early Antonine	1
c AD 120–145	Hadrianic/early Antonine	1
c AD 120–150	Hadrianic/early Antonine	6
c AD 120–160	Hadrianic/early Antonine	1
c AD 120–200	Hadrianic/Antonine	49
c AD 125–150	Hadrianic/early Antonine	1
c AD 130–165	late Hadrianic/mid Antonine	1
c AD 135–170	late Hadrianic/mid Antonine	1
c AD 140–200	Antonine	5
c AD 150–190	Antonine	1
c AD 150–200	Antonine	7
c AD 150–225	Antonine/early 3rd century	2
c AD 150–250/260	Antonine/mid 3rd century	1
c AD 160–200	mid–late Antonine	1
c AD 170–260	late Antonine/mid-3rd century	1
total		85

Although Montans ware had been thought a highly infrequent occurrence on Hadrian's Wall sites, recent study has revealed more examples. Its wide occurrence at sites associated with the Antonine frontier in Scotland is well established (Hartley 1972). Occasional sherds are anticipated among any sizeable sample from a large or important site with mid-2nd century occupation, such as Birdoswald. These two vessels, of course, amount to a very small proportion of the current assemblage.

There are three sherds of Les Martres ware, two of Trajanic–early Hadrianic date (*c* AD 100–130, from Trenches 2 and 5), the other Hadrianic (*c* AD 120–140, Trench 1). This paucity of early 2nd-century samian suggests that there was little or no activity in these areas before *c* AD 130. This impression may in part be because generally only later deposits were investigated within trenches. However, the same pattern is seen among the samples from within the fort (cf Dickinson 1997) and at the Spur site.

Lezoux samian (Hadrianic–Antonine) forms *c* 90% of the assemblage. This proportion agrees with the absence of activity in this area before the establishment of the Hadrianic fort. The range of Lezoux forms present indicates that occupation, and presumably burial, had begun in this general area west of the fort before *c* AD 150/160 (implied by the presence of examples of Drag 27, 18/31 and 18/31R) and continued during the second half of the 2nd century (eg presence of Drag 31 and 31R).

The chronology of the decorated vessels supports these dates.

The balance of the samian is perhaps not so heavily weighted to the period after *c* 150 as one might expect (see Table 45), as vessel forms after *c* 150 are few in number (such as Drag 31, 31R and mortaria; and Walters forms 79, 79R and 80 and Ludowici types are not represented). This suggests lower intensity of use during the mid-to late Antonine period.

Finally, there are five East Gaulish vessels (from Trenches 2, 5 and 7), from the major East Gaulish sources of Argonne and, especially, Rheinzabern. These pieces are of particular note for their date: Antonine to, potentially, 3rd century. East Gaulish ware represents 6% of the samian vessels, and is consistent with the frequency of East Gaulish vessels among the samples from the Spur site (8%) and the Study Centre site (7.2%). In sum 2nd-century samian of post-AD 120 dominates

Table 45 Summary of the dates of all the samian vessels from the Vicus areas (Trenches 2, 3 and 5) at Birdoswald 1999.

date range	*period*	*no.*
c AD 60–135/140	Neronian/Hadrianic	1
c AD 60–200	Neronian/Antonine	1
c AD 100–130	Trajanic/early Hadrianic	2
c AD 120–140	Hadrianic	1
c AD 120–140/145	Hadrianic/early Antonine	1
c AD 120–145	Hadrianic/early Antonine	1
c AD 120–150	Hadrianic/early Antonine	4
c AD 120–160	Hadrianic/early Antonine	1
c AD 120–200	Hadrianic/Antonine	32
c AD 125–150	Hadrianic/early Antonine	1
c AD 130–165	late Hadrianic/mid-Antonine	1
c AD 135–170	late Hadrianic/mid-Antonine	1
c AD 140–200	Antonine	4
c AD 150–190	Antonine	1
c AD 150–200	Antonine	6
c AD 150–225	Antonine/early 3rd century	2
c AD 150–250/260	Antonine/mid-3rd century	1
c AD 160–200	mid–late Antonine	1
total		62

Table 46 Summary of the dates of all the samian vessels from the cemetery areas (Trenches 1 and 7) at Birdoswald 1999.

date range	*period*	*no.*
c AD 120–140	Hadrianic	1
c AD 120–150	Hadrianic/early Antonine	1
c AD 120–200	Hadrianic/Antonine	13
c AD 140–200	Antonine	1
c AD 150–200	Antonine	1
c AD 170–260	late Antonine/mid-3rd century	1
total		18

the assemblage, and is consistent with that from the Study Centre and the Spur site.

Tables 45 and 46 show the samian chronology from the vicus (Trenches 2, 3 and 5) and cemetery (Trenches 1 and 7) areas. The sherds represent 62 and 18 vessels, respectively and their chronology appears to be a subset of the general pattern from the 1999 trenches: there is no differing emphasis between these areas in the date of samian recovered.

Composition by form

Table 47 shows the composition of the samian by source and form. Of the total of *c* 85 vessels represented 57 are identifiable to form or generic class. There is a minimum of 15 form types. Decorated vessels account for 35.1% of the group. This percentage conforms precisely to the average figure for decorated samian from extra-mural sites at military installations in Britain (Willis 2005), as at the Spur.

There is little of significance to note regarding the forms except that decorated vessels are well represented from the area of the burials. Systematic survey has shown that decorated samian vessels are rarely included in burials (Willis 2005), and in fact none of the vessels from the cemetery area is directly associated with a burial as funerary furniture. Samian mortaria are likewise rarely used as grave goods, which should be borne in mind considering the likely Argonne example from this area. Perhaps these sherds relate to non-cemetery activities.

Taphonomy and other aspects

The samian from the 1999 trenches is highly fragmented; with few exceptions the sherds are small, with a low average weight, indicating considerable fragmentation and weathering. Additionally, as with previous collections of samian from Birdoswald, the sherds have been subject to chemical weathering that often removed original surfaces and therefore some decorative details have been lost. The sherds are also generally soft as a result of weathering. The state of preservation is not good, but is consistent with the character of the samian pottery from earlier Birdoswald investigations.

Table 48 shows the average sherd weight of the samian from the 1999 work, and the data also by functional area. Comparative data from the Field Study Centre and Spur sites, from inside and outsie the fort, are also included; for reference, the average sherd weight for samian from excavated site assemblages in Britain ranges from *c* 13g to less.

It can be seen that the average sherd weight of the present assemblage accords with that for the samian from the Spur. The Spur site produced numerous samian sherds weighing 1g (evidently from the *vicus*), an aspect also seen in the Time Team assemblage; however, many sherds are still diagnostic.

The high fragmentation suggests that items had been trampled or otherwise broken before deposition in their contexts, or broken when deposits were reworked, or disintegrated in malign soil conditions. As noted, the 1999 excavators often excavated only upper layers within trenches, which may account for sherd size and weight.

Table 47 The composition of the samian assemblage from the 1999 Time Team excavations at Birdoswald by fabric, form and functional type (nos = no. of instances of each category; total *c* 85 vessels).

form type	*South Gaulish Montans*	*Central Gaulish Les Martres*	*Central Gaulis Lezoux*	*East Gaulish prob Argonne*	*East Gaulish Rheinzabern*
beakers/jars					
Déch 67	1	–	–	–	–
Déch 72	–	–	1	–	–
indeterminate	–	–	1	–	–
decorated bowls					
Drag 30	–	–	1	–	–
Drag 30 or 37	–	–	3	–	1
Drag 37	–	–	12	–	–
bowls					
indeterminate	–	–	2	–	–
plain bowls					
Drag 31R	–	–	1	–	–
Drag 38	–	–	1	–	–
Curle 23	–	–	1	–	–
indeterminate	–	–	1	–	1
bowls or dishes					
Drag 18/31R or 31R	–	–	1	–	–
Drag 31 or 31R	–	–	2	–	–
indeterminate	–	–	7	–	–
cups					
Drag 27	–	–	2	–	–
Drag 33	–	–	2	–	–
Drag 35	–	–	1	–	–
indeterminate	1	–	–	–	–
dishes					
Drag 18/31	–	1	3	–	–
Drag 18/31 or 31	–	–	1	–	–
Drag 18/31R	–	–	2	–	–
Drag 31	–	–	4	–	1
bowl or mortarium					
indeterminate	–	–	1	–	–
mortaria					
Drag 45	–	–	–	1	–
totals	2	1	50	1	3
form not identifiable	–	2	25	–	1
aggregate totals	2	3	75	1	4

A few sherds show evidence of burning or staining, including a sherd from the Argonne mortarium (see Catalogue). There appears to be no correspondence between burnt samian and the cemetery areas. Except for the sherd possibly fashioned as a disc from context 501 no sherds have been adapted for another purpose. Two sherds have drilled holes, presumably for repair by riveting: a Drag 37 bowl from Trench 2, context 208 and a Curle 23 bowl from Trench 5, context 503. Decorated bowls are the most common samian form found to be repaired, and the proportion of repaired pieces from this site is low and broadly consistent with numbers from other military sites and *vici* (cf Willis 2005).

Table 48 The average sherd weights for samian from various locations at Birdoswald.

site	*no. of sherds*	*average sherd wt (g)*
Time Team 1999 Vicus area trenches	68	6.4
Time Team 1999 cemetery area trenches	21	3.8
Time Team 1999 (all samian finds)	94	5.7
Field Study Centre site (585) 1997–8 (within the fort) (all samian finds)	363	11.7
Spur site (590) Vicus area (all samian finds)	300	6.7

Conclusion

The samian from the Time Team excavations usefully supplements the Birdoswald samian corpus. While its size is modest, it provides a useful 'snap-shot' of samian use and consumption in this underexplored area of the site.

The sequence of military activity and occupation at Birdoswald is not simple, as discussed in various recent writings, and the samian from investigations since 1987 has contributed to the clarification of dating (cf Dickinson 1997; Willis above). The chronological range of the 1999 samian accords with occupation before *c* AD 150, and probably initially during the decade *c* AD 130–140 (although this conclusion has to be considered alongside other chronological indicators from the western *vicus*). Neither the samian assemblage nor the excavations is sufficiently extensive to provide a basis for commenting on the chronological sequence in this western area of the fort during the mid-2nd century.

Considering form, the high percentage of decorated ware is remarkable, and conforms to the pattern found at other *vici*/*canabae* of forts, as discussed by Willis (2005). It presumably reflects the differing social life and activities between the forts and their associated *vici*, the latter doubtless including eating and drinking establishments, other recreational places and domestic households (perhaps for soldiers and officer's families).

Poor preservation is characteristic of Birdoswald samian, and seems to reflect intense occupation, on-going fragmentation after original breakage and erosion in the soil. Much of the samian seems to be residual, characteristic of other Birdoswald assemblages, nonetheless it is highly important. The *vicus* and cemetery samian assemblages show no marked distinction from other Birdoswald samian collections, perhaps because they are not derived from burials.

Fabric supply

Given the preponderance of 2nd-century BB1, its proportion in assemblage seems very high (even with 59 sherds the cremation vessel in context 109 and 38 sherds coming from the other in context 702) and well above contemporary levels from the fort and Vallum fill. This may relate to the functional composition of this assemblage, which has a more jar-dominated assemblage than the Vallum fill, fort ditches or Site 585. Also, the selection of BB1 vessels as cremation urns will have contributed significantly to this total. Fineware levels are high at 19.6% but both the overall level and the level of samian ware is lower than for Sites 585 and 590.

The bulk of the pottery deposition in this area (Table 50) appears to have been in the 2nd century. This is demonstrated by the preponderance of acute lattice-decorated BB1 sherds over obtuse-lattice-decorated ones, the much greater frequency of 2nd-century BB1 types, and the absence of any 3rd-century BB2 forms.

Table 49 Fabric breakdown of Time Team West Vicus pottery by fabric class.

fabric	*no. of sherds*	*% by no of sherds*
Dressel 20	22	3.4%
BB1	267	41.4%
BB2	7	1.1%
fineware	2	0.3%
CG Rhenish	3	0.5%
Trier Rhenish	9	1.4%
NVCC1	7	2.6%
mica dusted	1	0.2%
Dales(?)	1	0.2%
oxidised mortaria	10	1.6%
white mortaria	1	0.2%
Raetian mortaria	1	0.2%
Catterick mortaria	1	0.2%
oxidised wares	92	14.3%
white slipped flagon fabrics	4	0.6%
greywares	108	16.7%
samian	94	14.6%
whitewares	5	0.8%
total	645	

Overall functional composition

Table 50 shows a functional analysis of the Time Team fine ware and amphorae from the western *vicus*.

Jars are strongly represented at 43%; four vessels are cremation urns. If excluded, the proportion is still 39%. Tablewares (dishes and bowls) are strongly represented at 38%. Beakers and cups are weakly represented at 8%, but mortaria are strongly represented at 5%.

Compared with the assemblages from the Study Centre and the Spur jar proportions are similar to those from the Study Centre, although much higher than those from the Vallum (Phase A1), and higher than those from the fort ditches (Phase A3). Tableware proportions at 38% are a little lower than those from the Study Centre, much lower than those from the Vallum and a little lower than those from the fort ditches. Beakers and cups are more poorly represented than in the fort, although more strongly than in the Vallum and the fort ditches.

Overall the figures are consistent with those from other Roman military and urban sites in Britian, although at the higher end of the jar range (Evans 1993; 1995; 2001).

The amphora proportion is 3.4% by count, a figure that accords with other military and military-associated sites (cf Evans 2001, fig 11). The amphora proportion from the Study Centre fort interior is much higher, but these data are comparable with levels from the fort ditches and the Spur as a whole. The fine ware proportion is high at 19.6% by count.

These data are at the higher end of the range for towns, *vici* and forts (Evans 1993), although lower than those from the Study Centre (24.5%) and Spur (24.5%). Samian represents 14.6% of the assemblage, making it the greatest contributor to the fine ware total, as might be expected in this period. Willis (2006, table 23) shows this to be a high proportion for a *vicus* and is similar to the ranges in his military groups. Willis (above) notes that, like the functional composition of the Vallum fill, it has a high proportion of decorated samian (50%). He also notes high proportions from the fort Phases 1–7 (48.3%) and 44.0% in the total assemblage.

Discussion

The chronological evidence from the site seems fairly clear. The samian lacks South Gaulish material and there is little from Les Martres. The Central Gaulish material includes pre-mid–late Antonine types and use seems to begin in the Hadrianic or early Antonine period. The coarse pottery is consistent with this conclusion. Activity continues into the 3rd century, although probably at a lower level, but seems to cease by the AD280s.

The date range of pottery from the western *vicus* is similar to that from Birdoswald Spur, although it probably ends a little earlier. It seems significant, therefore, that just as the large collections of pottery from the fort lack Housesteads ware, so do those from the western *vicus*, although it was relatively common from the Spur.

It does seem particularly strange in comparison with other Roman places, that the timber buildings on the Spur were constructed a little after the abandonment of the western *vicus* and used by personnel who used Housesteads ware, who clearly did not spend time inside the fort (or in the western *vicus* if they had arrived before its abandonment).

samian from T49b, T50a T50b and Mc50

by S H Willis

The recent work at Birdoswald has raised questions about the chronological sequence in this sector of the Wall, including the date when the Stone Wall was built in this sector, and in particular the dating of the stone turrets and milecastle at High House. F Gerald Simpson's 1913 report on the 1909–12 excavations on the line of the Stone Wall is of key importance here. Birdoswald T49b, High House T50a, Appletree T50b and High House Mc50 are all west of Birdoswald fort, and the Stone Wall here lies north of the line of the earlier Turf Wall. The turrets and

Table 50 Functional analysis for the Time Team West Vicus pottery (by minimum numbers of rims).

flagons	*constricted-necked jars*	*jars*	*bowls*	*dishes*	*beakers & cups*	*mortaria*	*amphorae*	*lids*	*other*	*no.*
2%	2%	43%	20%	18%	8%	5%	2%	0	0	60

milecastle are contemporary with the construction of the Wall in stone here (Simpson 1913, 302). Finds from the lowest levels at these installations are therefore relevant to the date of the Stone Wall west of Birdoswald fort.

In his report on the samian and other pottery from these excavations, Newbold (1913b) addressed whether the pottery supported a Hadrianic date for the Stone Wall here. Newbold contended that the pottery from the lowest levels demonstrated that they were of Hadrianic construction.

This review uses Newbold's samian illustrations, descriptions and contexts; the fabrics are not identified; the sherds, believed to be in the Tullie House Museum, have not been seen. The number of vessels is small.

The principle outcome is that the samian dates are consistent with a Hadrianic construction; they do not preclude a date in the 140s, but a somewhat earlier date is more probable.

A Drag 27 cup and a 37 bowl were associated with the earliest floor (Floor 1A) of T49b (Simpson 1913, 304–5; Newbold 1913b, 346, pl XIX no. 1). The cup is almost complete, but had been repaired with lead rivets. Newbold noted that its wall had well rounded curves, which suggests that it was of earlier rather than mid-2nd century date (although repair will have extended its life). The bowl is represented by sherds with decoration. Newbold's statement that "it cannot be later than the early years of Hadrian" (1913b, 347) is sustained. This bowl belongs to the Medetus-Ranto group, dated *c* AD 100–130 (cf Stanfield and Simpson 1990, 93). The ovolo is Rogers B39, and below a wavy line border there is a bold, distinctive scroll filling the whole of the decoration zone. Tendril lobes contain a (?repeated) arrangement of fine, elongated leaves (Rogers J33): two and a bud in the lower lobe and three in the upper. Small versions of the leaf are common on Medetus-Ranto decorated forms (Stanfield and Simpson 1958). An unusual back loop junction occurs in the tendrils, seen elsewhere on a bowl attributed to Medetus (Terrisse 1968, pl XLIII, no. 1208). A similar, but different, design appears on a bowl from Birdoswald, attributed to the group (Detsicas 1962, 47, no. 62).

A possible Drag 33 and eight fragments of 'Dr 31' were also associated with Floor 1A and/or 1B (Newbold 1913b), but are not chronologically instructive here. Dr Evans notes that Newbold may have used the label Drag 31 as a generic identifier of all dishes in the Drag 18/31 to 31 range. This seems so here (cf Newbold 1913b, 341). At least one of these eight fragments came from an 18/31 rather than a 31 (compare Newbold 1913b, 341 and 346). This is significant, as form 18/31 normally dates *c* AD 100–150, and form 31 dates to after *c* AD 150.

Another relevant item is an unstratified Curle 11 bowl (Newbold 1913b, 349), whose date range extends only to the 140s. From its description it seems to be an earlier example of the form, and therefore early Hadrianic at latest.

Several samian vessels were found associated with the earliest floors of High House Turret T50a: a Drag 27 from occupation debris on the earliest floor; a Drag '31' (see above) – with a gloss slip finish characteristic of the early 2nd century, so perhaps in fact an 18/31; and small sherds of Drag 37 vessels (Newbold 1913b, 350). One sherd of the latter (Newbold 1913b, 350, pl XIX, no. 4) includes an ovolo border closely resembling a type used by Potter X-6 (cf Stanfield and Simpson 1958, pl 74), with a wavy line border below, therefore dated *c* AD 125–150. The other item (Newbold 1913b, 350, pl XIX, no. 5) has a small medallion band around the basal border, which is a feature most characteristic of Trajanic–Hadrianic vessels. Stanfield and Simpson ascribe both items to X-6 (1958, 152). The reason for item no. 5's attribution to X-6 is unclear, as the small medallion is not that characteristic of the workshop (cf Stanfield and Simpson 1958, fig 18, no. 4).

The lowest floor at Appletree Turret T50b yielded three samian items: an unillustrated Drag 37 rim, a sherd of a Drag 27, and "about one-third of a flattish base of Dr 31" (Newbold 1913b, 351). Judging from this description the last item seems more likely to be an 18/31 (see above). Sherds from two more 37s occurred in a deposit interpreted as disturbance of Floors 1A and 1B (Newbold 1913b, pl XIX, nos 6 and 7). Newbold says no. 6 is excellently moulded and its decoration arranged in panels. It is clearly the work of Ioenalis, dated *c* AD 100–120/130; Stanfield and Simpson also attribute this vessel to Ioenalis (1958, 40). Vessels of this workshop have also come from the recent work at Birdoswald. The ovolo resembles Ioenalis' ovolo type 2 (Stanfield and Simpson 1958, fig 10, no. 2); a tripod is Rogers Q21; and the two figures in a panel to the left of the tripod are Hercules, O.770, and a variant of figure O.632. Terrisse illustrates a closely similar design, attributed to Ioenalis (1968, pl XL, no. 476). Newbold had, essentially, dated this piece correctly.

Newbold assigned no. 7 to the second half of the 2nd century, a reliable date on stylistic grounds. Some of the decorative types were widely used (eg Apollo, O.93/93a), and it is possibly the work of Advocisus as the ovolo appears to be ovolo type 2 of that workshop (Stanfield and Simpson 1958, fig 33, no. 2). The vine scroll is Rogers M50, a type used by this producer whose bead border and rosette are the same as in No. 7 here. Rogers (1974, 144) attributes this vessel to his mould maker P-23, and it surely dates to *c* AD 155–200.

Unstratified material included pieces from two samian vessels, both Drag 27 (1913b, 355).

High House Mc50 had few stratified deposits. Newbold lists some 'early' samian sherds (1913b, 356–7), and two stamps were recovered, both on 'Dr 31'. One stamp is clearly on a Drag 31 or 31R and so must be later than *c* AD 150. The other is fragmentary: 'ALBI[' (Simpson 1913b, 328; Newbold 1913b, 356) – possibly 'ALBINIM' – that is, Albinus iv, *c* AD 135–165. It might actually be on a 18/31 (see above).

To summarize, Newbold's Hadrianic dating of the samian for the initial phase of these structures is secure. Sherds from pre-Antonine decorated bowls occur, some in or associated with the earliest 'floor horizons'; also form Drag 27 and sherds from apparent 18/31s, pre-dating *c* AD 150 (if the start of these structures was early Antonine, then Drag 33 would be expected to eclipse Drag 27). There is an absence of necessarily Antonine samian from these earliest deposits. Grace Simpson noted that the samian from the structures included significant Hadrianic items (Stanfield and Simpson 1958, xlii). John Gillam in turn included pottery from these groups in his dated corpus (Gillam 1970).

General discussion

The fairly small assemblages from the Study Centre, the Spur and the Time Team work have proved useful in enhancing our understanding of supply patterns at Birdoswald and in suggesting spatial variations across the site; also providing another valuable group from the Vallum fill. The groups provide useful data from the 2nd and 3rd centuries, whereas much of the previously published material (Hird 1997) has been 4th century.

The amphora proportions in the fort are high, as seems to be generally the case on the site, and the data re-confirm Bidwell and Speak's (1994b) demonstration of the supply of wine to Hadrian's Wall in barrels.This seems to be the case on the east and west coasts and the north-eastern hinterlands (Evans and Rátkai in prep b), but not in the north-west hinterland (Evans and Rátkai in prep a). As elsewhere in the north-west BB1 proportions in the 2nd century are low (*c* 20%), only increasing in the later 3rd century when BB1 supply along the wall and in the north-east reached its peak (Evans 1985). BB2 is lower (*c* 2%). Some groups studied by Hird (1997) had much higher proportions, although many groups are too small to be reliable. It is likely, however, that BB2 levels peaked here at a higher proportion in the early 3rd century. Fine ware supply at Birdoswald was a mix of national fabrics, and, in the 2nd century north-western sources. Nene Valley colour-coated wares were the commonest from the later 2nd century onwards, as is usual.

Gritted wares were rare on the site before the 4th century, when East Yorkshire calcite-gritted ware arrived in quantity. Of note is an early example of Derbyshire ware. Dalesware appeared on the site in the early 4th century (Hird 1997), as did a many other gritted ware Dales type jars (probably from the north-east).

In the 2nd century mortaria came a diversity of sources, mainly north-western. Both these data and stamp evidence suggest that Walton-le-Dale/Wilderspool was a major source, as were Scalesheugh and Carlisle. Other minor sources include the north-east, Colchester and Caerleon. The last is of particular note as it would not normally be expected and is evidence that strengthens the suggestion from the metal-work links (Cool this volume p 370) for direct contact between the sites, presumably in the form of a legionary detachment.

As usual, the 3rd-century mortarium supply is dominated by Mancetter-Hartshill, replaced in the 4th century by Crambeck.

As with many north-western sites, oxidised wares form a major part of the 2nd century assemblage, although proportions of these seem to have been decreasing

through the century. The sources of most of these are probably fairly local, and some of this material probably originates at the nearby kilns at Brampton. Reduced wares form a major part of the assemblage from the Hadrianic period, but increase in significance in the later 2nd century, and remain an important component of the assemblage into the 3rd century. The forms represented are mainly BB copies. The pattern is similar to other sites in north-eastern England, although most of the material is probably of local origin, and much might come from Brampton, although kilns of this date at Brampton are still to be discovered. Samian proportions are high, as might be expected, with notably high proportions of decorated ware from the fort – again a usual feature.

The material from the Vallum fill, although not completely unequivocal because of the presence of some intrusive material, seems to suggest that the filling of this was later than previously suggested, and that it was probably not filled in until after the construction of the Stone Fort, perhaps *c* AD 150. The evidence from the drain cutting the Vallum fill (Phase A2) shows that the *terminus post quem* for the fort ditches is *c* AD 160/70. Thus, the first Stone Fort would appear to have used the Vallum as its ditch, and the fort ditches contemporary with or later than the insertion of the Stone Wall.

The distribution of the Housesteads ware is also fascinating. It was widely distributed on the Spur, but absent inside the fort, despite the large collections from it. It is also absent from the recently recovered pottery from the western *vicus*, which seems to be abandoned in the later 3rd century. It is clear from the Birdoswald evidence, and that from the other sites, that Housesteads ware has a later 3rd century *terminus post quem*. At Birdoswald it appears to be associated with a series of timber buildings constructed on the Spur in the later 3rd century or later. The Spur generally lacks in 4th century pottery. Thus, providing the fabric is of later 3rd century date, it seems to be associated with an unprecedented, late timber *vicus* and the users of the pottery seem to have been barred from the fort interior. This 'cultural apartheid' is strange, but one that also appears, on the evidence provided by Jobey (1979), at Vindolanda and Housesteads. There does not seem to be a parallel in any other Romano-British finds type.

