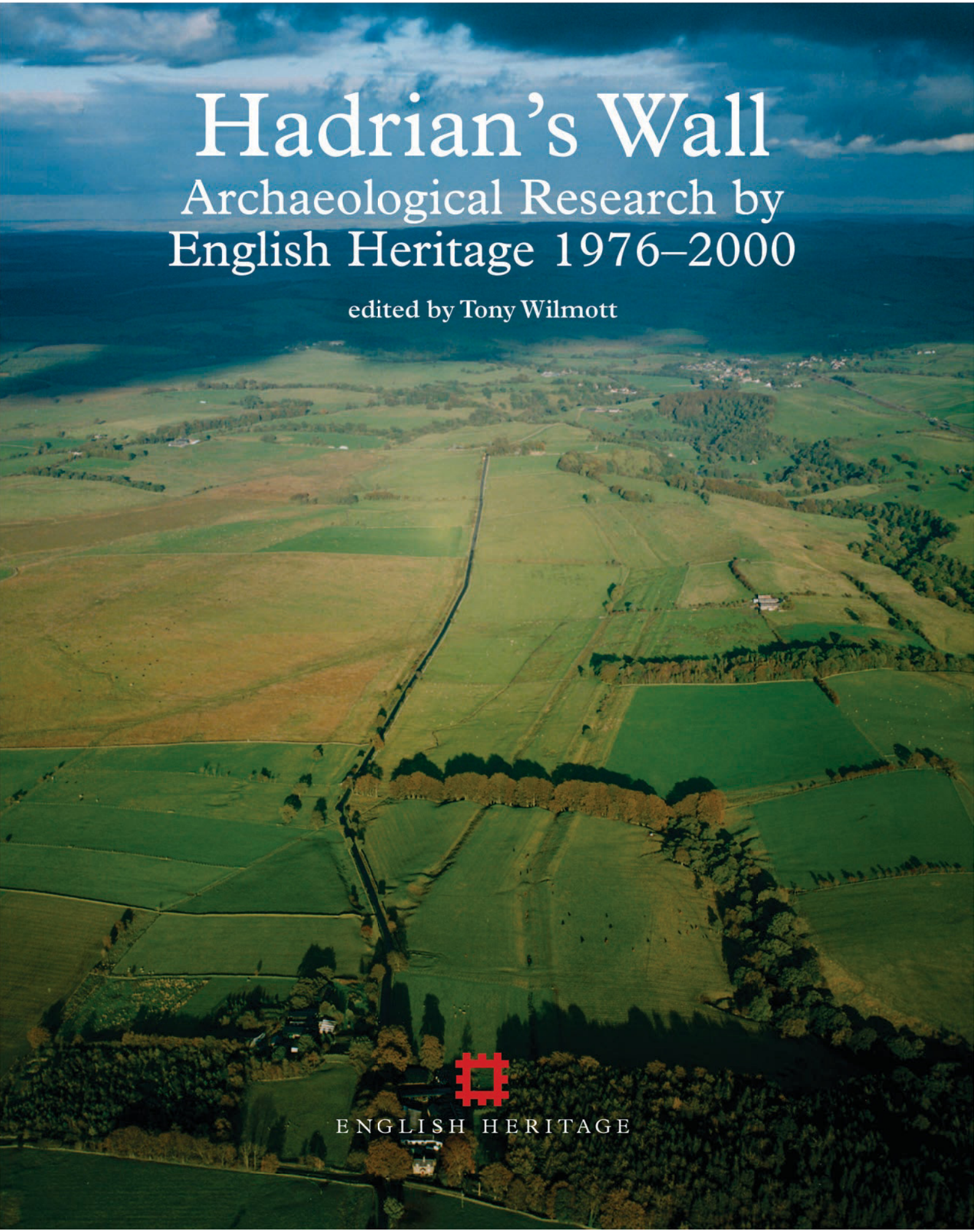

Hadrian's Wall

Archaeological Research by English Heritage 1976–2000

edited by Tony Wilmott

ENGLISH HERITAGE

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Periods

These dates are approximate ranges only. Dates represent calendar years, ie the equivalent of calibrated radiocarbon dates (source: Monarch Recording Guidelines Version 3.1 30 June 1998 English Heritage Internal Document).

Mesolithic 10 000 BC–4000 BC
Neolithic 4500 BC–2200 BC
- Early Neolithic 4500 BC–3000 BC
- Middle Neolithic 3500 BC–2700 BC
- Late Neolithic 3000 BC–2200 BC

Bronze Age 2500 BC–700 BC
- Early Bronze Age 2500 BC–1500 BC
- Middle Bronze Age 1600 BC–1000 BC
- Late Bronze Age 1000 BC–700 BC

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- Early Iron Age 800 BC–400 BC
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Later Prehistoric 4000 BC–AD43
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early medieval AD 410–1066
medieval AD 1066–1540
post-medieval AD 1540–1901

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Summary

From 1976 to 2000, English Heritage archaeologists undertook excavation and other research on Hadrian's Wall. In the early part of this period the excavations were related to rescue in advance of development, while later interventions included research excavation, responses to damage taking place outside the planning process, and work to inform the management of the World Heritage Site. A good deal of this work has been published elsewhere, and this volume completes the publication of all of these projects. A complete list of English Heritage interventions appears in Appendix 1. The next generation of work on the Wall will be undertaken in context with the recently produced Hadrian's Wall Research Framework.

Alan Whitworth's project of recording the standing fabric of the wall led to the discovery of the James Irwin Coates archive of drawings of Hadrian's Wall. Compiled between 1877 and 1896, these drawings, published in full here for the first time, provide a virtual condition survey of the Wall at the end of the 19th century. Alan Whitworth also gained an appreciation of the full scope of the work of exposing and consolidation of the Wall undertaken under the supervision of Charles Anderson for the Ministry of Public Building and Works and the Department of the Environment, 1936–1974. Anderson not only preserved a great quantity of the Wall through his work, but also made a comprehensive photographic record of what he did. His work is catalogued, and his career described in detail.

The most visible part of the Hadrian's Wall complex is the earthworks representing the Wall, its ditch and the Vallum to the south of the Wall line. Excavations on the earthworks have included three complete transactions at Black Carts, Appletree and Crosby on Eden. Evidence for the Roman-period natural environment of these locations was recovered, as well as new detail on the varied morphology of the works. At Black Carts the Vallum was built over ploughed land shortly after hoofed animals had traversed the area. The counterscarp to the Wall ditch was here built up to compensate for a shallow ditch in an area of hard rock. At Appletree and Black Carts the marginal mound of the Vallum appears to be a primary feature, and a hitherto unrecorded primary track behind the Turf Wall was found at Appletree. Work on thirteen of the milecastles has added to knowledge of the dimensions, date and layout of several of them. New evidence for possible occupation outside milecastles, and for the order of their construction is cited.

At Birdoswald fort, previous work has been augmented by the excavation of the north-west *praetentura*. This area contained three barracks, each with eight *contubernia*. They were rebuilt during a general Severan re-modelling of the whole fort, possibly when *cohors I Aelia Dacorum* came into garrison, and were later re-modelled into small, free-standing structures. The dimensions of the partially excavated *basilica exercitatoria* were confirmed. One of the centurion's quarters contained a private latrine. This building may later have been converted into a small chapel. Outside the fort, to the south, excavation in advance of cliff erosion discovered a third fort ditch. Timber buildings on the spur were fond to be 3rd century in date and associated with the Frisian-style Housesteads ware pottery. This ware does not occur within the fort, but only to the south. To east and west of the fort *vicus* development has been found through geophysical survey, mainly comprising stone-built structures. Evaluation on the west side showed that complex domestic structures were present, probably beginning at the earliest stage in the fort's development. Farther to the west, evaluation of the known cremation cemetery demonstrated that despite medieval ploughing, complete cremations could still be found. One of these produced grave goods in the form of decorated bone, probably for the adornment of biers. Excavation at the fort at Bowness-on-Solway confirmed the overall dimensions of the fort, and revealed part of the defences, including an interval tower.

Résumé

Les fouilles et d'autres recherches exécutées au mur d'Hadrien par les archéologues d'English Heritage ont eu lieu de 1976 à 2000. Au début de cette période, il s'est agi de fouilles de sauvetage réalisées avant des travaux d'aménagement ; par la suite, les interventions ont porté sur des fouilles de recherche, des mesures destinées à réparer des dommages résultant d'autres facteurs que l'aménagement urbain et des travaux visant à élaborer les principes de la gestion de ce site du patrimoine mondial. Une bonne partie de ces travaux ont été publiés dans d'autres ouvrages, que le présent volume vient compléter. Une liste complète des interventions d'English Heritage figurent dans l'appendice 1. Les prochains travaux réalisés au mur seront exécutés dans le contexte du cadre établi récemment pour les recherches relatives au mur d'Hadrien.

Le projet d'Alan Whitworth portant sur le relevé des vestiges du mur ont conduit à la découverte de dessins d'archive du mur d'Hadrien exécutés par James Irwin Coates. Datant des années 1877 à 1896 et publiés pour la première fois dans leur intégralité dans le présent ouvrage, ces dessins offrent pratiquement un état des lieux du mur à la fin du XIXe siècle. Alan Whitworth a pu également se faire une idée de l'ampleur des travaux visant à mettre au jour et à consolider le mur, entrepris sous la direction de Charles Anderson pour le ministère des travaux publics et le ministère de l'environnement de 1936 à 1974. Anderson a non seulement préservé une bonne partie du mur par son travail, mais il a également photographié intégralement ses interventions. Son travail est catalogué, et sa carrière est décrite dans les détails.

La partie la plus visible du complexe du mur d'Hadrien se compose du mur, de son fossé et du Vallum longeant le mur au sud. Leurs fouilles se sont déroulées en trois interventions complètes menées à Black Carts, Appletree et Crosby on Eden. Elles ont permis de recueillir des données sur l'environnement naturel tel qu'il se présentait durant la période romaine à ces endroits, ainsi que de nouvelles informations sur la morphologie variée de l'ouvrage. À Black Carts, le Vallum a été construit sur un terrain labouré peu après avoir été traversé par des animaux à sabots. La contrescarpe du fossé du mur a été ici surélevée en raison de la faible profondeur du fossé, creusé à un endroit où la roche était dure. À Appletree et Black Carts, le remblai extérieur (*marginal mound*) du vallum semble être un élément majeur, tandis qu'un sentier important, qui ne figurait jusqu'à présent sur aucun document, a été découvert derrière la levée de terre à Appletree. Des travaux menés sur 13 des tours milliaires ont permis de connaître les dimensions, la date et l'agencement de plusieurs d'entre elles. Des découvertes récentes indiquant la possibilité d'une occupation à l'extérieur de ces tours et permettant de déterminer l'ordre de leur construction sont mentionnées.

Au fort de Birdoswald, les travaux antérieurs ont été complétés par les fouilles de la *praetentura* nord-ouest. Cette zone abritait trois casernes, dotées chacune de huit *contubernia*. Elles ont été reconstruites durant le réaménagement général de l'ensemble du fort exécuté sous l'empereur Sévère, peut-être lorsque la *cohors I Aelia Dacorum* est arrivée en garnison, et ont été par la suite transformées en de petites structures séparées. Les dimensions de la *basilica exercitatoria* qui a fait l'objet de fouilles partielles ont été confirmées. L'un des quartiers des centurions contenait des latrines privées. Ce bâtiment a peut-être été par la suite transformé en une petite chapelle. À l'extérieur du fort, au sud, les fouilles réalisées pour devancer l'érosion de la falaise ont permis de mettre au jour un troisième fossé. On a pu établir que les bâtiments en bois situés sur l'éperon dataient du IIIe siècle et étaient liés à la poterie de style frison de Housesteads. Ces poteries n'ont pas été découvertes à l'intérieur du fort, mais seulement au sud. À l'est et à l'ouest du fort, un *vicus*, composé principalement de structures en pierre, a été découvert grâce à une étude géophysique. L'évaluation de la partie ouest a indiqué que des structures domestiques complexes se trouvaient à cet endroit, sans doute dès le début de l'aménagement du fort. Plus à l'ouest, l'évaluation du cimetière d'incinération déjà identifié a montré que malgré les labourages de l'époque médiévale, on pouvait encore y découvrir des incinérations complètes. L'une d'entre elles a permis de retrouver des objets funéraires, c'est-à-dire des os décorés qui avaient sans doute servi à agrémenter les bières. Les fouilles menées au fort de Bowness-on-Solway ont confirmé les dimensions d'ensemble du fort et permis de révéler une partie des défenses, y compris une tour intermédiaire.

Traduction: Muriel de Grey
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Zusammenfassung

Von 1976 bis 2000 nahmen Archäologen des *English Heritage* Ausgrabungen und andere Forschungsarbeiten am Hadrianswall vor. In der ersten Phase dieses Zeitraums konzentrierten sich die Ausgrabungen auf Rettungsmaßnahmen vor der Erschließung der betroffenen Gebiete. Später kamen Ausgrabungen zu Forschungszwecken hinzu, Reaktionen auf Schäden, die außerhalb des Planungsprozesses auftraten und Arbeiten zur Information der Verwaltungsorgane dieses Weltkulturerbes. Ein großer Teil dieser Arbeiten wurde bereits an anderer Stelle veröffentlicht. Dieses Buch schließt die Publikation all dieser Projekte ab. Anhang I enthält eine vollständige Liste der Maßnahmen des *English Heritage*. Die nächste Generation der Arbeiten am Wall findet im Zuge des kürzlich ins Leben gerufenen Rahmenprogramms zur Erforschung des Hadrianswalls statt.

Alan Whitworths Projekt zu Aufzeichnungen über die Struktur des Walls führte zur Entdeckung von James Irwin Coates Archiv mit Zeichnungen vom Hadrianswall. Die Sammlung wurde zwischen 1877 und 1896 zusammengetragen, und die Zeichnungen, die an dieser Stelle erstmalig in vollem Umfang veröffentlicht werden, bieten eine virtuelle Studie vom Zustand des Walls Ende des 19. Jahrhunderts. Durch Alan Whitworth wurde auch verdeutlicht, welchen Umfang die Arbeiten zur Freilegung und Festigung der Anlage hatten, die unter Aufsicht von Charles Anderson für das *Ministry of Public Building and Works* und das *Department of the Environment* von 1936–1974 durchgeführt wurden. Anderson erhielt mit seiner Arbeit nicht nur einen großen Teil des Walls, sondern fertigte außerdem eine umfassende fotografische Dokumentation seiner Aktivitäten an. Seine Arbeit ist katalogisiert und sein beruflicher Werdegang detailliert beschrieben.

Der am besten sichtbare Teil der Wallanlage sind die Erdarbeiten, die den Hadrianswall darstellen, sein Graben und das Vallum am südlichen Teil des Wallverlaufs. Zu den Ausgrabungen an den Erdarbeiten gehören drei vollständige Transaktionen in Black Carts, Appletree und Crosby on Eden. Nachweise für die natürliche Umgebung zur Zeit der Römer an diesem Standort wurden geborgen, ebenso wie neue Einzelheiten zu der unterschiedlichen Morphologie der Anlage. In Black Carts war das Vallum auf gepflügtem Boden aufgestellt, kurz nachdem Huftiere das Gebiet überquert hatten. Die Gegenböschung des Wallgrabens wurde hier aufgebaut, um den flachen Graben in einem Gebiet mit hartem Gestein auszugleichen. In Appletree und Black Carts scheint der Randhügel des Vallum ein Hauptmerkmal zu sein, und ein bis dahin unerwähnter Pfad hinter dem Graswall wurde in Appletree gefunden. Die Arbeiten an dreizehn der *Milecastles* (Festungen) haben zu weiteren Erkenntnissen in Bezug auf die Größe, Datierung und den Aufbau einer ganzen Reihe dieser Anlagen geführt. Neue Nachweise einer möglichen Besiedlung außerhalb der *Milecastles* sowie Hinweise auf die Reihenfolge, in welcher diese Befestigungen gebaut wurden, werden angeführt.

In Birdoswald Fort wurden frühere Arbeiten durch die Ausgrabung der nordwestlichen P*raetentura* (vorderer Lagerteil) erweitert. Dieses Gebiet enthielt drei Baracken mit je acht *Contubernia* (Zeltgemeinschaften). Diese wurden im Rahmen eines allgemeinen Umbaus der gesamten Befestigung durch die Severer neu aufgebaut, möglicherweise als die C*ohors I Aelia Dacorum* in die Garnison kamen. Später wurden sie in kleine, freistehende Gebäude umgebaut. Die Abmessungen der teilweise ausgegrabenen *Basilica Exercitatoria* wurden bestätigt. Eine der Unterkünfte eines Zenturios enthielt eine private Latrine. Dieses Gebäude könnte später in eine kleine Kapelle umgewandelt worden sein. Außerhalb der Festung in südlicher Richtung wurde bei Ausgrabungen vor einer Erosion der Klippen ein dritter Festungsgraben entdeckt. Holzhäuser auf dem Felsvorsprung wurden auf das 3. Jahrhundert datiert und mit *Housesteads Ware*-Keramik in friesischem Stil in Verbindung gebracht. Diese Keramik kommt in der Festung nicht vor, sondern nur südlich davon. Östlich und westlich der Festung wurden römische *Vici* (Siedlungen) durch geophysische Forschungen gefunden. Diese bestanden hauptsächlich aus Steingebäuden. Bewertungen auf der westlichen Seite zeigen, dass es komplexe häusliche Strukturen gab, die wahrscheinlich in der frühesten Phase der Festungserrichtung entstanden. Weiter westlich zeigte die Untersuchung des bekannten Kremationsfriedhofs, dass trotz der Pflügearbeiten im Mittelalter immer noch vollständige Krematorien gefunden werden konnten. In einem davon wurden Grabbeigaben in Form von verzierten Knochen gefunden, wahrscheinlich zur Dekoration der Bahren. Ausgrabungen an der Festung in Bowness-on-Solway bestätigten die Gesamtabmessungen der Festung und legten einen Teil der Verteidigungsanlagen frei. Dazu gehörte auch ein Zwischenturm.

Übersetzung: Tamara Benscheidt
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1
Introduction: English Heritage research on Hadrian's Wall, 1976–2000

by Tony Wilmott

Research on Hadrian's Wall has a long pedigree reaching back to the late 16th century, its beginnings virtually coinciding with the Union of the Crowns and visits by such antiquaries as William Camden and Reginald Bainbrigg. The historiography of research from the beginnings (indeed from the first post-Roman literary reference to the Wall in Bede's *Ecclesiastical History*) to the 1960s has been written by Eric Birley (1961, 1–69), although an authoritative update of this work, covering the following 40 years, is yet to be written.

The work undertaken by English Heritage over the last quarter of the 20th century has its origin in responses to the attrition of the monument, owing to both large- and small-scale development work. Most of this work, as discussed later, covers the period prior to the introduction of the Planning Policy Guidance Note on *Archaeology and Planning* (PPG16), when responsibility for addressing the archaeological impact of development rested largely with central government, but also covers the response of English Heritage to threats that fall outside the planning system.

Hadrian's Wall has been subject to threats of destruction virtually from the beginning of the period of antiquarian interest. Perhaps the starkest example is the building by General Wade of the Military Road (now the B6318) from Newcastle to Carlisle in the mid-18th century using the stone (and course) of the Wall, a project that caused the antiquary William Stukeley to write a letter of protest to the Princess of Wales, which has a very modern ring (Lukis 1887, 140–43; Lawson 1973, 186–90). At the same time, the robbing of Wall stone for building continued apace, and was railed against by William Hutton (1801). Stone robbing in the central sector was halted when John Clayton of Chesters inherited the Chesters estate in 1843, and proceeded to acquire large stretches of the Wall and several forts, a process that continued until his death in 1890. Clayton excavated a number of sites on the Wall, and also replaced facing stones, in parts virtually rebuilding stretches of Wall. Clayton's work was publicised and popularised by John Collingwood Bruce, author of the magisterial volume *The Roman Wall* (Bruce 1853) and founder, in 1849, of the institution of the Pilgrimage of the Roman Wall. Elsewhere, however, attrition, principally due to the robbing of stone, continued. This was exacerbated by the growth and spread of the urban areas of Carlisle and Newcastle, characterised by the destruction of the northern third of the fort of Benwell by the construction of a reservoir in 1863–4.

In the 1930s and 1940s the Wall was threatened by the quarrying of whinstone (dolerite) in the central sector. This led to the passage of the 1931 Ancient Monuments Act and a long struggle to save the Wall, which has been described in detail by one of the chief campaigners against the threat, John Charlton (2004). The threat was not finally defeated until a public enquiry finally put an end to proposals for quarrying in 1960.

The increasing pace of development nationwide in the 1960s and 1970s, and the consequent threat to archaeological monuments and remains, led to the formation of the pressure group RESCUE, and to the establishment of a series of archaeological units across the UK (Rahtz 1974; Jones 1984). The largely rural nature of the Hadrian's Wall zone meant that the area was largely free of the kind of large-scale threat experienced by much of the rest of the country during this period. One survey of 'crisis areas' (St Joseph 1974, 174) identified only the danger of dolerite quarrying, which,

Fig 1
Statue of a genius found in 1976 during the first CEU watching brief on the Wall at Burgh-by-Sands.

as we have seen, had been averted. The area was not wholly immune, however, and in 1974 work on the A69 Hexham-Corbridge by-pass revealed the Agricolan supply base at Red House, which was excavated by Newcastle University (Hanson *et al* 1979; Jones 1984, 70). Infrastructure projects that required north–south routes, such as the North Sea gas pipeline through north Cumbria, necessitated rescue observations (Richardson 1978). At the same time, development within the urban areas of Carlisle and Newcastle upon Tyne led to large-scale rescue excavations, notably at Annetwell Street, Carlisle and at Wallsend. In the absence of dedicated archaeological units for the Wall zone, archaeological responses to development were carried out by other bodies, often funded by the Department of the Environment (DoE); thus the work at Annetwell Street was directed by Dorothy Charlesworth in her role as DoE Inspector of Ancient Monuments and that at Wallsend by Charles Daniels for the University of Newcastle upon Tyne. Shortly after the Annetwell Street excavation the Carlisle Archaeological Unit was formed, and took on all rescue work within the extensive city boundaries, which include the whole of the Turf Wall sector.

The archaeological units that were set up at this time were generally committed to work within a particular territorial area: a city or county. It was due to the recognition that there were gaps in coverage and that the units had limited flexibility that the Central Excavation Unit (CEU) was set up by the DoE in 1975. The primary roles of the Unit were to undertake rescue excavation where no local archaeological organisation existed to carry out the work, or where such an organisation's resources were fully committed, and to undertake excavations on sites of special national importance. The 1979 Ancient Monuments and Archaeological Areas Act strengthened the protection afforded to Scheduled Ancient Monuments by introducing the concept of Scheduled Monument Consent (SMC), under which the prior permission of the Secretary of State was made compulsory for any works on monuments under statutory protection. In many cases archaeological conditions were laid upon the granting of SMC, such that excavations and watching briefs would take place before and/or during the work. This stipulation led to the CEU experiencing an increase in work related to the granting of SMC (Hinchliffe 1986, 2–3). The CEU also began to undertake evaluation exercises designed to assess the state of preservation and archaeological potential of sites, and thus to inform decisions on management.

From the outset, Hadrian's Wall was a major consideration for the CEU, as the linearity, complexity and extent of the Wall meant that it was constantly affected by a wide variety of development proposals, often simultaneously. Proposals ranged from drainage schemes and the erection of telegraph poles to housing development, road works and pipeline schemes (Hinchliffe 1986).

From 1976, Paul Austen was designated CEU officer for Hadrian's Wall, based permanently in Carlisle. His brief was to monitor developments and advise on their archaeological implications, negotiating with farmers and developers, and undertaking watching briefs, evaluations and, where required, rescue excavations. Much of the work was comparatively mundane, involving watching briefs that often produced negative results, although the very first watching brief in 1976 outside Burgh-by-Sands unearthed a limestone statue of a *genius* (Austen 1986) (Fig 1). In cases where large- or medium-scale threats existed, CEU teams were set up in order to undertake excavations.

The earliest of these larger works was undertaken at Tarraby, east of Carlisle in 1978 (Smith 1978), where a pre-Roman cultivation system was found beneath the Vallum and Wall. Evidence of a similar nature was found at T10a in Throckley (Fig 2), where the Roman structure sealed pre-Wall ard-marks (Bennett 1983). Excavations on two sites were necessitated by the laying of major gas pipe-lines. At Crosby-on-Eden in 1981 (this volume, pp 120–8) (Fig 3) a complete cross-section of the linear elements of the Wall was recorded, while at Wallhouses in the same year (Bennett and Turner 1983) a Vallum crossing was located.

The construction of a pipe-line across the Wall at Burgh-by-Sands in 1986 resulted in the first discovery of a substantial cobble foundation beneath the Turf Wall, a finding that was confirmed when the nearby Mc72 (Fauld Farm) was excavated three years later in advance of development (Austen 1994). Two of the most important rescue excavations were conducted off the line of the Wall (Austen 1991), on the outpost fort at Bewcastle and at the hinterland fort of Old Penrith during 1977–8. At Bewcastle excavations in advance of a new farm building provided an opportunity to examine a stratigraphic and structural sequence from the Hadrianic period to the 3rd century, promoting reconsideration of the accepted history of the site, particularly of the date of abandonment, which was earlier than previously thought (Fig 4).

At Old Penrith the contrasting histories of fort and *vicus* were established. A rescue excavation in 1988 was undertaken in advance of house building at Bowness-on-Solway. Prior to the excavation, a radical re-evaluation of the extent of the fort took place. This concluded that the east wall of the fort lay to the west of its presumed position, and that the defences would lie within the threatened area. Excavation confirmed this hypothesis, and further vindication was provided in a watching brief near the south-east angle of the fort (Austen 1990; this volume, pp 396–409).

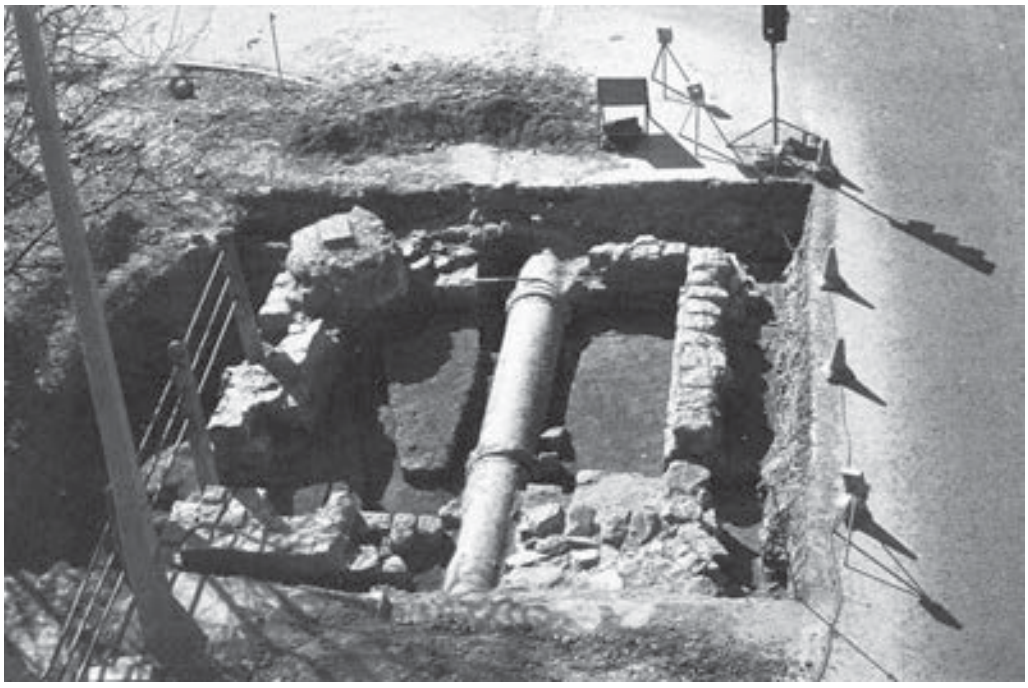


Fig 2
Excavation of T10a at Throckley in advance of renewal of services.

Fig 3
Excavation of the Wall ditch at Crosby-on-Eden in 1981, viewed from the scaffold erected to assist in spoil removal.

Fig 4
Excavation of fort buildings at Bewcastle, 1978.

In 1983, the National Heritage Act had set up English Heritage, "and transferred to it many of the responsibilities of the Secretary of State (for the Environment), including the power to fund the repair, management and recording of important sites, and to provide advice on the scheduling of monuments and application

for consent to carry out works to them." (English Heritage 1991, 3). The general duties of the new body were to:

> a) secure the preservation of ancient monuments and historic buildings situated in England;
> b) promote the preservation and enhancement of the character and appearance of conservation areas situated in England;
> c) and promote the public's enjoyment of, and advance their knowledge of, ancient monuments and historic buildings situated in England and their preservation.

It was in the light of the last-mentioned of these duties that 1987 marked a new departure for the CEU. The unit worked as contractor to Cumbria County Council on a major, 'non-rescue' excavation at Birdoswald (Fig 5), designed to improve understanding of the fort, and also to reveal major structures for public display (Hinchliffe 1989; Wainwright 1989, 17). This author was employed as Project Director for this work, which lasted until 1992 (Wilmott 1997a).

By 1990 the role of the Unit was changing from that of an 'alternative rescue unit' to an organisation that would play a more integrated role in English Heritage's strategies for archaeology. While the short notice response role was retained, the unit's major projects became more strategic in character, with a strong emphasis on methodological and technical development. At the same time the experience of the Unit's staff became increasingly exploited to provide professional advice to colleagues across the range of English Heritage's archaeological activities (Hinchliffe 1990; Wainwright 1990, 13). By 1991, under the title the Central Archaeology Service (CAS), the role of the organisation had expanded to include the assessment, monitoring and provision of advice on archaeological projects funded by English Heritage (Wainwright 1991, 8).

At the same time, the promulgation by the Department of the Environment of *Archaeology and Planning* (PPG16) meant that archaeology was now a material consideration within the planning process. The costs of archaeological recording were brought within development budgets. The impact of PPG16 on archaeological practice in England was immediate (Lawson 1994; Darvill 1994). The first preference in any development was hereafter for preservation *in situ*. Where damage cannot be avoided the developer has the responsibility to ensure proper records are made of the archaeology that will be destroyed. Professional standards are ensured through the provision to developers of briefs for work, normally compiled by the archaeological curator, usually the archaeological adviser to the planning authority. The actual work is then

Fig 5
Excavation in progress on the south horreum at Birdoswald in the first season in 1987.

undertaken by a recognised archaeological contractor following a tendering process.

The effect of PPG16 on Hadrian's Wall meant that the role of the CAS in providing rescue cover for development in the Wall zone was effectively over, as the presumption in every development was in favour of preservation *in situ*. The last of their traditional interventions took place at Whittledean Reservoir in 1990–91, and at Mc20 (Halton Shields) in 1992 (Appendix 1). At the same time the first of the new generation of PPG16-related works began. This had been foreshadowed in 1987 when Tyne and Wear Museums Service were funded through the Department of Transport to excavate the Wall and Vallum during the construction of the Newcastle Western By-pass at Denton (Bidwell and Watson 1996; pers comm P Bidwell), and began in earnest when, in 1991, the Lancaster University Archaeology Unit (LUAU) were contracted to undertake archaeological works associated with the North West Ethylene pipeline (Drury 1996). Since this time virtually all development related work on the frontier has been undertaken by three principal contracting organizations: Tyne and Wear Museum Service, Carlisle Archaeology Unit and LUAU (now Oxford Archaeology North – OAN). In recent years this work has included the archaeological works related to the creation of the Hadrian's Wall National Trail, which have been undertaken by OAN.

Hadrian's Wall was inscribed as a World Heritage Site in 1987. In 1996 the first Management Plan for the World Heritage Site was published, enshrining both guiding principles and five-year objectives for the management of the Wall. A Hadrian's Wall Co-ordination Unit was set up to champion the World Heritage Site, to co-ordinate relevant activities, to carry out English Heritage casework on Hadrian's Wall, and to take forward specific projects in partnership with other English Heritage departments as well as other bodies (Olivier 1997, 18). CAS (and its last incarnation (1999–2004), the Centre for Archaeology (CfA)) continued to undertake work on the Wall that fell outside the planning process, and did so within the framework of the Management Plan. Thus in 1996 work on the spur at Birdoswald was a response to the perceived threat of river erosion (this volume, pp 250–74). It also established the state of survival of archaeological deposits following the numerous and varied interventions of the 1930s in order to inform future mitigation and management. The following year work at Black Carts (this volume, pp 78–102) examined the damage caused to the Wall and Vallum by stock (Fig 6) and rabbits, and gathered information on preservation and survival in order to inform the preparation of a management agreement with the landowner. Similar management objectives underpinned the Hadrian's Wall Milecastles Project in 1999–2000 (this volume, pp 137–202), which was designed to assess the threat to selected milecastles from active ploughing. Also in 1999, the decennial Pilgrimage of Hadrian's Wall afforded the opportunity to examine a full section though the frontier at Appletree (this volume, pp 103–20) (Fig 7). This was the traditional site of the opening of a section of the Turf Wall for examination by the Pilgrims, a practice that may now be ended on conservation grounds. The work at Appletree was used as a training excavation for students from the University of Bradford.

Fig 6
Cattle poaching on the Vallum south Mound at Black Carts was one of the factors that led to excavation in 1997.

In 1997–8 CAS were retained by Cumbria County Council to undertake works associated with the development of the farm buildings as a residential study centre. This was due to the previous and very detailed knowledge that the Service had of the site following earlier work, and reflected its continuing role with respect to sites of particular national importance.

At the same time as the work described above was taking place, work was continuing on the consolidation of exposed areas of the fabric of Hadrian's Wall. During the 1980s the DoE realised that the historic policy of

consolidation without record (below, p 70) could not continue, and it was decided to produce a full, detailed record of all Wall fabric that was in State guardianship. This basic tool would be used to provide the reference material upon which contract specifications could be based for damage repair and/or for the continual process of repair and reconsolidation. It would also facilitate the annotation of copies by contractors, who would thus build up an archive of the conservation treatments used.

The project began in 1983, when a full photogrammetric survey was carried out by Plowman Craven Associates. From 1985 to 2001, a painstaking process of field enhancement and recording was carried out, led by Alan Whitworth (1994b). In those places where inaccessibility precluded rectified photography, the Wall face was drawn by hand, in some cases for more than 1km. Close examination of every inch of the curtain wall led to new discoveries relating to differences in building material, tooling marks, construction techniques and masons' marks. Research leading from this included the appreciation of the consolidation work undertaken, and privately recorded, by Charles Anderson (this volume, pp 50–71). In addition, newspaper coverage of the project led to the discovery of the James Irwin Coates archive of illustrations of the Wall; an invaluable source, published in full here for the first time (this volume, pp 8–49).

This brief summary places the work of English Heritage in research on the Wall into its context within the recent history of the archaeology of England. The volume that it prefaces spans two distinct periods of work: the rescue era, and that of archaeological work within the framework of the Hadrian's Wall Management Plan, completing the publication of both to date (Appendix 1 presents a database-derived list of all interventions on the Wall undertaken by CEU/ CAS/CfA). Current work towards the establishment of an agreed Research Framework for the Wall will usher in a new phase of research on Hadrian's Wall, and is a fitting context for the publication of these papers.

Fig 7
The excavation of a section through the frontier works at Appletree, for the 1999 Pilgrimage of Hadrian's Wall, was used as a training opportunity for Bradford University undergraduates in archaeology.

2
A 19th-century condition survey of Hadrian's Wall: the James Irwin Coates Archive, 1877–1896

by Alan Whitworth

In 1997 newspaper coverage of the English Heritage project to record Hadrian's Wall prompted Lorna Warren, the librarian of Ackworth School in West Yorkshire, to contact the author in order to bring to his attention a previously unknown collection of 165 19th-century drawings of Hadrian's Wall. The drawings, the work of the Reverend James Irwin Coates, had been donated to the school in 1948 by the sons of the artist. They were stored in the school library office and have never been published or put on public display since they were first drawn more than 100 years ago.

James Irwin Coates (1848–1925) entered the Quaker school at Ackworth, near Pontefract, West Yorkshire as a pupil in 1858. He left in 1863 to become an apprentice or student teacher, and studied for some time at the Flounders Institute, a training college for Quaker teachers. He returned to Ackworth School in 1869 to take up an appointment as a form master lecturing in chemistry and astronomy, a post he held until 1872. A photograph, probably taken sometime between 1869 and 1872, shows him among others of the Ackworth staff (Fig 8). On leaving Ackworth he had his own school built at Headingley Hill, Leeds, which carried on, chiefly as a day school, for 11 years. During this time he took an MA degree in Dublin and was subsequently ordained in the Episcopal Church, in which he held unbroken office for the rest of his life. Of his various curacies, his longest was at St Pauls, Haringay, which he held for 15 years, and the last that of Holy Trinity at Winchmore, where he was greatly appreciated. He married an Ackworth teacher, Hannah Gouch.

As an amateur archaeologist, his great compilation of drawings of the then visible remains of Hadrian's Wall shows a remarkable capacity for detailed and accurate observation. Numerous portions of the Wall and Vallum that he illustrated no longer exist, especially in those places where modern housing has been built over the remains of the monument or where agricultural activity has destroyed it. The scenes are therefore a valuable source of information of how the Wall looked towards the end of the 19th century. Besides drawing the Wall, Coates also sketched excavation finds that were being unearthed, including altars, burial urns, vases and statues, as well as making several ground plans of various sites and cross-sections of the Vallum. This work is the largest series of drawings made by one person of the entirety of the Wall and forms a unique and historically valuable archive.

Each of the 165 drawings (two are missing) measures 235mm × 150mm, and is mounted on drawing board. The depictions are in a sepia colour wash, the sketches first having been outlined in pencil. The drawings, made over a period of 19 years between 1877 and 1896 required nine separate visits to the length of the Roman Wall from Wallsend to Bowness. Also included in the collection is a copy of the map of the Roman Wall (in five separate foldout sheets), which was surveyed and drawn by Henry MacLauchlan between 1852 and 1854 for the Duke of Northumberland (MacLauchlan, 1858). The map has been annotated, presumably by the artist. The drawings are catalogued numerically in geographical order along the Wall from Wallsend in the east to Bowness in the west.

The 19th century was one in which antiquarian interest and archaeological study was further stimulated by new discoveries and a deepening realisation of the importance of the preservation of the surviving remains of the northern frontier of the Roman Empire. This was the

era in which John Hodgson, John Collingwood Bruce, John Clayton and others began to open up and excavate various forts, milecastles and turrets as well as sections of the Wall. From the late 1840s onwards a number of artists such as the brothers Henry, Charles and Thomas Richardson, David Mossman, William Collard, John Storey, Robert Blair and John Bell began to make paintings and drawings of sections of the Wall and associated structures as the monument was being uncovered by archaeological excavations. The private undertaking of James Irwin Coates to create such an outstanding collection of drawings should be remembered alongside such important names. Although a large amount of research and comment was being published at the time, and may have stimulated Coates to undertake his enterprise, it is possible that he had first travelled to the Wall in a personal capacity to view for himself these new discoveries. If so he may well have met both John Collingwood Bruce and John Clayton and discussed his work with them. In the course of this undertaking Coates made nine visits to the Wall between 1877 and 1896, each of which entailed travelling (presumably by train) from Yorkshire until 1883, and thereafter from London, to either Newcastle or Carlisle before travelling to the various sites that he wished to sketch. Unfortunately there is no record of where he stayed or with whom. His careful preparation for his visits, and his seriousness of purpose is illustrated by the fact that he was careful to be guided by and to annotate MacLauchlan's survey map.

Coates' first visit, or at least the first year of his drawing campaign, took place in 1877, during which he travelled virtually the entire length of the Wall, excepting only the area east of Newcastle. He completed an extraordinary 51 drawings. Most sites were sketched once, but at the forts and at the recently excavated Cawfields milecastle he made more. Coates drew at Newcastle, Chesters (13 drawings), Coventina's Well, Black Carts, Walwick, Housesteads (6 drawings), Vindolanda, Cawfields (2 drawings), Great Chesters, Cockmount Hill, Thirlwall, Gap, Gilsland, Birdoswald (2 drawings), Stanwix, Grinsdale to Kirkandrews and Bowness.

Two years later, in 1879, his second journey was even more productive than his first, resulting in no fewer than 60 drawings, the highest number made in a single trip. This time he travelled to Wallsend and began a sequence of drawings that took him across the line of the Wall to Bowness, visiting 40 locations. Five more sketches were made at Chesters and another three at Housesteads. Another year's gap followed, but between 1881 and 1883 Coates visited each year.

In 1881 he visited the western end of the Wall, where five drawings were made – at Kirkandrews, Monkhill, Burgh-by-Sands, Dykesfield and Port Carlisle. In the following year a more extensive trip was made, with a total of 26 drawings being completed. Eleven more drawings were made at Chesters fort, three at Carrawburgh, eight at Housesteads, including milecastle 37 to the west of the fort, two at Burgh-by-Sands, and one each at Teppermoor Hill (Limestone Corner) and Shield-on-the-Wall. In 1883 Coates once more concentrated on the western half of the Wall; seven drawings were made – two at Housesteads, four at Thirlwall and Carvoran and one at Monkhill. In 1885 Coates made a single drawing, that of

Fig 8
James Irwin Coates (centre) at Ackworth School.

an urn found at Burgh-by-Sands, in the same year when the foundations of the new vicarage were being dug (Ferguson 1887–8, 295–6).

A six-year gap followed, after which, in 1891, Coates visited Cawfields, Great Chesters, Walton and Thirlwall, and completed eight drawings. Coates' final journeys took place in 1895 and 1896, resulting in two drawings of Great Chesters and one of the vaulted strong-room within Great Chesters fort. This was the year of the Third Pilgrimage, but it is not known if Coates was a participant.