Part 7: The small finds

Small finds and vessel glass

by H E M Cool

This report (written in 2001) includes all items found in stratified Roman contexts. Publication of material from the medieval and post-medieval layers is selective. It includes objects that can be identified as Roman on typological grounds, and a few pieces whose dates are uncertain. Self-evident post-medieval and modern material, and less identifiable fragments of metal sheet, strips and bars are excluded. A brief description of this material is available in the archive assessment catalogue.

The material is ordered by functional categories following Crummy (1983), as in the publication of the finds from the 1987–92 Birdoswald excavations (Summerfield 1997). This report differs from these two by reporting the vessel and window glass with household equipment and building materials; iron nails are also included in the latter category. Finds from the Time Team cremation burials excavations are discussed above (pp 279–91). In each functional section the date and, where appropriate, the stylistic affinities of individual pieces is discussed, before a concluding overview.

NB Catalogue entries begin with number, site, find number, context, site phase.

Personal ornaments

Four brooches (Nos 1–4), eleven beads (Nos 5–15), three bracelet fragments (Nos 16–18), a possible finger ring (No. 19), two intaglios (Nos 20–21) and a number of hobnails (Nos 22–32) were found. Interestingly, there were no hairpins, although several were recovered from the 1987–92 excavations (Summerfield 1997, 286, nos 90–5).

Brooches 1 and 2 are bow brooches, but they are so corroded and fragmented that it is not possible to identify them closely. Brooches 3 and 4 are also corroded, but both retain sufficient diagnostic features to identify them.

The bow of No. 1 appears to be heavily arched in a manner reminiscent of P brooches, suggesting that it might be 3rd century, but this identification is tentative.

No. 3 is an umbonate enamelled disc brooch. This brooch family is moderately common on sites occupied at the end of the 1st and during the 2nd centuries AD; two were found in the 1987–92 excavations (Summerfield 1997, 280, nos 63–4). No. 3 is a less common variant with a conical umbo surmounted by sharp knob finial. This conical variant, with scalloped bases to the enamelled cells, has been found combined with a variety of flange patterns: one from near Grimsby has a plain flange with single lug and ring (Hattatt 1985, 146 no. 537); one from Kiddlington, Oxfordshire has eight lugs with ring cells like those on brooch 3 (Hunter and Kirk 1952–3, 59, no. 12, fig 26.4). Dating conical umbonate brooches like this has hitherto relied on an example found in the vices at Ravenglass, in a context dated AD 130–90 (Potter 1979, 67, no. 2, fig 26). The recovery of No. 3 in a phase A1 pit on the Spur refines this dating, as it indicates that such brooches were in use during the early to mid-Hadrianic period. In discussing the example from Grimsby, Hattatt suggested that the variant had a restricted distribution in eastern Roman Britain. Clearly the recovery of the examples from Ravenglass and Birdoswald makes this theory untenable.

No. 4, a repoussé sheet decorated brooch, belongs to the same family as the 'Adlocutio' series, of which the best known type is based on a Hadrianic coin (Hattatt and Webster 1985). Other decorative motifs, such as faces and trisceles, were also used. These repoussé-decorated brooches have rarely been found in well dated contexts, but a mid- to late-second-century date seems most likely (Mackreth 1986, 66). No. 4 is clearly residual in its 4th-century context. Diamond-shaped examples such as No. 4 are much rarer in the literature than the circular examples. There are two from the Castell Collen fort, Powys (Boon 1973, 18, no. 9, fig 3; 1978, 17, no. 5, fig 1), and one from Norfolk (Hattatt 1985, 177, no. 628). All retain the decorative sheets or parts of them. Another, from Lowbury Hill, Berks (Atkinson 1916, 35, no. 33, pl 9) appears to retain just the impression of the decorated sheet on its backing material. It is described as enamelled but was accepted as repoussé-decorated by Hull (Hattatt 1985). A further example, from Camerton, Somerset (Wedlake 1958, 232, no. 54, fig 54), has lost both the decorated sheet and its backing, but is the only example that gives some indication of the date of this variant, as it was found in a context pre-dating *c* AD 180. An unpublished but well preserved example in Mr Barry Carter's collection was found in the Cirencester region.

Other than the Birdoswald and the Norfolk examples, the distribution pattern of these brooches is similar to that exhibited by known south-western metalwork types of the later 1st and 2nd centuries (cf Cool 1991, fig 17), possibly hinting that this too is primarily a south-western type. As has been noted in connection with brooch 3, inferences of origin based on the distribution of known examples can easily be changed with new discoveries, and so such a suggestion can only be tentative. It may be significant, however, that the type is not considered to be a particularly unusual find by metal detectorists working in the south-west (B Carter, pers comm).

Most of the beads were recovered from post-Roman contexts or in contexts that were not closely dated within the Roman period. Therefore dates that can be assigned to them rely on their typology.

One of the most interesting of the beads is No. 5, also one of the earliest. It was found unstratified in 1999, and is an example of a Guido Glass 9 bead. When Mrs Guido defined the type (1978, 77) she suggested that they started to be made in the 1st century BC and ceased soon after the end of the 1st century AD. As Price (Manning *et al* 1995, 105) has pointed out, however, most have been found on sites of early Roman date, and it may be that the 1st century BC date is too early a start date for the type, and they may all be of the 1st century AD. No. 5 can certainly be dated to no earlier than the mid-1st century AD, as the ground colour of the bead is made from a re-used fragment of a polychrome vessel. Opaque white marbling in a peacock-coloured ground is clearly visible. The most likely origin of this glass is from a marbled polychrome pillar-moulded bowl. These were going out of fashion in the middle years of the 1st century AD, and became rare by the time the early Flavian sites were occupied (Cool and Price 1995, 16). Guido Class 9 beads are clearly a British product. As vessel glass is extremely rare in Britain before AD 43, there is a relatively short date window when bead-makers could have acquired such glass to make beads. No 5 was almost certainly made in the quarter of a century following the conquest and very likely in the earlier part of that period.

The use of the peacock and white vessel to make this bead is most unusual, as this is probably the rarest colour combination known in cast polychrome vessels in Britain. I know of one fragment of a pillar-moulded bowl in this colour combination from Chichester (Price and Cool 1989, 137, no. CM 3), but it seems a rare combination in pillar-moulded bowls across the Roman Empire as a whole. The colour does occur as a ground colour in the early imperial cast polychrome vessels of Grose's Family IV (Grose 1989, 257) but not, to my knowledge, in Britain. Curiously, the native British bead-makers appear to have shown little interest in exploiting fragments of polychrome vessel glass as raw material, although they were interested in fragments of deep blue glass and in the everyday blue-green glass, both of which were in plentiful supply.

The scarcity of beads made in re-used polychrome glass perhaps reflects the relatively short period when such glass was available. Two annular beads made from polychrome pillar-moulded bowls were found in legionary, pre-Flavian contexts at Usk (Manning *et al* 1995, 108, nos 5 and 6), and a third was found unstratified at Claydon Pike, Glos (Miles *et al* 2007). The last-mentioned is of particular interest with regard to the Birdoswald bead as it also makes use of a peacock vessel with white marbling, this time combined with fragments from a purple vessel with opaque white marbling and yellow chips. Given the rarity of peacock vessels in Britain, it is very tempting to suggest that both beads were made by the same individual from the same vessel. The other beads made from re-used polychrome vessels come from sites either side of the Bristol Channel. The use of such vessels to make a Guido Class 9 bead suggests that this bead-maker was based somewhere in that area. Guido (1978, 77) suggested that the distribution of Class 9 beads indicated either a factory or entrepôt for them in Somerset or the Bristol Channel area, and the discovery of additional examples since that time has not seriously disrupted this pattern.

Yellow-brown annular beads of moderate size, such as No. 6, are generally found in 1st- and 2nd-century contexts. They were present among the grave goods in a late 1st century BC to mid-1st century AD burial at King Harry Lane Verulamium, (Stead and Rigby 1989, 108, no. 1e) and were found throughout the Caerleon fortress bath drain deposits spanning the period AD 75/85 to 230 (Brewer 1986, 148–9 nos 12–16, 23, 36–8).

Most of the other beads are types that first came into use during the later 2nd century and remained in use until the 4th century. In this category there is a single example of a gold-in-glass bead (No. 7), a type that was recovered in the 1987–92 excavations, and which was discussed in that report (Summerfield 1997, 273). Blue cylindrical beads, such as No. 8, were recovered from the *vicus* at Castleford in contexts dated AD 140–80 (Cool and Price 1998, 187, nos 148–60), and blue cubic beads, like No. 9 and possibly No. 10, were found in the fortress bath drain deposit dated AD 160–230 at Caerleon (Brewer 1986, 151, no. 71–2). The long blue biconical bead No. 11 may also fall into this category; although the type is more normally found in 4th-century contexts, one example was found in a 3rd-century context during the earlier excavations at Birdoswald (Summerfield 1997, 275, no. 32).

Excepting the annular beads, all the bead types discussed so far were common finds during previous excavations at Birdoswald and all, including the annular bead, are common elsewhere in the province. The opaque red globular bead No. 15 does not fall into this category. Opaque red glass was virtually never used by Roman bead-makers. The rare examples found in stratified Roman contexts tend to be in late-4th-century ones. For example, an opaque red cylindrical bead from Vindolanda was found in a construction deposit dated AD 370 (Price 1985, 213, no. 63). It is, however, a colour that becomes common among 6th- and 7th-century bead assemblages (Guido 1999, 59). Birdoswald is known to have had a substantial sub-Roman occupation and bead No. 15 suggests that it continued in use into the 6th century or later. It may certainly be placed alongside the probable earlier discovery of a small long brooch (Wilmott 1997a, 218), and the pottery noted in the assemblage from the Spur site (*see* p 318) as evidence of Anglo-Saxon presence.

All of the glass beads are most likely to have come from necklaces, but the jet bead, No. 16, could have come from an armlet. Double pierced spacer beads such as this have been found in groups of beads that were probably bracelet length (Crummy *et al*, 1993, table 2.54, grave 406). In general, such beads were a 4th-

century type. An earlier find from Birdoswald with a pyramidal upper face, for example, was found in the late-4th-century dump in building 198 (Summerfield 1997, 276, no. 52). On the whole black jewellery made of jet and shale was a late Roman fashion in Britain, but the plain annular shale or jet bracelets such as Nos 17–18 are an exception, for they were also used in the 1st and 2nd centuries (Zienkiewicz 1986, 213). Given the late Roman preference for black jewellery, the plain shale ring of finger ring size (No. 19) is probably 4th century, but such a simple form is not inherently dateable.

Two intaglios were found in pits in Trench 2 in 1999. The one deposited first, No. 20 in cut 213, is a heliotrope depicting a *quadriga* being raced at full gallop. The second (No. 21) is a nicolo paste showing Achilles arming himself with the spear and helmet that his mother Thetis has brought him. It was found in pit 203, which truncated cut 213. Both of these stones are opaque and have a flat section, features that indicate a 2nd- to 3rd-century date (Zienkiewicz 1986, 121). The theme of Achilles arming himself seems to have been especially popular in the 2nd century (Henig 1974, 41). The discovery of an Achilles intaglio in a *vicus* is another example of the appeal that the type had to the military, especially the junior officers beginning their careers (Henig 1970, 256). The device of a four-horse chariot is sometimes associated with the god Sol driving his team across the sky, as can be seen on one from the fortress baths drain deposit at Caerleon (Zienkiewicz 1986, pl X, no. 38). In the case of No. 20, however, the main focus is the team itself, with the chariot and charioteer reduced to small and inconsequential figures to one side of the stone. The charioteer shows no evidence of the radiate crown that would be expected if he were a depiction of Sol, and so it is unlikely that an overtly religious symbolism is intended.

The discovery of these intaglios so close together in the enigmatic cuts is curious. One type of deposit where multiple intaglio finds can be expected are the drains of bath-houses, presumably because the steamy conditions of the baths affected the adhesive that held them in the bezels of rings (Zienkiewicz 1986, 118; Henig 1988, 27). This explanation is clearly not appropriate here, and it may be that the juxtaposition of these two finds is purely co-incidental. However, elsewhere at Birdoswald intaglios have been found in contexts that hint at deliberate deposition rather than accidental loss. A comelian gem depicting the eagle and standards of a legion (Henig 1997, 283, no. 86) was found beneath the Turf Wall (Wilmott 1997a, 52). A red jasper with the bust of a young man, which Henig (1997, 284, no. 87) suggests could possibly be the young Caracalla or Geta in semi-divine guise, was found in the fill of the cut dug for the ashlar walling associated with the rebuilding of the south tower of the *porta principalis sinistra* (Wilmott 1997a, 103). It may be that both of these are casual losses, but given their contexts and the 'official' images on them, an equally likely interpretation is that they were deliberately placed foundation deposits. The limited nature of the excavation in Trench 2 hinders clear interpretation of contexts in which intaglios 20 and 21 were found, but it might be that the fills were the result of something other than casual rubbish disposal.

The only other personal ornaments and equipment are hobnails from shoes (Nos 22–32). No. 25 comprises four corroded together and are probably the remains a discarded shoe, whereas Nos 22–4, 26 and 31–2 are individual finds and are probably casual losses from shoes while worn.

1. Study Centre: 9733068: 389: phase 6
Bow brooch: copper alloy; heavily corroded and much fragmented. Recognisable fragments are a complete pin, two fragments of spring, heavily arched rectangular-sectioned bow with vertical groove centrally tapering at either end, and a possible fragment of foot and catch plate. length of pin 39mm, bow section 7 2.5mm

2. Study Centre: 9733076: 392: phase 5
Bow brooch: copper alloy; heavily corroded and surfaces obscured. Lower part of D-sectioned bow tapering to foot and retaining part of catch plate. length 28mm

3. Spur: 963389: 739: phase Al (Fig 403)
Disc brooch: central raised conical umbo with small pointed finial surrounded by damaged flat flange with 8 lugs, upper face of flange much obscured by hard corrosion products. Rear face has two lugs to hold hinged pin (details obscured); opposing catch plate damaged. Outer face of cone has 12 triangular cells with scalloped concave bases; green (turquoise) enamel alternating with much decayed enamel now appearing black. X-radiography reveals lugs have circular cells probably originally filled with enamel. XRF analysis indicates a leaded bronze (copper, tin and lead). diam 37mm, max height 12.5mm

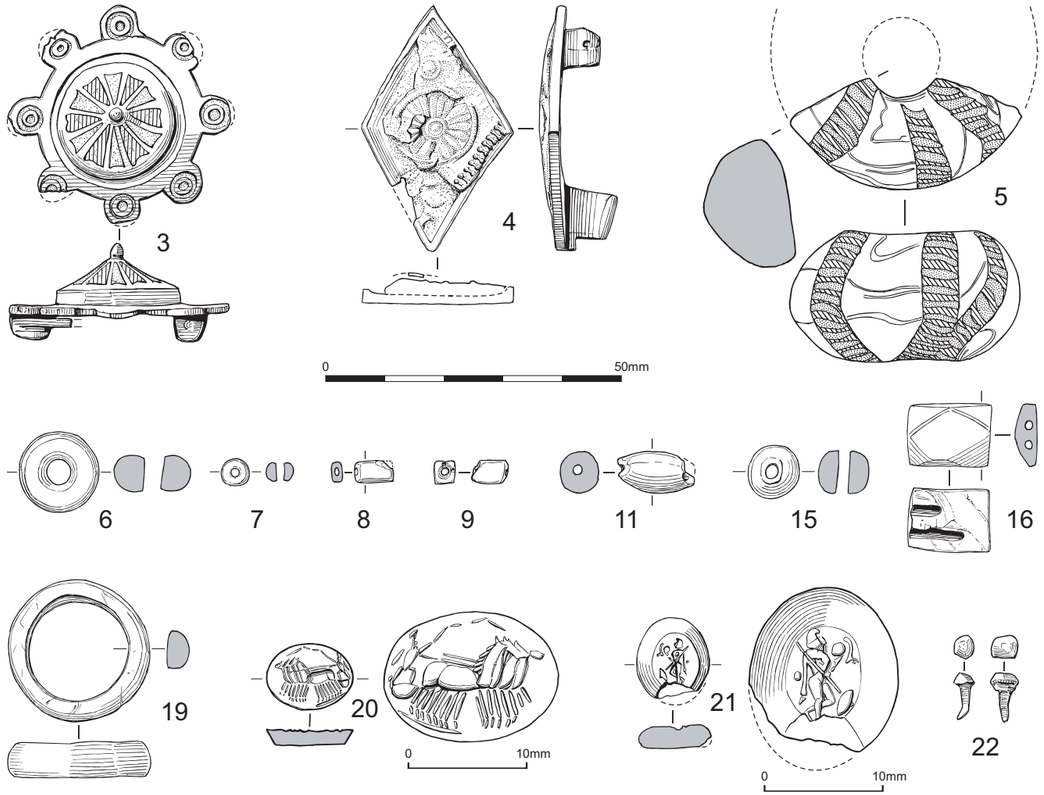


Fig 403
Birdoswald: small finds: personal ornaments.

4. Study Centre: 9733055: 521: phase 6 (Fig 403)
Plate brooch: diamond-shaped back plate with double lug retaining terminal of hinged pin and trapezoidal catchplate. Front face has raised ridge around the edge bordering an inset repoussé decorated sheet now much damaged and obscured with white corrosion products. Sheet bordered by short straight raised ridges at 90° to edge; centrally a raised circular ridge infilled with a petal or rosette design, and a smaller circular moulding. Much of design now present only on backing material underneath (missing) sheet. XRF analysis of back plate indicates a leaded bronze (copper, tin and lead), and analysis of sheet indicated the same elements with the addition of a small amount of zinc. length 40mm, width 26mm

5. Time Team: sf 1204: 208 (Fig 403)
Bead: glass; ground colour translucent green/blue (peacock) with opaque white marbling; outer face decorated by looped marvered cable of opaque yellow and (?) purple or brown (right-hand twist). D-sectioned annular. Approximately one-third extant. diam *c* 38–39mm

6. Spur: 9633324: 14: unstratified (Fig 403)
Bead: light yellow/brown (amber) glass; annular. length 6mm, diam 13mm, perforation diam 4mm

7. Spur: 9633985: 226: Roman (Fig 403)
Bead: gold-in-glass; squashed globular. length 3.5mm, diam 4.5, perforation diam 2mm

8. Spur: 9633926: 161: phase B2 (Fig 403)
Bead: translucent deep blue glass; short cylindrical with rounded rectangular section. length 6.5mm, section 4.2mm, perforation diam 1 mm

9. Study Centre: 9803131: 1006: phase 8 (Fig 403)
Bead: opaque dark blue glass; cubic; square-sectioned. length 5mm, diam 3.5mm, perforation diam 1.5mm

10. Spur: 9633930: 205: Roman
Bead: opaque mid blue glass. Chip from rectangular or square-sectioned bead. 3.5 × 2.5 × 1.5mm

11. Spur: 9633323: 14: unstratified (Fig 403)
Bead: opaque blue glass; long biconical with both ends chipped. present length 12mm, diam 6.5mm, perforation diam 3mm

12. Spur: 9633351: 205: Roman
Bead: translucent deep blue. Chips from globular bead? diam *c* 5mm

13. Time Team: sf 1144: 110
Bead: translucent deep blue; small chip retaining part of perforation. diam 2mm

14. Study Centre: 9803176: 1006: phase 8
Bead: translucent bubbly green/blue (peacock) glass; circular-sectioned cylindrical; end only. diam 3.5mm, perforation diam 1.5mm

15. Spur: 9633340: 101: phase B6 (Fig 403)
Bead: opaque red glass; slightly squashed globular; narrow black edging to perforation on either face. length 7mm, diam 9mm, perforation diam 3mm

16. Study Centre: 9803152: 1006: phase 8 (Fig 403)
Bead: jet; rectangular with two longitudinal perforations; upper face has slightly faceted corners producing diamond and triangle pattern; lower face damaged. length 14, section 9 × 5.5mm

17. Spur: 9633353: 147: phase B2
Bracelet: jet; D-sectioned; one side only. internal diam 90mm, thickness 12mm

18. Spur: 9633984: 46: phase A3
Bracelet: shale; D-sectioned; probably undecorated; outer edge only remaining. internal diam 70–80mm, length 18mm

19. Study Centre: 9803153: 1006: phase 8 (Fig 403)
Ring: shale; D-sectioned. diam 24mm, section 5.5 × 3.5mm

20. Time Team: sf 1205: 208 (Fig 403)
Intaglio: heliotrope (opaque appearing black with greenish tinge); oval with flat upper and lower faces, steeply bevelled towards lower face. Impression: Quadriga being raced to left; galloping horses urged on by helmeted charioteer who curls the lash of his whip above the horses head. Good condition with little wear. upper face 15.5 × 10mm, thickness 2mm

21. Time Team: sf1202: 202 (Fig 403)
Nicolo paste, i.e. dark glass appearing black with opaque dark blue layer on upper surface; lower part broken revealing glass to be translucent deep purple. Oval: flat face front and rear, bevelled in to front at shallow angle to give small front panel for the engraving. Impression: figure standing facing right with left leg bent behind right, holding plumed helmet in left hand and spear over right shoulder, shield at feet. Figure naked apart from *chlamys* hanging from shoulder. Lower edges chipped; surfaces worn. present length 13mm, width 12mm, thickness 3mm

22. Study Centre: 9803291: 1283: phase 1 (Fig 403)
Hobnails: iron; 5 complete and 4 broken; approximately pyramidal heads some flattened through wear. length range 15–18mm, head diam range 9–10mm

23. Study Centre: 9803226: 1215: phase 6a
Hobnail: iron; rounded head (?). length 9.5mm

24. Spur: 9633937: 6: phase A1
Hobnail: iron; pyramidal head (?), shank bent. length 13mm

25. Spur: 9633308: 2: phase A3/4
Hobnails: iron; 4 corroded together in slightly pointed curving line.

26. Spur: 9633956: 56: phase A3/4
Hobnail: iron; pyramidal head. length 11 mm

Textile equipment

There were two perforated discs made from re-used pottery sherds, which are possibly spindle whorls. Roman spindles were narrow and the diameter of the perforation is normally in the range of 5–7mm (Rogers 1997, 1735). The diameter of No. 27 is slightly narrower than that, so the disc may have had another function; No. 28 appears to be large enough. Both discs would have been manufactured in the late Roman period at the earliest, as the Crambeck ware of No. 33 can be dated to AD285–400+, and the Housesteads ware of No. 34 is of at least mid-3rd-century date.

27. Study Centre: 9803246: 1006: phase 8 (Fig 404)
Spindle whorl(?): re-used pottery fragment – Crambeck grey ware appearing very light grey with upper face nearly black. diam 26mm, perforation diam 4.5mm, thickness 6mm

28. Spur: 126: phase B5
Spindle whorl: re-used pottery fragment – Housesteads ware appearing black; approximately one-quarter extant. diam *c* 35mm, perforation diam *c* 6 7mm, thickness 6.5mm

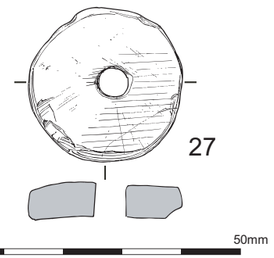


Fig 404
Birdoswald: small finds: textile equipment.

Household utensils

Vessel glass

The majority of household items recovered were fragments of Roman vessel glass; 103 fragments were found, approximately 30% from the Study Centre, 8% from the 1999 excavations and the majority from the site on the Spur. The Estimated Vessel

Equivalent (EVE) of the whole group, as calculated by the zonal method outlined by Cool and Baxter (1996; 1999), is 4.54.

Almost all of the glass was either colourless or blue/green, indicating an assemblage accumulating during the 2nd and 3rd centuries. There were no fragments of the distinctive greenish bubbly glass typical of the 4th century and, with the possible exception of No. 58, the strong colours typical of the 1st century were also missing. The group is thus similar in broad outline to that recovered during the 1987–92 excavations (Price and Cottam 1997, table 32), although it lacks the wide range of forms seen there.

The form that dominates the glass from all sites is the blue/green prismatic bottle (Nos 41–57 and Table 51) – 67 fragments (2.66 EVEs). These were very common from the later 1st to the earlier 3rd centuries. Military sites especially tend to have assemblages dominated by this form (Cool and Baxter 1999, 83), and so the ubiquity of these fragments from these sites and the earlier excavations is unsurprising (Price and Cottam 1997, 346).

Several other pieces also come from utilitarian vessels. Blue/green jar No. 37 has a fire-rounded rim, suggesting, in the context of this assemblage, that it was probably a 2nd-century vessel (Cool and Price 1995, 113). Nos 33 and 39 are flasks, but neither is sufficiently preserved to be closely identified.

Tablewares are scarce compared to the 1987–92 excavations. Neck fragment No. 38 has dimensions appropriate for the narrow-necked globular and conical jugs of Isings Forms 52 and 55 (Cool and Price 1995, 120), the dominant glass jug form of the later 1st to mid-2nd century. The colourless base fragment No. 32 probably belongs to a cylindrical cup with double base ring (Isings Form 85b; Cool and Price 1995, 82), the commonest glass drinking vessel of the later 2nd to mid 3rd century. The addition of a small blob of glass centrally, as here, is not often noted on these cups (but see Allen 1986, 113, no. 70). However, the trailed inner ring with pontil scar is typical of the form. Alternatively, the trailed ring could be the base ring itself, albeit of small diameter, and the vessel might have resembled the cup in greenish glass found in a burial at Skeleton Green, Herts, which also contained a coin of Antoninus Pius (Charlesworth 1981, 271, fig 106.11). The trailed body fragment No. 31 could have come from the trailed variant of the cylindrical cup with double base ring, but the fragment is too small for certain identification. The rim fragment No. 29 possibly comes from a jar, although colourless glass is rarely used for such utilitarian items. It is perhaps more likely that it is from a mid-3rd-century hemispherical cup like that from the cemetery at Brougham (Cool 1990, fig 1.2; Price and Cottam 1998, fig 45a), but with a rim that has a more pronounced out-turn than usual.