After Coates' death in 1925 the drawings remained in his family, but in 1948 one of his sons, Benjamin Goouch Coates, wrote to Ackworth School wishing to bequeath the drawings to them, as it was the centenary of his father's birth:

> "I have in my possession what I believe to be a unique collection of original sketches of the Roman Wall across the counties of Northumberland and Cumberland. These water colour sketches (in sepia) were drawn by my father on the spot and form a complete record of Hadrian's Wall, as then existing."

He says that the drawings were arranged in geographical order from East to West, although in closer examination it is evident that some are slightly out of sequence. He continues:

> "If, in your opinion, this illustrated record of the historical Wall would be of value to the school library, and could be exhibited from time to time …, it will give me great pleasure to present it to Ackworth School. I should like to perpetuate my father's name as a worthy Ackworthian and would suggest that the exhibit be known as the James Irwin Coates collection."

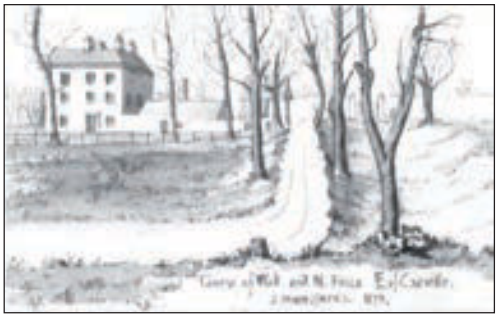
The drawings and accompanying maps are filed in a wooden box with an inscribed metal plaque on top, which reads:

> *Pictorial record of the Roman Wall drawn by James Irwin Coates MA, scholar, apprentice and master at Ackworth School 1858–1872*
> *Presented to the library by his sons A I and B G Coates on the centenary of his birth 26th June 1848.*

Because of the importance of this collection, English Heritage, with the approval of Ackworth School, has made a full set of photographic prints and slides for archive purposes. These are located at the Hadrian's Wall Co-ordination Unit at Carlisle Castle, Cumbria. A set of the photographs are to be deposited with the National Monuments Record. The original drawings have been returned to Ackworth School. The photographs are reproduced in the following catalogue.

Catalogue

1 *S.E. angle of Segedunum.* 1879 (Fig 9)
The drawing shows a number of buildings, perhaps associated with the Wallsend colliery, within the confines of the fort. One is a two-storey structure with chimneys at both gable ends and a centrally placed arched doorway, above which are three upper floor windows. This may be the house at one time occupied by Mr Reay (Bruce 1863, 39). Another building appears to be four storeys high. The ditch at the south-east angle of the fort is well defined.



2 *Course of Wall and N. Fosse E. of Carville.* 1879 (Fig 10)
A three-storey house with an associated outbuilding is depicted adjacent to the south side of the Wall. A tree-lined path or bridle way lies on top of the Wall and the north Ditch is defined. This building is part of Carville Hall (previously known as Cousins House and rebuilt *c*1750) and is shown on the 1st edition of the Ordnance Survey map within the boundary of the Hall.

3 *Site of First Mile Castle. W. of Wallsend.* 1879 (Fig 11)
A footpath is shown following the line of the Wall with a small footbridge over a stream called Stotts Pow, between Stotts House and Old Walker. The outline of the north Ditch is shown. Mc1 was located just west of the stream (Bruce 1863, 42). The church of St Francis now covers the site.

4 *Fosse and Course of Wall, 'Stote's House'.* 1879 (Fig 12)
A footpath runs adjacent to the Wall towards the Stote's Houses buildings, called the Beehouses by Horsley in 1732 (Bruce 1863, 42). The north Ditch is partially filled with water and forms two ponds. A hedgerow grows on the north lip of the Ditch. North of the Wall is the Walker corn mill, which is powered with four sails and in the distance is the village of Old Walker.

5 *Vallum in Front of Workhouse, Newcastle.* 1879 (Fig 13)
The shallow outline of the Vallum and its associated mounds is visible with the buildings of the Union Workhouse adjacent to or covering the Wall on the line of the Westgate Road on the east side of Elswick Grange. It is marked as the Poor House on MacLauchlan's map of 1852–4. Bruce (1863, 52) also says that the Vallum is well seen opposite the Union Work-house.

6 *First view of N. Fosse W. of Newcastle. Opposite Gloucester Arms.* 1879 (Fig 14)
The view, looking west, shows the north Ditch of the Wall in a field on the north side of the Westgate turnpike. A single gas lamp stands opposite the Gloucester Arms. The public house was situated close to where the present Gloucester Road joins the Westgate Road. According to Bruce (1863, 52), the mounds and Ditch appeared the moment the last row of houses in the town, Gloucester Road, was passed.

7 *S.E. Angle of Rampart and Fosse. Condercum.* 1879 (Fig 15)
The fort ditch is visible, as well as a stone wall (presumably of re-used Roman material) and footpath running parallel to the ditch. A two-storey house (Benwell Hills?) is depicted close to the north-east corner of the fort on the first edition OS map of 1854. A stand of mature trees grows along the line of the east ditch. A map of Benwell in 1790–1808 shows a similar line of trees along the east side of the fort (Graham 1984). Bruce (1863, 52) says that the east rampart and south-east angle stood in the grounds of G W Rendel Esq, who had recently excavated one of the suburban buildings on the east side of the fort.

8 *Temple E. of Condercum (S. End)*. 1879 (Fig 16)
The depiction, looking south towards the apse, shows the surviving low walls of the Temple of Antenociticus, located in 1862, standing at least four courses high above the offset. The two original altars (RIB 1327, 1328) are in place and the statue base of Antenociticus (RIB 1329), together with several pieces of sculpture, lies on top of the apse end. The door threshold block in the east wall is visible. No other buildings are visible and small trees or scrub on top of a small mound surrounds the south end. Grass capping covers most of the tops of the temple walls.

9 *Temple E. of Condercum (N. End)*. 1879 (Fig 17)
A large stone plinth is at the north end of the temple flanked by several pieces of moulded masonry. The grass-capped walls stand at least four courses high. The wall at the north end of the temple is only partially exposed.

10 *N. face of Wall. E. Denton.* 1879 (Fig 18)
Up to three courses of wall facing stones are exposed with an earth mound covering the surviving core. A depiction in the mid-19th century (Bruce 1863, 54) shows the trunk of an apple tree on top of the west mound of the Wall. Two houses are depicted south of the Wall. The rock face of the Denton Burn is shown on the south-west side of the Wall.

11 *Core of the Wall opposite Denton Hall.* 1879 (Fig 19)
The view, looking east, shows the site of the, as then undiscovered, T7b. The raised mound covering the Wall shows no visible stonework. The Westgate turnpike is depicted together with a stone boundary wall, probably that of Denton Hall. A line of trees is growing on the north side of the Wall and within the north Ditch. The houses of East Denton are depicted and another house is situated farther east. The surrounding fields south of the Wall are divided by hedgerows and a line of trees.

12 *In Wall just E. of Heddon. Diameter at bottom 6' 4".* 1879 (Fig 20)
The depiction is of a circular-shaped medieval kiln (excavated by Clayton in the mid/late 1870s) built into the south face and core of the Wall at Heddon-on-the-Wall. The mound of the Wall was covered in trees and bushes with three courses of the kiln stonework surviving above the flagged-stone floor.

13 *Fosse of Wall. Heddon. Looking E.* 1879 (Fig 21)
The view shows the well defined cut of the Fosse (north Ditch). Two buildings, one of which appears to be a row of terraced cottages, are depicted in the distance. A hedgerow forms a fence line on the south side of the Ditch. Bruce commented on the depth of the Ditch at this point (Bruce 1863, 57).

14 *The Works E. of Heddon-on-the-Wall.* 1879 (Fig 22)
The Newcastle–Carlisle turnpike is shown, as is the well defined Vallum coming down Great Hill. The south face of the Wall is at least seven courses high, with a small trench (possibly Clayton's) against the face of the Wall exposing several courses of Wall below ground level. Bushes and a large tree grow on top of the Wall.

15 *The Wall: E. of Heddon.* 1879 (Fig 23)
A detail of the previous drawing (Fig 21), showing the trench against the south face of the Wall. Seven courses are depicted, three of which are below ground level. The length of Wall sketched is approximately 9.5m.

16 *Fosse of Vallum. E. of Heddon.* 1879 (Fig 24)
The south side of the Vallum is sharply scarped and rock faced, the north face is sloping and covered in vegetation. A building in the distance in line with the Vallum appears to be the church of St Philip and St James in Heddon.

17 *Stones in Hedge and increased thickness where Vallum crosses brook W. of Heddon.* 1879 (Fig 25)
The view shows the Vallum at a point where the present A69 (Carlisle–Newcastle) road crosses the line of the Wall, slightly east of Mc13. A wood railing fence crosses the Vallum at right angles. The Rudchester Burn flows across the line of the Wall and Vallum. The stonework exposed in the banks of the Burn is most likely the remains of the Roman culvert built to channel the water through the Vallum. A similar culvert through the Wall is shown in Bruce (1863, 55). The Newcastle–Carlisle turnpike road is depicted flanked by a stone wall.

18 *Vallum between Heddon and Vindobala.* 1879 (Fig 26)
The view, looking east, shows the slope of the Vallum Ditch and its two mounds. A stone boundary wall north of the Vallum, probably containing re-used Roman stone, is situated on the south side of the Military road. The depiction is in Wall-mile 12, probably close to T12b.

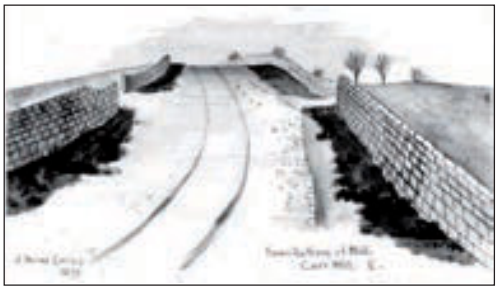
19 *S.W. Angle: Vindobala.* 1879 (Fig 27)
The outline of Rudchester (*Vindobala*) fort Ditch is clearly indicated, including a pool of standing water. Adjacent to the south edge of the Ditch are some of the buildings of Rudchester Farm. A line of trees is shown at the east end of the site and a hedgerow, including several trees, is depicted in an east–west direction, bisecting the southern half of the fort.

20 *N. portion of Vindobala.* 1879 (Fig 28)
The view, north from the Military road, shows the slope of the west Ditch of the fort to where it turns for the north-west corner. A stone field wall has been built on the north side and parallel to the turnpike road. On the east side of the fort is a hedge line indicating the line of the road running north from the Rudchester junction.

21 *Trough near Vindobala.* 1879 (Fig 29)
The top is turf-covered. The masonry partition in the trough, when it was discovered, has been removed. A quantity of irregular-shaped stones is lying adjacent to the cistern.

22 *Vallum. Carr Hill. W. from Down Hill.* 1879 (Fig 30)
The view, looking east, shows the well defined Vallum and associated mounds in wall mile 20/21. Car Hill Farm is on the east horizon. A similar view from the same position was made in 1848 by H B Richardson (Birley 1961, pl iv). The outline of the north Ditch is visible on the north side of the Military Road. A (19th century?) field wall bisects the line of the Wall and Vallum. A clump of trees is on the north side of the Military Road.

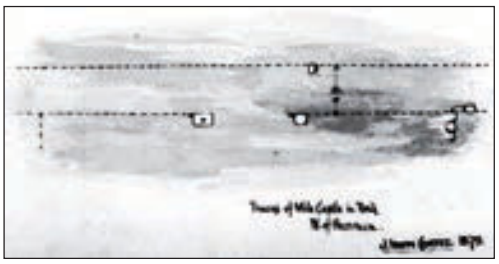
23 *Foundations of Wall. Carr Hill. E.* 1879 (Fig 31)
The line of the north face of the Wall is visible in the road surface. A stone boundary wall, probably incorporating Roman material, runs parallel to Hadrian's Wall and to the road. The slope of the north Ditch is discernable. The view is close to the position of T20a.



24 *Mile Castle. Halton Shields.* 1879 (Fig 32)
The view, from the Military Road shows the entrance to Halton Shields Farm (the site of Mc20). Within the road surface are several large stone blocks, two of which appear to be the pivot stones for the milecastle gateway, together with two threshold blocks. The field wall appears to be built of re-used Roman stone.

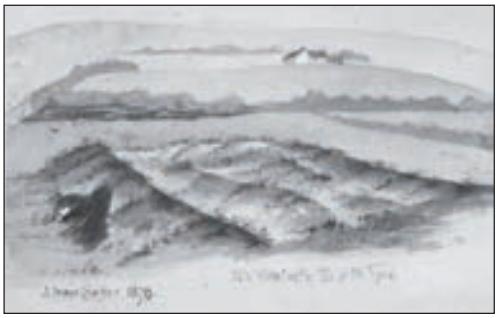
25 *Entrance to Mile Castle. Harlow Hill. E.* 1879 (Fig 33)
This is the site of Mc15 (Whitchester), situated on the south side of the Military Road east of Harlow Hill. A raised mound, topped with vegetation, indicates the line of the Wall with the wooden gate leading into the field indicating the position of the milecastle gateway. In the middle of the entrance is a line of stonework that may be original Roman material relating to the gateway entrance.

26 *S.E. Angle: Hunnum.* 1879 (Fig 34)
The Ditch and mound of the east wall of Halton Chesters fort are discernable, as well as the tree-lined road through the middle of the fort leading from the Newcastle–Carlisle turnpike to Halton. This road presumably lies above the original Roman road within the fort. A stone(?) wall crosses the fort on the south side of the Newcastle–Carlisle turnpike road. Numerous humps and bumps in the south-east quadrant of the fort indicate the extent of buried buildings within the fort.



27 *Traces of Mile Castle in Road. W. of Hunnum.* 1879 (Fig 35)
This is the site of Mc22, known as Portgate or Errington Arms. The junction of the east wall of the milecastle wall and the Roman Wall is indicated as well as the position of the north gate, the west side of which contains a block with a pivot slot. The milecastle west wall is shown by a dotted line. One facing stone indicates the width of Hadrian's Wall (eight feet).

28 *Vallum. XVIIth Mile Stone. W. of Newcastle (looking E.)*. 1879 (Fig 36)
Probably close to Mc23, west of Dere Street. The north, south and marginal mounds of the Vallum and the Vallum Ditch are all well defined.



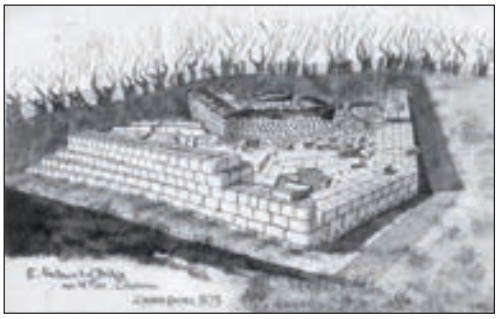
29 *IVth Mile Castle E. of N. Tyne*. 1879 (Fig 37)
This is Mc24 (Wall Fell) opposite Errington Hill Head farm. The grass covered sides and platform of the milecastle are distinct and the Vallum appears to be water filled. A farmhouse is depicted to the south-west of the Vallum.

30 *Turret. Brunton.* 1879 (Fig 38)
This turret (T26b) had been excavated by Clayton in 1873. The drawing shows the emptied turret, with three small altars against the north wall and a larger block with diamond broaching against the east wall. The threshold block shows the pivot slot and door jamb. The east wall stands 11 courses above the offset.

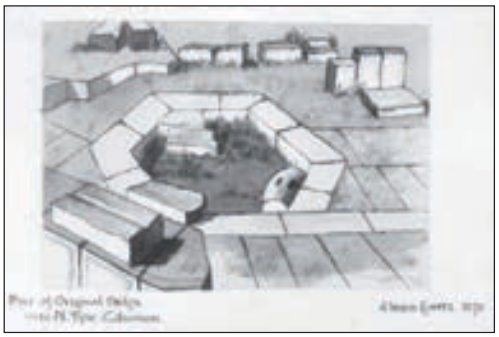
31 *N. face of Wall. Brunton.* 1879 (Fig 39)
The sketch is of the uncovered north face of the Wall. Lying against the Wall are two altars, part of a window head and a circular stone block. Trees are growing out of the Wall face and on top of the Wall. The large altar appears to be the one (Coulson and Phillips 1988, no. 279) that was removed from outside St Oswald-in-Lee church (Heavenfields) and placed here by the owners of Brunton House in the early/mid-19th century. The altar was placed back in the nave of the church by the Ministry of Works *c*1948. The location of the second altar is unknown.

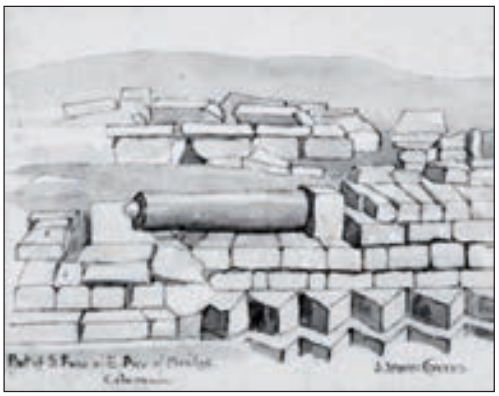
32 *The Wall. Brunton. E.* 1879 (Fig 40)
This length of the exposed (north?) face of the Wall, up to six courses high, is at Planetrees situated to the east of T26b. A number of large trees grow adjacent to and on top of the Wall.

33 *E. Abutment of Bridge over N. Tyne. Cilurnum.* 1879 (Fig 41)
The drawing shows the turret, millrace and bridge abutment, which had been uncovered between 1860–63 by John Clayton. The pier of the first bridge is clearly defined within the abutment of the later bridge. The crowbar slots and Roman setting out lines on the large abutment blocks are clearly shown. Six courses of masonry of the north wing of the abutment are depicted and a stone column is shown positioned at the south wing. The walls of the turret are turf capped and the site is surrounded by a wooden fence and a line of bushes.



34 *Pier of Original Bridge over N. Tyne, Cilurnum.* 1879 (Fig 42)
The drawing is of a detail of the pier of the first bridge enclosed by the masonry of bridge two. Lying within the pier is a socketed counterweight stone.





35 *Part of S. Face of E. Pier of Bridge. Cilurnum.* no date (Fig 43)
Presumably made at the same time as Figs 41 and 42, the sketch depicts a cylindrical column, with an oval boss at one end and a square base at the other, lying on the masonry of bridge two. The lower blocks of the abutment have been laid at an angle of 45 degrees to those above to form a series of dogtooth courses. A number of blocks forming the stone millrace are in the background.

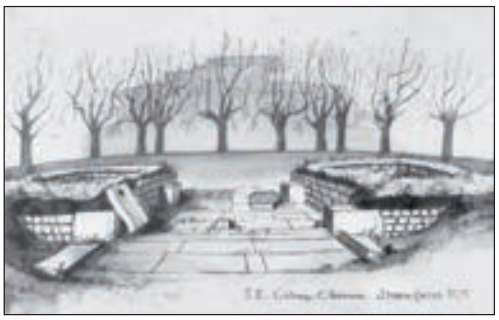
36 *S. Portal of N.W. Gate. Cilurnum.* 1882 (Fig 44)
The view, from the west, shows the south portal, gate threshold and central *spina* of the West gate. Hadrian's Wall is bonded with the south guard chamber, which stands three courses above the offset course. Several mature trees grow adjacent to the gate.

37 *N. Guardchamber, N.W. Gateway. Cilurnum.* 1882 (Fig 45)
The sketch, looking north, shows the internal view of the guardroom, including the pivot block and slot for the gate. At the north end is a stone water channel and a stone platform to support a tank for the water supply. The west wall of the guard chamber is seven courses above the offset course. The guard chamber door threshold is in place. A clump of mature trees, north of the chamber, extends across the Ditch and fort wall.

38 *Iron Socket for Gate. S. Portal. N.W. Gateway. Cilurnum.* 1882 (Fig 46)
This shows a detail of the surviving iron collar in the pivot block to hold the door as well as the south portal threshold block.

39 *S. Gateway. Cilurnum.* 1879 (Fig 47)
The drawing, looking north, shows the east and west guard chambers, central *spina* and gate portals. The sill and threshold of the east portal have been uncovered, while the east portal retains the large blocks of a later road. Within the fort are a large number of mature trees.

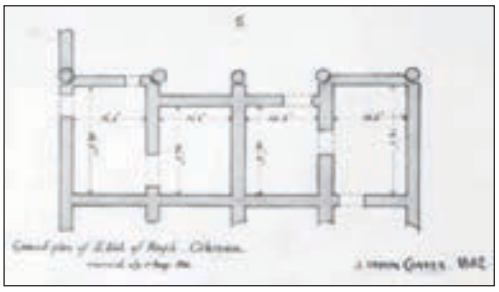
40 *S.E. Gateway. Cilurnum.* 1879 (Fig 48)
The first gate to have been excavated, perhaps in 1854, but before 1863 (Bidwell and Snape 1993, 13); the sketch shows the two guard chambers and the paving slabs of the single passage portal in the east wall. The outer face of the fort wall is partially excavated. The north pivot block is in place and a large block with a pivot hole rests against the north wall of the south guard chamber. Irwin Coates clearly depicts guard chambers on either side of the gate. These are not evident on the ground or indicated on any of the site plans, and no doors are visible in the side walls of the portal, the entrance perhaps being at the back of the guardrooms. Mature trees are growing within the fort.



41 *N.E. Gateway. Cilurnum.* 1877 (Fig 49)
The view of the main East gate shows the north and south guardrooms, the central *spina* and portals as well as the gate thresholds. The pivot slots for the gates are visible as is the section of Hadrian's Wall and its junction with the south guardroom. The impost-mould of the south rear pier is depicted.

42 *S. Guardchamber, N.E. Gateway. Cilurnum. Showing junction with Wall.* 1877 (Fig 50)
The view, from the east, shows the excavated south guard chamber, the gate portal and threshold, central *spina* and north face of Hadrian's Wall at its junction with the east face of the south guardroom. The impost block at the rear of the gate is in place. Four mature trees are inside the fort.

43 *Cilurnum.* 1879 (Fig 51)
The drawing depicts a section of the hypocaust system within the central part of the Commander's House. Three large stone slabs rest upon raised stone pillars with another slab in the background resting against five courses of walling.

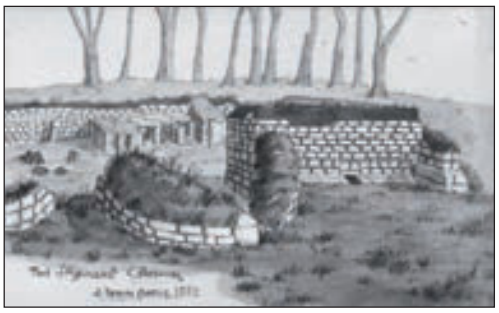


44 *Ground-plan of S. End of Temple. Cilurnum. Uncovered Jy & Aug.* 1882 (Fig 52)
The drawing shows four adjoining but partially interlinked rooms with entrance ways. A central partition wall separates the two rooms on the left from the two rooms on the right. On the south side of the partially excavated building are five equally spaced columns. The rooms at either end of the building measure 5.66m × 3.84m while the two central rooms measure 4.45m × 3.84m. No mention is made in any text of a temple within the fort. The building is part of a barrack block in the south-east corner of the fort and shown in the 13th edition of the *Handbook* to the Wall (Daniels 1978, 110).

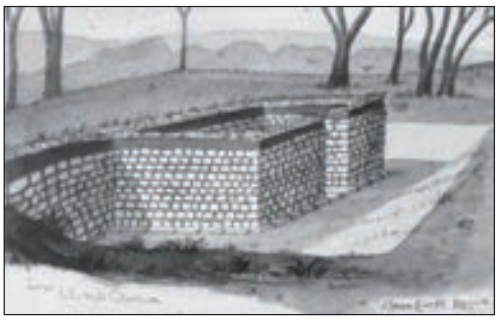
45 *Part of Hypocaust, Cilurnum.* 1879 (Fig 53)
This shows the hypocaust of the Commanding Officer's Bathhouse at the east end of the range. The stone floor slabs are supported by both circular stone and square brick pillars. Four courses of masonry are depicted above the floor level, the rest of the masonry being covered in turf.

46 *Part of Hypocaust. Cilurnum.* 1882 (Fig 54)
This is the east wall of the Commanding Officer's House at the south-east corner showing the brick arch of the furnace through the wall. A string course extends the length of the east wall. Large foundation blocks and the north wall of eight courses (above a moulded plinth) of a small room abut the east wall. The top of the east wall is turf capped and a clump of a dozen mature trees is situated within the fort.

47 *Part of Hypocaust Cilurnum.* 1882 (Fig 55)
The view shows the raised floor and hypocaust of the Commanding Officer's House together with the apsidal ends of the hot room and the moulded base course on the external face of the east wall. A squared-topped column rests against the wall close to the hypocaust. All of the walls are turf capped. A clump of eleven mature trees is depicted within the fort.



48 *Turret. S.E. Angle. Cilurnum.* 1882 (Fig 56)
Excavated between 188–82, the angle tower stands ten courses high above the offsets as does the inner face of the fort wall. The wall and turret top is turf capped.



49 *Chamber and Bath. Cilurnum.* 1877 (Fig 57)
The view is of the north-east corner of the Commanding Officer's House, showing the area of the cold baths, including the wall of brick tiles up to six courses high and a door threshold slab leading into the dressing room. The surviving walls stand to 11 courses high.

50 *Cilurnum.* 1879 (Fig 58)
The internal view of the underground strong room in the *principia* shows the arch-ribbed vaulting and entrance with its monolithic door jam and a stone slab over the passage steps. The walls of the vault are built on a stone plinth. On one of the floor slabs is what appears to be a circular drain hole.

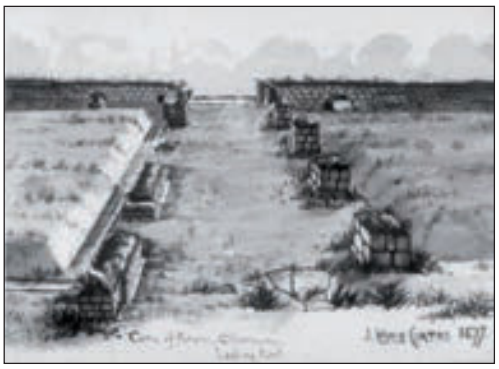
51 *Entrance to Vault in Æararium ~ Cilurnum.* 1879 (Fig 59)
An external view of the entrance to the underground strong room. The top is still covered in turf. A stone slab is laying above the passage steps. The wall on the south side of the steps contains eight courses of masonry.

52 *E. Gateway of Forum. Cilurnum.* 1877 (Fig 60)
The drawing shows part of the east wall of the *principia* together with the threshold and some paving slabs of the entrance. What appears to be a drain through the east wall, north of the entrance is depicted. The grass-covered mound in the background is the west end of the *praetorium*, not exposed until 1892–5.

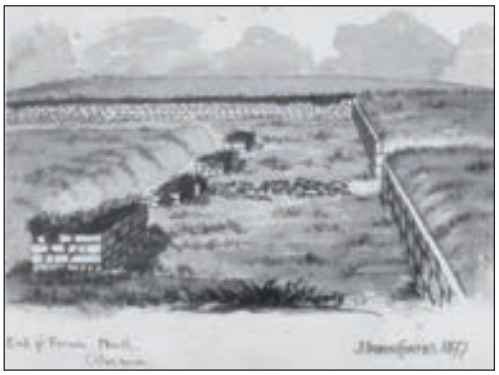
53 *Bases of Columns. E. side of Covered Market. Forum. Cilurnum.* 1877 (Fig 61)
The *principia* was exposed between 1870 and 1875. The view depicts the east portico of the *principia* courtyard with a line of column bases on plinths, the east entrance to the principia and the mound of earth covering the as yet unexcavated underground strongroom. The interior of the courtyard area had also not yet been uncovered.

54 *N.W. Corner of Forum. Looking S. Cilurnum.* 1877 (Fig 62)
The view along the west portico of the *principia* shows a row of column plinths, behind which is a stone gutter which runs parallel to the line of plinths. The west wall of the *principia* stands three courses high, at the end of which is the west entrance into the *principia*. A section of paving is visible between the column bases and the west wall.

55 *Centre of Forum. Cilurnum. Looking East.* 1877 (Fig 63)
The view shows the cross-passage of the basilica looking towards the east entrance. Four column plinths, with between two and three courses above, occupy the south side while the north side has the courtyard gutter and three arch supports. The eastern support arch for the entrance from the courtyard to the basilica passage has been robbed out and only a pivot stone is in place. A small section of cross-passage paving is at the west end of the passage. The central area of the courtyard and the basilica is unexcavated.

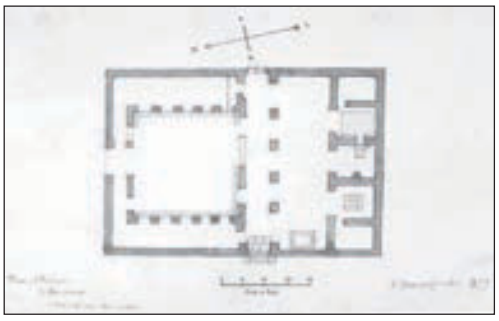


56 *End of Forum. North. Cilurnum.* 1877 (Fig 64)
Four arch supports and associated masonry (which are still capped with turf) are exposed as are the west and north portico walls. The north entrance into the courtyard is exposed. The courtyard and the area north of the *principia* entrance are unexcavated.



57 *S. End of Forum. Cilurnum.* 1877 (Fig 65)
The drawing, from the south-east, shows the southern end of the *principia* including the chapel (*aedes*), regimental records room and pay room with the earth mound covering the vault of the underground strongroom. The tribunal foundations are at the west end of the hall. Up to six courses of masonry are surviving in some of the walls. Two mature trees with foliage are shown to the west.

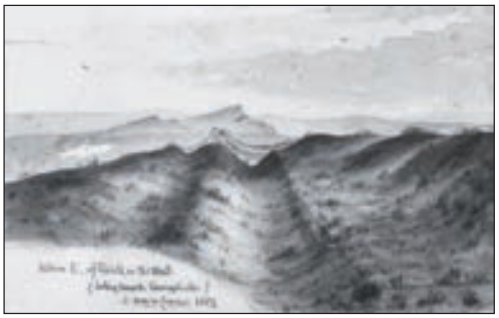
58 *Plan of Forum. Cilurnum. (reduced from Mr Clayton's)*. 1877 (Fig 66)
The plan of the *principia* was published in 1875. Coates made a copy of this for his drawing, acknowledging his source. A scale (0–40ft) is indicated at the bottom.



59 *N. Portal. N.E. Gate (outside). Cilurnum.* 1877 (Fig 67)
The gate was excavated in 1867. The depiction shows the central *spina*, the north portal and threshold as well as the north guard chamber standing to at least seven courses. Turf covers the tops of the guard chamber walls.

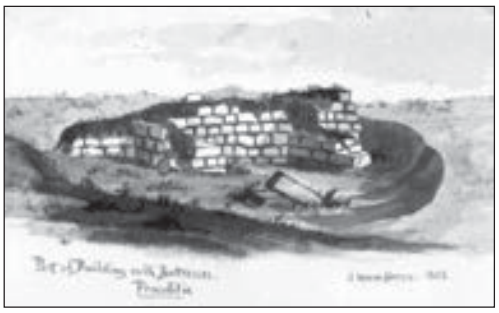
60 *Part of N.E. Gateway. Cilurnum.* 1879 (Fig 68)
The depiction shows a detail of the south guard chamber of the east gate including the impost on the rear south pier and nine courses of the fort walls inner face, the guardroom entrance, the pivot block on the south side of the gate and a section of the gate threshold. The pivot block shown is probably the one from the upper part of the gate superstructure.

61 *Additional Ramparts. Busy Gap.* 1879 (Fig 69)
A stone field wall of re-used Roman stone, built on top of the line of Hadrian's Wall stretches eastwards towards Sewingshields. A wooden gate, attached to stone pillars is built into the west end of the field wall. The outline of the north Ditch (east of Mc36) is shown crossing the level ground in front of Busy Gap. The Ditch and banks of a post-Roman enclosure on the north side of the Wall is depicted.



62 *Vallum E. of Shield on the Wall. (looking towards Sewingshields.)*. 1882 (Fig 70)
Shield-on-the-Wall is situated close to and south of Mc33. The mounds and Vallum Ditch are clearly outlined. South of the Vallum is a reservoir now known as Shield-on-the-Wall Dam. Shield-on-the-Wall cottage (previously known as Tipplehall) is depicted on the Vallum mound and Sewingshields Farm is shown farther westwards.

63 *Part of Building with Buttresses. Procolitia.* 1882 (Fig 71)
Two buttress or walls join a length of wall at least six courses high. Although the location is uncertain, this building may be related to either the west wall of the fort, the external bathhouse or, within or close to, the central range of buildings in the fort as these were the only places excavated by Clayton by this time. It may also possibly be a section of wall of a granary (Snape 1994, 17).

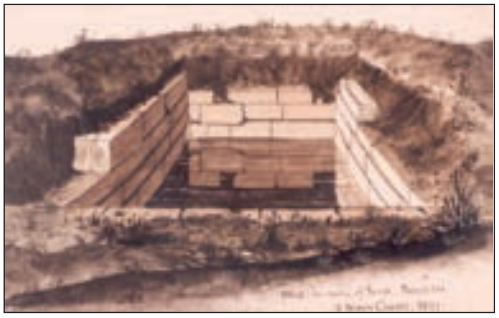


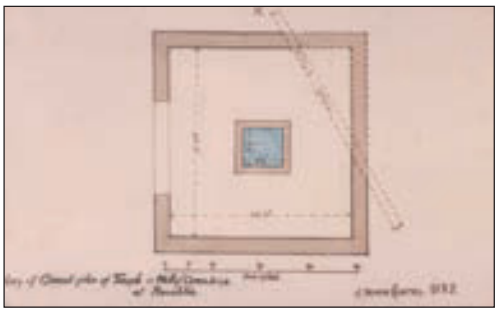
64 *Vases found at* PROCOLITIA. 1879 (Fig 72)
The depictions are of clay incense-burners or thuribles found in 1876 in Coventina's Well situated on the west side of Carrawburgh fort (*Brocolitia*). The left-hand depiction is RIB 1530 and the other 1531 (Allason-Jones and McKay 1985, 41–7). Both are now on display in Chesters Museum.

65 *Sculptured Stone from Well of* COVENTINA: PROCOLITIA. *1882* (Fig 73)
The sculpture is of three water nymphs, each within a separate niche beneath an arch supported on columns. Located in 1879 in Coventina's Well and now on display in Chesters Museum (Coulson and Phillips 1988, no. 93).

66 *Turret: W. Wall. Procolitia.* 1882 (Fig 74)
This must be the interval tower south of the west gate of the fort excavated by Clayton in 1871 (Snape 1994, 17). Eight courses of the inner face are depicted built on top of two offset courses. All of the walls have a turf capping.

67 *Well: in centre of Temple – Procolitia.* 1877 (Fig 75)
Coventina's Well, discovered in the early 18th century, was excavated in 1876 by Clayton. The square shaped pool is encased by large well worked masonry blocks at least four courses high above the then water line. On one side of the well is a trough-like block. Within the well were found 13,487 coins, together with altars, carved stones, jars and a variety of other votive objects. A watercolour of the well by F Mossman in 1878 is published by Allason-Jones and McKay (1985, 93, pl iii).





68 *Copy of Ground-plan of Temple & Well of Coventina at Procolitia.* 1882 (Fig 76)
The depiction shows the basin of the spring (coloured blue) enclosed by a masonry wall surrounded by a rectangular enclosure wall. An entrance is on the west side and a field wall crosses part of the north and east perimeter walls. The drawing includes a scale (0–40ft). This is a copy of a plan of the well published by John Clayton (1880a; 1880b).

69 *N. Fosse cut through Basaltic Dyke. Limestone Corner. Teppermoor.* 1877 (Fig 77)
The drawing, looking west, shows the jumbled mass of stonework left lying in the north Ditch.

70 *Fosse of Vallum. Teppermoor.* 1882 (Fig 78)
The view depicts the top of Limestone Corner looking west towards Carrawburgh fort with the distinct shape of the Vallum cut through the outcrop of basalt rock. In the distance is the faint outline of a building (Carrawburgh Farm) on the south mound of the Vallum.

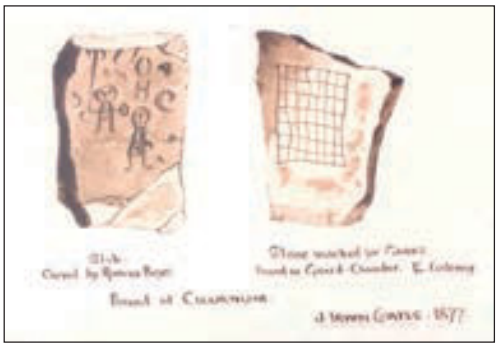
71 *Wall near Turret (near Black Carts) recently uncovered – S. side.* 1877 (Fig 79)
Excavated in 1873 by Clayton, the Wall stands at least six courses high. Vegetation and trees are on top of and adjacent to the Wall.

72 *Part of Wall near Turret recently uncovered.* 1877 (Fig 80)
Seven courses of the Wall are visible. Small bushes and a tree grow on top of the Wall.

73 *Turret near Walwick.* 1877 (Fig 81)
The turret (T29b, Black Carts) had been excavated four years earlier by John Clayton. The drawing shows the view from the south-east. Fifteen courses survive above ground level in the internal north wall of the turret. The Broad gauge wing-walls are evident. A small ground plan is added giving the internal dimensions as 16ft each way whereas the actual dimensions are 11ft 4in × 11ft 2in (3.45m × 3.4m).

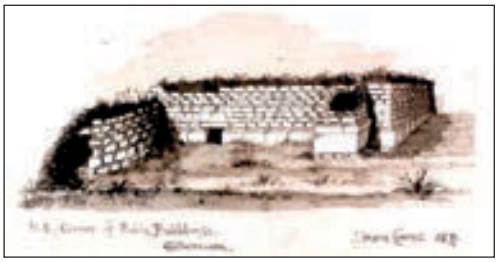
74 *Stone cut by Roman Boys. Cilurnum.* 1882 (Fig 82)
The depiction on the stone is of an incised figure wearing a tunic and holding a trident in his right hand. A boar is on the upper right corner (Coulston and Phillips, 1988, no. 402). This is now on display in Chesters Museum.

75 *Found at Cilurnum. Slab: Carved by Roman Boys. Stone marked for Games. Found in Guard-Chamber. E. Gateway.* 1877 (Fig 83)
The drawing on the left shows the frontal view of two incised figures, the upper one of whom holds a trident and shield. A series of letters or symbols appears to surround the figures (Coulston and Phillips 1988, no. 401). The right-hand drawing is of a gaming board with 49 squares. Both are now on display in Chesters Museum.



76 *Figure found at* CILURNUM. 1882 (Fig 84)
The figure is the Statue of a River God (Coulston and Phillips 1988, no. 94) found in 1843 in the Commanding Officer's Bathhouse and now in Chesters Museum.

77 *Figure of Cybele. found at Cilurnum.* 1882 (Fig 85)
The figure is the Statue of Juno Regina (Coulston and Phillips 1988, no. 117) and now on display in Chesters Museum.



78 *N.E. Corner of Public Buildings. Cilurnum.* 1877 (Fig 86)
The drawing is of the north-east corner of the Commanding Officer's House showing the moulded plinth, the buttress and the curve of the apse end of the bathhouse. The east wall has an outlet at plinth course level. The walls survive up to eight courses above the plinth.

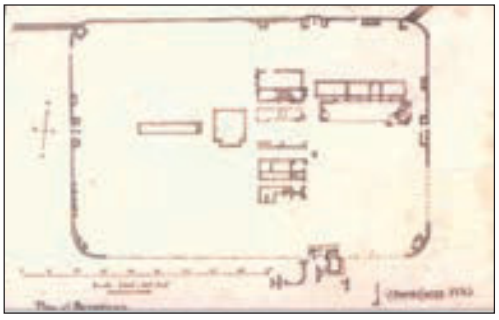
79 *Front of Temple. Cilurnum.* 1882 (Fig 87)
This is a view of the so-called 'Temple' in the south-east corner of the fort excavated in 1882. The view, looking east, shows a line of five columns with broken tops with a six-course wall built between one pair of columns. Another wall, nine courses high is on the opposite side. The stratigraphy of one of the excavation sections shows large pieces of masonry. The masonry of the walls was removed and the trenches backfilled (Bidwell 1993, 15) although the columns are still in place. A flagstone surface is at the west end of the building.

80 *N.W. Corner & Junction with Wall showing repairs. Borcovicus.* 1883 (Fig 88)
Five courses of the south face of Hadrian's Wall are depicted at the north-west corner of Housesteads fort. The fort wall itself is built on top of the offset course. A number of large blocks in the external face of the north wall of the fort indicate Roman repairs. Within the fort some of the west wall of the north-west angle tower is visible. Both the fort wall and the Curtain Wall are turf capped. Three large pieces of masonry lay outside the fort.

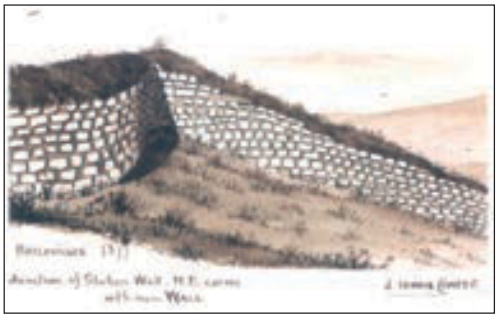
81 *S.E. angle of Station Wall (Repaired). Borcovicus.* 1882 (Fig 89)
This external view shows the turf capped fort wall standing ten courses high with large blocks, indicating repair work, at the position of the south-east angle tower.