Vessel glass fragment No. 58 from a modern context on the Spur is a deeply puzzling piece. It is made of opaque red glass and could come from a small bowl with a wide rim. Opaque red glass was a colour used by the makers of the early Imperial cast vessels and Grose (1989, 256) notes that the majority of such opaque cast vessels belong to the first half of the 1st century AD. This colour must have continued in use into the 2nd half of the century, as an opaque red cast bowl with overhanging rim was found at Ditchley, Oxon (Harden 1936, 64 no. G.3, fig. 12 no. 3), and that form is not made until the second half of the first century (Cool and Price 1995, 15, 38). Whether or not No. 58 comes from a cast vessel is open to question, as although the surfaces show minute pits typical of cast surfaces, the equally characteristic concentric polishing marks are absent. If it was a bowl, the width of the rim combined with the small diameter would make it very small. Possibly it came from a wide-rimmed vessel like the opaque medium blue one in the Toledo Museum, which Grose (1989, 307, nos 428, 421) describes as a patella. Alternatively, it might come from a stand or some other object, as in the earlier first century opaque glass was used to make a variety of objects as well as vessels.

Table 51 Undecorated vessel glass body fragments.

site: period	*colourless*	*blue/green bottles*	*blue/green other*	*light yellowlbrown; light green*
585: 1–3	–	–	–	–
590: A1, A2, B1	–	8	2	–
585: 4–6	1	8	–	–
590: A3–4, B2	3	8	8	1
585: post-Roman	–	11	3	–
590: post-Roman	–	11	3	3
BRD 99	1	3*	2*	–
totals	5	49	18	4

* each total including one melted fragment

Colourless glass

29. Study Centre: 9803105: 1006: phase 8 (Fig 405)
Jar or cup: slightly green-tinged colourless; some small bubbles; rim turned out almost horizontally, edge fire-rounded; convex-curved body sloping out. rim diam 90, present height 22mm, wall thickness 1, EVE 0.4

30. Spur: 9633334: 101: phase B6
Bowl? rim and two body fragments: out-turned rim, edge fire rounded. 17 × 14mm

31. Study Centre: 9803230; 1255: phase 6b
Cup? body fragment: occasional small bubbles; straight side with horizontal trial. 19 × 11 mm, wall thickness 1.5mm

32. Spur: 9633380: 122: phase A3 (Fig 405)
Cup or beaker?: two joining base fragments; strain-cracked; concave base with central dot and neatly applied circular trail with traces of pontil scar. Also one colourless body fragment. oOuter diam of trail 27mm, EVE 0.2

33. Spur: 9633900: 166 and 9633925: 122: phase B2
Flask: five neck and body fragments: green-tinged colourless; many bubbles (some large), impurities and internal flaw; base of wide neck sloping out smoothly to convex curved side. 48 × 41mm, wall thickness 1.5mm, EVE 0.4

34. Study Centre: 9733046: 455: phase 6
Bottle? body fragment: green-tinged colourless; clouded surface; flat side broken at 90° angle. 24 × 19mm

35. Study Centre: 9803098: 107: phase 8
Two body fragments: slightly clouded; slightly convex-curved side; shallow vertical ribs. 24 × 22mm

36. Spur: 9633933: 229: Roman
Body fragment: ribbed

Blue-green glass

37. Study Centre: 9803231: 1116: phase 5/6 and 9803234: 1206: phase 6 (Fig 405)
Jar rim and joining body fragment; also one body fragment possibly from the same vessel: rim edge bent out and down with fire-rounded edge; convex-curved body. rim diam *c* 125mm, present height *c* 40mm, EVE 0.34

38. Study Centre: 9803232: 1206: phase 6
Jug neck fragment: narrow, cylindrical, thick-walled neck. neck diam 20mm, neck thickness 4mm, present length 37mm, EVE 0.14

39. Spur: 900: 166: phase B2
Conical flask neck and side fragment: cylindrical neck lightly tooled at junction with straight side sloping out. neck diam 17mm, wall thickness 2.5mm, EVE 0.4

40. Study Centre: 9803105: 1006: phase 8
base fragment: solid pushed-in base ring. 17 × 13mm

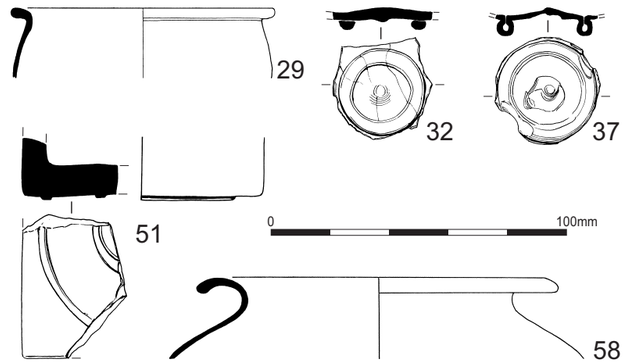


Fig 405
Birdoswald: small finds: vessel glass.

41. Study Centre: 9803105: 1006: phase 8
Bottle rim and neck fragment: rim bent out, up, in and flattened; handle scars on neck and underside of rim. rim diam 53, EVE 0.14

42. Study Centre: 9803098: 107: phase 8
Bottle rim fragment: outer edge of rim folded out, up, in and flattened; small fragment of handle on underside. rim diam 70mm, EVE 0.14

43. Spur: 9633335; 100: phase B6
Bottle rim fragment: rim folded out, up, in and flattened. rim diam 60mm, EVE 0.14

44. Study Centre: 9803098: 107: phase 8
Bottle neck and shoulder fragment: cylindrical neck with tooling marks at junction with horizontal shoulder. outer diam of neck 46mm, EVE 0.28

45. Study Centre: 9733057: 418: phase 6
Bottle: cylindrical neck fragment.

46. Spur: 9633313: 6: phase A1
Bottle; two cylindrical neck fragments.

47. Spur: 9633305; 1: phase A5
Bottle neck/shoulder junction fragment.

48. Spur: 9633310: 2: phase A3/4
Bottle: chip from angular handle.

49. Time Team: sf 1309: 301:
Square bottle shoulder and side fragment, retaining tips of lower handle attachment.

50. Spur: 9633381: 77: phase A2
Square bottle shoulder and side fragment.

51. Spur: 9633360: 212: Roman (Fig 405)
Square bottle lower body and base fragment: base design is two concentric circular mouldings. diam outer moulding *c* 70mm, bottle width *c* 82mm, present height 17mm, EVE 0.28

52. Spur: 9633313: 6: phase A1
Prismatic bottle lower body and base fragment: base design is at least two concentric circular mouldings. diam outer moulding *c* 65mm, bottle width *c* 85mm, present height 15mm, EVE 0.28

53. Spur: 9633305: 1: phase A5
Prismatic bottle lower body and base fragment: base broken at edge of circular moulding. present height 37mm, EVE 0.28

54. Study Centre: 9803268: 1298: phase 8
Square bottle lower body and base fragment: base probably broken at edge of circular moulding. present height 28mm, EVE 0.28

55. Time Team: sf1524: 501
Hexagonal bottle lower body and edge of base fragment. present height 22mm, EVE 0.28

56. Study Centre; 9803105: 1006: phase 8
Prismatic bottle lower body and base fragment: base retaining tip of moulding, probably from corner design. present height 20mm, EVE 0.28

57. Spur: 9633397: 161: phase B1
Prismatic bottle lower body and edge of base fragment. present height 23mm, EVE 0.28

Opaque red

58. Spur: 9633349: 101: phase B6 (Fig 405)
Bowl? rim fragment: flat underside; rounded edge; slightly concave upper surface; surfaces pitted but not apparently polished. diam 115mm, thickness 5mm

Stone objects

Other household items are mostly fragments from rotary quernstones. Only No. 59 was stratified in a Roman context. It is a lava upper stone with heavily eroded surfaces showing few traces of the characteristic dressing seen on the other lava quernstone fragments (Nos. 60–3), which were recovered from modern contexts on both sites and are therefore residual. The erosion seen on No. 59 suggests that it too was residual in the phase 5/6 context in which it was found, and that it was not a freshly broken stone when it was deposited. The erosion is particularly unfortunate as the upper face of the stone appears to have had a graffito, which is now reduced to just the faint impression of the base of the letters ID, probably part of the name of the Roman army century to which it belonged. The other quernstone No. 64 is a quartz conglomerate and could be of more local origin.

Mayen lava querns are common finds on northern military sites (Welfare 1985, 156), and were well represented in the 1987–92 Birdoswald excavations (Summerfield 1997, 294). In that assemblage, as is often the case, upper stone fragments outnumbered lower stones by a ratio of more than 3 to 1. Here there are two upper and two lower stones; both upper stones were found on the Study Centre site, thus enforcing the upper stone domination from within the fort. The frequent imbalance of upper and lower quernstone fragments is thought result because lower stones are of simpler and stronger design and thus less likely to break (Welfare 1985, 163).

A final item, No. 65, seems most likely to be from a pot lid. It is part of a stone disc with a small central perforation. The outer margin appears to be blackened from soot or a similar substance, primarily on one face, but with traces on the other side as well. Its diameter of *c* 140mm would make it ideal for fitting a BB1 cooking jar, as these consistently have rim diameters of this size. Such jars are often sooted around the rim, including on the interior (J Evans pers com) and so the sooting pattern on No. 65 would be appropriate for a lid. The central perforation was possibly a steam vent and for attaching a knotted string handle.

59. Study Centre: 9733093: 546: phase 5/6 (Fig 406)
Rotary quernstone, approximately half: lava with black grains and white crystalline inclusions, probably Mayen; shallow hopper; cylindrical eye with possible staining from iron at base; inclined grinding face; surfaces much eroded and few traces of dressing furrows remain; possible traces of letters ID on upper margin. diam *c* 410mm, depth at edge *c* 70mm

60. Study Centre: 3219: 1006: phase 8 (Fig 406)
Rotary quernstone, skirt fragment of upper stone: lava with black grains and black and white crystalline inclusions, probably Mayen; retains part of shallow hopper and inclined grinding face; deep grooves on grinding face, shallower ones on side and upper surface. diam *c* 380–400mm (12% of circumference), depth at edge *c* 50mm

61. Spur: 9733092: 852: phase 8 (Fig 406)
Rotary quernstone, lower stone: lava with black grains and black and white crystalline inclusions, probably Mayen; grinding face dressed with furrows in hearts with rotary grinding marks beyond raised area around eye; vertical grooves on side; dished lower face; slightly hour-glass-shaped eye. diam *c* 400mm (25% of circumference), depth at edge *c* 58mm

62. Spur: 9633341: phase B6
Rotary quernstone, fragment of lower stone, lacking undersurface: lava with black grains and black and white crystalline inclusions, probably Mayen; grinding face dressed with furrows and heavily worn on raised area around eye. diam *c* 400–420mm (5% of circumference), depth at edge *c* 55mm

63. 656: 2005: 7: Roman
Small irregularly shaped fragment of Mayen lava quernstone. length 54mm, width 35mm, thickness 17mm

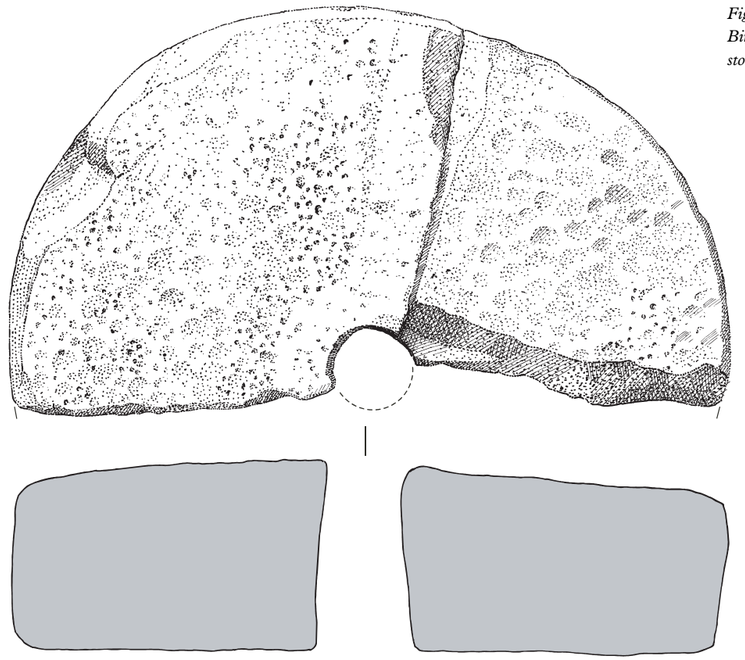


Fig 406
Birdoswald: small finds: stone objects, quern stones.

64. Study Centre: 3220: 1006: phase 8 (Fig 407)
Rotary quernstone, lower stone: quartz conglomerate (average grain size 2–4mm with some inclusions of 6–8mm); inclined grinding face worn smooth around margin; vertical side; roughly dressed, approximately horizontal base; cylindrical central eye. diam *c* 380mm (40% of circumference), depth at margin *c* 45mm, depth at eye 70mm

65. Study Centre: 9733058: 418: phase 6 (Fig 407)
Pot lid?: fine-grained (0.1 mm) micaceous grey/brown bedded sandstone; flat disc broken across small central perforation; outer margin of

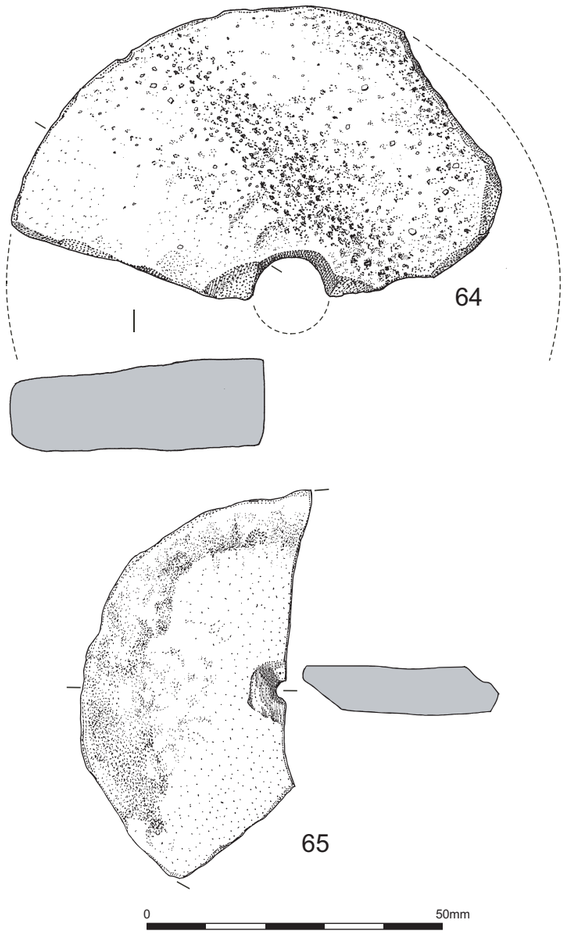


Fig 407
Birdoswald: small finds: stone objects, quern stone (No. 64) and pot lid (No. 65).

c 30mm sooted on one face; traces of sooting on other face at margin. diam *c* 140mm (43% of circumference extant), thickness 16mm

Recreational items

Eight counters made from pottery and glass vessel fragments, and a single example made from stone were recovered. Most of the pottery counters (Nos 66–9) used fragments of 2nd-century Central Gaulish samian as the raw material, and No. 70 was made of a coarseware of Hadrianic or later date. Only the samian counter, No. 66, came from a closely dated Roman context, which is mid-4th-century phase 6 at the Study Centre site. There are grounds for thinking that this counter was in use in the 4th century, and not residual, despite being made from a 2nd-century vessel. The majority of spindle whorls made from re-used samian pottery are found in later 4th-century contexts, suggesting that such pottery was being deliberately sought out for re-use at that time (Cool 2000, 53). Counters made from samian are not found concentrated in late contexts to the same extent. They are, however, regularly found in the same late contexts as the spindle whorls, suggesting that they too were of interest for the same reasons. During the 1987–92 Birdoswald excavations, for example, the only samian counters found stratified in Roman contexts were in late 4th-century dumping in building 198 (Summerfield 1997, 296, nos 145, 149–50). Whether the other two samian counters from these excavations are equally late cannot be deduced from their contexts.

Glass vessel bases where the edge of the vessel wall has been carefully chipped or ground away to leave a disc, as with Nos 71–5, are common in Roman vessel glass assemblages. There is no proof that they were used as counters, but is difficult to see what other purpose they could have served, although No. 74 is particularly large. Blue-green and colourless vessels with tubular pushed-in base rings were commonest in the late 2nd and 3rd centuries, so Nos 71–2 could have been made at that time or later.

66. Study Centre: – : 418: phase 6
Counter: disc from wall of a Drag 31R bowl in CG Lezoux fabric, *c* AD 160–200; has been trimmed to produce an approximately round counter or disc; slight manufactured depression at centre of disc on one side where disc has been marked, possibly in preparation for drilling through or other purpose (SHW). diam *c* 34–38mm, 15g

67. Spur: – : 2: phase A3/4
Counter: disc from the wall of an unidentifiable form in CG Lezoux fabric, *c* AD 120–200; slight depression at centre of disc on one side where disc has been marked, possibly in preparation for drilling through (SHW). diam *c* 22–23mm, 3g

68. Spur: – : 207: Roman
Counter: crudely fashioned disc from the wall of an unidentifiable form, probably in CG Lezoux fabric, although perhaps Rheinzabern ware, *c* AD 120–260 (SHW). diam *c* 19–21mm, 3g

69. 656: 90007: 43: Roman
Counter: fabricated from a Central Gaulish samian vessel of indeterminate form; complete but abraded on edges. diam 25mm, thickness 5mm

70. Spur: – : 164: phase A3 (Fig 408)
Counter: re-used pottery fragment of fabric R01, appearing black. diam 23mm, thickness 6mm

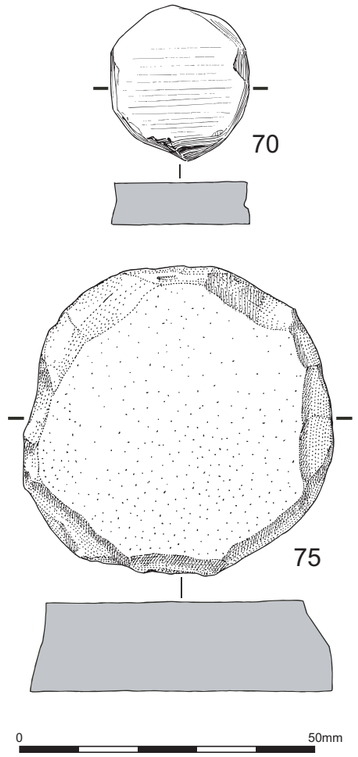


Fig 408
Birdoswald: small finds: recreational objects, counters.

71. Study Centre: 9803105: 1006: phase 8
Counter?: formed from re-used base of blue-green vessel with tubular pushed-in base ring; concave base and pontil scar; body carefully grozed around outer edge of base ring; chipped on alternate sides. base diam 33mm

72. Study Centre: 9803113: 1005: modern
Counter?, approximately half extant: formed from re-used base of colourless vessel with tubular pushed-in base ring; concave base and pontil scar; body carefully grozed around outer edge of base ring. base diam 40mm

73. Spur: 9633306: 6: phase A1
Counter?: tubular pushed-in base ring; broken on interior; body broken around outer edge of base ring and edge ground. base diam 90mm

74. Time Team: sf 1001 and 1138: unstratified
Counter?: two joining fragments; solid pushed-in base ring; concave base with pontil scar; base worn, side grozed. base diam 45mm

75. Study Centre: 3133: 1006: phase 8 (Fig 408)
Counter?: fine-grained (0.5mm) slightly pinkish brown sandstone disc with roughly shaped edges. diam *c* 55mm, thickness 15mm

Buildings and services

Wall plaster (No. 76), window glass (Table 52) and iron nails (Table 53 and No. 77) all show building activity and subsequent demolition or decay. None are closely dateable within the Roman period, although all of the window glass recovered is of the cast variety commonest during the 1st to 3rd centuries. The fact that all three categories are found in pre-Stone Fort features on both sites clearly indicates the presence of glazed and plastered timber buildings on the site before the Stone Fort. One nail from a phase A1 context on the Spur, for example, is a complete bent nail *c* 45mm long. Such nails were needed in large quantities for attaching the timber cladding to buildings. As they did not contain sufficient iron for it to be worthwhile recycling the metal, bent nails were a typical by-product when a timber fort was dismantled and they were discarded

Table 52 Cast window glass (area measured to nearest square centimetre).

site: period	*fragments*	*area (cm²)*
590: A1	2	3
590: A2	1	<1
590: A3	2	12
590: Roman	1	6
585: 6	1	5
585: post-Roman	4	19
590: post-Roman	3	8
BRD 99	3	16
totals	17	69

Table 53 Iron nails stratified in Roman contexts.

site: period	*complete*	*fragments*	*total*
585: Phase 1	–	6	6
590: Phase A1	3	5	8
590: Phase A2	–	6	6
585: Phase 4	–	7	7
585: Phase 5	–	10	10
585: Phase 6	7	12	19
590: Phase A3	2	2	4
590: Phase A4	5	45	50
590: Phase B2	2	3	5
Roman	1	12	13
BRD 99: context 109	–	12	12
BRD 99: context 402	–	1	1
BRD 99: context 702	1	2	3
BRD 99: other Roman	–	13	13
totals	21	136	157

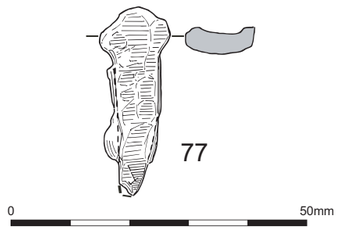
Fig 409 (below)
Birdoswald: small find: nail.

Fig 410 (opposite)
Birdoswald: small finds: tools.

(Manning 1985a, 291). Where the heads survive, most of the nails are of Manning's typical flat-headed form (1985b, 134–5, type 1b), but there is also one example of a type 2 nail (No. 81) where the head is of the same thickness as the shank and can be driven into the wood completely. Nails were also found associated with the cremation burials (Table 54 BRD99 contexts 109, 402, 702), and are discussed as part of the consideration of the pyre goods the pyre goods.

76. Study Centre: 9803276: 1283: phase 1
Wall plaster: light buff surface with two small black spots. area 4cm²

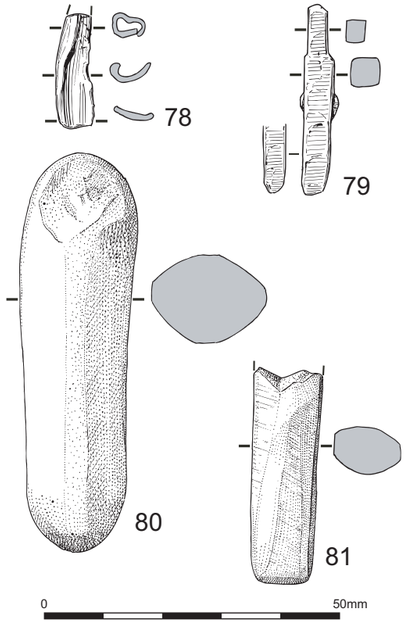
77. Time Team: sf1216: 208 (Fig 409)
Iron nail: rectangular section, diamond-shaped head, twisted out of shape; rectangular-section shank tapering to square section; lower part missing. present length 61mm, head section 22 × 6.5mm



Tools

Tools were rare in the stratified material and, following the pattern established by the previous report (Summerfield 1997, 269), tools from modern contexts have been excluded from consideration. The possible awls recovered from farmyard contexts on the Study Centre site, for example, are likely to be of relatively modern date, used to punch holes in harness straps. Hones and whetstones are treated similarly. This leaves an iron implement that could have been a gouge, or possibly a small scoop (No. 78), a possible carpenters drill bit (No. 79) and two hones (Nos 80–81) of the rectangular form typical of the Roman period. A possible sharpening stone was recovered from the Time Team excavation (No. 82). A possible whetstone (No. 83) came from the 2000 Trench D on the spur.

78. Spur: 9633321: 13: phase A3 (Fig 410)
Iron scoop or gouge?: rectangular-sectioned strip; sides pinched together and broken at one end, thinning to blade-like edge at other; curved around long axis; reddened surface indicative of burning. length 39mm, width 13mm



79. Study Centre: 9733065: 393: phase 6 (Fig 410)
Iron drill bit head?: square section, tapering slightly to bevelled edge; stepped junction to stem. length 64, max section 9mm

80. Study Centre: 9803269: 1283: phase 1 (Fig 410)
Hone: dark grey siltstone with mica; square-sectioned bar with bevelled ends; one face concave from heavy use. length 131 mm, section 28mm

81. Spur: 9633347: 205: Roman (Fig 410)
Hone: dark grey siltstone; rectangular-sectioned bar with one squared and one chipped end; wide faces concave from heavy use. length 72mm, section 19 × 16mm

82. Time Team: sf1206: 202
Sharpening stone?: dark grey siltstone; broken fragment with rounded outer face retaining diagonal parallel grooves on one face as if from sharpening. length 78mm, present section 47 × 24m

83. 656: 2006: 9: Roman
Whetstone: micaceous sandstone, smooth on all sides; scratches visible on sharpening edges, indicating use. max length 93mm, max width 29mm, thickness 16mm (note by N Hembrey)

Fasteners and fittings

As is frequently the case in Roman assemblages, there are many such items from these excavations. Of particular interest is a small dolphin mount, No. 84. A similar mount was found in the Caerleon amphitheatre (Wheeler and Wheeler 1928, 168, no. 42, fig 15). The pair are so similar in detail and size that it seems certain that they came from the same workshop, if not the same mould pattern. The Caerleon example shows that when complete the Birdoswald mount would have had a perforated bud emerging from the pelta. Unfortunately, as neither example comes from a usefully stratified context, the workshop cannot be dated.