82 *S.W. angle of Station Wall (Repaired). Borcovicus.* 1877 (Fig 90)
The turf-capped external face of the fort wall stands ten courses high. Larger stones denote the position of the internal angle tower and areas of repair work and rebuilding. The late-18th-century farmhouse situated near the south-west corner of the fort (Bruce, 1863, 126) had been demolished by this time.

83 *Plan of Borcovicus.* 1883 (Fig 91)
The plan, at a scale of 1in = 1ft, shows all four gateways and the east, west and north walls together with the associated angle-towers. The line of the south wall is indicated. Several *vicus* buildings outside the south gate are shown including the medieval bastle. Within the fort is the Commanding Officer's House, part of the headquarters building, hospital, granaries, the building and barrack block on the north side of the *via praetoria* as well as a barrack block on the south side of the *via decumana*. A farm track leads out of the fort through the north wall, east of the north gate. Hadrian's Wall is shown joining the fort at the north-west and north-east angles.



84 *Junction of Station Wall. N.E. corner with main Wall. Borcovicus.* 1877 (Fig 92)
Nine courses of fort wall are depicted at the junction of the north-east corner and the south face of the Wall, which slopes eastwards to the Knag Burn. Both the fort wall and curtain wall are turf-capped.



85 *Amphitheatre ~ Borcovicus.* 1877 (Fig 93)
The view, from the north side of the Wall looking towards the fort, shows the circular depression in the foreground referred to by Bruce (1863, 116) as an amphitheatre but now known to be a Roman quarry (Crow 1994, 16). At least six courses of the north face of the Wall adjacent to the quarry are depicted. The east and north walls of the fort are shown as is the gap in the north wall used as a farm entrance/exit. Housesteads crags and the woods to the west of the fort are depicted. The outlines of the walls of buildings are shown inside the fort.

86 *N. side Gate to Amphitheatre E. of Borcovicus.* 1882 (Fig 94)
The view, from the north side of the Knag Burn gateway, shows the large blocks of the Knag Burn gate entrance with the gate threshold and stop block in position. The gate had been opened up by Clayton in 1856. A wooden three rail fence is in the east portal and a three-bar gate in the west portal. The north face of the Wall stands up to eight courses high. For the Housesteads 'amphitheatre' see Wilmott (forthcoming)

87 *Gate to Amphitheatre ~ Borcovicus.* 1877 (Fig 95)
The depiction of the south face of the Wall at Knag Burn shows the Wall to be standing up to seven courses high. The outline of the gateway is depicted showing the partially exposed walls of the two guard chambers. The gate stop block and threshold are visible as is the pivot block of the west guard chamber. A slab with a pivot hole is on the ground surface in the centre of the passage way.

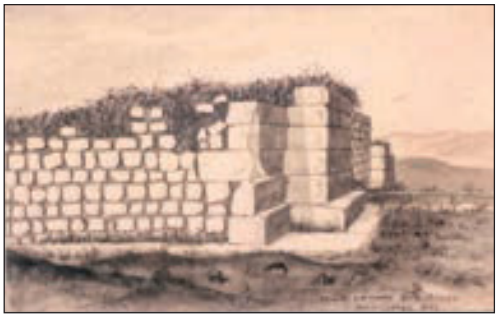
88 *Passage of Wall over Knag Burn E. of Borcovicus.* 1882 (Fig 96)
A detail of the south face of the Knag Burn culvert with eight courses of Wall visible. A large stone slab covers the culvert, the east side of which has three courses of large blocks above an offset course. The top of the Wall is turf-covered.

89 *Borcovicus from the EAST.* 1879 (Fig 97)
The view is from the rising ground to the south of the Knag Burn gateway and on the east side of the Burn looking west towards the fort. The Roman Wall is shown at the Knag Burn gateway running up the slope to its junction at the north-east corner of the fort. The east wall of the fort and its excavated gate are depicted and within the fort is the outline of several masonry walls of buildings. A stone slab is placed across the Knag Burn and on the east bank is a length of masonry wall in the vicinity of the Roman well.

90 *Building near E. Gate. Borcovicus.* 1877 (Fig 98)
This drawing, from the south, is of the east end of Building XV opened by Hodgson in 1831 and identified as a bath suite. At the south-east corner of the building are two massive stone blocks with 'diamond broaching' and the internal face of the east wall standing eight courses high. A section of the internal face of the east wall of the fort, north of the east gate, is shown.

91 *Foundations of N. Gate. Borcovicus. (outside)*. 1877 (Fig 99)
The north gate including a section of the external face of the north wall of the fort had been exposed in 1852. The drawing shows both portals of the gate and the large foundation blocks below, the north-west corner of the east guard chamber, the central *spina* and the east wall of the west guard chamber. At the base of the gate are a number of partially exposed fallen blocks containing a (moulded?) border and one block, which appears to be the upper part of an arched window head.

92 *N. of W. Gateway. Borcovicus.* 1882 (Fig 100)
The view from outside the north portal of the west gate, shows the junction of the fort wall with the piers of the north portal. Five courses of masonry above an offset are standing on the foundation slab. The door and south wall of the north guard chamber is visible as are the north portal threshold blocks.



93 *Interior N. Gateway. Borcovicus.* 1877 (Fig 101)
This interior view of the north gate shows both guard chambers, the central *spina*, the inner face of the fort wall and the water tank on the south side of the west guard chamber, all of which had been cleared prior to 1857 (Crow and Rushworth 1994, 30). Several large blocks are close to the south wall of the east chamber and in the foreground a number of blocks are protruding through the ground surface.

94 *Exterior W. Gateway. Borcovicus.* 1877 (Fig 102)
The drawing is of the west gate, which had been excavated in 1850–51 by Clayton. The fort wall stands up to ten courses above the offset course and the bonding with the gate piers is clearly seen. The central *spina* and gate portal thresholds are depicted as well as the south wall and door of the north guard chamber. The fort wall is capped with turf.

95 *Interior W. Gateway ~ Borcovicus.* 1879 (Fig 103)
The view of inside of the west gate shows both guard chambers, the central *spina* and portal thresholds as well as the inner face of the west wall of the fort. The south face of the north guard chamber stands seventeen courses high. A number of blocks protrude through the ground surface in the foreground. The top of the gate and fort walls are turf capped.

96 *S. Part of E. Gateway. Borcovicus. Blocked up.* 1882 (Fig 104)
The view, from the exterior of the fort, shows the blocked south portal of the gateway with the adjoining piers and central *spina* as well as the exterior face of the east wall of the fort south of the gate. Two sections of window arch, one of which has a moulding, rest against the portal blocking. The gateway blocking and wall top is turf-capped.

97 *S. Gateway ~ Borcovicus.* 1882 (Fig 105)
By 1852 Hodgson and Clayton had fully excavated the gateway. The drawing, from the south, shows the two gateway portals and thresholds, both of which show wear marks from the passage of wagons. In the east portal the stop-block is in position. Outside the gate passage are a number of stone slabs forming the Roman road and in the foreground are more slabs. Above these, but separated by a layer of material, is another set of stone slabs. The west wall of the medieval bastle is partially seen, resting against which are several large flag stones. The west wall of the east guard chamber retains its blocked door while the west guard chamber has a column and base resting on it and a window arch together with what appears to be a column are on the south side of the chamber. The blocking of the inner end of the east portal (Bruce 1863, 125) seems still to have been in place at this date. Within the fort is a wall belonging to the east wing of the Commanding Officer's House, exposed in 1858, (Crow and Rushworth 1994, 30) and to the east, on the *via principalis*, is what appears to be either a partially buried altar or column base.

98 *Base of Column. Borcovicus.* 1877 (Fig 106)
The detail shows a broken column shaft, square in outline with the edges tapering at the bottom, sitting on top of a square base. On the left side of the drawing are the edges of three rows of stones protruding from the earth, possibly relating to the granary. This depiction appears to be of the column base still *in situ* on the *via principalis* at the south end of the *principia*.

99 *Entrance to Building near N. Gate – Borcovicus.* 1877 (Fig 107)
Three rows of stone steps lead to the unexcavated entrance of the east door of the south granary. A moulded column plinth is situated on the third step up on the south side.

100 *N.E. Corner of Building: near E. Gate. Borcovicus.* 1882 (Fig 108)
This is the north-east corner of Building XV, the south end of which has a bath suite inserted. Some of the walls of the bath suite are visible within the building. The remains of a buttress on the north wall of the building can be seen, the wall of which stands up to six courses. The barrack block (XIV) and its associated alleyway to the north of the building are still covered in overburden.

101 *S. Gateway. Mile Castle W. of Borcovicus.* 1882 (Fig 109)
The view, from outside the south gate of Mc37, shows the visible internal and external walls and the south face of the Wall east of the milecastle. Within the south gate are the two lower pivot blocks as well as a pivot slab from the top of the gate. Part of the gate threshold as well as the stop block is visible. The west side of the south gate has been robbed down to the foundation slab. An arch voussoir is visible on the west side of the north gate although the voussoir shown in Fig 109 (1879) on the east side is no longer there. The later blocking of the north gateway is exposed and a wooden fence had been erected since Coates was there in 1879. The Wall and milecastle tops are covered in turf.

102 *Mile Castle. W. of Borcovicus.* 1879 (Fig 110)
The milecastle was excavated in 1853. The view is of the internal face of the north gate and the later blocking in the entrance passage. A single voussoir is on top of both of the gate piers. The string course within the internal face of the north wall is visible, above which are seven courses of masonry and seven below. The internal building in the north-east corner is not uncovered.

103 *Castle Nick Mile Castle.* 1879 (Fig 111)
The view is of Mc39 from the west. The Curtain Wall had been exposed as had the walls, gates and internal building of the milecastle. The rounded external corners and square internal corners of the milecastle are evident. In the distance is Hotbank Farmhouse with Highshield Crags overlooking Crag Lough. The line of the Wall continues eastwards over Hotbank Crags. The outlines of field boundaries and drainage ditches are visible on the ground north of the Wall. A similar view is depicted in Bruce, (1863, 152).

104 *Above Hot Bank. Overlooking Craig Lough.* 1879 (Fig 112)
Looking west towards Crag Lough and beyond, the view shows Hotbank Farmhouse built on the north side of the Wall together with the south face of the Wall standing up to eight courses high.

105 *N.E. portion of Wall of Vindolanda.* 1877 (Fig 113)
The partial remains of the east wall of the fort, north of the east gate, are depicted and the sloping ground to the east. A tree grows in the north-east corner of the fort and an arch or culvert of a small bridge to the north indicates the course of Brackies Burn as it crosses the Stanegate. The roof outline of an unidentified building can be seen behind the arched culvert.

106 *Roman Mile Stone. Near Vindolanda.* 1879 (Fig 114)
The milestone is situated on the Stanegate to the north-east of the fort, the wall of which is visible. A stone wall lines the road as it passes Codley Gate Farm. The building has a chimney at the east end and appears to have a thatched roof.

107 *View from Above Cawfields Mile Castle. Looking E.* 1877 (Fig 115)
The view from on top of Cawfields, looking east, shows a line of stone in the foreground, which appears to be a demolished field wall on top of the line of Hadrian's Wall. This section has now been quarried away. Mc42 (Cawfields) and the Wall eastwards is shown as is the line of the Vallum south of the Wall with Shield-on-the-Wall Farm in the distance. The excavated north gate of the milecastle is not shown, neither is the field wall in the northern quarter of the site, yet both are depicted in drawings made by Coates in the same year.

108 *N. Fosse & Crags between Æsica & Cawfields.* 1877 (Fig 116)
The north slope of the Wall Ditch and its southern lip is shown with the crags of Cawfields and Winshields in the distance. The drawing appears to have been made slightly west of Burnhead Farm and east of T42b.

109 *Cawfields Mile Castle*. 1891 (Fig 117)
This was the first of the milecastles on the Wall to be excavated, the work being done by Clayton in 1848 (Clayton 1848, 54–9). The view shows the rounded south-east corner, the south gate with its massive piers and the external face of the milecastle west of the south gate. Hadrian's Wall joins the north-east and north-west corners. The depiction appears to show a stone wall running through the northern end of the milecastle. This field wall, presumably made with re-used Roman material blocks the view of the north gate while the passage of the south gate also appears to be partially(?) blocked with a stone wall. Both of these were probably erected after the Clayton excavations. The face of the quarry at Cawfields is seen to the west of the site.

110 *Gateway: (South). Cawfields Mile Castle*. 1877 (Fig 118)
The view shows the excavated entrance of the south gate of the milecastle (Mc42) showing the large blocks forming the gate piers and a section of the external face of the south wall. Within the gateway portal is the stop block and stone threshold. A field wall of reused Roman stone standing up to seven courses high is in the northern quarter of the milecastle crossing in front of the north gate. Several large blocks in this wall appear to be reused north gate piers.

111 *N. Gateway, Cawfields Mile Castle*. 1877 (Fig 119)
The view of the excavated north gate shows the stone piers and foundations as well as five courses of external Wall face east of the gate. Within the milecastle is the previously noted 'No 109' (Fig 117) field wall of reused Roman material. The date of the removal of this wall is not known.

112 *Wall between Caw Burn & Æsica*. 1891 (Fig 120)
Looking east towards Cawfield Crags, the drawing shows the south face of the Wall standing at least four courses high with the remains of a field wall on top. This section of Wall is probably close to T42b.

113 *Mile Castle W. of Æsica.* 1891 (Fig 121)
This is Mc44 (Allolee). The outline of the walls and ditches are distinct and this was noted by Bruce (1863, 162). A gap in the south wall indicates the position of the gateway, while a field wall built of Roman stone lies on top of the line of the north wall.

114 *W. Gate Æsica.* 1891 (Fig 122)
The drawing depicts the external face of the west wall of the fort covered in earth and turf. The outline of the inner ditch outside the west gate is discernable. A slight gap in the wall indicates the position of the gateway. The inner face of the west wall was not cleared until 1895. The fort wall continues northwards to where it meets the Roman Wall at the north-west corner. The line of the Wall west of the fort appears to be indicated by a covered mound.

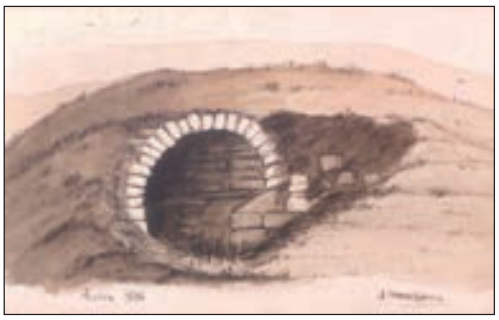
115 *W. Gateway. Æsica.* 1885 (Fig 123)
The internal view from the south-east shows the blocking in the north portal of the west gate, the *spina* blocks and the north guard chamber with its doorway (seven courses high), all of which had been uncovered in June of that year by J P Gibson (1903, 26). Within the blocking of the north portal are the two pivot blocks for a later raised Roman road surface. The north pivot block of the south portal is in place including three of the pier blocks above the portal blocking. In the internal north wall of the guard chamber there are five courses below the string course and five courses above. The gateway blocking and the walls of the guard chambers are turf-covered.

116 *N. Rampart; Æsica.* 1891 (Fig 124)
Looking westwards, the view shows the turf-covered north rampart of the fort with the position of the north gate indicated by an arrow and exposed masonry. The mound of the west wall leads to a gap, indicated by an arrow showing the position of the west gate. The outline of the Ditch on the north side of the fort is clearly indicated leading towards Cockmount Hill Farmhouse and Cockmount Wood. A number of fallen blocks of masonry are on the mounds of the north Ditch. A field wall crosses the line of the Roman Wall and Ditch west of the fort.

117 *What looks like Foundations of a Turret on N. side of Wall. W. of Æsica.* 1891 (Fig 125)
This drawing is approximately 250m west of Great Chesters fort (*Aesica*). The farmhouse and buildings of Great Chesters in the north-east corner of the fort are depicted. The distinct outline of the north Ditch has a field wall crossing it with a wooden gate situated on the Wall berm. A mound of stonework consisting of a field wall built on top of Roman material indicates the line of the Wall. On the north side of the line of the Wall is an oblong platform with slightly raised sides indicating buried walls on the east, north and west sides. This is likely to be the site of a medieval shieling or shelter rather than a turret. To the south is the outline of a road, which is straddled by a wooden gate attached to stone uprights. This road may either be the one still situated on the south mound of the Vallum or perhaps be a track laying on top of the Military Road, which exited from the west gateway of the fort.

118 *Workshop: Æsica* 1895 (Fig 126)
The position of this building within the fort is uncertain. It may relate to either one of the barrack buildings excavated in 1894 (Gibson 1903, 22) or one of the buildings erected against the inner face of the west wall north of the west gate excavated in 1895 (Gibson 1903, 33). The view is from inside the building showing a doorway and stone threshold on the right side. The walls of the building survive up to five courses. The line of what appears to be a stone-capped drain leads from the middle of the room towards the door. A large stone slab, which may be a threshold block, is resting in the left-hand corner of the building. Close to this is a small semicircular structure three or four courses high, which may be the smithy referred to by Gibson. Another stone slab lies against the right hand side wall of the building.

119 *Æsica.* 1896 (Fig 127)
The drawing is of the east end of the vaulted underground chamber, first opened by Dr Lingard in 1800 (Hodgson 1840, 203) and re-examined in 1894 (Northumberland Excav Comm 1895). The vault had been fully emptied by this time and 23 of the voussoirs are visible as are several large blocks in the entrance. The top of the chamber is covered in turf.



120 *Æsica.* 1877 (Fig 128)
This view of the west end of the chamber was made prior to the clearance of the rubble and earth filling in the chamber. The arch is clearly visible with 18 of the voussoirs depicted. Earth, turf and loose stones partially block the entrance and cover the top of the chamber.

121 *Wall on Cockmount Hill. (looking E.)*. 1877 (Fig 129)
The view, looking eastwards, is of the north side of the Wall, close to Mc44, showing an extensive length of Wall standing up to eleven courses high with a turf capping. On the north side of the Wall the ground slopes steeply away.

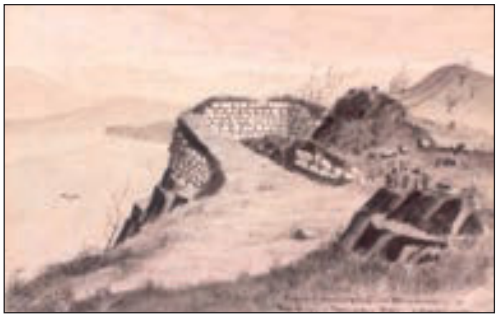
122 *Turret Above Walton. Nine Nicks of Thirwall.* no date (Fig 130)
The drawing must have been made during either the 1895 or 1896 trip as the site was not excavated until 1892 (Gibson 1902, 13) although it had been discovered in 1883. The view, from the east side of T44b (Mucklebank), shows the right-angled turn of the Wall, the turret with the door in the southwest corner and a length of Wall on the east side. A line of stone south of the turret indicates the line of the Wall towards Walltown Nick. The line of the Wall heading west along Walltown Crags is outlined. On the south-facing slope is a field wall and a small stand of trees close to the line of the Military Way as it passes near Mc45.

123 *Mile Castle above Walton.* 1891 (Fig 131)
This is Mc45 (Walltown) viewed from the west. The mounds outlining the walls are visible as is the Wall itself, which contains exposed rubble and facing stones. The line of the Wall is indicated following the Crag edge eastwards.

124 *Wall on the Nicks of Thirlwall.* 1877 (Fig 132)
This view of the south face of the Wall west of T45a shows up to 16 courses of facing stones surviving. Horsley commented on it (Birley 1961, 82) and a depiction of an adjacent section of Wall appears in Bruce (1863, 165).

125 *Turret on Nine Nicks. W. of Walton.* 1891 (Fig 133)
This is T45a, partly exposed in 1886 by Clayton in advance of the second Pilgrimage, cleared and planned in 1912 and re-examined in 1959 prior to consolidation. The view is of the exposed north and west walls with collapsed rubble and facing stones to the east. Up to nine courses are visible in both the north wall and west walls of the turret with facing stones and core lying on the surface within. To the west are several blocks forming the south face of the Wall. The tops of the turret walls are turf-covered.

126 *Turret Uncovered on Westernmost of Nine Nicks of Thirlwall.* 1883 (Fig 134)
T45b was located in 1883 by Clayton, but was subsequently destroyed soon after by the operations of the Greenhead quarry (Birley 1961, 28). The view, from the west, shows the turret perched on the crag edge showing the exposed external west face and the internal north and east faces. A mound of earth indicates the position of the south wall, of which two courses of the east jamb of the door are visible. Within the turret is a mass of fallen material and outside the south wall sits a pivot block. The outline of the course of the Wall eastwards towards T45a is visible. A similar view is published by Bruce (1885, 57).