Other fittings are examples of more common forms. No. 85 is a bell-shaped stud of Allason-Jones (1985) type 1, although it should be noted that there is no evidence of the lead caulking that normally unites the head and shank. A slightly smaller example of this type was found during the 1987–92 excavations (Summerfield 1997, 307 no. 203, fig 222). There are two other studs, a copper alloy nail and a binding (Nos 89–92), though it is possible that the stud No. 87 could be of relatively modern date. The fitting No. 86 was obviously designed to be part of a

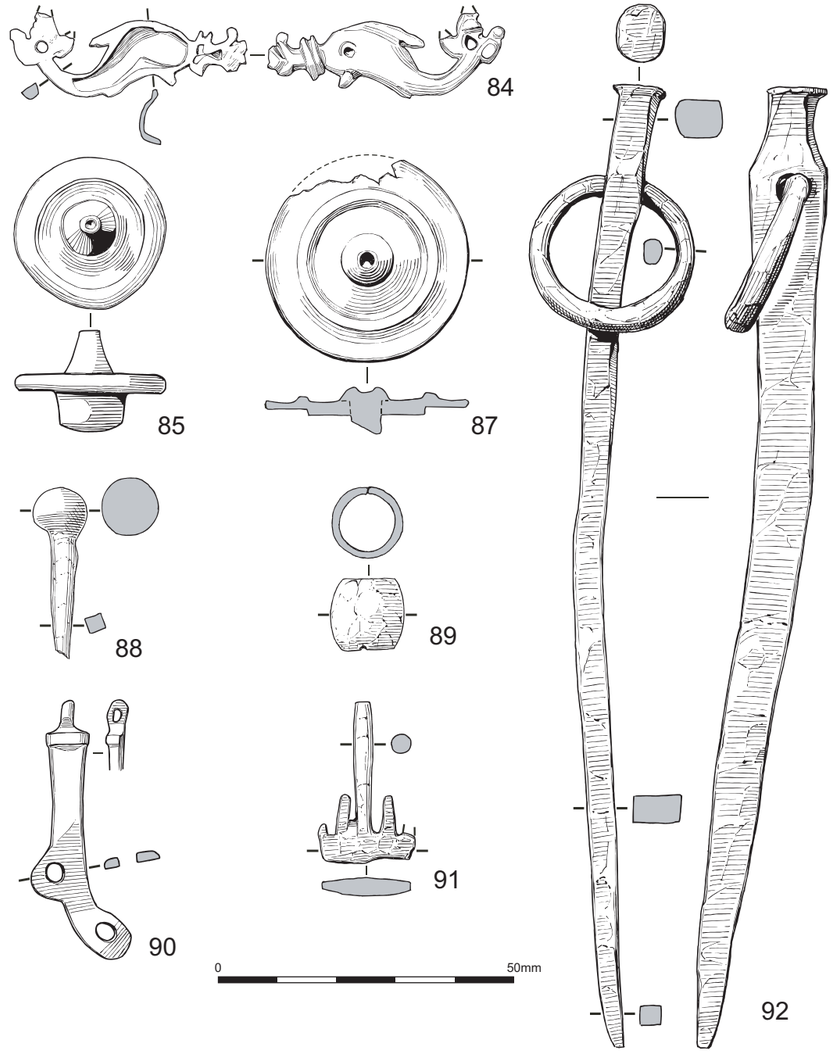


Fig 411
Birdoswald: small finds: fasteners and fittings.

multi-part object. It was found unstratified and no are no parallels of Roman date for it. The nature of the corrosion, however, is similar to that found on other Roman copper alloy implements from the site. T-shaped lift keys are a typical Roman form (Manning 1985b, 90), so No. 90 has been included here despite coming from a modern context. It belongs to a relatively uncommon form with four teeth, rather than two as on the earlier example from Birdoswald (Summerfield 1997, 305 no. 198, fig 220).

The ring-headed spike No. 92 and the drop hinge staple No. 93 are both large pieces and are likely to have been fittings from buildings. The spike may have been designed to anchor a tethering ring, although the ring it currently holds seems rather small for this purpose.

84. Study Centre: 9733013: 398: Post Roman (Fig 411)
Mount in shape of dolphin: copper alloy; hollow-backed; broken across (?) pelta-like moulding projecting from beak; ring and dot cell marking eye, possibly with traces of enamel in base of dot; central perforation in tail. length 40mm, max width 10mm

85. Study Centre: 9733036: 25: phase 8 (Fig 411)
Bell-shaped stud: copper alloy with (?)iron shank; circular dished head with narrow conical projection centrally; back has (?)short copper alloy circular shank obscured by (?)iron corrosion products. diam 25, present length 20mm

86. Study Centre: 9803291: 1283: phase 1 (Fig 411)
Stud head: material unknown; oval domed head with central perforation. diam 9 × 8mm

87. Study Centre: 9803103: 1007: phase 8 (Fig 411)
Stud: copper alloy; circular head with damaged edge in one area and broken shank; upper face has circular moulding and domed centre. diam 35mm, head thickness 1.5mm

88. Study Centre: 9803239: 1269: phase 5 (Fig 411)
Nail: copper alloy; circular-sectioned globular head; square-sectioned head. length 28mm, head section 9mm

89. Study Centre: 9733043: 421: phase 6 (Fig 411)
Binding: copper alloy; cylindrical with hollow-backed convex outer face. length 11 mm, max diam 13

90. Time Team:1002: U/S (Fig 411)
Suspension fitting: copper alloy; rectangular-sectioned curved bar with two perforations; suspension loop at other end set at right-angles to main axis. length 44mm, bar section 5 × 2mm

91. Study Centre: 9733026: 91: phase 8 (Fig 411)
T-shaped lift key: iron; square-sectioned stem; rectangular-sectioned bit retains three teeth of the original four. Length 54mm, stem section 7mm

92. Study Centre: 9733088/9: 491: phase 5 (Fig 411)
Loop-headed spike: iron; rectangular-sectioned bar tapering to point with slight expansion below hammered head; perforation in expansion with ring threaded through. length 330mm, section through expansion 27 13mm, ring diam *c* 55mm

93. Study Centre: 9733013: 352: phase 6
Drop hinge staple: iron; rectangular strip with three square perforations. width 33mm, present length 100mm

94. 656: 2000: 1: Roman
Iron strap fragment: flat in section and roughly rectangular in shape, tapering slightly at one end. length 61mm, max width 29mm (note by N Hembrey)

95. 656: 2003: 11: Roman
Iron ?strap fragment; flat in section and roughly rectangular in shape, but with a small projection at one end, and circular ?iron object (visible on X-Ray) attached to it at the other end, probably through concretion. length 63mm, width 29mm (note by N Hembrey)

Military equipment

An interesting range of military equipment was recovered, concentrated at the Study Centre site. It includes elements from uniforms and armour (Nos 96–99), weapons (Nos 100–101) and, most interestingly, a shackle (No. 103), possibly reflecting the policing role of the army.

The binding No. 96 may come from a helmet – it is of similar size as accepted helmets bindings from elsewhere (for example see Bishop 1998, 64, nos 193–9, fig 20). Its preserved curve is similar to the front edges of cheek-pieces (Bishop and Coulston 1993, figs 57.2 and 58.8).

The elaborate enamelled belt plate No. 97 is closely paralleled by examples from Golledge's Field Caerleon (Bateson 1981, 55, fig 9Ai), the Roman Gates, Caerleon (Webster 1992, 123, no. 88), Manchester (Bruton 1909, 159, no. 15, pls 89–90), Holt (Grimes 1930, 128, no. 22, fig 56), and Chesters (Chesters Museum Acc No. 911). As far as can be established from published scaled illustrations, and from personal inspection of the Birdoswald and Chesters pieces, all of these plates are so similar in overall size, arrangements and size of the enamelled cells, rivet details and other features, an origin from the same workshop and probably from the same mould seems certain. The way in which the Birdoswald plate possibly differs from the others is that close inspection reveals is that one of the transverse spines that divides up the enamelled field is very slightly curved, whereas it is straight in the illustrated examples. On the basis of similarity, Webster (1992, 123) suggested that the two Caerleon plates were manufactured 'on or near the site', an idea further discussed below with regard to the other plates found.

The context of the example from the Roman Gates, Caerleon indicates that these plates must have been in existence by some time in the first half of the 2nd century. Given that much of the legion would have been absent from Caerleon during the second quarter of the century, a date in the first quarter might be more likely for its loss. The discovery of the Birdoswald plate in a phase 1 pit and thus possibly associated with the putative short-lived timber fort (Wilmott 1997a, 54), strengthens the argument for an early Hadrianic date. The family of narrow enamelled belt plates to which these belong is sometimes attributed to the Antonine period (Bishop and Coulston 1993, 119), but there is an increasing body of evidence that they were being worn in the early- to mid-2nd century as well. In addition to these examples from Birdoswald and Caerleon in contexts of that date, there is one with a quatrefoil design from Myrtle Cottage, Caerleon (Fox 1940, 128, no. 10, fig 6) stratified in a barrack of the early timber phase associated with material of *c* AD 90 to 120. At the same site a slightly broader plate with rectangular panels was found with pottery of the early 2nd century (Fox 1940, 134, no. 30, fig 7). This earlier date for the British examples accords with Oldenstein's (1977, 197) view that such belt plates were most likely to have been in use on the German frontier in the first half of the 2nd century.

It is likely that the undecorated belt plate No. 98 is also a 2nd-century piece, despite being found in a mid-4th-century context. From the 3rd century onwards the military favoured broader belts (Bishop and Coulston 1993, 152), and this piece would have been appropriate for the narrower belt of the early Roman period. The heavily corroded fragment No. 99 is the only possible item of military equipment to have been recovered from the Spur. In shape it is very reminiscent of the peltate scabbard chapes (cf Bishop and Coulston 1993, fig 90.8), which are a common late 2nd- and 3rd-century form. It should be noted that this identification is not totally secure, as when complete it would have been somewhat larger than normal for this type, and it may have had four openwork perforations on each face rather than the more normal two.

Two pieces of ammunition were found. No. 100 is a large bolt-head of Manning Type I (Manning 1985a, 170) designed to be shot from a *catapulta*. Similar bolt heads from earlier Birdoswald excavations confirm the presence of catapults at the fort (Summerfield 1997, 310 nos. 261–2). No. 101, a roughly formed stone ball weighing only 625g it is far too small to have been ammunition for a *ballista* – Baatz (1978, 7), for example, notes that the 10 Roman pound weight (3.27kg) was considered only a medium-sized stone. No. 101 could easily be thrown by hand, as could similar stones from earlier Birdoswald excavations (Summerfield 1997, 312, nos 272–3). Vegetius (1.16) notes that 'it is advisable that recruits be thoroughly trained at casting stones by hand or with sling'. Although such ammunition in the field might have been unworked cobbles, in a fort it may be have been thought worthwhile to produced roughly-shaped pieces such as No. 101 for such practice.

Finally, the iron shackle No. 102 is an example of a Manning type 4 shackle, where the loops for fastening are at right angles to the frame (Manning 1985b, 82–4), which Thompson (1994, 99–103, illus 49–51) calls a Künzing type Roman shackle. They were in use by AD 20–30 and still in use in the early- to mid-3rd century. Many have been found on military sites, thus identification as military equipment seems appropriate here, although they are also found in civilian contexts. The example from the Walbrook, London (Manning 1985b, 84, no. M1, pl 35; Wilmott 1991a, 128, no. 455) presumably mid-1st to mid-2nd century AD, as following the generally accepted date of the finds from this river bed (Merrifield 1962; Wilmott 1991a, 175), could fall into the civilian category. The example from Castle Street, Carlisle (Padley 1991a, 152, no. 486, fig 135) was found in a very late 2nd- or early 3rd-century context and thus post-dates military involvement with the site, although a number of finds of military character were found stratified in the contexts of that period (McCarthy 1991, 42). The contexts of this Birdoswald example and the one from the Old Penrith fort (Mould 1991, 200, no. 741, fig 102) are clearly military.

The manacles were fastened tightly by a ring passed over the two loops to hold them together; and a chain passed through the

paired loops (Thompson 1994, illustration 54). The internal diameter on the arm which has the permanently closed loop at 90° to that of the rest of the arm provides the minimum diameter of the manacle. All of those from British sites have a minimum diameter of *c* 50mm to 53mm, which appears quite small. This was sufficient to suggest to Mould (1991, 186) that the one from Old Penrith might have been some sort of horse trapping rather than a manacle for humans. It seems probable that they were large enough internally for a manacle, as the Romano-British population was of shorter average stature than is normal today, and of lighter build (T O'Connor, pers comm). The small size of the manacle from northern Britain perhaps casts light on the reference to '*Brittunculi*' in one of the letters found at Vindolanda (Bowman and Thomas 1994, 106 letter 164) – a new word, translated as 'wretched Britons'. Perhaps it should instead be understood as a slighting reference to the small stature of the Britons!

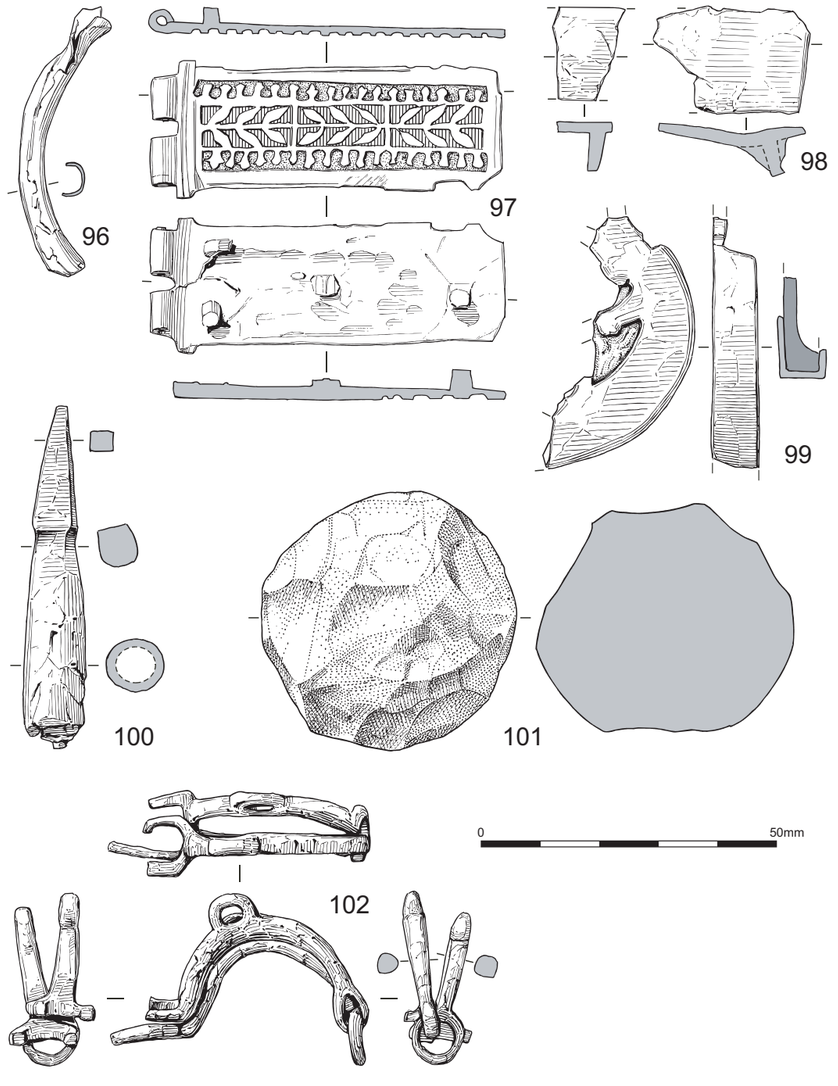


Fig 412
Birdoswald: small finds: military objects.

It is of some interest to note that all examples of Künzing type manacles found in Britain have an additional eye on each arm even though in general this feature seems rare. The Carlisle and London examples retain oval iron rings, presumably to provide junctions for other chains, perhaps uniting pairs of manacles together to form a type of handcuff.

96. Study Centre: 9733041: unstratified (Fig 412)
Helmet binding (?): copper alloy; U-shaped sheet binding retaining a convex curve. length *c* 50mm, depth 4mm, thickness 4mm

97. Study Centre: 9803250: 1283: phase 1 (Fig 412)
Belt plate: copper alloy; cast rectangular plate with two perforated cylinders for articulation, with buckle at one end, two integral rivets on underside close to hinge (one bent over) and a third centrally close to other end; under face shows hammering marks and a central sub-square stump from casting; upper face has tripartite enamelled field separated from buckle articulation by two transverse mouldings of slightly greater width than majority of plate; enamelled field comprises wider central panel flanked by narrow panels; inner zone has enamelled cells outlining a leaf pattern in the copper alloy of the belt plate – three panels of six leaves pair a central spine with panels divided by transverse spines, one closest to buckle articulation very slightly curved; flanking panels have series of small keyhole-shaped cells projecting in from base line; central panel enamel green; flanking panels enamel, now much decayed, appear brown; edges slightly chipped in places, but otherwise in good condition. length 60mm, max width 23mm

98. Study Centre: 9733045: 455: phase 6 (Fig 412)
Belt plate: copper alloy; narrow rectangular plate with integral rivet centrally at each short end on underside; upper face has faint silvery glint as if originally coated with white metal; in two non-joining pieces with hard corrosion products on underside. min length 37mm, width 18mm

99. Spur: 9633361: 126: phase B5 (Fig 412)
Scabbard chape (?): copper alloy; side of peltate chape retaining small part of one face, possibly with two openwork areas and perforation on lower side; much corroded and retaining black deposits internally that might be carbon or leather remnants. 42 × 17mm, thickness 7mm,

100. Study Centre: 9803174: 1006: phase 8 (Fig 412)
Catapult bolt head: iron; square-sectioned bolt head tapering to burred point; expanding closed socket filled with mineralised wood. length 105mm, max diam of socket 22 × 18mm

101. Study Centre: 9733078: 546: phase 516 (Fig 412)
Shot: light grey, fine-grained sandstone with small black grains; roughly pecked sphere. diam *c* 80mm, 625g

102. Study Centre: 9733039: 14: phase 8 (Fig 412)
Shackle: iron; two semi-circular bands permanently linked at one end by closed circular loops; other ends terminating in broken rectangular loops at 90° to bands; each band has semi-circular projecting eye midway along outer edge; two parts now lie alongside each other. internal diam when closed now 50 × *c* 55–60mm

Religious objects

A fragment of a pipe-clay figurine was found on the Spur, and is a fragment of a basketwork chair of the type seen on the 2nd-century Central Gaulish *Dea Nutrix* figurines (Jenkins 1978, 151). It was found in a ditch fill with Hadrianic–Antonine pottery and thus must have been broken when it was still relatively new.

In general *Dea Nutrix* and *Venus* figurines were the most popular of various figure types in Roman Britain, but there is an interesting difference in their distributions – *Dea Nutrix* figures are rare in the north. Van Boekel (1993, 247) could cite only three northern examples – Chesterholm, Piercebridge and Vindolanda – out of the 60 in Britain then known. A fragment of one from Corbridge (Allason-Jones1989, 214, no. 22) and this example from Birdoswald can be added to this tally. Although the distribution is clearly now much wider than when Jenkins (1957) first mapped the distribution, it does appear that *Venus* figurines are by far the commonest pipe-clay figurine type in the north. From the earlier Birdoswald excavations, for example, there

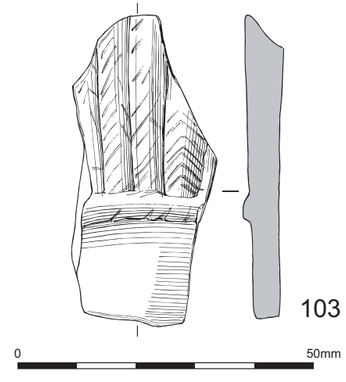


Fig 413
Birdoswald: small finds: religious object, pipeclay figurine.

are fragments from two *Venus* figurines (Summerfield 1997, 312, no. 278). The scarcity of *Dea Nutrix* figures presumably indicates little worship of this form of the Mother Goddess in the north. Some pipe-clay figurines appear to have been appreciated as ornaments or toys, but the *Dea Nutrix* form is more certainly a religious artefact (Jenkins 1978, 152).

103. Spur: – : 207; Roman (Fig 413)
Dea Nutrix figurine fragment: creamy white pipe-clay; lower part of back or side of figurine; slightly uneven bevelled base, horizontal diagonally nicked moulding below vertical shallower ribs with herringbone decoration. 53 × 23mm

Metalworking artefacts

The working of non-ferrous metals was attested by discoveries of crucibles during the 1987–92 excavations (Hird 1997, 253, nos 251–2), but insufficient residues remained for the alloy to be identified. On the Study Centre site the small crucible No. 104 had been used to recover silver from lead by cupellation. It has a typical shallow form, and such vessels are termed 'heating trays'. Working precious metals on military sites cannot have been uncommon, judging from the number of crucible fragments recovered. Heating trays for cupellation and crucibles for melting silver were recovered from contexts dating to AD 75–200 within the legionary fortress at Caerleon (Zienkiewicz 1993, 124) for example, and even in a campaigning base fort such as Castleford a crucible that had been used either to melt or refine silver was recovered from the earliest occupation deposit (Bayley 1998, 223, no. 22). Unfortunately No. 104 came from a modern context, so when within the life of the fort silver was being worked is unclear.

Blacksmithing must have been a regular activity in the fort, but the only evidence of this appears to be a fragment of an iron bar (No. 105) with a transverse cut. It may be an off-cut produced during smithing when many artefacts start life as iron bars.

Fig 414
Birdoswald: small finds: metalworking artefact, crucible.

104. Study Centre: 9803175: 1006: phase 8 (Fig 414)
Crucible rim fragment: grey ware; shallow vessel with vertical rim and convex curved side; interior, rim edge and part of exterior coated with black residue; EDXRF analysis of residue shows shows presence of lead, silver and copper consistent with the cupellation of lead to recover silver. rim diam 35mm, height 10mm

105. Study Centre: 9803224: 1215: phase 6a
Iron bar: rectangular-sectioned with transverse facet across one end and rounded end at other. length 41 mm, section 20 × 9mm

Miscellaneous artefacts (Table 54)

106. Study Centre: 9733067: 520: phase 5 (Fig 415)
Decorated iron bar: rectangular-sectioned, slightly expanding in width and becoming hollow-backed at notched end with transverse rib running across upper face; other end squared off and shallowly bevelled on upper face; sides and upper face tinned (XRF analysis detected copper, tin, iron and lead in surface coating). length 50mm, section 10 × 2mm

107. Time Team:sf 1706: 701 (Fig 415)
Iron bar: rectangular-sectioned; both ends broken; small circle with lines radiating out around circumference visible centrally on X-radiograph – investigative conservation failed to locate this as the original surface has now disappeared leaving only a hollow corrosion crust. The absence of any trace of the pattern suggests that it was a stamp rather than an inlay, as inlays of other metals tend to survive well even on highly corroded ironwork (Jennifer Jones, pers comm). The rectangular section of this piece precludes it being a blade fragment. present length 44mm, section 9.5 × 4mm

108. Spur: 9633316:12: phase A3/4 (Fig 415)
Iron spatula?: rounded square plate tapering towards one side where edge broken, possibly due to breakage of handle; slightly convex-curved around axis with possible handle. 33 × 35mm

109. Study Centre: 9733042: 452: phase 6a (Fig 415)
Rolled sheet lead: thick sheet rolled into slightly ovoid rod with tapering blunt ends. length 62mm, max section 17 × 14mm

Table 54 Miscellaneous metal fragments (sheet rod, etc) stratified in Roman contexts.

site: phase	*copper alloy*	*lead alloy*	*iron*	*total*
585: Phase 4	–	-	1	1
585: Phase 5	6	-	-	6
585: Phase 6	–	-	9	9
590: Phase A1	–	-	1	1
590: Phase A2	–	–	2	2
590: Phase A3	–	-	4	4
590: Phase A4	–	1	3	4
590: Phase B2	–	1	1	2
585/590: Roman	–	–	2	2
BRD 99	–	–	4	4
656: Roman	–	–	1	–
totals	6	2	28	35

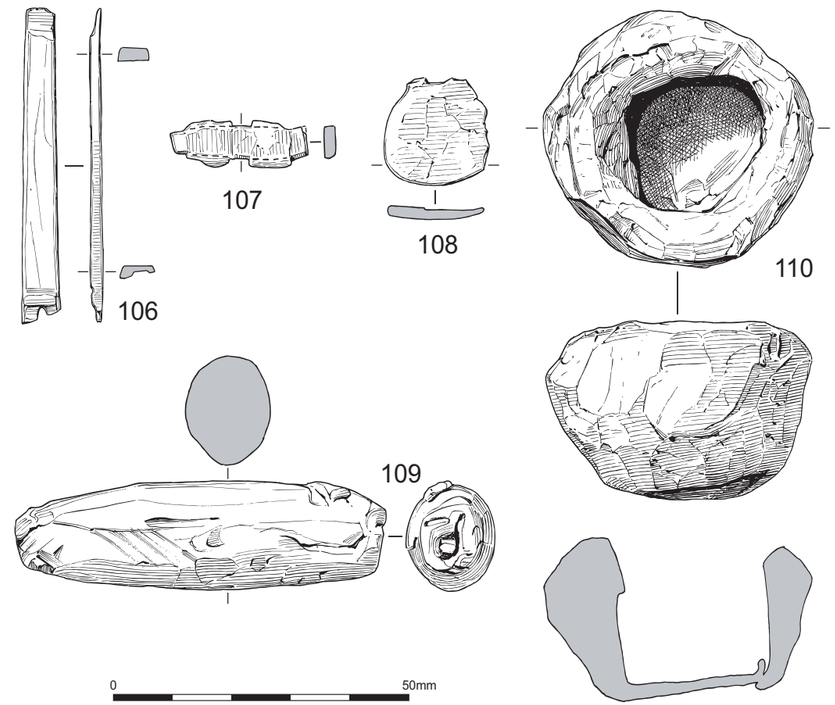


Fig 415
Birdoswald: small finds: miscellaneous objects.