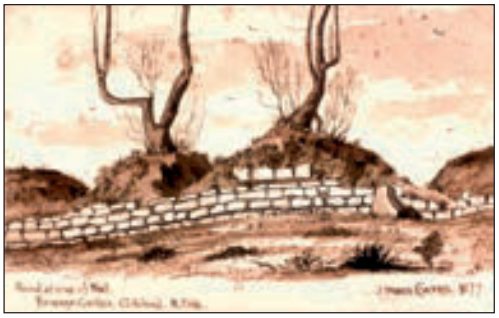


127 *Plan of Turret on Crags West of Thirlwall.*
This drawing has gone missing at some time between 1948 and 1997, as it is listed as part of the archive when the drawings were presented to the school.

128 *North Fosse ~ Magna.* 1883 (Fig 135)
The view is of the north Ditch of the fort looking east towards Carvoran Farmhouse, which is surrounded by trees. Bruce (1863, 167) noted the distinct profile of the north fosse. A stone field wall is built on top of the line of the north-west angle of the fort, which was uncovered three years later (1886) by Clayton in time for the second Pilgrimage in 1886 (Birley 1998, 80). Fallen fort material has been exposed on the slope below the north-west corner.

129 *Altars found at Magna.* 1883 (Fig 136)
The depiction is of three altars found at Carvoran. The left-hand one is RIB 1776, the middle is RIB 1785 and that on the right is RIB 1784. The text under the depiction of RIB 1785 says 'Taken from Wall of Byre Sept 1883', whereas the Roman Inscriptions in Britain (Collingwood 1965, 556) says that it was re-discovered in 1886 built into the farmhouse. RIB 1776 and RIB 1784 are now in the Museum of Antiquities, Newcastle and RIB 1785 is in Chesters Museum.

130 *North Fosse of Wall at Gap.* 1877 (Fig 137)
The drawing, looking east, shows the profile of the steep sided north Ditch with a sharp drop on the north side. Two buildings of Gap Farm are seen straddling the line of the Ditch and in front of these is a stone wall crossing the line of the Ditch. A stone built field wall and two mature trees are seen on the south side of the Ditch. In the background is the outline of Walltown Crags. The drawing is just west of T47b.



131 *Foundations of Wall. Vicarage Garden. Gilsland. N. Side.* 1877 (Fig 138)
Up to five courses of Wall face are visible, the top of the Wall being covered in turf with two trees growing from the mound. Three cuttings have been made across the width of the Wall and in front are four small piles of Wall core. This section of Wall had been exposed not long prior to this by the vicar of Gilsland, Rev A Wright (Ferguson 1877–8, 24).

132 *Wall on Cliff over the Irthing E. of Amboglanna.* 1879 (Fig 139)
This shows the section of Wall east of Mc49 (Harrow's Scar) overlooking the steep west bank of the Irthing river. At least nine courses of facing stones are visible above two courses of foundations, the rest of the Wall having been taken away by land slips. The bare slope above the curve of the river has a wooden fence and a line of five trees. An 1848 watercolour by H B Richardson (Bidwell 1989, pl 6) shows the Wall perched on top of the river escarpment and evidence of the river undermining the Wall.

133 *S.W. Gateway. Amboglanna.* 1877 (Fig 140)
This single portal gate had been exposed in 1850 (Birley 1961, 199) The drawing, from the west, shows the pier blocks on both sides of the gateway with up to eight courses of facing stones in place as well as the portal threshold within which are blocks of fallen masonry. The top of the fort wall is turf covered. Several mature trees are depicted inside of the fort.

134 *Exterior S.E. Gateway. Amboglanna.* 1877 (Fig 141)
This gate, excavated in 1852, shows both of the gate portals, central pier and a short section of the external face of the east wall of the fort flanking the gateway. On the north side of the south portal is a pivot block and on the south side are two arched window heads. A possible voussoir for the gate arch is lying within the north portal. An engraving of the gateway in 1852 (Wilmott 1997a, 5) shows the portals fully excavated and the window heads laying outside the gateway. By 1877 vegetation is growing within the portals and the window heads moved to the position shown in the drawing. The window heads have now been incorporated in the new visitor and education centre. A mature tree is growing in the fort close to the east wall and a large mass of trees grows on the west side of the fort.

135 *E. Gateway ~ Amboglanna (interior).* 1877 (Fig 142)
The view from inside the east gateway shows the two portals, the central pier as well as the walls of the guard chambers, the southern one having been excavated, the northern one seemingly only partly exposed. Two arched window heads are depicted partly buried within the southern portal. The wall tops of the guard chambers are turf covered.

136 *Guardchamber. S. Gateway Amboglanna.* 1877 (Fig 143)
This was excavated in 1851 by H G and W S Potter when Henry Norman was owner of the site. This is a detailed view of the west portal of the south gate showing the gate pier blocks and the impost block to carry the arch. The door of the west guard chamber and the internal face of the west wall are depicted. A voussoir is exposed within the gate portal and the threshold at the rear of the gate is partially visible.

137 *Buildings with Buttresses. Amboglanna.* 1877 (Fig 144)
This view is of the south wall of the south granary, excavated in 1859, and used as a ha-ha (retaining wall) for the garden in front of the farmhouse. The granary was subsequently excavated between 1987–91 (Wilmott 1997a, 8). Eight of the buttresses are depicted with the walls standing seven courses high. A line of partially covered stone slabs indicates the flooring level of an adjacent building south of the granary.

138 *Amboglanna.* 1877 (Fig 145)
This drawing shows the eastern *porta quintana* of the fort, which was excavated by WG Potter in 1850 (Potter 1855a). The excavation has clearly been left open for the 27 years between excavation and Coates' visit (Compare images of the gate from 1855 and the 1992 re-excavation in Wilmott 1997a, fig 40).

139 *N.W. angle of Camp Wall. Amboglanna.* 1877 (Fig 146)
The angle tower wall was exposed in 1831 by the proprietor Thomas Crawhall (Hodgson 1840, 207). The drawing shows the turf-topped north-west angle of the fort wall standing ten courses above two foundation courses. A two-part gate is erected on the line of the Wall. The three large gate pillars are each topped with a chamfered capstone. The pedestrian entrance, on the east side, has a six-bar gate and the carriage entrance a five-bar gate. A line of bushes grows on the north side of the road outside the fort. Bruce (1863, 177) depicts the gateway with a section of Wall joining on to the angle of the fort but comments that this portion of the Wall had recently been removed to allow for a new entrance to the house.

140 *Wall W. of Amboglanna. Looking N.* 1877 (Fig 147)
The south face of the Wall west of Birdoswald stands at least seven courses high, the earth capping containing core work. Sections of the Wall face show evidence of either collapse or robbing of the stone work. Three mature trees are shown on the north side of the Wall. In the distance to the north-west is the outline of the only remaining wall of Triermain Castle, which had been built with re-used Roman Wall stone.

141 *Core of Wall. Hare Hill.* 1879 (Fig 148)
This depiction, possibly of the north face, shows the original core work laid horizontally and a large amount of scrub and small bushes cover the surviving Wall. The north face of the Wall, including a centurial stone found to the west of T53a (RIB 1958) was re-built in the 19th century by Mr Marshall, the Earl of Carlisle's architect (Bruce 1933, 182).

142 *Course of Wall. E. of Stanwix. Looking E. towards Tarraby.* 1877 (Fig 149)
This drawing, made from close to the crest of Wall Knowe and east of Mc65, shows Tarraby Lane on the line of the Wall with a shallow depression, partially water-filled, indicating the position of the Ditch. A hedgerow grows along the north edge of the Ditch and another is on the south side of the Wall enclosing a field system. Two hedgerows in the middle distance cross the line of the Wall. In the distance are several buildings in the village of Tarraby.

143 *Fosse of Wall. Stanwix.* 1877 (Fig 150)
The position of this drawing appears to be looking eastwards between the river Eden and the fort of *Petriana.* Well defined slopes indicate the line of the partially filled north Ditch which has a pool of water in the bottom. A mature tree grows on the north slope, behind which is a wooden fence and a hedge-line parallel to the Ditch. In the background the Ditch has been filled in and a wooden building with vertical planking erected across it. Behind this is a two-storey house with three upper windows and centrally placed chimney stack. On the north side of the Ditch is a two-storey building with two windows at one end and a chimney stack at the other. In the area of the berm between the south side of the Ditch and the Wall is an upright stone possibly used as a sheep or cattle rub.

144 *Core of Wall. W. of Newtown ~ (Carlisle.)* 1879 (Fig 151)
The drawing is east of Knockupworth Gill in the vicinity of T67a. A low covered mound marks the line of the Wall, south of which is the outline of the Vallum at Davidson's Bank. The ground to the north of the Wall slopes down to the River Eden. The drawing depicts the distant view of Stanwix, in Carlisle, with its church, the two chimney stacks of the Bone Manure and the Varnish Works at Primrose Bank as well as the engine shed of the North British Railway on the Carlisle-Silloth line (Ordnance Survey map, 1865, sheets 23/2&3). A tall railway signal is evident and south of the Vallum are five houses surrounded by trees in the vicinity of the Newtown area.

145 *Course of Wall between Newtown and Grinsdale.* 1879 (Fig 152)
The Wall, situated on the steeply sloping south bank above the River Eden, is shown as a raised mound surmounted by a hedgerow in front of which is a footpath. The Wall makes a dogleg turn at this point. In the distance is the outline of several large chimneys and Carlisle Cathedral.

146 *Course of Wall between Grinsdale & Kirk Andrews. looking East.* 1877 (Fig 153)
The depiction is of Long Bank between Ladylands Lane and Kirkandrews. The earth-covered mound of the Wall has a hedgerow growing on top as well as a group of mature trees. A footpath is on the berm with the ground sloping away to the north Ditch.

147 *Course of Wall between Grinsdale & Kirk Andrews. looking West.* 1877 (Fig 154)
The drawing is in a similar position to Fig 153. Although there is no discernable trace of the Wall itself the drawing shows a path on the position of the Wall berm. The ground slopes away to the north.

148 *Mile Castle. Kirkandrews.* 1879 (Fig 155)
The view shows the graveyard of (the now demolished) Kirkandrews-upon-Eden church. An earlier 12th century church, dedicated to St Andrew, had been built on the line of the Wall (Whitworth 2000, 55). Mc70 (Braelees) is now thought to be further north (p 181) but Coates was following the information supplied by Bruce who said there was a milecastle here (Bruce 1863, 210). Two buildings are depicted adjacent to the graveyard, one of which is probably related to Eden Farm. A stone pile, perhaps of re-used Wall material from the earlier church, lies next to a tree within the graveyard.

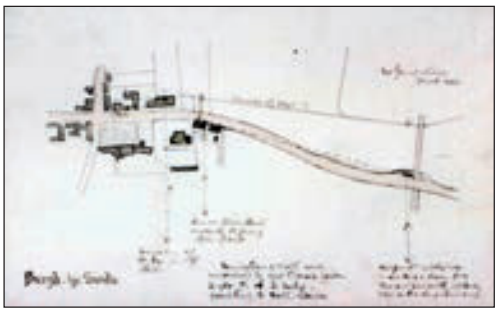
149 *Vallum. Kirkandrews by Dolly Bank.* 1881 (Fig 156)
The view, looking west, shows the Vallum mound surmounted by a number of trees with the road from Carlisle to Bowness on the left. Several buildings in Kirkandrews are depicted. The drawing seems to be on the east side of the Carlisle-Silloth section of the North British Railway as it passes through Kirkandrews.

150 *N. Fosse E. of Beaumont.* 1879 (Fig 157)
The view shows the low mound of the Wall, the well defined north Ditch and the bank of the Eden river. The drawing is west of Mc70 and overlooks the Monkhill Beck. At least eight buildings in the village of Beaumont are depicted as well as the church of St Mary

151 *Fosse of Vallum between Kirk Andrews and Monkhill.* 1881 (Fig 158)
Looking west, the drawing shows the hedge-lined Carlisle to Bowness road as it approaches Monkhill with the line of the Vallum on the south side. A number of fields are outlined by hedgerows and trees. Three buildings at Monkhill are depicted one of which is on the north mound of the Vallum. The building adjacent to the road may be the Drovers Rest Public House.

152 *Vallum opposite Monkhill Mill.* 1881 (Fig 159)
The depiction, looking west, is of the Vallum at the west end of Monkhill, on the west side of the crossroads and the Mill Race. The outline of the Vallum and mounds on both sides are distinct and the bottom of the cutting is water-filled. Several large trees grow within the Vallum and a line of five mature trees and a hedgerow cross the line of the Vallum. In the foreground the south face of the Vallum has been partially removed. A stone wall follows the line of the Carlisle-Bowness road. A cross section of the Vallum showing the road, mounds and Ditch has been included. In the background is a building with a chimney stack on the north gable.

153 *Stones in Road near Church. Burgh.* 1879 (Fig 160)
The drawing, looking west from the east end of the village, shows the corner of the old vicarage with a lattice window, on the south side of the road leading into Burgh-by-Sands. A line of seven stones on the south shoulder of the road is depicted which is most likely the north face of the Wall (see comments on Fig 161), which had also been noted in 1877 (Daniels 1978, 247). A row of cottages with a haystack at the east end is on the north side of the road adjacent to the two storey Lowther Arms Inn (now the farmhouse of Demesne Farm). A hedgerow on an earth bank is on the north side of the road ending in a gate post with an associated short section of stone walling.



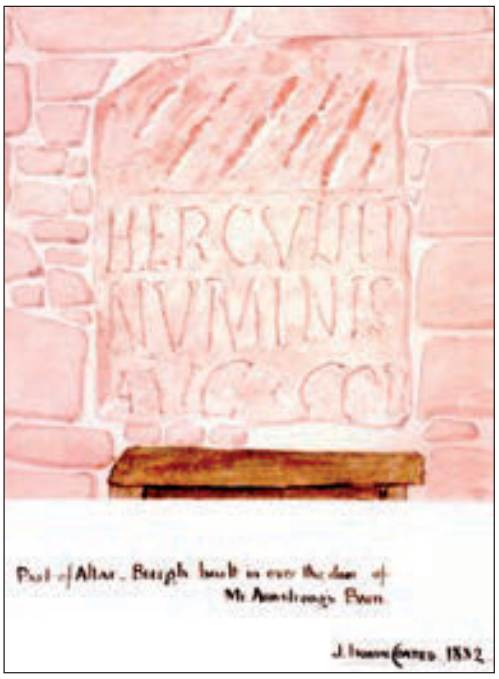
154 *Burgh-by-Sands* [plan]. no date (Fig 161)
This must have been drawn no later than 1885, the last date of his visit to this section of the Wall. The depiction is a plan of Burgh-by-Sands as far east as the Powburgh Beck showing the main road, various buildings in the village, the outline of the fort and the course of the Wall north of the road, which he marks with a question mark and notes "no foundations found here". The actual course of the Wall is marked by a broken line to which he has added several comments and observations. Adjacent to the Powburgh Beck he notes "Wall foundations cut thro' here in making a drain, 1881. Was not met with at place given in MacLaughlan's map". Opposite the vicarage he notes "Here are stones in Road evidently North facing stones of Wall". He made a drawing (Fig 160) of these stones. North of the fort he shows a broken line which he notes as "here are traces of north rampart of Station". A note on the drawing says "Foundations of Wall were uncovered in new Vicarage garden 4 yards North of South hedge – pointing to Hall Stones".

155 *Head: probably from Burgh: now over House Door at Monkhill Hall.* 1883 (Fig 162)
The head is that of a woman and may come from a funerary monument. The hair flows down over the shoulders and she is wearing some form of head covering or decoration. Still at Monkhill Hall, but now on the external west wall at first floor level. Within recent memory the figure has been painted in various colours by the owner of Monkhill Hall.

156 *Altar found in field near* HALLSTONES BRIDGE: BURGH. *full Size*. 1882 (Fig 163)
This altar (RIB 2039), dedicated to the god Belatocadrus Antronius Aufidianus, was found in 1792. A depiction of it is in Bruce (1863, 213). Collingwood gives the location of the altar as Rindle House, Burgh-by-Sands. Its present location is not known to the author.

157 *Altar found in Window of Church: Burgh. 1881 (Half Size)*. 1881 (Fig 164)
The sandstone altar, 6in × 9in (152.4mm × 228.6mm) (RIB 2044), was found in 1881. It is dedicated to Mars Belatucadrus, and now in Tullie House Museum, Carlisle.

158 *Mouth of Urn: Burgh. Found when digging Foundations of new Vicarage. 1885 (About Half-Size)*. 1885 (Fig 165)
The drawing depicts a female face and neck forming the top of a pottery urn. The figure has hair in ringlets and the forehead is decorated with a stippling which may be some form of body decoration. Of Roman origin it dates to the 3rd–4th century. This urn was shown to the members of the 1886 pilgrimage on 3rd July (CWAAS 1880, 150) and is now on public display in Tullie House Museum, Carlisle.



159 *Part of Altar – Burgh: built in over the door of Mr. Armstrong's Barn.* 1882 (Fig 166)
This altar, 14in × 16in (335.6mm × 406.4mm) (RIB 2040), was found in or before 1801 close to Burgh fort and is now built into the west wall of a stable at Cross Farm, Burgh-by-Sands. It was dedicated by a cohort to Hercules and the deity of the emperor.

160 *N. Fosse of Wall. Dykesfield.* 1881 (Fig 167)
The depiction, looking west, is in the vicinity of T72b and Mc73, on the west slope of Watch Hill. The line of the north Ditch is distinct with some stonework exposed within it and on the north side. The Wall itself is discernable as a slight raise. A line of trees and a hedgerow with a wooden gate entrance cross the line of the Wall at right-angles indicating the line of the road north from Dykesfield. A small cottage is close to the road on the north side of the Wall. In the background Ridding Sough flows across Burgh Marsh towards the Solway.

161 *Drumburgh N.W.* 1879 (Fig 168)
The depiction shows a water-filled, tree-lined ditch, which must be that of the right-angled medieval grange enclosure which crossed the north-west angle of the fort (Daniels 1978, 251). The top of a farm building can be seen which must be situated in the south-west quadrant of the fort. Coates must have mistaken the medieval ditch and banks for those of the fort, as there are no surface traces and excavations did not begin until 1899 (Haverfield 1900–1, 81).

162 *Foundations of Bridge in Stream between Port Carlisle and Bowness.* 1879 (Fig 169)
The depiction shows three large wedge-shaped blocks, which must have been associated with a Roman culvert through the Wall, partly exposed in the bank of a watercourse, which flows in a northerly direction into the Solway Firth. The Wall crosses the stream close to the estimated position of T79a. The nearest block seems to have a recessed hole in the top. A number of blocks and stones are in the bottom of the stream. A small sketch gives the measurements between the blocks: 3ft (0.9m) between the north and central blocks and 6ft (1.8m) between the central and southern blocks. The sketch shows a similar shaped block in the east bank of the stream. No discernable traces of the Wall or Ditch remain but a path or track follows the line of the stream and this indicates the line of the Wall. In the distance are the roofs of two buildings and a four-sailed windmill in Bowness village.

163 *Core of Wall ~ near Bowness: S. side. 4ft.* 1877 (Fig 170)
The mound of the Wall is covered in small trees and bushes, with little evidence of the facing stones which have been robbed out Horsley (1732, 157) had reported it to be 10ft (3.05m) high half a mile east of Bowness, and that gunpowder was used to bring it down (Daniels 1978, 253).

164 *Core of Wall ~ 1/4 mile W. of Port Carlisle.* 1881 (Fig 171)
The site is west of Mc79. The view, looking east, shows the line of the Wall although it is covered in trees and bushes and a wooden fence has been erected on top. Three courses of the south face of the Wall are visible at the west end but much has been robbed (Jenkinson 1875, 187). In the background several houses in Port Carlisle are depicted.

165 *Bowness N.W.* 1879 (Fig 172)
The depiction shows a windmill with four sails or 'sweeps' and wooden cantilevered gantry situated in the north-west corner of the fort together with the kiln and associated buildings (Hughes 1973, 355). The windmill, owned by Sarah Lawson, was demolished between 1880–85 (Hughes 1972, 126). A section of the water-filled west Ditch of the fort is outlined. Ridge and furrow are evident in the field in the north-west corner of the fort. Mill Cottages are seen on the south side of the Bowness-Silloth road.

166 *Bowness.* 1879 (Fig 173)
The view is of the shore of the Solway Firth at low tide with the ground rising towards Bowness. Four small boats are depicted on the shoreline. The Bowness windmill is situated in the north-west corner of the fort, as are several other buildings associated with the mill. A hedgerow on the headland indicates the line of the north wall of the fort. Running towards the shore at right angles from the fort are a number of hedgerows.

3
Charles Anderson and the consolidation of Hadrian's Wall

by Alan Whitworth

> "No more suitable person than Charlie Anderson could be called upon to perform this ceremony. Every section of Hadrian's Wall now to be seen owes much to his labours and supervision, and he has just retired after a lifetime of service with the DOE's department in charge of Wall conservation. Hadrian may have ordered the construction of the Wall, but it is thanks to Charlie that we are able to enjoy so much of it today."