110. Study Centre: 9803130: 1006: phase 8 (Fig 415)
Lead 'cup': approximately circular cup with slightly concave base and sub cylindrical aperture with flat base. diam 44mm, depth 26mm

111. Spur: 9633383: 79: phase A2
Perforated iron plate: rectangular, curved, with central perforation near one squared end. length *c* 150mm, width 51mm

112. 656: 009: 11: Roman
Iron object: roughly carrot-shaped, but slightly spatulate at top, and flattish in section; probable miscellaneous structural fitting. length 67mm, max width 18mm

113. Study Centre: 9803225: 1215: phase 6a
Iron wire: possibly bent into a spiral. diam of spiral *c* 15 (identified from X-radiograph)

114. Study Centre: 9803296: 1283: phase 1
Fragment of fine-grained grey siltstone (?): one face possibly dressed flat. 76 × 39 × 22mm

115. 656: 2009: 5: Roman
Small fragment of pale pink-coloured ceramic: rod-like in section, flat-surfaced and slightly curved in profile; function unknown, although possibly inlay of some sort, for a mosaic or for a larger item of furniture. max length 21mm; max width 9mm; thickness 7mm

Overview

Table 55 summarises the material from the Study Centre and Spur sites according to function (excluding structural and miscellaneous items, and vessel glass fragments; also Nos 83, 94–5 recovered subsequently to

Table 55 A comparison of the finds from Birdoswald.

functional category	*1987–92*	*site 585*	*site 590*
Personal Ornaments	32%	24%	57%
Toilet Equipment	3%	–	–
Textile Equipment	4%	3%	4%
Household	16%	11%	9%
Gaming Equipment	6%	11%	13%
Weights and Measures	1%	–	–
Writing Equipment	1%	–	–
Tools	6%	5%	9%
Fitting and Fasteners	19%	24%	–
Agricultural items	1%	–	–
Military Equipment	9%	16%	4%
Religious items	3%	–	4%
Metalworking	1%	5%	–
totals	314	37	23

the work for this report). Materials from the 1987–92 excavations are summarised in the same way for comparison. (It should be noted that hones are underrepresented, as only two of an unstated number of Roman examples were published in the catalogue (Summerfield 1997, 302). The material from the Time Team site has been excluded as much derives from burial contexts and is thus not comparable.

The tables show that the numbers of small finds from the two more recent excavations are many fewer than from the 1987–92 excavations – too small for formal comparisons. In general, however, the patterns are broadly comparable.

The least well represented categories in the 1987–92 excavations are absent from the Study Centre and Spur sites. The best represented categories from the 1987–92 excavations (personal ornaments, household items, fasteners and fittings and military items) are also well represented in the Study Centre assemblage. Finds from the Spur are underrepresented in fasteners and fittings and military equipment, but the total volume of finds from the site is so small that such fluctuations are probably not significant. Despite the small size of the assemblages, they do cast interesting light on the history of the garrison of the fort at Birdoswald, especially during its early phase.

As noted above, the presence of painted wall plaster, bent iron nails and fragments of window glass in contexts that pre-date the Stone Fort is strong evidence for the presence of timber structures on the site before the Stone Fort. Bent nails indicate nothing more than that some buildings were probably present, but the fact that the buildings appear to have been glazed and plastered suggests buildings of more than temporary use. These finds therefore provide evidence for a timber fort.

A few other finds were also found in pre-Stone Fort stratified contexts, including hobnails, vessel glass fragments, a hone and a small stud – the sort of ubiquitous finds found on any Romanised site of the early- to mid-2nd century, but which are of little help when trying to characterise the nature of the early occupation at the site. Nor is the umbonate brooch useful for this purpose, although in this case it is because it is a rare variant. The enamelled belt plate, however, is more informative. It belongs to a group of plates that are so similar that a common origin is likely. It has been suggested that the workshop might have been at Caerleon, but, given the distribution of the plates, this is open to question. There are, however, other links to Caerleon in the Birdoswald finds that might support the suggestion.

The best link is the comelian intaglio found below the Turf Wall – either lost or, as suggested above, deliberately placed by one of the builders (Henig 1997, 283, no. 86, fig 195, pl 12). This is stratigraphically contemporary with the belt plate. It is best paralleled by a sardonyx intaglio found west of the Porta Decuma at Caerleon (Henig 1974, 93, no. 706). Both share the device of an eagle with wreath in its beak standing between legionary standards, a device specifically associated with legionaries. The dolphin fitting can also be precisely paralleled at Caerleon, suggesting that items from the same workshop were reaching both sites. Unfortunately neither piece is closely dated, so it is impossible at present to know whether they are contemporary with the belt plate and the intaglio.

Other links to the broad south-western area are also suggested by plate brooch No. 4 and bead No. 5. The bead was found unstratified but on typological grounds could have been associated with early occupation at the site. Whether or not the plate brooch was contemporary with the belt plate and intaglio cannot be proven because the brooch was found in a mid-4th-century context, and the only independent dating for the type only suggests a *terminus ante quem* of *c* AD 180. Though no beads like No. 5 have been reported from Caerleon, there is an interesting indirect connection to the fortress there. Another bead almost certainly made at the same time as the Birdoswald one was found at Claydon Pike, a site where there was some activity by Legio II Augusta, judging by a graffiti found at the site (Frere 1983, 314); and this of course was the garrison at Caerleon.

Although this evidence is all circumstantial, when combined with the building inscription found in the Mc50TW (High House 50), it suggests that the earliest builders in the Birdoswald vicinity were Legio II Augusta. The Turf Wall milecastle inscription *(RIB* I , 596, no. 1935) does not preserve the name of that legion, but the phraseology used is

appropriate for II Augusta rather than for XX Valeria Victrix.

Information that can be derived from these finds about later occupation is more limited, although the veneers found with the burial in pit 703 provide a valuable insight into 3rd-century funerary practices (pp 278–91). Few finds are typologically 4th century, although among those that are often point to the presence of females. The jet bead is a 4th-century form, and black shiny jewellery seems to have been a prerogative of females (Allason-Jones 1996, 17). The spindle whorls are also most likely late Roman products; and spinning was probably a female task. The late Roman presence of females within the fort was also noted from the 1987–92 excavation finds (Summerfield 1997, 360).

Equally, there is little that typolgically must belong to the immediately sub-Roman period, although there is, the single bead No. 15 of 6th- or 7th-century date, which can be added to the small body of evidence for post-Roman occupation.

The Roman Coins

by David Shotter

This report comprises: identification and listing of the coins, denominational distribution and discussion. Comparisons are to the corpus of Roman coins already known from Birdoswald (Shotter, 1990; 1995; Davies, 1997, 320–6).

Thirty-seven coins were recovered from the excavations. Two were British (18th and 20th centuries), and one was an illegible fragment of a Roman *aes*-issue. Thirty coins came from the Study Centre site (including the illegible *aes*-fragment), two from the Spur sites and three from the Time Team site. The total number of legible Roman coins found at Birdoswald is thus 237. Table 56 shows them distributed chronologically by intervention.

Table 56 Chronological breakdown of coinage for each archaeological intervention at Birdoswald.

	1928–29		*1987–92*		*1996–99*		*casual finds*	*total*	
	no.	%	no.	%	no.	%	no.	no.	%
I (–AD410)	–		1	0.69	–		–	1	0.42
II (41–54)	–		–		–		–	–	
III (54–68)	–		–		–		–	–	
IV (69–96)	–		3	2.07	3	8.57	1	7	2.95
V (96–117)	4	8.51	12	8.28	3	8.57	1	20	8.44
VI (117–138)	2	4.25	11	7.59	3	8.57	1	17	7.17
VII (138–161)	7	14.89	7	4.83	–		1	15	6.33
VIII (161–180)	–		4	2.76	4	11.43	1	9	3.80
IX (180–192)	–		2	1.38	–		2	4	1.69
X (192–222)	5	10.64	4	2.76	5	14.28	–	14	5.91
XI (222–235)	1	2.13	1	0.69	1	2.86	–	3	1.27
XII (235–259)	–		2	1.38	1	2.86	1	4	1.69
XIII (259–275)	10	21.28	32	22.06	13	37.14	1	56	23.62
XIV (275–294)	–		1	0.69	–		–	1	0.42
XV (294–324)	1	2.13	10	6.90	1	2.86	–	12	5.06
XVI (324–330)	–		5	3.45	–		–	5	2.11
XVII (330–346)	6	12.77	28	19.30	–		–	34	14.35
XVIII (346–364)	5	10.64	8	5.52	–		1	14	5.91
XIX (364–378)	3	6.38	13	8.96	1	2.86	–	17	7.17
XX (378–388)	1	2.13	–		–		–	1	0.42
XXI (388–)	2	4.25	1	0.69	–		–	3	1.27
totals	47		145		35		10	237	

percentages	*1928–29*	*1987–92*	*1996–99*	*total*
I–V	8.51	11.04	17.14	11.81
VI–XII	31.91	21.39	40.00	27.86
XIII–XVII	36.18	52.40	40.00	45.56
XVIII–XXI	23.40	15.17	2.86	14.77

Catalogue

A The Spur Site (590)							
1	Faustina I	963 3326	ÆΔ Dupondius	very worn	AD 161–76	14	
2	Radiate copy	963 3332	ÆΔ	very worn	cAD 270–90	96	
B The Study Centre Site (585)							
3	Vespasian	980 3301	ÆΔ Denarius	very worn	AD 69–71	1005	RIC 10
4	Vespasian	980 3299	ÆΔ As	very worn	AD 69–79	894	
5	Trajan	973 3000	ÆΔ Sestertius	very worn	AD 103–111	421	RIC 497
6	Trajan	973 3053	ÆΔ Depondius	very worn	AD 103–111	389	
7	Hadrian	980 3145	ÆΔ Denarius	mod worn	AD 137	1005	RIC 267; Hill, 1970, 835
8	Hadrian	980 3146	ÆΔ Denarius	little worn	AD 133	1005	Hill, 1970, no. 528
9	Hadrian	980 3144	ÆΔ Sestertius	very worn	AD 119–121	1005	RIC 589
10	Faustina II	980 3209	ÆΔ Sestertius	mod worn	AD 161–176	1165	RIC (Marcus), 1642
11	Commodus	973 3051	ÆΔ Sestertius	mod worn	AD 179	460	RIC (Marcus), 159 (as Caesar)
12	Septimius Severus	980 3101	ÆΔ Denarius	mod worn	AD 199	1027	Hill, 1977, no. 388
13	Septimius Severus	980 3141*	ÆΔ Denarius	little worn	AD 209 (?)	1006	RIC 278a
14	Caracalla	973 3047 (i)*	ÆΔ Denarius	little worn	AD 201+	418	RIC IV, p 261
15	Caracalla	973 3047 (ii)*	ÆΔ Denarius	little worn	AD 201+	418	RIC IV, p 261
16	Julia Paula	980 3137	ÆΔ Denarius	mod worn	AD 218+	1006	RIC 216
17	Severus Alexander	980 3125	ÆΔ Denarius (frag)	mod worn	AD 222–235	1006	
18	Gordian III	973 3054	ÆΔ Antoninianus	mod worn	AD 238–240	388	RIC 4
19	Claudius II	980 3248	ÆΔ radiate copy	mod worn	AD 268–270	1006	RIC 98
20	Divus Claudius	980 3138	ÆΔ radiate copy	mod worn	AD 270	1006	
21	Victorinus	980 3140	ÆΔ radiate copy	Mod worn	AD 269–271	1006	RIC 61
22	Tetricus I	980 3122	ÆΔ radiate copy (frag)	mod worn	AD 271–273	1006	RIC 76
23	Tetricus I	980 3124	ÆΔ radiate copy	little worn	AD 271–273	1006	RIC 147 (?)
24	Tetricus I	980 3139	ÆΔ radiate copy	very worn	AD 271–273	1006	
25	Tetricus I	980 3297	ÆΔ radiate copy (frag)	very worn	AD 271–273	1006	
26	unassignable	973 3018	ÆΔ (frags)	very worn	c AD 270–280	26	radiate copy
27	unassignable	980 3123	ÆΔ (frag)	Very worn	c AD 270–280	1006	radiate copy
28	unassignable	980 3127	ÆΔ (frag)	Mod worn	c AD 270–280	1006	radiate copy
29	unassignable	980 3129	ÆΔ	very worn	c AD 270–280	1006	radiate copy
30	Constantine I	980 3126	ÆΔ	mod worn	AD 323–324	1006	RIC VII (London), 263
31	Valentinian I	980 3128	ÆΔ	mod worn	AD 364–367	1006	LRBC II, 992

* Three coins require comment:

a) Coins 14 and 15 (973 3047 i) and ii)): These denarii are identical hybrids with obverses of Caracalla (ANTONINVS PIVS AVG) and reverses of Septimius Severus (P M TR P III COS II P P). The obverse belongs to issues of AD 201–211, the reverse to AD 196 (see RIC IV, p 261). The coins are described by the English Heritage conservator as 'of a base silver alloy'.

b) Coin 13 (980 3141): This denarius-type is RIC 278a of c AD 209. However, laboratory-analysis shows that it consists of copper, iron, tin and lead, but with no silver present at all. Presumbaly, the 'coin' was either a forgery, intended to deceive, or possibly a votive object. 'Forged' denarii are known also from Maryport (see P J Casey in Jarret„ 1976, 47).

C Channel 4 Time Team site (BRD 99)					
Three coins were recovered, all unstratified:					
32 Domitian	ÆΔ Denarius	little worn	AD 95–6	1003; U/S	
33 Trajan: 1 coin	ÆΔ Denarius	little worn	AD 117	1201; U/S	RIC 331; Hill, 1970, 762
34 Marcus Aurelius	ÆΔ Sestertius	mod worn	AD 172–3	1203; U/S	RIC 1049

Denominational Distribution (Periods 1–X)

Unfortunately, many of the coins from 1928–9 (and casual finds) were published by Richmond (1930) without giving their denominations. These coins cannot be located for re-study. The seventeen coins that could be valued are listed in Table 57. An the indication of *As* value is presented in Table 58.

Tables 59 and 60, and 61 and 62, respectively, give the same information the coins from 1987–92 and from these more recent excavations.

Table 57 Coins that could be valued from excavations in 1928–9.

period	*denarius*	*sestertius*	*dependius*	*as*	*total coins*	*total value in assessment*
I	–	–	–	–	–	–
II	–	–	–	–	–	–
III	–	–	–	–	–	–
IV	–	1	–	–	1	4
V	2	1	–	–	3	36
VI	–	2	–	–	2	8
VII	2	3	–	–	5	44
VIII	–	1	–	–	1	4
IX	–	–	–	–	–	–
X	4	–	–	1	5	65
totals	8	8	–	1	17	161

Table 58 As value of coins from 1928–9.

period	*'As–value' per coin*	*% Denarii*
I	–	–
II	–	–
III	–	–
IV	4.0	–
V	12.0	66.67
VI	4.0	–
VII	8.8	40.00
VIII	4.0	–
IX	–	–
X	13.0	80.00
overall	9.47	47.06

Table 59 Coins that could be valued from excavations in 1987–92.

period	*denarius*	*sestertius*	*dependius*	*as*	*total coins*	*total value in assessment*
I	1	–	–	–	1	16
II	–	–	–	–	–	–
III	–	–	–	–	–	–
IV	2	1	–	–	3	36
V	2	4	3	3	12	57
VI	4	3	1	3	11	81
VII	2	3	1	1	7	47
VIII	2	2	–	–	4	40
IX	2	–	–	–	2	32
X	4	–	–	–	4	64
totals	19	13	5	7	44	373

Table 60 As value of coins from 1987–92.

period	*'As–value' per coin*	*% Denarii*
I	16.00	100.00
II	–	–
III	–	–
IV	12.00	66.67
V	4.75	16.67
VI	7.36	36.36
VII	6.71	28.57
VIII	10.00	50.00
IX	16.00	100.00
X	16.00	100.00
overall	8.48	43.18

Table 61 Coins that could be valued from excavations 1996–99.

period	*denarius*	*sestertius*	*dependius*	*as*	*total coins*	*total value in assessment*
I	–	–	–	–	–	–
II	–	–	–	–	–	–
III	–	–	–	–	–	–
IV	2	–	–	1	3	33
V	1	1	1	–	3	22
VI	2	1	–	–	3	36
VII	–	–	–	–	–	–
VIII	–	3	1	–	4	13
IX	–	–	–	–	–	–
X	5	–	–	–	5	80
totals	10	5	2	1	18	184

Table 62 As value of coins from 1996–99.

period	*'As–value' per coin*	*% Denarii*
I	–	–
II	–	–
III	–	–
IV	11.00	66.67
V	7.33	33.33
VI	12.00	66.67
VII	–	–
VIII	3.25	–
IX	–	–
X	16.00	100.00
overall	10.22	55.56

Table 63 Total as value of coins from all excavations 1987–92.

period	*'As–value' per coin*	*% Denarii*
I	16.00	100.00
II	–	–
III	–	–
IV	10.43	57.14
V	6.39	27.78
VI	7.81	37.50
VII	7.58	33.33
VIII	6.33	22.22
IX	16.00	100.00
X	14.93	92.86
overall	9.09	46.84

Table 63 shows coin-values by period for the entire sample of Birdoswald Roman coins.

Discussion

Chronology of coin-loss

The sample of coins from the excavations of 1996–8 and 1999 is relatively small; its profile, however, closely resembles those of the excavations of 1928–9 and 1987–92, especially that of the former, which was also concerned with the fort's barrack-accommodation. The most obvious difference is the near-absence from the 1996–8 group of coins later than AD 275, which is explained by post-Roman truncation of the north-west quarter of the fort.

Table 64 All coins with Periods XIV–XXI eliminated.

period	*1928–29 (29 coins)* %		*1987–92 (79 coins)* %		*1996–99 (33 coins)* %	
I	–	20.69	1.27	34.18	–	27.27
II	–		–		–	
III	–		–		–	
IV	–		3.80		9.09	
V	13.79		15.19		9.09	
VI	6.90		13.92		9.09	
VII	24.14	24.14	8.86	16.45	–	12.12
VIII	–		5.06		12.12	
IX	–		2.53		–	
X	17.24	20.69	5.06	8.86	15.15	21.21
XI	3.45		1.27		3.03	
XII	–		2.53		3.03	
XIII	34.48		40.51		39.39	

If, for the purpose of comparison, we 'eliminate' the coins of periods XIV–XXI (Table 64), then a much greater homogeneity between the groups is apparent.

Variations between the groups in periods I–V are not significant in terms of fort-occupation, as all these coins were residual in circulation from the Hadrianic period onwards. It is likely that this explanation can be applied to the republican *denarius* from 1987–92. Reece (1974, 84) has shown that while Trajan's 'demonetisation' of 'old silver' in *c* AD 107 was intended to remove from circulation all silver coinage earlier than Nero's reforms of AD 64, such a policy probably did not become fully effective in Britain until Hadrian's reign. Nonetheless, the considerable amount of pre-Hadrianic coinage, highlighted by the *denarii* that came from the work in the *vicus*, may lend weight to the proposition that the building of the Turf Wall preceded Hadrian's visit to Britain and the commencement of construction of the Stone Wall (Shotter, 1996, 66–7).

Coin-loss in the 2nd century is generally affected by the development of inflation, when the smaller denomination coins become progressively less relevant to everyday needs. Casey (1974, 44) has also made the point that loss of higher denomination coins was probably followed by a keener search, perhaps made more feasible by the greater incidence of stone surfaces by that time. The effect is generally a gradual decline in coin-loss during the 2nd century, which is clearly evident in the larger sample of 1987–92. However, not too much should be read into the difference in 2nd-century coin-loss between the samples of 1987–92 and 1996–99 – unless the slight fall in the latter sample of Hadrianic coin-loss and the absence of coins of the reign of Antoninus Pius point to some adjustments in manning consequential upon the Antonine re-occupation of Scotland. In general, however, the level of 2nd-century coin-loss at Birdoswald would not support the contention of the complete abandonment of Hadrian's Wall and its installations in the reign of Antoninus (Hartley, 1972). In any case, the coins of the reign of Marcus Aurelius offer evidence of continuing activity through the remainder of the 2nd century.

Severan coin-loss is strong – at the level noted particularly in the excavations of 1928–29; further, the presence of some coins of the normally poorly represented

periods XI and XII gives no hint of any interruptions in the first half of the 3rd century. Radiates and copies occupy a proportion of all Birdoswald samples approximately equal to (or a little higher than) the majority of occupied sites in north-west England; we can assume that some, at least, of these were losses into the latter years of the 3rd century. This raises a question over the often-suggested under-manning of the fort at Birdoswald in the second half of the 3rd century, and offers a strong contrast to the situations evident at neighbouring Castlesteads and Stanwix (Shotter, 1990). Beyond this point, however, disturbance suffered by the Roman deposits and the consequent lack of coin-loss preclude meaningful comment on the 1996–99 sample.

Denominational distribution

Caution is needed in any analysis of Roman coin distribution. An example is provided by the Birdoswald coins: in a measurement of the 'wealth' represented by the coins as an '*as*-equivalent', Birdoswald 'scores' highly. In the Flavian and Trajanic periods this clearly can have had no connection with any factor at work during those periods. If we assume – as is reasonable – that the fort at Birdoswald was a Hadrianic foundation, then the Flavian and Trajanic coins found will have been residual in circulation in the Hadrianic period (or later). To some extent, therefore, the types of earlier coins used (and lost) will reflect the predominant denominations in circulation at the-time of loss. Thus, the bulk of Flavian and Trajanic coins circulating at Birdoswald were *denarii* and *sestertii*. Similarly, the progression of inflation during the 2nd century placed even greater weight on such high denomination coins – as is clear from the coins of period X. It is, however, striking that in comparison with other sites the measure of '*as*-equivalence' is higher at Birdoswald during the 2nd century than at almost any other site in the north-west, owing to the strong showing of *denarii* (Shotter, 2000). The obvious conclusion to be drawn from this is that the status of the fort's occupants was high for at least some of the 2nd century – that is, presumably legionaries or auxiliary cavalry.

In conclusion, therefore, the evidence provided by the Roman coins from Birdoswald as a whole, and by the sample of 1996–99 in particular, highlights two significant contributions: first, the breaks in occupation or de-manning (in whole or part) that are often assumed for the Hadrian's Wall forts are not obviously represented in the Birdoswald coin-sample; second, the sample, certainly in the 2nd century, provides evidence to suggest that the fort's occupants were (wholly or partly) soldiers enjoying special status.

The Leather

by Quita Mould

Methodology

The leather was washed and briefly examined whilet wet before being conserved by freeze-drying by Gill Nason at the English Heritage Ancient Monuments Laboratory. The leather was subsequently studied by the author and drawn by Judith Dobie of the English Heritage CAS Drawing Office. Species identification was made by grain pattern using low powered magnification. No distinction was possible between sheep and goatskin, so the term sheep/goat is used in the text.

A small assemblage of leather recovered from the excavations comprised shoes, tent fragments and a small amount of leatherworking waste. The styles of footwear found here, together with tentage and leatherworking waste were also found in recuts of the inner ditch outside the south side of the west gate of the stone fort during previous investigations (Mould 1997, 326–41). Earlier, an important collection of tentage was recovered from the primary silt in the double ditches of the early polygonal enclosure on the spur to the south of the fort (McIntyre and Richmond 1934, 62–90). The tent fragments found here, like those recovered from the 1987–92 excavations, were too few and fragmentary for any original panel dimensions or likely positions within the tent to be suggested.

Shoes

The remains of a minimum of seven shoes were recovered, of types found previously at Birdoswald. Shoes of nailed construction were in the majority, while a single fragment from a shoe of one-piece construction was also found. Sandals and shoes of sewn construction found during earlier investigations were not represented in this assemblage.

Shoes of nailed construction

Shoes of nailed construction were found in features that pre-date the construction of the Stone Fort and in the primary fill of the

middle ditch of the Stone Fort. They appear to be of similar type and, where sufficient features survive, share several characteristics. The bottom units are of a relatively wide shape with no distinct waist. The individual bottom unit components are held together by thonging. The calfskin or cattlehide uppers have nailed lasting margins held between the middle and the outer sole. The uppers were joined to the bottom unit by grain/flesh whip stitching along the edge of the lasting margin passing through tunnel stitching running around the edge of the underside of the middle before the bottom unit was nailed. The uppers were made of a single piece of leather with a closed grain/flesh seam at the centre front of the vamp running down to the toe. The centre back of the continuous quarters were supported internally by heel stiffeners.

The remains of a minimum of four shoes were recovered from contexts that pre-date the Stone Fort. A nailed bottom unit was found in the backfill of the Vallum, while two shoes and various small fragments deriving from at least one other were found in features clearly sealed by the hiatus deposit and deposits associated with the Stone Fort above.

A bottom unit (Fig 416, No. 1) was found in the backfill of the Vallum comprising an insole and two middle layers held together by constructional thonging around the perimeter (type 3). Regrettably, none of the shoe upper remains, so that features providing dating evidence are few. The fact that the bottom unit comprises two middle soles may be of some interest here, however, and is a feature also present on the two shoes Nos 2 and 3 (Figs 417–419) from the phase 1 pits in the north-west quadrant of the fort (Study Centre:1146).

The large assemblage of leatherwork recovered from Vindolanda has been meticulously examined by Carol van Driel-Murray and a preliminary summary of the

Fig 416
Birdoswald: leather finds: Shoe No. 1.

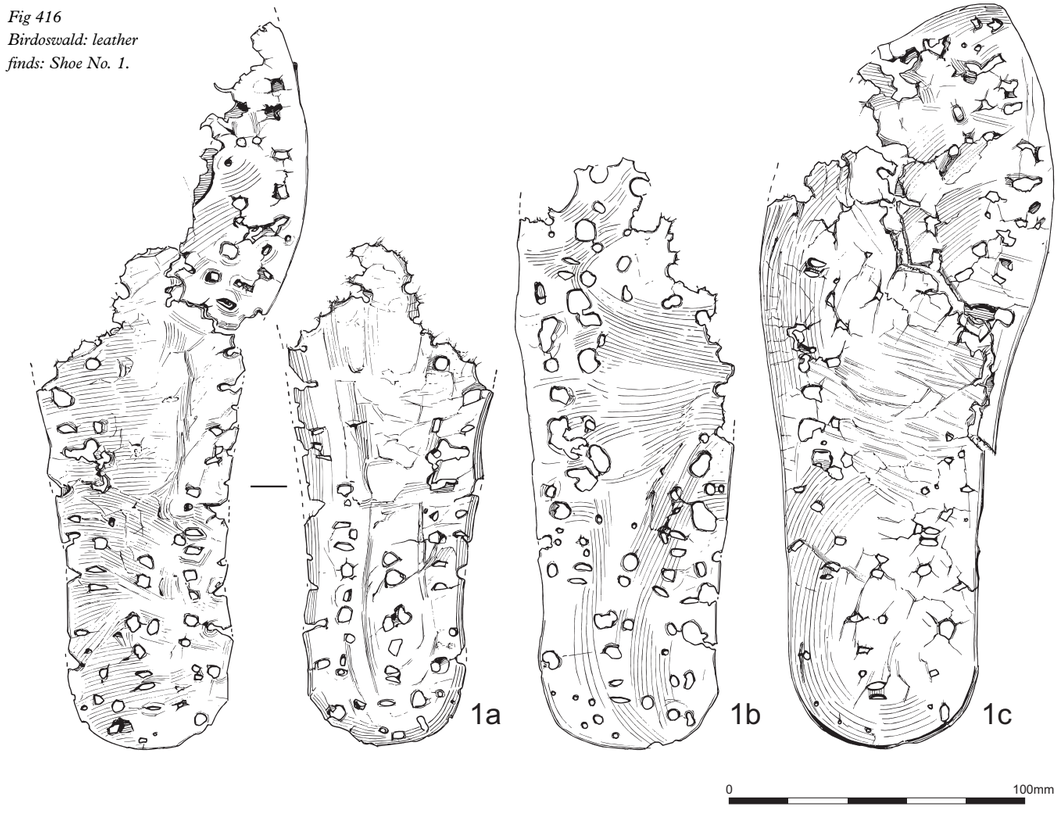
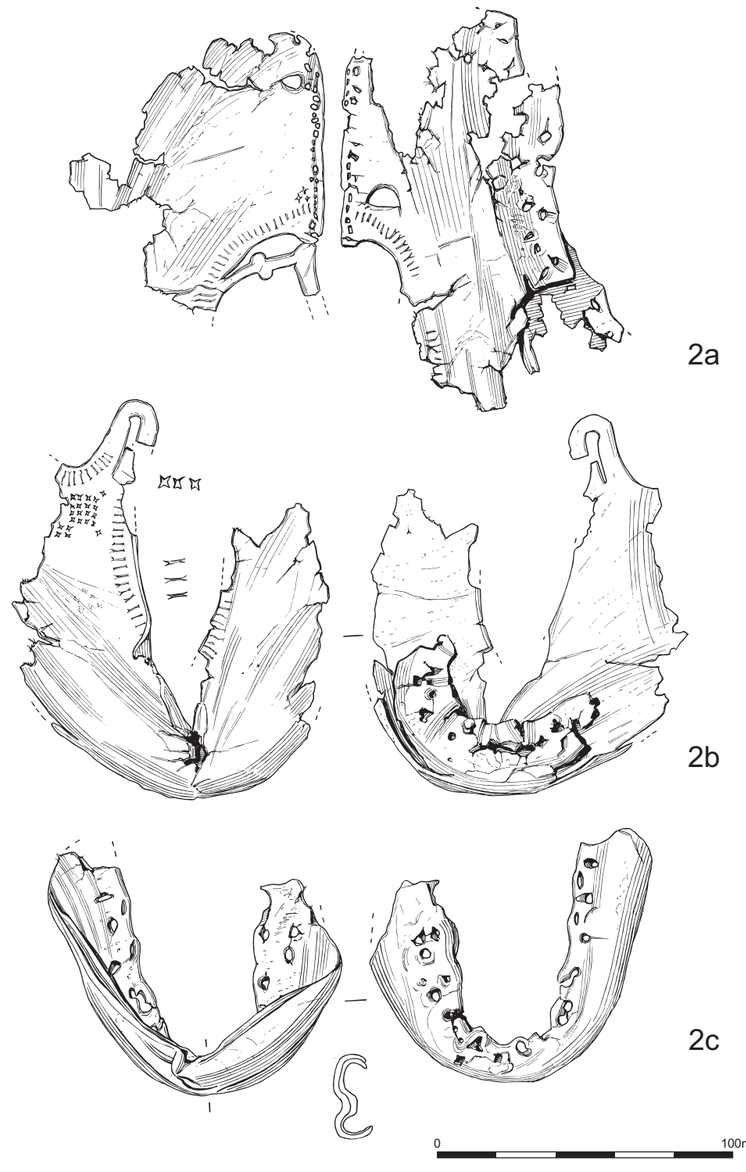


Fig 417
Birdoswald: leather finds: Shoe No. 2, upper fragments.



results of her study of approximately half of the material found has suggested that bottom units comprising an insole and two middle soles may be an early feature of nailed shoe construction (van Driel-Murray 1993, 32). At Vindolanda bottom units with an insole thonged to one or more complete middle soles was common during Period V (*c* AD 120– 130). The earlier part of the Antonine period at Vindolanda is poorly represented, so no evidence exists for the bottom unit construction used during this hiatus. When occupation recommences (Period VI *c* AD 160–c180) it was the

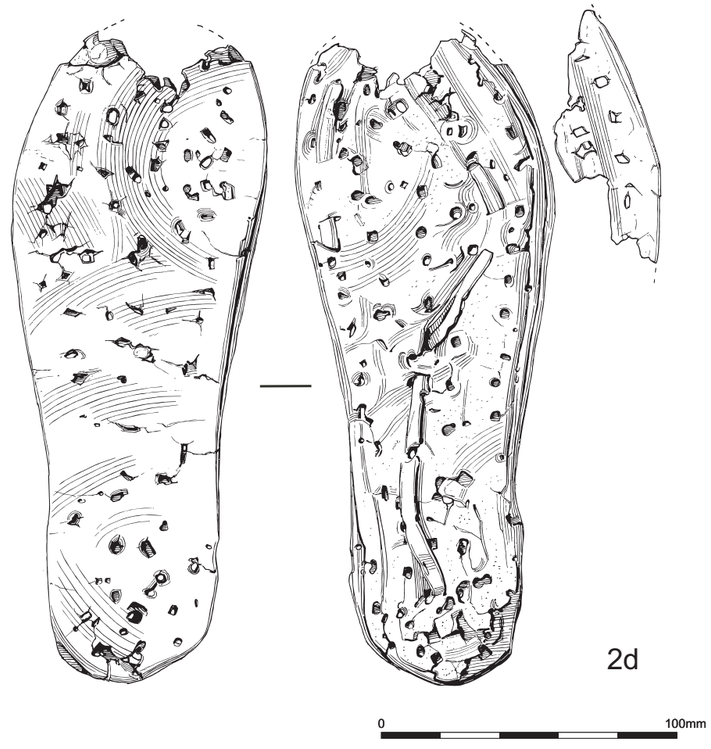


Fig 418
Birdoswald: leather finds: Shoe No. 2, bottom unit.

practice for insoles to be thonged to middle laminae, that is, a number of smaller packing strips rather than complete middle soles. On the basis of this the bottom unit from the backfill of the Vallum is more likely to date to the Hadrianic than to the later Antonine period. This is slender evidence, indeed, to suggest that the Vallum went out of use during the Hadrianic period at Birdoswald, but it may perhaps be usefully added to the other scraps of evidence being gathered.

Two shoes (Figs 417–19, Nos 2 and 3), of differing style but belonging to a general latchet fastening type with rouletted and stamped decoration (Fig 421, shoes 2 and 3), were found in the phase 1 pre-fort pits at the Study Centre site (Study Centre: 1146) sealing a sub-circular pit. One shoe (No. 2) can be exactly paralleled by shoes of calceus type A from Bar Hill (Robertson, Scott and Keppie 1975, fig 22, nos 1–3). A shoe of the same style was found at Hardknott (Charlesworth and Thornton 1973, 141–2, shoe 1, fig 1) and others have also been found at Ambleside, Newstead and Saalburg (Charlesworth and Thornton 1973, 151). The second shoe (No. 3), with multiple narrow straps, is of the same style as shoes of calceus type B at Bar Hill (Charlesworth and Thornton 1973, fig 23, nos 16 and 20) and Hardknott (Charlesworth and Thornton 1973, shoe 2, fig 2, and shoes 4 and 7, fig 4). A shoe of this style has been recovered previously at Birdoswald (Mould 1997, style 1 and fig 238, no. 5) associated with mid- to late 2nd-century pottery.

The remains of a nailed bottom unit (Fig 420, No. 4), comprising an insole, middle sole and middle laminae were found in the main fill of one of the pre-Stone Fort pits (Study Centre: 1283). A fragment of shoe upper (Fig 421, No. 5) with rouletted and stamped decoration, a heel stiffener and other small fragments of bottom unit were found in the same context. The decoration on the upper fragment and the stubs of narrow straps that remain indicate it comes from a latchet fastening shoe like Nos 2 and 3. The laminae present in the bottom unit (No. 4) may suggest a later date, post AD *c*130 (*see above*).

The remains of the left side of a shoe upper (Fig 421, No. 6) was recovered from the primary fill (Spur: 166) of the middle ditch of the Stone Fort in Trench B of the Spur excavation. The right side and much of the quarters area has been deliberately cut away from the rest of the upper. A more complete shoe of this style with a type C3 nailing pattern has been found previously at Birdoswald (style 2, Mould 1997, fig 239, no. 8) associated with mid- to late-2nd-century pottery. Another was found at Bar Hill (Robertson, Scott and Keppie 1975, fig 22, no. 5) where it was grouped with others of their calceus type A (Fig 422, Shoe 6).

The uppers that survive all come from shoe styles thought to be typical of an 'Antonine Wall Group' *c* 140–60 (van Driel-Murray 1993, 35). These shoe styles are largely missing from the assemblage at Vindolanda a phenomenon which has been explained by the movement of troops from Hadrian's Wall to the Antonine Wall at this time (van Driel-Murray 1993, 35). At Birdoswald they derive both from contexts pre-dating the construction of the Stone Fort and from primary deposits from the middle ditch of the Stone Fort. As the Stone Fort is believed to have been built in the mid-late Hadrianic period (AD *c* 125–38) this moves the dating of these shoe styles slightly earlier. In discussing the leather from the ditches at Vindolanda, Carol van Driel-Murray has pointed out (1993, 35) that the material would have had to be buried quickly in order for it to survive and, as such, is likely to represent the latest material in the deposit. The leather in the ditch is likely to belong to the final phase of its use, the deliberate backfilling, and may reflect what was being

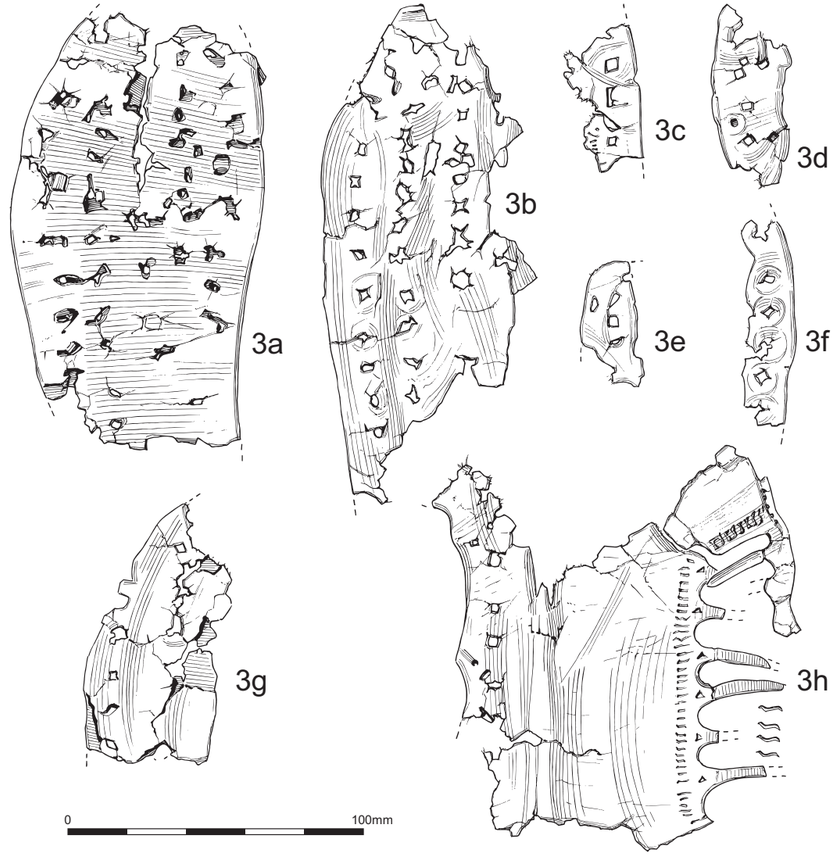


Fig 419
Birdoswald: leather finds: Shoe No. 3.

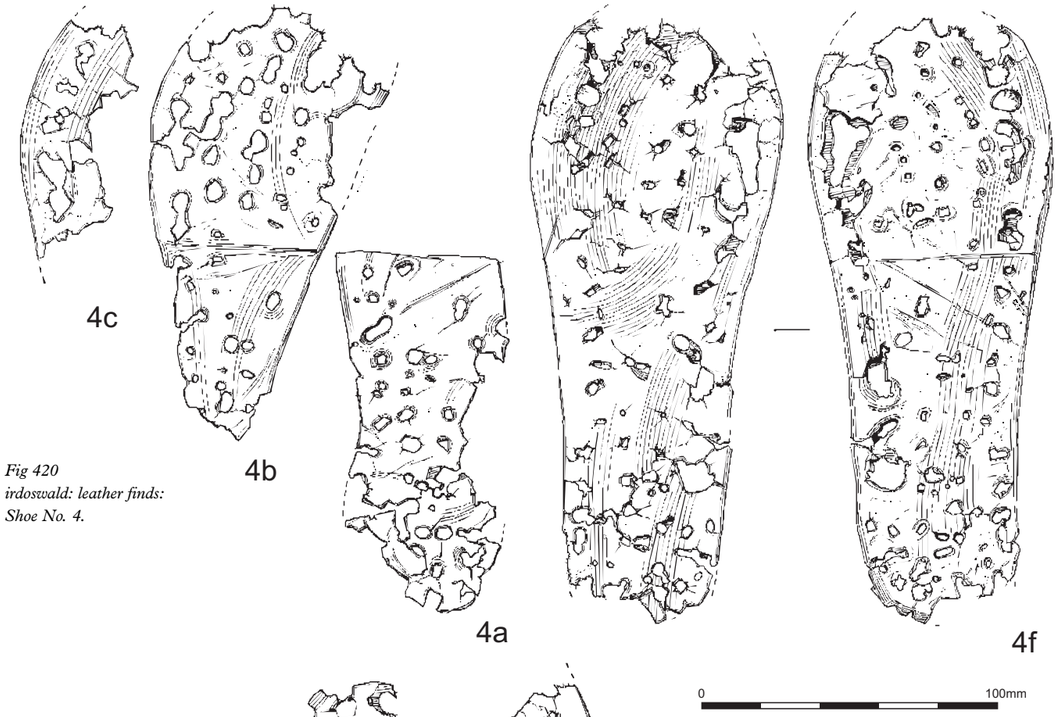
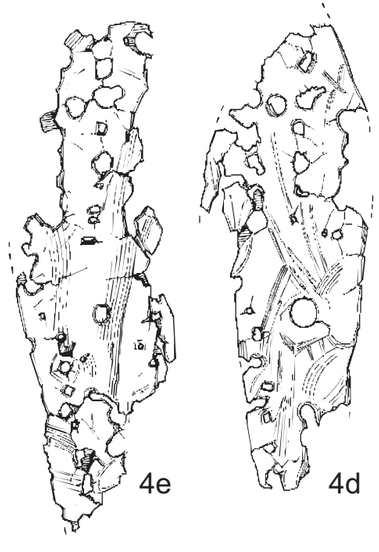


Fig 420
irdoswald: leather finds: Shoe No. 4.



used and discarded by those building the succeeding features. This may also be the case at Birdoswald with the leather from the pre- Stone Fort features having been discarded by those engaged in constructing the Stone Fort.

Constructional thonging

The individual bottom unit components of the shoes of nailed construction were held together by constructional thonging either running around the perimeter of the bottom unit (constructional thonging type 3) or in a lozenge pattern at the tread passing in a straight line down to the seat (constructional thonging type 2). Type 1 thonging, which runs in a straight line from the toe to the seat, was not represented here, although it was the most commonly used thonging in nailed shoes found from earlier excavations (Mould 1997, 328–31 and table 29). A possible correlation between the type of constructional thonging used and the date of the shoe or the style of the upper was sought. Type 3 constructional thonging was used on a bottom unit (No. 1) from the Vallum backfill (context 730), the other bottom units had type 2 constructional thonging. Seven instances of type 3 constructional thonging were found previously at Birdoswald occurring in later phases of the inner ditch outside the west gate in which they were deposited, associated with pottery dating as late as the

mid- 4th century. Type 2 thonging occurred in 2nd-, 3rd- and 4th-century deposits, again suggesting that the pattern of constructional thonging used to join the individual bottom unit components is not a reflection of date but more likely governed by the style of upper to be attached.

Nailing

The lack of iron hobnails and any associated iron staining from them was a notable feature of the shoe assemblage. The nailed bottom units recovered showed little evidence of surviving nailing, only a single group of three hobnails and small shank fragments from another example was found. The surviving outer soles had no hobnails remaining nor iron staining marking their former position, iron staining was also absent from the other bottom unit components. While varying burial conditions could perhaps account for this apparent anomaly, the hobnails may have been deliberately removed for re-cycling before the worn out shoes were thrown away or the shoe soles may have been exceptionally heavily worn. The shoes of nailed construction found at Vindolanda had been subjected to extremely heavy wear, to such an extent that the worn down hobnails had fallen out, and the unprotected leather of the sole worn featureless before the shoe was eventually discarded (van Driel-Murray 1993, 33). This may also have been the case at Birdoswald, where one very heavily worn outer sole lacking its hobnails is certainly represented (No. 3). Such heavy wear is not commonly encountered in nailed shoes from other assemblages nor, indeed, from the shoes recovered from earlier excavations at Birdoswald, where iron hobnails were commonly found in the shoe soles. It is notable that the footwear from Hardknott also appears to have no hobnails present, although outer soles were preserved

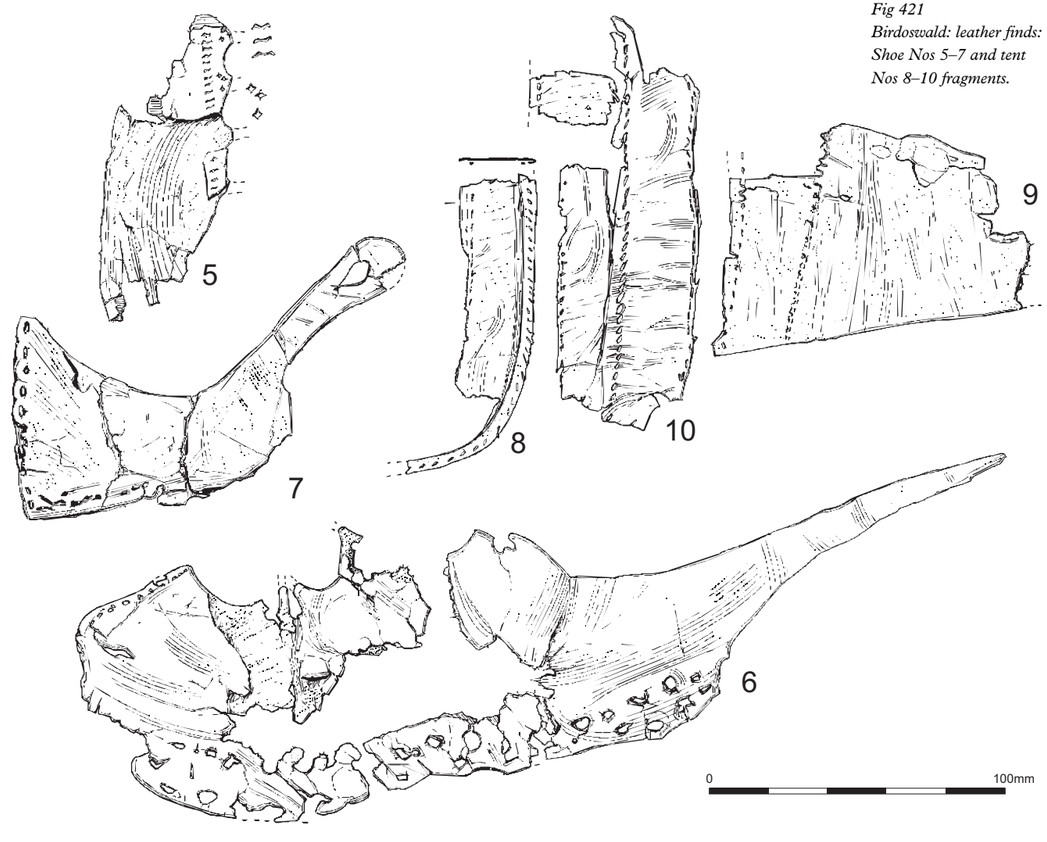


Fig 421
Birdoswald: leather finds: Shoe Nos 5–7 and tent Nos 8–10 fragments.

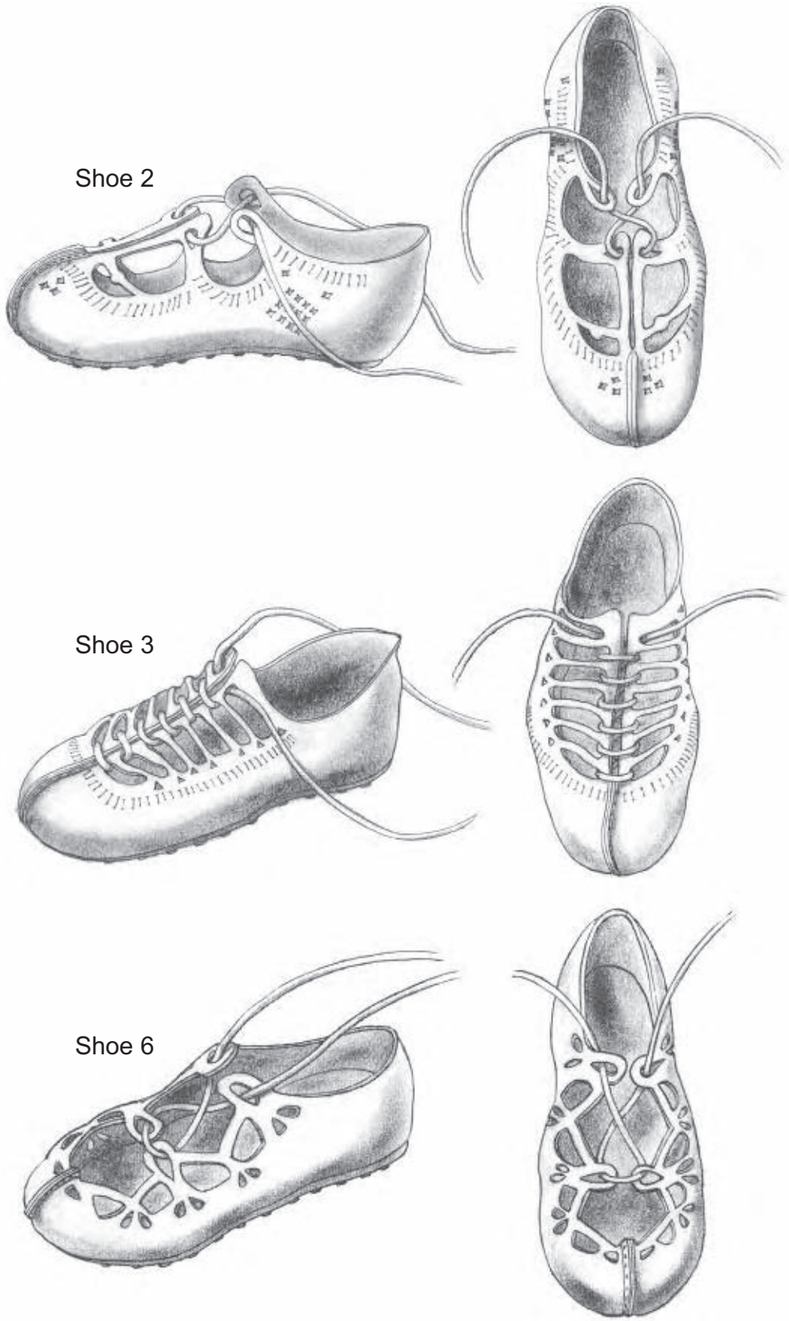


Fig 422
Birdoswald: leather finds: Reconstruction drawings of Shoes 2, 3 and 6.