These words were spoken by Robin Birley in 1974 during the opening ceremony of the replicas of a timber milecastle gateway and a stone turret beside Vindolanda Fort. In the same year Charles Anderson was awarded the Imperial Service Medal in recognition of the meritorious services he had rendered during the course of his working life.

Charles Anderson was born in 1909, in the north Yorkshire village of Middleham. He began work with the Ministry of Works at Middleham Castle, North Yorkshire in 1927, before moving on to the ancient monuments of Pickering Castle, Roche Abbey and Mattersey Priory. Within about three years he had been promoted to a mason. During the course of his working life he also worked on Tynemouth Castle, Guisborough Priory, Lanercost Priory, Shap and Whitby Abbeys, and both Hylton and Norham Castles. In 1935 he was transferred to Corbridge Roman Station (as it was then known) to assist in the masonry consolidation of the site. Between 1933 and 1972 30 sites were given into the Care of the State, all of which required an ongoing programme of consolidation and maintenance (Whitworth 1994a, 75). Anderson was to play a major part in the exposure and consolidation of the Wall for nearly four decades (Fig 174). In the pre-war era Anderson worked on several sites in the eastern sector of the Wall.

Excavations at Corbridge had begun in 1906. The site came into State guardianship in 1933 as a gift from Mr David Cuthbert of Beaufront Castle and a programme of consolidation of the exposed sections of masonry, after their excavation, was undertaken by H M Office of Works to preserve the monument for future generations (Bishop and Dore 1988, 1). Anderson consolidated the granary walls and flagstone floor, as well as the columns and masonry at the south end of the building. Work was also carried out on the Fountain, the strong room and various walls within site XI. A photograph taken in 1936 shows him carrying out consolidation work on the columns in front of the granaries. During work on the granaries he found a number of coins between the sleeper walls, which had fallen through the joints in the flagstone floor. Anderson's pay while working here was 1s 6 1/2d per hour. On being transferred to Benwell temple he was paid an extra 2d an hour. It was anticipated that the work there would take approximately six weeks. When work was halted by bad weather the men received no pay, and they therefore normally worked even in heavy rain (R Birley, pers comm).

The following year, 1937, saw the commencement of clearance and consolidation of the temple at Benwell, which was dedicated to the local native god Antenociticus. This site had been given as a gift and taken into national guardianship in 1936. The temple, which had been discovered in 1862, was by now being used as a local tip, and yew trees were growing on the top. Without a labourer to assist him, Anderson cleared the accumulated rubbish from the site, using a horse and cart, before exposing and dismantling the walls. After reconsolidating the walls he re-turfed the site and erected a boundary fence of iron railings. He even took the trouble to plant some rambler roses, which died away long ago. Two replica casts of the altars were put in place – the originals are now in the Museum of Antiquities in Newcastle

(RIB 230–1). The iron railings were cut down during the War and melted down as part of the War effort.

Following a spell at Tynemouth Priory Mr Anderson was sent on loan to Newcastle Corporation to train a team of masons who were to work on the city walls and the castle. He explained the methods and techniques to be used on Ancient Monuments, including the use of lime pointing. They applied some of this new knowledge in 1939 by re-setting, under his supervision, the section of Wall at Denton Burn, which is owned by Newcastle City Council (Daniels 1978, 71).

Anderson, by now a foreman, together with two labourers began exposing and consolidating the 300m length of Wall at Heddon-on-the-Wall in 1938 completing the work in May of that year. At this time a line of trees was growing along the line of the Wall and a fence ran along the top as a boundary between two fields. At the west end of the Wall there was a medieval kiln, which had been exposed by 1879 (or possibly earlier). A drawing done in the same year shows the kiln (Fig 20) and some of the exposed facing stones on the south face of the Wall. Anderson said the tools used to carry out the work consisted of picks, shovels and wheelbarrows. The cement and lime mortar was mixed by hand shovels in the farmyard west of the site and delivered to the site in wheelbarrows. Water for the work was delivered in the same manner. Anderson notes that the east end of the site was flooded by water coming from the Vallum down the steep hill. The site was visited by Professor Sir Ian Richmond, who thought there was some evidence of puddled clay in the core of the Wall. Evidence is cited for a clay-bonded core at or near Heddon by Daniels (1978, 75) and also at Denton (Bidwell 1996, 32). Anderson says he found a short section of clay bonding of the core during the consolidation but that this was the only place that he saw it while re-building the Wall. This was probably because many of the sections of the Wall that he uncovered did not require dismantling to below the offset level.

At the same time Anderson was also supervising the consolidation of the Vallum crossing at Benwell. This had been discovered in 1932 and examined in detail the following year by the North of England Excavation Committee under Eric Birley, Parker Brewis and John Charlton (Birley 1934). Following this work, it was placed under guardianship in 1934. In 1937, when archaeological work was complete, Anderson moved onto the site with a team of local labourers. He says that the excavations had been carried out by a student, a Mr George. They cleaned out the Vallum ditch on either side of the causeway, for public display, exposed and consolidated both the roadway leading from the fort to the causeway and the causeway walls, built a retaining wall along the north side of the site and fixed a boundary fence. Various methods were tried to hold the steep sides of the Vallum but none were very successful, so a rough stone core was built down the Vallum slopes and covered with turf. The ditch bottom was then partially back-filled to a depth of three or four feet. In 1938 Anderson ordered two tons of cement for the site at a cost of £4 3s 10d.

After another six months' stint at Tynemouth Priory Anderson was transferred to the highest point along the Wall, at Winshield Crags (1230ft [375m] above sea level). This section of Wall, 370m long, had come into guardianship in 1937 and Anderson's consolidation work was carried out between 1938 and 1940.

A field wall that stood on top of the remains of the Roman Wall was dismantled by the workmen. Assisted by two labourers

Fig 174
Charles Anderson inspects the Wall east of Birdoswald.

Anderson built a 150m long stone field boundary wall aligned with the north side of the Wall, to Mc40, completing the work in November 1940. The lower courses of the new field wall were built of any facing stones that were available and completed with whinstone from the dismantled field wall (EH file no AM 10352/01). During the course of work Anderson's men dug a hole at Winshields so they could collect water to mix with the cement and sand. Mc40, which had been excavated by F G Simpson in 1908 (Simpson 1976, 86–98) is unconsolidated and buried under a covering of soil and turf. A photograph taken in 1938 shows workmen in the process of exposing and dismantling the north face of the Wall. More work was undertaken here in 1956.

In January 1942 Anderson enrolled as a Military Policeman attached to the headquarters of the 1st British Infantry Division. Posted to North Africa he saw some of the ancient ruins of Algeria and Tunisia before he was moved to Italy, where he took part in the Allied Forces landings at Anzio, finally reaching Rome. By May 1946 he was on his way back, via the Middle East, to the North of England and started work on the Wall again in December 1946. Here he remained, exposing and consolidating the monument of the Roman legionaries and auxiliary troops from across Europe, until he retired in March 1974.

On returning to civilian life Anderson's first task, with the Ministry of Works based at Corbridge, was to assemble and train a team of masons and labourers in methods of exposing and consolidating Rome's northern frontier. With a trained team he began to tackle the task before them.

The following account is not set out as a chronological sequence, rather site-by-site, moving westwards from Planetrees, on the east side of the North Tyne. All quotations are from transcripts of recorded interviews with Anderson.

Planetrees

Situated west of Mc26, Planetrees was taken into guardianship in 1945. The antiquarian William Hutton commented, when he visited the site in 1801, that the proprietor, Henry Tulip, was taking the stonework to build a farmhouse and that 95yd [86.9m] had already been destroyed (Hutton 1813). When work began here in 1948 Anderson says that the north face was already partly exposed and that his masons excavated the south face of the 53m stretch of Wall. In doing so they uncovered a junction on the south side of the Wall between the Broad Wall, to the east, and a section of Wall only 6ft [1.8m] in width built on top of foundations that had been pre-laid for the Broad Wall. During the consolidation he noted that Roman mortar was visible in the fabric on the south face, west of the reduction point in the area of the drain through the Wall. He says that on the Narrow Wall very little work had to be done, except on the top course or two, to make it waterproof. Anderson noted that the core of the Broad Wall was of fairly big stones, but that there was no mortar found (Transcript, 3). This may be because the original mortar had disintegrated, if there was any, or because, if the Wall had been clay bonded here, none was found during consolidation work.

It is interesting to note that in 1948 the first motor vehicle, a Ford, was provided to the staff, so that they could be transported from Corbridge to various sites along the Wall. Before this time it was necessary for the workmen to either catch a bus from Corbridge, changing at Hexham, or to travel by bicycle.

Brunton

At Brunton another reduction point or junction between the Broad Wall and Narrow Wall, east of the T26b, was uncovered. The north face of the Wall was also exposed, revealing 11 courses of standing masonry. The turret itself had first been excavated by John Clayton in 1873 (Daniels 1978, 105) and the south face of the Wall from the turret westwards, originally bonded with clay, had also been exposed by him. The masons arrived in 1947, the site having been taken into guardianship in February of that year.

They began by cutting down one or two large trees on the north side and removed the roots. It is apparent that Anderson was observant about earlier work that had been carried out on the Wall, as he commented that "when consolidation of the south face of the Wall west of the turret began it was discovered that three or four courses of facing stones had been re-built dry", that is without mortar. The remaining two or three courses were still buried in their original positions. When this face was first excavated the facing stones were perhaps found fallen along the side of the Wall, and the masons returned them to the Wall. In this particular case the core must have been very solid, and the masons probably found it much easier to cut the tails of the facing stones than to try to remove sufficient core to enable them to return the stones to the Wall in their original state.

Clayton had used both methods. If the core was hard, he cut off the backs of the facing stones, and if the core was fairly loose and comprised small stones, he would remove the core and pack the facing stones into place with loose, dry stones down the back (Transcript, 2). Any original Roman mortar in the joints was left in place.

Anderson noted a Roman altar on the north side of the turret. The vicar of St Oswald's Church, the Reverend F G Westgarth, visited the site and said the altar had been removed from in front of the church to the grounds of Brunton House and then to its position on the north side of the Wall more than 100 years ago. After discussions among Mrs Selby Woods of Brunton House, Mr P Hedley of Corbridge, Mr Charlton (the assistant Inspector of Ancient Monuments) and Dr Richmond it was agreed that it would be better to have the altar placed back in the church (EH file AM 10348/01). The necessary Faculty was obtained and the altar is now in the nave of the church (Coulston and Phillips 1988, no 279). A drawing made in 1879 of the north face of the Wall at Brunton by James Irwin Coates (Fig 38) shows two altars on the north side of the Wall, the larger of which is presumably the one noted by Anderson and returned to the church.

Chesters bridge abutment

The abutment was given to the nation in 1946 by the owner of the Chesters estate, Captain A M Keith and subsequently placed in guardianship. F G Simpson then carried out a small excavation to locate the Hadrianic bridge abutment (Simpson 1976, 44–9). In 1955 the short section of the Wall running down to the bridge foundations, together with the tower and water mill race, was consolidated.

Chesters fort

The team of masons moved into Chesters fort to begin that consolidation campaign after the site had been placed in guardianship in 1954. Prior to consolidating the bathhouse, which had been excavated in 1884–5 (Bidwell 1993, 13), a small excavation of the complex was undertaken in 1957–8 by J P Gillam. During the course of consolidation the masons uncovered a short length of Roman lead piping leading from the earlier cold bath, as well as a number of T-shaped metal brackets fastening thin stone slabs to the hot room (*caldarium*) walls. The fort walls and gateways, as well as the *principia*, *praetorium* and barrack buildings were consolidated, as was the short length of Wall on the east side of the fort. When the strong room in the Headquarters building was being cleared out prior to consolidation in 1956, a dedicatory slab of the 1st Cohort of Dalmatians (Wright 1957, 229; Coulston and Phillips 1988, no. 237) was found, which is now on display in the museum at Chesters fort. There are 160 photographs by Charles Anderson in the Chesters album showing the site before, during and after consolidation. Consolidation was still ongoing in 1960, as at that time work was being carried out on the south gate. In January 1956 the first cement mixer was delivered to the team of masons.

Fig 175
Consolidation team at Black Carts (T29a).

Black Carts

The site of Black Carts, taken into guardianship in 1970, was covered with a line of trees and scrub, although some of the south face of the Wall and T29a had been exposed by John Clayton in 1873. After removing the trees and scrub the masons exposed and consolidated the north face of the Wall as well as T29a (Fig 175). A series of photographs taken by Mr Anderson showed the Wall as left by Clayton and its subsequent re-building, as well as work in progress and the finished work. Anderson, in a taped transcript of the photographs he took of this section of Wall, made some comments and observations. "I think Clayton must have been a very thoughtful fellow; he also appears to have the public in mind, or visitors to the Wall. When he exposed any Wall section, it was always an easy section to reach."

He took a couple of photographs to show the difference between Clayton core packing and Roman core within the Wall, and also how the Roman core work and lime mortar was built in layers, making a tie across the Wall each time, for strength. He notes that there were "no chamfered stones at Black Carts but what we did find in position were three centurial stones (Charlesworth 1973, 97); one on the south face west of the turret, on the lower courses, and two in position on the north face, which is supposed to be unusual, as an expert told us they were only found on the south face." Another centurial stone was located fallen on the north side of the Wall 82m west of the turret (Wright and Hassall 1972, 354, 12).

Before the turret was consolidated, a re-excavation was carried out in 1971 by Dorothy Charlesworth (1973a). Quantities of facing stones with perhaps quarry batch marks on them have recently been located in the Black Carts section (Hassall and Tomlin 1989, 333).

Carrawburgh temple

Carrawburgh Mithraic temple, discovered in 1949, was excavated in 1950 (Richmond and Gillam 1951). After being taken into guardianship in 1953 the Ministry of Works consolidated the structural remains for public viewing. Anderson said "This was an interesting little monument. I made the imitation concrete posts and altars inside the temple. They must have been fairly good as the visitors started to break pieces off. They thought it was proper stone, fossil timber at least."

The timber structural posts, and the wattlework around the benches, which had survived in the waterlogged conditions of the site, were actually cast in concrete, the concrete replicas being installed on site. Although the brown paint that was applied to the concrete is long gone, the imprint of the timber is very clear. A replica of the temple is on display in the Museum of Antiquities in Newcastle. Anderson made a smaller replica model of the temple for Richmond, who subsequently returned it to the family.

In 1957 when the workmen were landscaping the ground around the temple they uncovered an altar dedicated to the Nymphs and the Genius Loci (Wright 1961, 193; Coulston and Philips 1988, no. 92).

S T35b and was taken into guardianship in 1946. Coesike turret (33b), located in 1913 by F G Simpson, was examined in the same year and also in 1947, and completely excavated in 1970 (Miket and Maxfield 1972). During consolidation Anderson located two inscriptions, one within the blocking of the internal recess and another in the north face of the Wall (Wright and Hassall 1971, 291, 10–11).

T34a (West Grindon), also located by F G Simpson in 1913, was excavated in 1971 (Charlesworth 1973) and then consolidated by the Ministry of Works. The central section of Wall at Sewingshield Crags began to be exposed and consolidated in 1958. T35a (Sewingshields) was excavated in 1958 on the behalf of Durham University Excavation Committee (Woodfield 1965, 151) and was consolidated at the same time that the curtain Wall was being uncovered. Anderson said:

> "When operations commenced at Sewingshields there was no exposed Wall to be seen at any point. I had a word with Mr Rawson, the architect at the time, and suggested that we just expose any short section existing, with face stones, for the benefit of hikers. This he agreed to do. I had no trouble with the management in those days, they would usually ask me where I was going next or how did I know it was Roman. So what I did first was put down a few trial trenches in at points where I thought we might find a nice piece of Wall, where the mounds or high mounds were on the ground, or slacks on the hillside. With our luck we found a few reasonably nice pieces of Wall. This was carried out just from the milecastle area, west of the farm, to the point on the crags overlooking the lake. The trenches were made in 1958. This was a site where we discovered a lot of original mortar. At the time it was fairly sound and it was decided to retain as much as possible. This we did, but it was a mistake. The first frost that comes along soon destroys it."

After excavating and consolidating the best surviving sections along the top of Sewingshield Crags, a number of trial trenches were dug along the line of the field wall down to the extreme west boundary of Sewingshields Farm. The results were not encouraging and no further sections of Wall were exposed at the west end.

Anderson noted a variation in the core composition where there was a reduction point. He commented that where the Wall was narrower the core was smaller than seen in the wider sections of Wall and the original mortar was very hard. The then farmer at Sewingshields, Mr Tulley, told Anderson that there were three or four centurial stones north of the Wall, in the field somewhere beyond his farm. Unfortunately he was never shown their precise location and they appear never to have been recovered.

Housesteads

Housesteads fort, which had been given to the National Trust in 1930 by Mr J M Clayton, was taken into the care and guardianship of the Ministry of Public Works in 1951, as it was felt that this body had greater expertise in the management of archaeological sites (Woodside 1995, 67). Excavations have been carried out within the fort since 1822 and consolidation of the remains was deemed necessary for their future preservation. Eric Birley was closely involved with the Trust regarding excavation and maintenance of the exposed walls as he was the Secretary of the local committee of the National Trust. He was concerned at the state of some of the walls and whether the Trust's employee, Mr Thompson, had the skill and expertise to carry out major works on the west wall north of the Westgate. He said that the Ministry of Works man at Corbridge, Anderson, was a first class man and they need have no anxiety at all if the job could be done by him and some of his men.

The method of consolidation was the same as that carried out by the Ministry of Works on all ancient monuments in its care and guardianship, and had the approval of the Ancient Monuments Board for England, as well as that of respected and eminent archaeologists who had been closely involved with the Wall for many years (*Hansard*, 2

April 1958, 1351). All of the fort walls, gates and towers, as well as the Headquarters building, the Commandants house, granaries, latrines, hospital and the civilian buildings to the south of the fort were treated. The three photograph albums of Housesteads show the sections of the fort walls and buildings before, during and after consolidation. Anderson took a number of photographs at the start of excavations in the Commandants House in 1967. There are also five photographs showing members of the 1959 Pilgrimage when they visited the site, including Dorothy Charlesworth, J P Gillam and Mr T Hepple.

In 1963 when the latrines, which had been excavated in 1898 and then backfilled, were opened up and prepared for consolidation Anderson took photographs of the work in progress (Fig 176). Since 1945 a number of excavations have been undertaken within the confines of the fort and it was Anderson, as Ministry of Works foreman, who oversaw the consolidation work being carried out as the walls and floors were exposed. He took numerous photographs of the Hospital and the Commandants House under excavation by Dorothy Charlesworth between 1967 and 1973.

Vindolanda

The fort of Vindolanda, but not the *vicus*, came into guardianship in 1939. The fort walls, gates and the Headquarters building were consolidated prior to 1945. In 1970 the bathhouse was excavated by the Vindolanda Trust and then consolidated by the Ministry of Works (Fig 177) in 1972. When Anderson retired from the Department of the Environment he was appointed Consultant for Consolidation by the Vindolanda Trust and in that capacity gave invaluable advice during the consolidation of the *vicus* between 1974 and 1976 (R Birley, pers comm).

Fig 176
Team at work on the bathhouse at Vindolanda, 1972.

Fig 177
Consolidation work on the north-west corner of the Housesteads latrines, 1963.

Hotbank

By 1960 the Ministry of Works and the National Trust were beginning to co-operate on methods of consolidation along parts of the Wall that belonged to the Trust, following high level meetings between the two organisations. In November of that year Anderson wrote to the Superintendent of Works in York that work on the above section had finished and that treatment had been applied to 18yd (16.5m) of Wall. Four or five courses of dry wall had been removed from the top of the Roman Wall, which had then been secured, the core re-built and lime pointed, as well as the facing stones in the Roman wall. The dry wall was re-built above the Roman Wall and turf laid on the top of the Wall. Anderson supplied a sketch of a cross section of the Wall showing the original Roman wall with the later dry wall and turf capping on top. The National Trust supplied one mason as well as a part time labourer, who was an old age pensioner. The cost of this work was £255 16s 10d, which was paid by the National Trust. In 1968 they carried out preservation work on a further 25ft (7.6m) of Hadrianic foundations, costing £60.

Castle Nick Mc39

A length of Wall belonging to the National Trust to the east of Castle Nick received the attentions of the Ministry of Works with the help of a National Trust mason, of whom Anderson said, "they thought he would know all about consolidation of the Roman Wall when he had completed a short section, I don't think he has recovered from the shock yet."

Within the core there was very hard, original (Severan) Roman mortar, which was exposed. Anderson recalls that someone from the National Trust erected a sign saying Original Roman Mortar. However, this was quickly taken down when it was

noticed that the mortar was disappearing rapidly, pieces being taken away as souvenirs by visitors.

Anderson said that he would like to see the Wall east of the milecastle all the way to Housesteads receive consolidation treatment, removing all National Trust and Clayton building work, or that carried out by anyone else. The Ministry of Works wanted to take responsibility for the entire length of Wall but the National Trust, having acquired the section from Housesteads to Steel Rigg, was not willing to relinquish control. In 1968, as part of the co-operation between the Ministry of Works and the National Trust, Anderson's masons consolidated 112ft (34.1m) of Wall at the west end of Castle Nick at a cost of £220, and carried out first aid treatment to a further 330ft (100.6m) by cleaning out and lime pointing cavities at a cost of £100 (National Trust File HW\EG 1969–73).