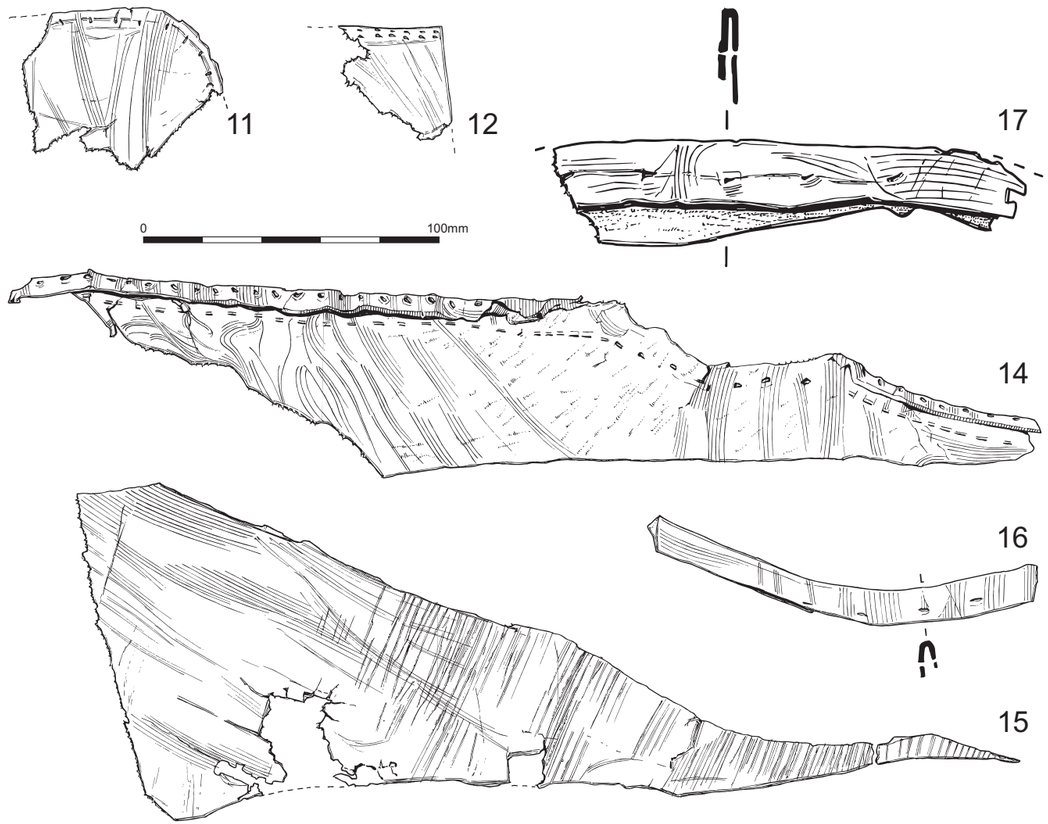


Fig 423
Birdoswald: leather finds: tent fragments.

(Charlesworth and Thornton 1973, figs 1–2). This extreme wear was noted particularly on the shoes from the first four periods at Vindolanda: from *c* AD 85–120. It may be that the difficulties of supply to the frontier zone reflected at Vindolanda can also be seen at Birdoswald during the earlier part of the occupation, and at Hardknott.

Nailing patterns

As so few hobnails were present, nailing patterns were difficult to discern with certainty, although patterns could be seen in the worn holes left by the nails. No. 1 appeared to have a double row of nailing around the perimeter with a single line at the seat and infilling at the tread, a type found previously at Birdoswald (type C3, Mould 1997, fig 243) on a shoe of the same style as No. 6. Nos 3 and 4 appeared to have a tendril pattern of infill nailing at the tread, a common pattern (type A1), one of which, No. 4, had a single nail present at the waist. Another bottom unit (No. 2) had a double line of nailing around the perimeter and a circle of nails at the seat.

Shoe of one-piece construction

The left quarters area of a shoe of one-piece construction (Fig 421, No. 7) was found in primary fill of the middle ditch of the fort (context 166). The loop fastening around the ankle is comparable, if a little longer, with those on a one-piece shoe from Castle Street, Carlisle (Padley 1991b, fig 215, no. 988) from a deposit dating from 165 to late Antonine/200 (Padley 1991b, 186). Twelve shoes of one-piece construction were found during earlier excavations at Birdoswald, occurring exclusively in Periods 4a and 4b principally associated with later 3rd to mid-4th-century pottery (Padley 1991b, 338–40). The occurrence of a shoe of one-piece construction in this context may

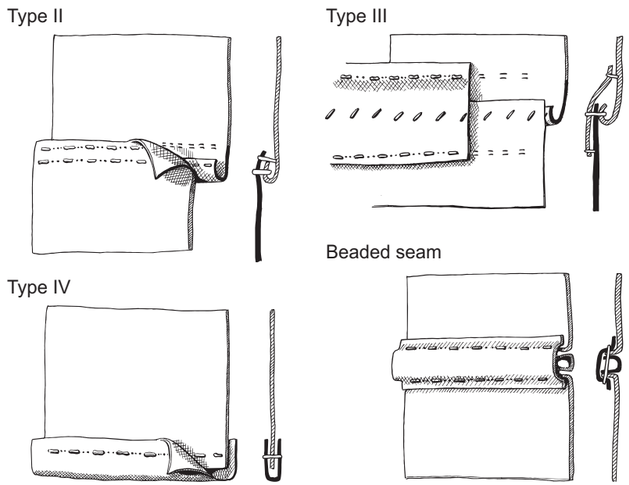
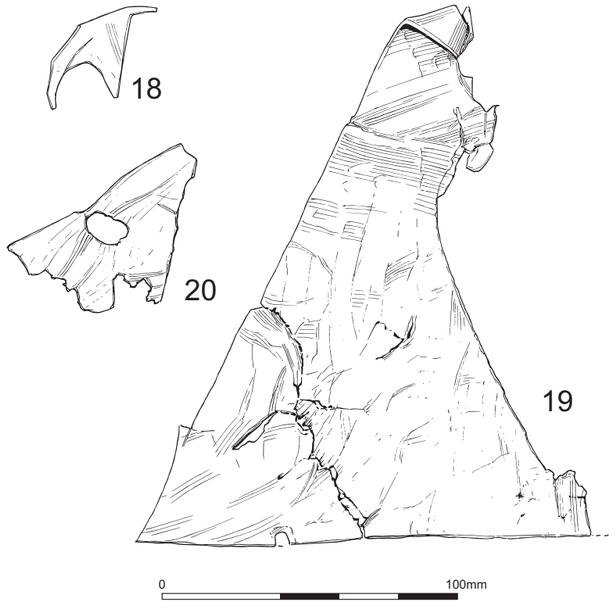


Fig 424
Birdoswald: leather finds: seam types (after Winterbottom 1991, fig 220–1).

Fig 425
Birdoswald: leather finds: leatherworking waste.

suggest a civilian presence. Shoes of this construction are notably absent from early, purely military assemblages, with the notable exception of the assemblage recovered from beneath the rampart of the second, late Flavian fort at Castleford, Yorkshire (van Driel-Murray 1998, 295–7). One–piece shoes are commonly found from civilian sites and *vici* sites with a mixed military and civilian component (ibid).



Tents

Nine pieces of leather come from tent panels, comprising for the most part discarded areas of seam. All the leather was identified as being of sheep/goatskin and is likely to be of goatskin. The majority were found in features pre-dating the construction of the Stone Fort, the pre-Stone Fort pits on the Study Centre site (Study Centre: 1146, 1283) and the fill of the ditches of the primary polygonal enclosure on the Spur site (Spur:162) – the very context in which leather tentage was found in the 1930s (MacIntyre and Richmond 1934) with a single fragment of tent panel (Fig 423, No.14) coming from the primary fill of the middle ditch of the Stone Fort (Spur: 166).

Insufficient material survives to offer any new insights into tent construction. The seams and hems used are of the standard types used on tentage. Seams of type II, type III, a fragment from a beaded seam and the binding from a type IV hem were found (*see* Fig 424). Dealing with such limited material, however, the possibility that fragments identified as being of seam II and bound hem IV may actually come from a narrow reinforced seam (NR seam, Padley 1991b, 249–51, van Driel-Murray 1998, 287–9). The size of the assemblage is too small to contribute much of value to the discussion of the possible dating implications of the types of tent seam present. This is also the case regarding the tent fragments found during the 1987–92 investigations, although it is notable that Seam type II was not represented at the earlier excavations (Mould in Wilmott 1997a, 340–1, fig 242).

Small fragments of two panels joined with a type III seam (Fig 421, Nos 8 and 9) and its wide reinforcement binding (Fig 421, No. 10) were found in the pre-fort pit fills on the Study Centre site (Study Centre: 1283). The slightly oblique stitching running along the centre of the binding was a feature also seen on tent fragments from the earlier excavations (Mould in Wilmott 1997a, 334, fig 242, nos 35–7). A curving fragment from a tent patch or appliqué (Fig 423, No. 11) came from the same context. Circular patches were used to attach loops for the guy ropes. At Carlisle they were also sewn to the base of the tent wall seams to reinforce the junction of the seam and the hem (Winterbottom 1991, 253).

A small fragment of a seam II bi (Fig 423, No. 12) and a second possible fragment (Fig 423, 13) were also found in these pit fills (Study Centre: 1283). A fragment deliberately cut from a tent panel using a seam of the same type (seam II ai, Fig 423, No. 14) was recovered from the primary fill of the middle ditch of the Stone Fort (Spur:166). Here the two lengths of seam are interrupted by a concave cut with grain/flesh stitching marking the former position of an edge infilling where an area of poor quality leather had been replaced. When cutting a tent panel from a hide it was necessary to use the greatest amount of leather possible and occasionally the incorporation of a small area of unusable or damaged hide was unavoidable. These undesirable areas were cut away and the resulting gap infilled by a separate piece of leather during the original manufacture of the panel. The form of these edge infillings and patches and their method of attachment have been well illustrated in the description of the tents from Castle Street, Carlisle (Winterbottom 1991, fig 230).

In addition a piece of waste leather (Fig 423, No. 15) with all edges cut was also found in this context. The piece had characteristic ridging (van Driel-Murray 1998, 312) visible on the grain surface and from this can be identified as having been cut from a used tent panel.

Two small lengths of longitudinally folded binding were found in pre-Stone Fort features. One, an internal packing strip from a beaded seam (Fig 423, No.16), was found in the early pit fills on the Study Centre site (Study Centre:1146). A similar folded binding (Fig 423, No. 17) was found in the fill of the ditch of the polygonal enclosure (Spur: 162) it differed in having thread impressions visible on both faces, indicating that it was the binding from a bound hem of type IV a – a hem used on a variety of articles (Winterbottom 1991, 251, fig 425).

Leatherworking waste

Three pieces (Fig 425, Nos 18 and 19) of shoemaking waste of cattle hide were found in the pre-Stone Fort pits (Study Centre:1146, 1283), while another was found in the primary fill of the middle ditch of the fort (Spur: 164). A small quantity of sheep/goatskin with cut edges, likely to be waste from the cutting up of tent panels, was found in the pit fill (Study Centre:1283) and the primary fill of the middle ditch of the Stone Fort (Fig 425, No. 20) (Spur:164).

Catalogue of illustrated leather

1. Spur: 352: 730: phase A1 (Fig 416)
Bottom unit of shoe of nailed construction for left foot, forepart displaced inward, with short pointed toe, medium tread, no distinct waist and wide seat: bottom unit comprises insole and two middle soles; constructional thonging type 3 running around the edge; impression of upper lasting margin visible on underside of lower middle sole; no iron hobnails present *in situ* but 3 small shanks revealed when bottom unit was radiographed; holes worn by hobnails suggest a double row around edge with single vertical line infilling at seat and infilling at tread; insole leather worn cattlehide. insole length *c* 252mm+, width max *c* 93mm, seat 63mm, present length = adult size 5 (adult size 7 with 10% allowance for shrinkage)

2. Study Centre: 3134:1146: phase 1 (Figs 417, 418, 422)
Shoe of nailed construction for left foot, comprising bottom unit, heel stiffener and one-piece upper: bottom unit with toe area missing, medium tread, no distinct waist and wide seat; unit comprises insole and two middle soles, with small fragment of outer sole from right edge of forepart.; type 2 constructional thonging with lengths of thong surviving; line of oblique tunnel stitching runs around edge of lower middle sole to attach lasting margin of upper; no hobnails present but worn holes indicate a double line around edge with infilling at tread and seat; seat with a circle motif recognizable; shallow heel stiffener, slightly worn down at centre back of heel; worn grain inward to foot; nailed lasting margin and awl made stitch holes close to edge to attach to underside of middle layer using tunnel stitching; remains of uppers made of single piece of leather with central vamp seam and nailed lasting margin with grain/flesh stitching close to edge to join underside of middle layer with tunnel stitching; two sides of toe area remain with central closed vamp seam with butted grain/flesh stitching running from toe to throat; central seam extends into beginning of central strap, now broken off, with fine strap with decorative lobe remaining on left side; heel area is well preserved but broken down by wear at centre back, so that original presence of heel tab is unknown; surviving top edge extends into small fastening latchet on left side; top edge has single line of rouletted decoration of vertical slits with bifurcated ends; base of fastening latchet and centre front junction of rouletting and toe seam are further decorated with series of stamped crosses; area at right side centre front, below throat, has elliptical hole deliberately cut out, possibly to alleviate a painful great toe joint; leather heavily worn calf/cattlehide. insole length 217mm+, width tread 85mm, seat 58mm, present length = adult size 1+ (adult size 3+ with 10% allowance for shrinkage)

3. Study Centre: –: 1146: phase 1 (Fig 419, 422)
Shoe of nailed construction for left foot, toe broken off, medium tread, broken away across the waist area: bottom unit forepart comprises insole, middle sole, fragments from second middle sole and worn remains of outer sole; type 2 constructional thronging; no hobnails present but wear holes indicate tendril pattern of infilling at tread; fragment of uppers from forepart with nailed lasting margin; remains of six narrow straps along top edge with line of decorative rouletting of shallow 'S' motifs below, and single punched triangle at base of each narrow strap; small area from one side of toe[?] area with remains of closed grain/flesh toe seam, stitch length 3mm; toe seam extends into central projection with stubs of narrow straps that joined to top edge of sides of uppers; surviving area of top edge also has rouletted decoration; also four fragments of lasting margin and fragment of uppers broken from shoe; leather heavily worn calf/cattlehide. length 170mm+, width 84mm, uppers height 110mm

4. Study Centre: 3278/9: 1283: phase 1 (Fig 420)
Insole from bottom unit of nailed construction: leather insole from bottom unit of shoe of nailed construction with medium tread, no waist and wide seat, toe area and exterior seat torn/worn away; middle sole and laminae; type 2 constructional thronging; worn nail holes suggest infilling at tread, possibly of tendril design, and at seat; laminae show central nail hole at waist; leather worn cattlehide. length 203mm+, width tread 82mm, seat 56mm

5. Study Centre: 3282.1: 1283: phase 1 (Fig 421)
Shoe upper fragment of nailed construction with small area of top edge present with stubs from five narrow straps and a line of rouletted decoration below: rouletted decoration comprises W-shaped motifs lying on their sides with two groups of three stamped crosses below straps; leather worn and delaminated, unidentified.

6. Spur: 366.2: 166: phase B2 (Fig 421, 422)
Left side of shoe upper of nailed construction with length of nailed lasting margin with line of stitch holes running along edge with impression of whip stitching from attaching upper to bottom unit; grain/flesh closed seam runs down to toe at centre front of vamp; fragment of concave curving throat survives with remains of fine decorative straps with concave bases running along side of foot, with small lobed base present towards ankle; much of area around toe joints worn away, while back of shoe in region of quarters deliberately cut away leaving only tapering strip present; leather heavily worn calf/cattlehide. length 319mm+, height to top of toe seam 88mm

7. Spur; 366.1: 166: phase B2 (Fig 421)
Left quarters area of one-piece shoe with butted edge/flesh back seam, now delaminating, and grain/flesh heel seam; rest of sole area and uppers torn away; top edge of quarters falls steeply away from peaked back seam before rising to ankle loop with tear-drop-shaped fastening hole; leather heavily worn cattlehide, delaminating. surviving length 135mm+, back seam height 69mm

8. Study Centre: 3282.3: 1283: phase 1 (Fig 421)
Fragment of tent panel seam with folded edge with line of closely spaced oblique stitch holes along edge: stitch length 3mm, piercing one thickness only; line of felling stitches runs parallel to edge 23mm above, with stitches aligned at right angles to edge; seam III ai; other edges torn; appears to match with seam 9 and binding 10 below; leather worn sheep/goatskin. length 105mm+, width max 27mm+

9. Study Centre: 3280.1: 1283: phase 1 (Fig 421)
Fragment of tent panel with two cut edges meeting at an angle of 75 degrees: seamed edge is flat with line of grain/flesh stitches along edge and line of felling stitches running 25mm above, with each stitch at right angles to edge; seam III bi; leather worn sheep/goatskin. height 107mm+, width 72mm+

10. Study Centre: 3282.2: 1283: phase 1 (Fig 421)
Leather tent seam binding: wide reinforcement binding strip with line of horizontal figure of eight shaped, grain/flesh stitches running along each edge with thread impression on grain side, and central line of slightly oblique grain/flesh stitches; seam III ii; leather worn sheep/goatskin. length 140mm+, width 45mm

11. Study Centre: 3273.1: 1283: phase 1 (Fig 423)
Patch fragment with curved edge with line of grain/flesh stitching with thread impression on grain side; other edges torn; area *c* 20mm inward from curved edge is darker in colour and shiny from differential wear; leather sheep/goatskin. length 67mm+, width 54mm+

12. Study Centre: 3282.4: 1283: phase 1 (Fig 423)
Fragment with two cut edges meeting at right angle: one edge has line of grain/flesh stitches running very close to edge with continuous thread impression on flesh side, and second line of oblique grain/flesh stitching running above some 3mm from edge; seam II bi; leather worn calfskin. length 37mm+, width 34mm+

13. Study Centre: 3273.2: 1283: phase 1 (Fig 423)
Fragment with remains of two straight edges meeting at right angles with line of fine grain/flesh stitching running along one edge; other edges torn; possibly a small fragment from a seam II bi; leather sheep/goatskin

14. Spur, 366.4: 166: phase B2 (Fig 423)
Length of seam deliberately cut away from a tent panel: fine seam with folded edge with grain/flesh stitch holes running along edge (not penetrating through to front face) and a line of felling stitches running parallel to edge 9mm below; individual stitches aligned at right angles to folded edge; second edge with same seam meets this at angle of 160°; apparent angle may be due to distortion and one length of seam may be represented; junction of two seams is missing, being replaced by concave cut with line of grain/flesh stitch holes around edge; seam II ai; leather worn sheep/goatskin. length 365mm, Width max 64mm

15. Spur: 366.5: 166: phase B2 (Fig 423)
Triangular piece cut from tent panel with cut and torn edges: tip torn off but present and an area is broken away along one edge, apparently through wear; series of fine parallel creases or ridges visible on grain surface, characteristic of rolled leather, suggesting that piece comes from tent panel; leather sheep/goatskin. length *c* 330mm, max width 105mm

16. Study Centre: 3134.2: 1146: phase 1 (Fig 423):
Length of longitudinally folded binding with line of widely spaced grain/flesh passing through both thicknesses; no obvious thread impression visible on either side; stitching cut away in one area; packing strip for beaded seam; leather sheep/goatskin. length 135mm, width folded 11mm

17. Spur: 367: 162: phase B2 (Fig 423)
Length of rectangular strip binding folded longitudinally, torn at each end; matching grain/flesh stitch holes in each side with thread impression on grain side (exterior) on both faces; occasional stitch holes are noticeably figure-of-eight shaped; slight curvature visible; leather worn sheep/goatskin. length 80mm+, width folded min 11mm, max 16mm

18. Study Centre: 3134.3: 1146: phase 1 (Fig 425)
Secondary waste piece from shoemaking; leather cattlehide. length 52mm, width 26mm

19. Spur: 365: 164: phase B1 (Fig 425)
Triangular piece of secondary waste, now torn into two fragments, with two cut edges meeting at 64° angle; third edge torn; towards apex leather is thin and split, which probably explains why it was discarded; leather sheep/goatskin. length max c240mm, width 155mm

20. Study Centre: 3282.5: 1283: phase 1 (Fig 425)
Sub-triangular fragment of primary waste with cut and two torn edges and oval hole close to cut edge; leather worn calfskin. length 73mm+, width 40mm+

Part 8: Conclusions: the history of the fort

by Tony Wilmott

This section updates previously published conclusions on the history of the fort (Wilmott 1997a, 401–10) and takes account of the excavated material reported above and of ideas that have emerged in the decade since the original report. Table 5 is a concordance of the phasing used for the various sites, reconciling these into a single system of periods based on those formulated in 1997 (Wilmott 1997a, 21–2).

Period 1: pre-Stone Fort

Prehistoric activity comprised a stone-lined burial cist found on the edge of the spur (Wilmott 2004). During excavation its drystone and orthostat construction suggested that it was Neolithic, but later comparison with a similar structure at Lochend, Dunbar suggested that an Iron Age date is possible.

No further work has been done on the pre-Roman environment of the site during these projects, and the interpretation remains that, on the Birdoswald spur itself, dense deciduous woodland survived until the construction of the Turf Wall (Wiltshire 1997). It has been argued that the spur, with its steep surrounding cliff and central peat bog, would have been of little use for grazing, and would not have merited clearance before the military potential of the site, with its extensive views, was realised. It seems possible that the cist might have been on the woodland edge, as previously argued for the location of an early signal tower (Wilmott 1997a, 41).

It has been suggested that the first Roman structure on the site was a Trajanic signal tower related to the Stanegate, and that its less-than-ideal position was dictated by natural vegetation and topography (Wilmott 1997a, 51), as the first significant impact on the pollen record here was the construction of the Turf Wall early in the Wall building process. Although this building is in the heart of the later extra-mural settlement of stone-founded buildings (Biggins and Taylor 2004), its geophysical signature as a square, thick-walled building, apparently with a surrounding ditch (Biggins and Taylor 1999, 107), may confirm the identification as a tower made by the excavator (Richmond 1931, 130). If this is correct, it seems likely that the building was later incorporated into a large extra-mural building.

The first aspect of the Hadrianic frontier to be built at Birdoswald was the Turf Wall. The Wall and its ditch were found by Haverfield (1897a) to describe a straight line through the area later occupied by the Stone Fort. Construction was clearly a rapid process, and it is also apparent that the builders of this wall were responsible for the clearance of the woodland on the spur. This is shown by the fact that building was so speedy that tree clearance did not register in the pollen record before the turfs were laid (Wilmott 1997a, 37). The Turf Wall appears to have been built complete with T49a (Richmond 1957, 179), which was later demolished and completely robbed. The centurial stone found re-used in the southern outer wall of the basilican building, Building 807 (= Wilmott 1997a, Building 4403; Wilmott 1997a, fig 250, no. 4; Wilmott 2001, 46) may have been robbed from the site of this turret, as there is no other explicable source for this inscription. The truncation of natural deposits down to the top of natural clay (p 213) is evidence for the wholesale stripping of topsoil and vegetation for the construction of the Turf Wall.

It was previously suggested that the polygonal double-ditched and palisaded enclosure on the end of the spur might have been a construction camp for the legionary builders of the Turf Wall, designed to take advantage of the shape of the promontory. Re-excavation of a small portion of this important feature (p 262) has consolidated this interpretation. It was confirmed that the Roman leather previously recovered from the ditches of this feature (McIntyre and Richmond 1934) came from their primary silt, as leather was found in the same context in 1996 (p 263 and pp 386–7). It has also been shown that the palisade was of post-in-trench construction, with some evidence of repair in the shape of re-cut postholes. This need not mean a full second phase to the structure, and is more likely simply to reflect maintenance over a short lifetime. It has become increasingly clear that the promontory has been severely eroded since the Roman period (p 204; Biggins and Taylor 2004, 174), and the original extent of this camp cannot be reconstructed. It is now clear that the rectangular enclosure on the promontory is not as stratigraphically early as previously thought, and that it has no connection with the polygonal enclosure.

It remains likely that the Turf Wall and its stone turret were completed during the governorship of Platorius Nepos (122–*c* 126) as this is attested by the accepted reading of the timber inscription from Mc50TW (Collingwood 1935). It is probable that a carnelian intaglio with a legionary motif (Henig 1997, 283–4, fig 195, no. 86) found beneath the Turf Wall in Area A was either dropped by one of the builders or left deliberately as a votive deposit. There is strong circumstantial evidence to suggest that soldiers from *legio II Augusta* built this part of the Turf Wall. The reconstruction offered by Collingwood for the building inscription from Mc50TW suggests this legion, and one reading of the re-used centurial stone probably from T49a is also of the second legion (Tomlin 1997, 356). Added to this is the fact that the best parallel for the intaglio found beneath the Turf Wall is from Caerleon, which was the base of *legio II Augusta* (p 370).

Evidence for the existence of a primary timber built fort was found in the 1930s (for discussion see Wilmott 1997a, 43–4). The earthen rampart of this fort was constructed on a stone base, part of which was found in the south-east corner of the Stone Fort (Simpson and Richmond 1932, 141–2). It is probable that the Vallum was laid out to respect this early fort, as this is the only conclusion that adequately accounts for the fact that the Vallum was constructed so close to the south-west corner of the Stone Fort, particularly as the spur was considerably more extensive in area than it is today. It was previously thought (Wilmott 1997a, 53–4, fig 24) that this early fort was contained to the south of the Turf Wall; however, the discovery of three stratigraphically early cut features to the north of the Turf Wall (p 211) indicates that the early fort, like its stone successor, projected to the north of the Turf Wall. This means that the stone turret T49a and the Turf Wall itself were demolished within the walls of the fort, and that the turfs of the Turf Wall were pitched back into the ditch (pp 106, 213). This conclusion allows other observations to be associated with the early fort, particularly a substantial north–south post-trench found beneath the north *horeum*, complex stratification beneath the south *horreum* (Wilmott 1997a, 46–8, figs 23, 25), and features including a drain, wooden chippings, stakeholes and wattling found in 1929 and 1988 above the back–filled Turf Wall ditch and beneath deposits of the Stone Fort (Richmond and Birley 1930, 'Level 0'; Wilmott 1997a, 79, fig 49; p 214). In addition, in 1930, a hoard

was found in the earliest levels encountered in the angle of the *viae decumana* and *quintana*, 'pushed into the floor' of a building (Richmond 1931). Although this building was assumed to be one of the earliest in the Stone Fort, it is also possible that this hoard was deposited in a building of the earlier timber fort (Wilmott 1997a, 54). The hoard was closed before the issue of Hadrian's second coinage in AD 125 (Bennett 1990, 350).

Before 1998, the only finds that could be interpreted as from the early fort were the pottery and mixed occupation material incorporated into the rampart of the Stone Fort, which the excavators considered proof of the existence of an early fort (Simpson and Richmond 1932, 143). Now, small groups of Hadrianic pottery (Hird 1997, Analytical group 1, 239–40; p 295) may be added, together with some Roman leather (pp 385–6) and other finds, including an enamelled legionary belt plate (p 367, No. 97). This seems to be one of a distinctive group of such objects probably manufactured at Caerleon, and which therefore adds further evidence for the link noted above between the early phases at Birdoswald and *legio II Augusta*. Other less well stratified objects reinforce this idea (pp 370–1).

The course of the Vallum was clearly diverted southwards to skirt a fort, southern access to which was provided by a causeway equipped with a stone-built gateway. It was previously suggested that this was the early timber fort (Wilmott 1997a, 46). This may well be the case, although we can now be sure that the Stone Fort and the Vallum ditch must have co-existed, even if the ditch was partially backfilled before the Stone Fort was built. As noted above (p 271), the Vallum gate may have been dismantled, and the mound re-deposited in the ditch when the Stone Fort was built, as this would be a reasonable context for the deposition, over a very slight deposit of primary silt, of the interleaved clay and peat that filled just over half of the ditch. The remaining hollow of some 900mm depth might have acted as a temporary fort ditch prior to its later complete backfilling.

Period 2: construction and first occupation of the Stone Fort

As a result of previous excavations, the history of the construction of the Stone Fort is understood in considerable detail (Wilmott 1997a, 55–100, for further discussion see Breeze 2003b, Wilmott 2006c). In summary, the fort was designed as a projecting fort functioning with the Turf Wall. This is clear from the fact that the two *portae principales* and the *porta praetoria* lay to the north of the Wall, while the two *portae quintanae* were provided for lateral communication to the south of the linear barrier. A combination of the evidence of stonemasonry and soils analysis allows a detailed view of the history of the fort's construction. First, the first fort was demolished, and a start was made on the construction of the curtain walls and the six gates of the Stone Fort.

This effort was not sustained, however, and a hiatus occurred. The evidence for this was the Site Phase 2 black soil, which lay over the truncated clay and the pits of Site Phase 1, was part of an extensive deposit covering much of the north-west quarter of the fort (Fig 307), and was sealed by the earliest deposits of the Stone Fort. This represents a clear cessation of work on the construction of the fort (Wilmott 1997a, 59). Following the building of the foundations and part of the superstructure of the *porta principalis sinistra* the black soil deposit developed, overlying the raft foundation of the gate, and lapping up against the lower blocks. The primary gate-sill was later laid over the black deposit, when the gate was completed in a less well finished masonry (Wilmott 1997a 56–60).

The recent excavations are important in confirming that this widespread deposit was in fact continuous across the entire north-west quarter of the fort. There appears to have been continued human activity during the accumulation of these soils, and this was followed by a period of undisturbed plant growth and 'normal' soil development. Some scrub growth took place, which was subsequently cleared by burning, and the site was extensively used for animal housing or penning until just before the completion of the Stone Fort was started.

The general conclusion that the site was utilised during this hiatus is derived from analysis of the soil chemistry (McHugh *et al* 1997), but is confirmed by the L-shaped slot of Site Phase 3, which seems to represent the foundation of a short-lived timber building that post-dates the accumulation of most of the hiatus deposit, but antedates the completion of the Stone Fort (p 216).

The hiatus was followed by an energetic resumption of work towards the completion of the fort. The walls and gates were finished, internal streets, buildings and the

drainage system were installed and the fort rampart was raised, although it is clear that the fort ditches were not excavated at this time, and that a phase of timber buildings on the spur, which have long been thought to associate with the building of the Stone Fort (Wilmott 1997a, 88), were actually considerably later in date (pp 272–4).

In 1997 (Wilmott 1997a, 403) it was stated that the layout of the primary phase of the Stone Fort remained unknown, despite the discovery of the basilican building and the detailed stratigraphic sequence summarised above. This situation changed as the layout of the fort *praetentura* in this first phase became better understood (discussed in detail above, pp 223–7). The main issue, now resolved, was the existence of the basilican building, so far unique in any auxiliary fort (Wilmott 1997a, 99), and the effect that this building had on the fort plan. In the *praetentura*, on both sides of the *via praetoria* and on the *via principalis* frontage there were two long narrow buildings, which might have been stores, workshops or service buildings of some kind. The facades of these two buildings lent uniformity to the street frontage. To the east of the *via praetoria*, in the eastern *praetentura*, the long narrow building was built back-to-back with a north-facing barrack block. Geophysical survey (Biggins and Taylor 1999) showed that this barrack faced a second barrack across an alley. This second barrack was built back-to-back with a third, which faced a fourth barrack across another alley. The fourth barrack backed onto the *via sagularis*.

On the western side, the long narrow building was placed back-to-back with the basilica. To the north of this building a broad alley allowed bodies of people to gather to enter the basilica through doors in the north side, and to the north of this alley a pair of confronted barracks paralleled the northernmost pair on the east side.

It is thus clear that the suite of buildings in the *praetentura* consisted of two long narrow roadside buildings, the basilica and six standard barrack blocks. The barracks comprised officer's quarters at the rampart end and eight barrack rooms or *contubernia*. The plans of the barracks and the implications of the layout are extensively discussed above (pp 224–6), where it is argued that the six barracks were infantry barracks, and that the grouping of such barracks around the basilica, which was probably provided for infantry drill (Wilmott 1991b, 1997b) was significant. The implications of the elucidation of the *praetentura* plan in terms of the nature of the Hadrianic garrison have also been discussed (p 226).

At Wallsend and South Shields (Hodgson 2002), the barrack requirements for a *cohors quingenaria equitata* in the Hadrianic period have been conclusively demonstrated. At both sites the forts were zoned, with six infantry barracks in the *praetentura*, and in the *retentura* four cavalry barracks. The character of the *retentura* of Birdoswald in the Hadrianic period remains unknown; however, the concentration of the infantry barracks with an infantry exercise facility in the *praetentura* does demonstrate an emphasis on infantry in this division of the fort. The limited evidence for the presence of auxiliary cavalry; a samian sherd inscribed as the property of the *decurion* Martinus (Wilmott 1997a, 356: found in the primary rampart of the Stone Fort), and a fragment of a curry comb is supplemented by the evidence from the coinage (p 375), which indicates that the early garrison included troops of high status, possibly auxiliary cavalry. Without further work in the *retentura*, however, it is only possible to state that the primary garrison was probably either a *cohors milliaria* or a *cohors quingenaria equitata*, and that if the latter, there is at least *prima facie* evidence for the same zoning as observed at Wallsend and South Shields.

The area of the *latera praetorii* immediately inside the *porta principalis sinistra*, where two *horrea* were built in Period 3, was not built up in Period 2, although an unfinished foundation suggested that a start was made on the construction of *horrea*, or at least of a buttressed building (Wilmott 1997a, 83–4).

All the dating evidence for Period 2 points to the fact that the construction of the Stone Fort and its first occupation is Hadrianic in date. This is confirmed by the dating of the events connected with the replacement of the Turf Wall in stone. The fort was built in order to function with the Turf Wall, and to project to the north of the Wall, with three of its four principal gates to the north of the linear barrier. This is demonstrated by the fact that it was provided with two *portae quintana* to provide linear access to the south of the Wall. These gates were begun before the hiatus in construction that led to the deposition of the black soil in the *praetentura*, and they were

completed after this hiatus. This is clear from the fact that, like the other fort gates, the upper stones of the piers were less well dressed and finished than the earlier blocks. This difference in workmanship is sufficient to demonstrate that the work on the gates was completed during a different building campaign (Wilmott 1977a, 90).

This is particularly apparent in the *porta principalis sinistra*, where, as we have seen, the completion of the *spina* of the gate and the insertion of the gate sill stratigraphically post-dated the hiatus soils. However, the poor quality of the stonemasonry of the *spina* in this gate is shared by the upper stones of the piers of the two minor gates (Wilmott 1997a, 91, table 5), showing beyond doubt that these were completed during the post-hiatus building stage when the defences were completed and the internal roads and buildings were laid out and built. The two minor gates became redundant when the Turf Wall was replaced in stone along a different line, running up to the northern corners of the Stone Fort such that the east and west principal gates were then south of the Wall.

The date of the replacement of the Turf Wall in stone in this sector has long been accepted as being Hadrianic, based on the analysis of pottery found in the earliest occupation levels of the Stone Wall Mc50, and Stone Wall turrets T49b, T50a and T50b (Simpson 1913; Newbold 1913b). Dr S Willis has reviewed the dating of the samian ware from these deposits (pp 347–9), and confirms that the earliest occupation in the Stone Wall interval structures was indeed Hadrianic. Thus if we accept Breeze and Dobson's (2000, 86) date for the initiation of work on the Turf Wall in AD 123, then all of the changes in plan that took place, up to and including the replacement of the Turf Wall would have had to have been completed in 16–17 years, or by 139, the date of an inscription at Corbridge recording building work intended as preparatory to the Antonine advance into Scotland and the associated desertion of Hadrian's frontier.

The question of the status of the fort during the Antonine period remains unanswered, and is unsatisfactorily addressed by the results of any recent excavations. There is little if any evidence for total desertion during the Antonine occupation of southern Scotland, indeed the coin evidence (p 375) suggests continued occupation in some form. Similarly the samian evidence does not rule out occupation during this period (p 304). There is no obvious evidence for desertion or dilapidation during this period, and the state of the fort contrasts favourably with the stratigraphic evidence for a late 3rd-century desertion (Wilmott 1997a, 199). The apparent maintenance of the fort in good order, however, contrasts with the failure to build on the site of the later *horrea*. The evidence begins to suggest a small garrison, which had no need for storage buildings of the capacity of standard, large, military *horrea*.

The final deliberate backfilling of the Vallum ditch contained a large quantity of pottery, mainly from two contexts. This material lay beneath the final deliberate sealing fill of the Vallum ditch, – a clean, re-deposited natural clay. The pottery from these deposits (pp 307–9) was predominantly of Hadrianic–Antonine date, but contained sufficient later material to lead to the conclusion that the group was deposited somewhat after *c* 150. This would mean that it is not strictly speaking post-Antonine Wall. The possibility exists that it represents material deposited during the occupation of the Antonine Wall and disposed of before re-commissioning in the late 150s or early 160s.

There is, however, one very odd aspect of the pottery-rich fills in the Vallum ditch, and that is that they were deposited from the *west* side and not from the east. In other words this material was thrown into the ditch from the side *away from* the fort (Fig 344). This prompts the question whether this material derived from the fort at all, as to achieve its location and its angle of repose in the ditch it would need to be carried out of a gate, through the one south crossing, around the north-west corner of the fort, and then, and only then, dumped. This interpretation strains credulity. It is far more believable that these deposits comprised piecemeal dumps made from *outside* the area enclosed by the Vallum, and that they originated in a 2nd-century extra-mural settlement.

The existence of extensive extra-mural settlement has been proved by geophysical survey (Biggins and Taylor 2004), and sample excavation has shown the settlement on the west side to be complex and multi-phase; and it is entirely possible that an extra-mural settlement sprang up early in the life of the fort (Sommer 1984, 9–10). Little if anything is actually known of these

settlements on the Wall in the 2nd century (Snape 1991, 468). Breeze and Dobson (2000, 206) quote the example of Carriden in Antonine Scotland, whose settlement must have been set up early in the life of the fort, could have lasted only 20 years, and yet was able to establish an organised corporate identity (Richmond and Steer 1957). It is entirely possible that this kind of development might have occurred at Birdoswald and elsewhere in the early years of Hadrian's Wall, and at Housesteads there is also some evidence of a 2nd-century extra-mural settlement (Breeze 1982, 92). It is an important future research priority to establish chronological and developmental relationships between the forts and the extra-mural settlements.

Period 3: second major construction phase

During the 1929 excavation in the eastern *praetentura* (Birley and Richmond 1930, 172) changes in the plan and function were identified in the long narrow building along the *via principalis* frontage and the barrack block behind it. Despite the fact that the *terminus post quem* for this rebuilding was *c* 150 (Wilmott 1997a, 12), the date of this rebuild was conflated with that of an inscription commemorating the construction of a *horreum* in 205–8 (RIB 1909) to postulate a major reconditioning of the fort in the late 2nd and early 3rd centuries (p 240) – broadly speaking, a 'Severan' phase.

Period 3 is principally defined by a major rebuilding, which is indeed dated to the late 2nd or early 3rd centuries; however, the possibility remains that some of this work is the result of refurbishment on the re-occupation of the fort after the retreat from Antonine Scotland. Coinage suggests that the period between this return and the end of the 2nd century saw full occupation at Birdoswald (p 374).

There is evidence for activity outside the fort walls in the period from *c* 160, which would fit with this context. The pottery-rich deposit in the Vallum fill at the south-west corner of the fort was, as we have seen, carefully sealed with re-deposited natural clay shortly after *c* 150, and the ditch was so well sealed that it was difficult to identify in excavation. Across the backfill ran a stone-lined drain, which led from the fort, and a number of pits. These features contained a small group of pottery dated *c* AD 150–170, giving the following phase in this area, the excavation of the primary fort ditches, a *terminus post quem c* 160–70 (pp 309–10). If the pottery from the upper fills of the Vallum ditch relates to the existence of an extra-mural settlement, it seems likely that these features do also. The three primary fort ditches cut the fills of the drain and pits. The *terminus post quem c* 160–170 strongly indicates that these ditches were excavated before the late 2nd–early 3rd centuries, and a late Antonine context is perhaps most likely. As to why three ditches were cut at this time, when the fort had not previously been provided with any ditches at all, it may be that this was a response to an encroachment of the extra-mural settlement towards the fort, possibly attested by the backfilling of the Vallum ditch and the ditches and pits that followed this.

Once the Vallum was eradicated there was no separation between the fort walls and the extra-mural area, and it is feasible that the ditches enforced such a separation. If so, this separation seems to have been maintained, as geophysical survey shows the ditches to the south of the *porta principalis sinistra* defining a clear space, with the buildings of the extra-mural settlement beyond them (Biggins and Taylor 2004, fig 3; Fig 366). This might be a reason for the 'reverse-punic' profile of the outer ditch in its first phase (p 260). The demarcation of the intra- and extra-mural zones of the fort settlement, however this opposition is defined (conventionally military and civilian), is a non-defensive addition to Breeze's (2002a) list of possible reasons for the provision of multiple fort ditches.

Although previously it was noted that building work on the defences, specifically the south tower of the *porta principalis sinistra*, and the construction of the two *horrea* in the western *latera praetorii*, were part of a second major construction phase (Phase 3: Wilmott 1997a, 103–10), it was not thought that this amounted to a major piece of work across the whole fort. It can now be shown, however, that the whole of the western *praetentura* was remodelled, with all buildings seeing some rebuilding and modification, except for the *basilica exercitatoria*. It is significant that it was the most basic buildings, the soldiers' accommodation barracks that were the most extensively altered.

Two buildings were remodelled by detaching the officers' quarters, which became freestanding blocks, one equipped

with a latrine and a hypocaust. That this was part of a more widespread project, is demonstrated by the layer of clean masons chippings that runs across the northern intervallum, and connects the rebuilding of the barracks with that of the interval tower, which was transformed into a bakehouse (Building 804; p 237). The limited dating evidence from the phase can be extended to date the whole of this building operation. The best evidence is the Commodan coin of 179 from the officers' latrine in the northern barrack, Building 803, supplemented by the pottery from the fill of a drain, which predated the alteration of this barrack (p 238), and which confirms a late 2nd–early 3rd-century date for the phase.

Detailed evidence for reconstruction within the fort is presented on pp 238–41. It seems likely that this wholesale rebuilding was the result of the arrival of a new garrison (Wilmott 2001a, 87–90; 2001f, 107), identified as *cohors I Aelia Dacorum*, which is attested on a great many inscriptions throughout the 3rd century, and is the unit listed for Birdoswald in the *Notitia Dignitatum* (Wilmott 1997a, 14, 195–7; 2001b). The *horreum* inscription is one of two inscriptions of this unit specifically to date to the reign of Severus. Although this may have been the original impetus for improvements made at Birdoswald, there is further epigraphic evidence to support the idea of a major building programme between *c* 198 and 219 (Wilmott 1997a, 197–8; above pp 240–1).

Period 4: 3rd- and early 4th-century occupation

The archaeological evidence for periods after Period 3 on the Study Centre site is sparse and patchy. Difficulty in identifying broad site phases was also encountered during the 1987–92 work, when it was possible to identify building phases with phases of activity around the *porta principalis sinistra*. It seems that activity within the fort following the early 3rd-century work associated with the arrival of *cohors I Aelia Dacorum* saw a continued consistent use of the barrack buildings, with major changes only in the roadside *fabricae*, which were sub–divided and constantly remodelled, while ironworking took place both in buildings, and also in the towers of the *porta principalis sinistra*, the southern portal of which was blocked.

As part of the blocking, the inner fort ditch was re-cut, and extended to cover the blocked portal, cutting through the earlier road (Wilmott 1997a, 145). The ironworking was attested by the presence of hammer scale, evidence for the use of heat, stone boxes or tanks, and a hearth. At the end of the phase, Building 831 collapsed, the *terminus post quem* for which was provided by a coin dating to 271–84. Subsequently soil developed over the site. When rebuilt, it was no longer used for the same purposes as previously. A similar date was recovered for a cessation of the metalworking, which took place within the *porta principalis sinistra* (Wilmott 1997a, 199), and this cessation defined the end of Period 4a.

Period 4a was not recognised stratigraphically in the Study Centre work, as Site Phases 6a and 6b cannot be identified with the sub-phases identified in Building 831 (Table 66). Instead it would appear that there was continual occupation of the barrack buildings during the alterations that took place around the gate, culminating in their demolition in the late 3rd century. The *terminus post quem* for the demolition of barrack Building 802 rests with a sherd of Crambeck mortarium dated after *c* AD 280–5, which suggests that the barracks were demolished at around the same time as Building 831 went out of use.

This date for the demolition of barracks contributes to increasing evidence of a major hiatus in the history of the fort and its extra-mural settlement at the end of the 3rd century. The demolition of the barracks in the north-west *praetentura* is contemporary with the cessation of metalworking around the *porta principalis sinistra*. All of these developments have a late-3rd-century date. In previous work, the end of metalworking, the collapse of Building 831, and its covering with earth was associated with other evidence.

Epigraphic evidence shows that *cohors I Aelia Dacorum* continued to observe official religious practices, especially in the form of dedications to Iupter Optimus Maximus (Wilmott 1997a, 198–201), at least until the reign of Probus (276–82) when the last known of a string of such dedications took place. In 297–305 the final major inscription from the site records that the *praetorium* was 'covered in earth and fallen into ruin' (RIB 1912). 'This has consistently been interpreted since 1929 as signifying rebuilding during the years 297–305, after a period of desertion. Unlike the mid-2nd century, when there is no evidence at all for

desertion, this late-3rd-century withdrawal has archaeological substance. There is something of a hiatus in the coin list after a very strong run of coins of the Gallic Empire, with only a single coin representing the reigns of the usurpers Carausius and Allectus. The list then picks up in the early 4th century. The ironworking in the excavated gate and in the adjacent roadside *fabrica* ceased, and in both cases this cessation is associated with coins of the Gallic Empire. The *fabrica* collapsed and was not immediately rebuilt, and the fort ditch was allowed to silt up and flood the berm, thereby causing the fort drainage system to back up. These are conditions that were not permitted to occur before or after the later 3rd century, and form presumptive proof of a period of desertion. The backing up of the drainage system, it is suggested, would have had serious consequences in the low lying parts of the fort, and might have contributed largely to the dilapidation recorded in RIB 1912' (Wilmott 1997a, 405).

It is probable that the extra-mural settlements east and west of the fort grew to their full extent (Biggins and Taylor 2004) during the early 3rd century. It has been noted (p 277) that occupation on each side of the fort differs. To the west it is organised around a central space, kept away from the fort walls by the maintenance of the inner and outer ditches. To the east the settlement gives the impression of being crowded, not spatially organised, and huddles close to the fort walls. It is possible that a phasing and dating issue is responsible for this perceived difference, although there may be other reasons. A mundane explanation might be that the eastern area was sheltered from the worst of the weather carried on the prevailing winds from the north-west by the Wall and the fort.

Beyond the extra-mural settlement to the west, on a slightly elevated site, was the fort cemetery. Almost all of the burials and tombstones found in this area can be dated to the 3rd century (Wilmott 1993; pp 278–90). The single excavated burial shows a complexity in burial ritual equivalent to the contemporary cemetery at Brougham (Cool 2002), with its suggestion of a major funerary industry manufacturing high quality and minutely decorated biers, used for funeral show before being consigned to the flames.

Although the evidence from the west *vicus* is sparse, there is a clear implication from the analysis of the ceramics that the *vicus* was abandoned in the later 3rd century and never reoccupied. The absence of 4th-century wares, even in upper unstratified deposits is a telling factor in this interpretation. The Birdoswald evidence fits well with that from Vindolanda, where coinage suggests that the *vicus* was also abandoned *c* 270, and never reoccupied (Bidwell 1985a, 91). In addition it is clear that the barracks were extensively remodelled in the last quarter of the 3rd century (Bidwell 1985a, 69), and that, as at Birdoswald, this remodelling was to a different plan. Casey (1985, 105) has suggested on coinage evidence that the fort at Vindolanda saw a short break around the time of Carausius and Allectus, although he also notes that this conclusion cannot be firm when only based on numismatic evidence.

The 3rd century also saw the construction to the south of the fort, on the spur, of a settlement comprising a quadrangular ditched enclosure and sill-beam constructed buildings, significantly different to either those in the fort or those in the east and west *vici*, in all of which areas buildings had stone foundations. This settlement was associated with the use of Housesteads ware, pottery with Frisian associations, although locally made (pp 318–19). This is discussed extensively on pp 272–5, where it is argued that this combination of ceramics and building type might indicate a separate *numerus* fort squeezed into the only available space not occupied by either the fort or the *vicus* buildings, and that the curious 'cultural apartheid', which excludes the Housesteads ware from the fort and *vicus*, may indicate that the settlement on the spur was occupied by people who preferred to use their own building style and their own pottery, both of which were dissimilar to anything in either the fort or the civilian settlement.

The restoration of fort buildings after the apparent desertion of the late 3rd century is recorded in RIB 1912, showing work taking place on the *praetorium*, *principia*, and bathhouse. This work appears also to be attested archaeologically at the *porta principalis sinistra.* The ditch was re-cut, but this time it was continuous across the gate portal, and was bridged by means of a stone bridge-culvert. Building 831 was also rebuilt, although it was no longer used for metalworking (Wilmott 1997a, 406).

At the same time, the barracks were clearly rebuilt to a different plan. No longer the long barrack buildings divided into

contubernia of earlier periods, the barracks comprised rows of separate, small freestanding buildings (p 249). The larger separate officer's quarters were retained. The *contubernia* seem to have comprised buildings set in a row, similar to one another in shape and size, and with internal partitions, as seen at Housesteads, Vindolanda and elsewhere (Bidwell 1991).

Periods 5 and 6: sub- and post-Roman

The later 4th century and later periods at Birdoswald have been extensively discussed elsewhere (Wilmott 1997a, 203–231). In summary, Period 5 represented the late-Roman transition between the Roman occupation of Period 4, and Period 6, which may be described as 'non-Roman' in character. During this Period, the ventilated sub-floor of the south granary was backfilled and the flagstone floor re-laid. The latest coin from this fill was dated to 348, giving a *terminus post quem* for this work. Silty layers were succeeded by a re-laid patchy stone floor, incorporating two hearths at one end of the building, around which were found high-status items such as a gold earring, a glass finger ring and a worn, silver Theodosian coin (388–95). At the same time, the north granary roof collapsed (*terminus post quem* 350–3) and the building was robbed of its walling stone and floor flags, the former sub-floor being used as a dumping area. The coinage from these dumps ran on from 348–378, and the finds also included a small penannular brooch of a characteristic sub-Roman type (Snape 1992, 158).

'Non-Roman' Period 6 was characterised by the erection of timber structures over the remains of the north granary and over the roads of the fort. The first major building was post-built with most of the posts placed in shallow postholes located in the tops of the robbed granary walls. A new floor of re-used flagstones over facing stones was laid over the roof tile spread from the building's collapse. This building was larger than the granary. A small service building was constructed as a post-built lean-to against the inner side of the fort wall south of the west gate.

The second phase of timber buildings saw the erection of a freestanding, framed building founded on post-pads. The south wall was on the site of the former granary, but the north wall on the former *via principalis*, aligned with the *spina* of the west gate, thus covering the road inside the blocked south gate portal. This building was surface-built, as were two small structures founded on surface-laid sleeper beams on the intervallum road. Apparently at the same time, the west gate was provided with a new, timber-built outer portal, possibly allowing gates to be hung to open outwards, and thus to be more defensible.

Dating for Period 6 is problematic. The south granary was clearly re-used, possibly as a hall building, with the hearths at the western end provided for the leading figures in the fort community. If the timber structures were the functional successors of this building, as seems likely, the *terminus post quem* for the first is *c* 388–95. As the Theodosian coin was worn, however, this could be assumed to be later, perhaps *c* 420. An estimated life of 50 years for each building would bring the close of occupation to *c* 520.

The excavations reported above had little to contribute to knowledge of these phases because the barrack areas within the fort were heavily truncated and activity in the extra-mural areas ended in the later 3rd century. The sole evidence thought to relate to Period 5 to survive in the north-west *praetentura* was the final phase of Building 803, the officer's house in the north-west corner of the fort. This building clearly survived in use longer than the adjacent structure to the east. *The terminus post quem* for the apsidal structure within this building is 330–70, which places it within the same period as the late 4th-century re-use of the south *horreum* (Wilmott 1997a, 203–6). It is tentatively interpreted as a possible church. Similar interpretations have been advanced for an apsidal structure built at Housesteads on a street in the north-west corner (Crow 1995, 95–6), and at Vindolanda, within the courtyard of the *praetorium* (Birley *et al* 1998, 20–1). At South Shields there is some evidence that the *principia* forecourt was transformed into a church in the late 4th century (Bidwell and Speak 1994a, 102–3). Also at Vindolanda the early Christian tombstone of Brigomaglos, dated *c* 500, indicates a late Roman/early post-Roman Christian presence (Jackson 1982, 62), as does other recently discovered artefactual evidence. Long-cist graves (all empty) have been claimed adjacent to the church at Housesteads, at Sewingshields (Crow and Jackson 1997, 66–7) and east of Birdoswald (Wilmott 2000, fig 16). It is possible that Birdoswald was one of a number of forts that persisted as a Christian centre.