Cawfields

The whinstone quarry at Cawfields, which had been operating since at least 1896, finally stopped production in 1952. Several photographs from the 'Picture Post', in the Anderson Cawfields album, show the quarry and Wall in 1943.

The Cawfields section of Wall stretches for a distance of 1.2km. Within this sector are T41a, T41b and Mc42 (Fig 178). The milecastle was exposed by Clayton in 1847–8 and the turrets located in 1912 by F G Simpson (Simpson 1976, 108). Consolidation work first began here in 1960, the year it came into guardianship, and continued through until 1973. Anderson noted that the milecastle had "become mostly covered again with soil and turf" and that the south face of the Wall had also been exposed, perhaps at the same time as the milecastle, from the field entrance gate west of the milecastle as far as Thorny Doors. He said that there were a few courses of original or undisturbed face work.

> "I lime pointed the face joints of the original work, but Clayton work I left 'angry' with outline pointing. The north face of the Wall was covered with soil and shrubbery and well hidden from view with the exception of the top course or so in the milecastle area. To the east of Thorny Doors the Wall was below ground level and for the majority of the distance there was a dry-stone wall built along top."

Fig 178
Consolidation team at work at Mc42, Cawfields.

Part of this wall was dismantled and re-built about 30m south of the Wall (and T41a) and parallel to it to form a new field boundary for the benefit of the farmer. Speaking in 1980, he recalls visiting the Wall with Mr Gilyard-Beer, the Inspector of Ancient Monuments, and:

> "seeing the National Trust excavating along the north side of the Wall at the same time re-building the face with the stones they were uncovering Clayton all over again. Mr GB soon put a stop to that ... unless of course they have made a move in the last year or two, like the Vallum mound in the car park at Twice Brewed, which was frozen for many years, but has disappeared in the last year or two."

The location of the incident given by Anderson in the transcript (page 8) is Cawfields but the photograph he refers to (PP7) shows the line of the Wall between Hotbank Farm and Rapishaw Gap looking eastwards. The Hotbank sector of Wall had come into the ownership of the National Trust in 1942. In a note dated 1 March 1967 Anderson reported that the owner of the Twice Brewed Hotel had removed a further 20yd (18.3m) of turf from the south side of the south mound of the Vallum. In 1962 Gilyard-Beer had said that they must not consolidate any masonry unless they were certain that it was not Clayton or other work. He also suggested that from the milecastle westwards to the field gate the wall should be reduced in height to three or four courses at most unless they were certain that the original Roman work went higher. The reduction work was not to be done in one operation, as it would attract attention, but by removing different areas every few days as inconspicuously as possible. This does not seem to have been carried out to judge from the height of the Wall as now consolidated.

Anderson was well aware that Clayton and others had been working on the Wall before him, repairing and re-building, and he could tell where the earlier interventions had occurred:

> "Clayton made a good job of his coursing. If you get any alterations, anyone else following, the farmer or anyone else like that, the courses were not so good. They'd be up and down, little pieces of stone

> packed in here and there to level up the courses. Clayton was very particular with his coursing of masonry. That's one way you can tell Clayton from the rest of the world."

Anderson was aware that where there was grass growing in the Wall joints that it was likely to be undisturbed Roman material. He was also keeping the Inspector of Ancient Monuments (Dorothy Charlesworth), who had taken over from Gilyard-Beer, informed of anything out of the ordinary that he found on the Wall, including the unusually large blocks in the north face of the Wall just east of Mc42 (Charlesworth 1963) and three possible parapet stones found in the fallen debris (Charlesworth 1968, 69–74).

Anderson noted the difference in weathering on the facing stones between the worn blocks in the top section and those in the lower courses, which had hardly been weathered at all. The facing stones at Thorny Doors showed the greatest amount of weathering that he had seen anywhere along the Wall. He thought this was because the gap in the hillside acted like a flue.

> "The wind and storms would be blowing from the north very fiercely and nothing weathers the stone more than the wind and rain. You can see all the edges of the stone worn away, especially the top half. The bottom half must have been pretty well covered in Roman times, because there is hardly any weathering at all on the lower few courses. I haven't seen stone weathered so much on the Roman Wall anywhere as they are at Thorny Doors."

He also points out possible Roman putlog holes in the Wall face (for scaffolding poles) in a couple of the photographs taken at Thorny Doors. Certainly during the consolidation process the workmen had to use scaffolding, owing to the height of the Wall. Much of the north side of the Wall was original, while some areas of the south face had been added to by Clayton's workmen in the 19th century. He said that at the extreme west end of Cawfields there was also a lot of very hard mortar, but the frost got at it and it could not be saved from disintegration. Anderson noted that during the many years of uncovering and consolidating sections of Wall they had never found any discarded, broken or worn-out Roman tools. This is probably because any metal tools or implements would have been recycled.

Great Chesters

First aid treatment was carried out at Great Chesters to the various walls of the fort, including the West gate, barracks and bathhouse. Parts of the site had been opened up as early as 1894 (Gibson 1903, 19–64) and although the site has never been taken into guardianship it was felt necessary that there should be some remedial works undertaken. A modem mortar pointing was applied between the exposed joints to protect the upstanding masonry from further frost and stock damage. In 1969 the repairs to the stonework of the strongroom and replacing and re-bedding loose and fallen stone was estimated at £200. Work started on 2 June of that year and was completed on 24 July at a final cost of £189 17s 9d.

Walltown

The 400m of Wall were given into guardianship by a deed of gift in 1939 and operations at Walltown quarry ceased in 1943. T45a, which had been discovered by Claytons chief excavator Mr W Tailford in 1883, was examined in 1959 prior to consolidation (Woodfield 1965, 162). T45b, which had also been discovered in 1883, was destroyed by quarrying activity soon after, as predicted by Bruce in that year (Bruce 1883, 235). The consolidation of Walltown began in 1959 and continued into the

Fig 179
Consolidation on the south face of the Wall at Walltown.

Fig 180
Consolidation on the north face of the Wall at Thorny Doors, where the original Wall face was 10ft (3.05m) high.

Fig 181
Chamfered stones found during consolidation at Walltown.

Fig 182
Centurial stone (COH VI >CALEDO SECUNDI) found at Walltown.

early 1960s. Woodfield (1965, 164) noted that the junction of the north corners of T45a and the Wall had been mortared in the past and covered with bracken and netting to protect it. F G Simpson may have carried out this work after he had finished his investigations in 1913.

Of all of the sections of Wall that Anderson helped expose, his favourite was at Walltown Crags (Fig 179). He said:

> "Walltown is one of the best and most interesting of all the sections of the Wall I have had the pleasure to expose. There had been no modem interference; even Clayton worked in the area, but for a change he failed to leave his trademark. All the curtain Wall we exposed was original and in an excellent state of preservation and in most cases, it was only necessary to remove the top course or two and the top layer of core for re-setting and waterproofing, and the remainder of the face joints were raked out, removing soil and perished mortar, washing out with water and re-pointed with new lime mortar."

When this section of Wall was exposed Anderson was impressed with the quality and class of building work that had survived, standing up to 14 courses high (Fig 180). He also noted the fact that the original builders had constructed the Wall directly on top of the natural bedrock without the normal foundations found in other sections of the Wall. He photographed a section of the core, which had been buttressed as the Wall climbed the steep incline of the slope. Several drains run through the Wall and the north side of one of these has a curved top stone.

He noted a change of alignment of the Wall slightly to the north of its intended line, which is related to a stepped offset course. He thinks this is where it was decided to follow a slightly easier line rather than having to build over the tops of the crags. A similar change of alignment is seen on Cuddy's Crags 100m west of Mc37.

Anderson noted that beneath the collapsed Roman stonework that they uncovered from the face of the Wall there was a certain amount of soil build up, which must have happened prior to any Wall collapse. This may indicate that the base of the Wall was not kept clean of decaying vegetation growth during the Roman occupation of the Wall. He also comments that the chamfered stones, which are shown in a large pile in one of the photographs, must have come from the top of the Wall and that they were mainly, but not exclusively, found on the north side of the Wall (Fig 181). He noted that the original Roman mortar was in a bad state and that they did not find any that they could do anything with.

The photographs of this section of Wall show how much was visible prior to work commencing, and there are numerous photographs of the Wall as work progressed, uncovering and consolidating the remains. At least 11 centurial stones were found in material fallen from the Wall as well as one *in situ*

built upside down in the north face of the Wall and their locations noted in the *Journal of Roman Studies* for 1960, 1961 and 1962 (Fig 182).

In 1969 Anderson delivered 14 inscribed facing stones to the Museum of Antiquities in Newcastle. Twelve were from Walltown and two from Sewingshields. Eric Birley commented that the find spots had been noted with exemplary exactness by Mr Charles Anderson, the Ministry of Works' Charge-hand, and it is already evident that they will give considerable help in working out the exact lengths built by individual Roman army centuries (Birley 1961, 258).

While the consolidation was being carried out at Walltown, Anderson took a number of photographs of T45a after it was excavated and exposed, prior to consolidation. They show that the turret had been built directly on top of the underlying bedrock. During the consolidation of the Wall the adjacent ground surface was landscaped.

> "On the north side we usually took a levelling straight out to the cliff face which is never very far away and on the south side we took a level or line from the bottom offset course out into the field as long as it was good to look at and suited the eye."

Long Byre

This is a short stretch of Wall on the west side of the road leading from Greenhead to Gilsland (NY656661). Anderson says that (in 1957):

> "some road work was going on near this section one day as I passed, [and] the foreman in charge gave me permission to check if there could be any Wall. I was lucky it was passed on to the excavators, after which we carried out our treatment."

It appears that he must have informed Mr J P Gillam, who reported the fact to the Inspectorate of Ancient Monuments, who then arranged an emergency excavation to be carried out in July 1957, under the direction of Peter Salway, to uncover and record the section of Wall. On completion of the excavation 8m of Wall were consolidated by the Ministry of Works. Had not been for the observations of Anderson, this section of Wall might have been lost in the road-widening scheme.

Poltross Burn

Mc48 came into guardianship in 1938, having been first excavated in 1886 and then again in 1909–10 (Gibson and Simpson 1911). In 1960 the cutting close to the milecastle was filled with ballast because increased rail traffic made the shoring unsafe. The Ministry of Works re-opened the site, which had been back filled, in 1965–6 and carried out their normal consolidation treatment of the whole site. At the east end of the Wall a reinforced concrete beam was placed below the ground surface adjacent to the foundations to stop the Wall from sliding down the slope into the Poltross Bum.

Gilsland Vicarage

The section of Wall through the garden of Gilsland Vicarage was placed in guardianship in 1945. The south face had been cleared of soil in 1894 by Francis Haverfield, although a short piece of the Wall had already been cleared in June 1877 by the Rev A Wright, vicar of Gilsland, during an excursion of the Cumberland and Westmorland Antiquarian and Archaeological Society. A cross section through the Wall in the vicarage garden was dug in 1927 (Simpson 1928, 385).

In 1949 Anderson began clearing the soil from the top and sides of the Wall as well as dismantling the field wall built on top and exposed more than 200m of the monument for consolidation. There were several centurial stones around the front door (Collingwood 1933, 168) and Anderson was told he could take any of them – otherwise they would be used in the re-building. He removed them to the site at Corbridge Roman fort. These must be RIB 1856, 1857, and possibly 1858.

Willowford and Milvain

The Willowford bridge abutment came into guardianship in 1939 , and the rest of the Wall eastwards (Willowford Farm and Milvain) in 1946. Work on the length of Wall from the main road to Willowford bridge was carried out in three stages over a number of years. The dates given by Anderson on the back of one of the photographs (Willowford, Book 2, no. 179) for the work are: sector one (east) – from the main road to where the farm track crosses the Wall (1950–2); sector two (central) – from that point to Willowford Farm (June 1960–June 1963); and sector three (west) – from the farm to the Roman bridge abutment by the river Irthing (October 1962–September 1964). However, some of the photographs show that work was being carried out on the eastern sector up until 1954.

Within the east section of Wall is T48a, which had been excavated in 1923 and then back filled (Shaw 1926, 437–50). In a photograph taken by Anderson in 1954 the south wall of the turret is visible in the wheel ruts of the old cart road leading to the farm, and a field wall lay on top of the Roman Wall. The old cart road was removed and a new road laid out by the the Ministry of Works, the line of which is shown on one of the photographs.

In 1952 Anderson wrote to the Superintendent of Work (EH file AM 10048/01) saying he had put a few trenches along the line of the Wall towards

Fig 183 (top)
The wall face excavated at Willowford, east of the farm.

Fig 184 (above)
Clearance of debris and tree roots from the Wall at Willowford.

Fig 185 (below)
Mechanical clearance of rubble near Willowford Bridge.

Willowford and found the Wall with ten courses of ashlar and standing in several places' 8ft or 9ft (2.4–2.7m) high and any amount of stone along the side of the Wall to raise it another course or two.

In 1955 several masons opened up a section of the Wall in the central sector at Willowford, so that a Ministry of Works photographer, Mr Broadrim, could make a record of their work for an exhibition held in London. These photographs are reproduced in Whitworth (1994, 69). By 1960 works had progressed to the central sector, including T48b, where the Wall was uncovered from Willowford Farm eastwards towards the farm track crossing (Fig 183). The turret had been excavated in 1923 (Shaw 1926, 429–7) when the turret to the east (T48a) was also being uncovered. The tree growth was removed, and although Anderson notes that there were a lot of trees to cut down, their roots did not penetrate the Wall to any large extent, as they tended to travel over the sides of the monument, thus more or less holding it together.

As the Wall was being opened up, by pick and shovel, the soil and rubble lying next to and covering the Wall was moved by small dumper trucks and scattered around the farm fields (Fig 184). In parts of the Wall there were more than seven courses of original Roman facing stones *in situ*. He noted the three offset courses at the bottom of the Wall on the north face and the 2in (50.8mm) offset above and related this to the Broad Wall foundations.

> "This Broad Wall business puzzles me. You get three or four courses of masonry on the south face running along on the Broad foundation and then the Romans have built their Narrow Wall leaving these courses standing. I think if I'd been building the Roman Wall and changed my mind, I'd have used those stones instead of leaving them like that. Whether the mortar was too hard to remove them or whether they were used for some building purposes, it's a bit puzzling this Broad foundation business."

The central section provided a very good example of how the Wall was constructed by the legionary soldiers in this part of the Wall; a course of facing stones was put in place, which was then filled in with core from face to face and then a spread of lime mortar on the top. This was repeated course after course until the desired height was reached (Willowford/Harrow's Scar Bk 1, 100–2). The core here was in an excellent state and is probably evidence of Severan rebuilding.

> "We cleaned it off, brushed it and washed it down but it didn't last very long when the frost came along. Apart from the section where the

> excellent core was, we found very little lime mortar worth bothering about. Once the frost gets at it, it's better to get rid of it and do the necessary re-building at the time."

Anderson was also puzzled by the size of some of the blocks in the Wall, as he commented that when excavating at Willowford east (sector one), where they had two or three courses of original masonry, they found many fallen stones that were much larger than those actually in the Wall. He thought that it did away with the idea that there were big stones in the base and they got thinner as they get to the top of the Wall. These larger blocks may have been part of the superstructure of T48a.

One of the photographs is a close-up of several courses of facing stones showing original Roman mortar spread over the face of the blocks (Willowford/Harrow's Scar, Bk 1, 106). This has been observed in a number of other places along the Wall (Crow 1991, 59).

At the west end of the Willowford section, from the farm to the bridge abutment, a line of mature oak trees was growing on top of the Wall and a field wall had been constructed with re-used facing stones. Anderson said this was the worst section for trees. Once the trees had been felled, the removal of the stumps required the use of heavy machinery on the site so a bulldozer, supplied by Browns of Thursby, was used to ease the root remains free of the Wall and also to move the tree trunks away from the Wall face. A number of photographs show this operation taking place (Fig 185). This was the only time that such a large piece of equipment was used by the workmen along the Wall.

The bridge abutment at Willowford had been examined by Dr R C Shaw in 1923 and given to the nation in 1939 by Lord and Lady Henley, whereupon the Office of Works began to restore the visible remains (Simpson 1976, 49).

Mr Anderson recalled, in his transcript, that the consolidation of Willowford:

> "was quite straightforward, there wasn't [sic] many snags. A lot of hard work and we hadn't much interference from these so called, you know..., as you get around. They seemed to be holding you back more than allowing you to go. We had a free hand. I could just carry on with the work, and everything went nice and smoothly. We just opened the Wall out as we went, preserved it as we went, and I think it turned out to be an excellent section."

The reference to being held back probably refers to the visits by the Inspector of Ancient Monuments and the Superintendent of Works.

At the river crossing the Ministry of Works constructed a temporary footbridge across the Irthing so that the members of the Roman Wall Pilgrimage in 1959 and 1969 could cross from Harrow's Scar to Willowford. The cost of erecting the temporary bridge for the 1969 Pilgrimage was £170. During the course of excavation and consolidation on this length of Wall a number of centurial stones were recovered from the fallen material (*see* Appendix 4, table 72).

Birdoswald and Harrows scar

The 400m section of Wall from Mc49 to T49b, including the walls and gates of the fort, had come into guardianship in 1946.

Anderson had first been introduced to the site at Birdoswald by the archaeologist F G Simpson who had excavated along the Wall for many years. Starting work on the fort in 1948, Anderson took a number of photographs of consolidation work being carried out on the east gate. Several of these photographs show a farm building, used by the farmer (Mr Hall) to house a pack of foxhounds, outside the east wall of the fort north of the gateway, and a field wall across the gate portals. The workmen removed both the farm building and the field wall. During this time the Ministry of Works located the interval towers north of the main gates on the west and east walls of the fort, and the north-west angle tower. Anderson says:

> "after I'd been working some time I traced the inside face of the wall almost round its northern half exposing two interval towers and the north west angle tower. A man from the Ministry of Works came along and told me it wasn't part of the Wall, the towers, and we should not have exposed them. I suppose it would be one way of clearing himself in case anything developed, but I might say the owner and the agent at the time were very interested with what we were doing."

During May 1949 while in the course of removing part of the rampart backing of the east wall of the fort, north of the east gate, the workmen located a Roman bronze wrist-purse (Richmond 1951). It was preserved by the British Museum laboratory and found to contain 28 *denarii* ranging in date from 125 BC to AD 119. After the inquest the owner, Lord Henley, presented the finds to Tullie House Museum in Carlisle. A similar purse had been found at Birdoswald in 1930.

In 1949 Mr Macgregor and Colonel Shore, at the request of the National Trust visited a number of sites along the Wall to view the differing methods of consolidation. At Birdoswald Anderson was uncovering the east wall of the fort and they reported that they were re-laying and building the

upper courses in 5:1 cement and pointing in 3:1 lime. In 1950 the interval towers and the north guard chamber of the east gate were excavated by the Durham University Excavation Committee under the supervision of J P Gillam and Brenda Swinbank (Gillam 1952). Anderson noted than when they were "cleaning it out, it was filled with a black sooty soil."

The north-west angle tower was uncovered and excavated soon afterwards, but there is no published record of the work (Gillam 1952). Initially a 25yd (22.8m) section of Wall top of the east wall of the fort was left with a turf capping, but in 1952 he was told to remove this and consolidate the top in cement.

West of Birdoswald fort a length of Wall and a turret were exposed and consolidated between 1953 and 1955. The turret, T49b (Birdoswald), had been excavated in 1911 and then backfilled. Anderson said:

> "the north face was just a tumbled mess of thorns and trees and rubbish growing along the top. We excavated, cleaned it down and did the necessary preservation work on it. We had to bury one or two courses of masonry on its north side because they are down below the road level and it would have been dangerous to have left them exposed."

A phallic symbol was located on the upper course of the south face of the Wall 12m west of the turret.

The length of Wall from the fort eastwards to Harrow's Scar was begun to be opened up in March 1956 and immediately a phallic symbol was found built *in situ* on the south face of the Wall. Six centurial stones were located *in situ* in the south face of the Wall, as was as another phallic symbol. Anderson fixed into the bottom courses of the Wall short pieces of non-rusting delta metal to locate the inscriptions and phallic symbols; however, very few of these metal tags now survive. At least 13 other centurial stones were recovered from the fallen facing stones of the Wall (*see* Appendix 4, table 72). These eventually went to Tullie House Museum in Carlisle and the Museum of Antiquities in Newcastle. Some of the inscriptions had been found lying on the north side of the Wall. Anderson, who thought they had come from the north face of the Wall, mentioned this to Professor Sir Ian Richmond who replied, "Well Charlie, we've not yet found any in position in the north face yet [sic]". Anderson was to find, at a later date, two centurial stones at Black Carts built in the north face of the Wall. However, this seems to be the exception rather than the rule.

Some time later the Wall was opened up from the Harrow's Scar end and work commenced in a westerly direction so that the two sections would eventually meet half way along. When work commenced the photographs show that the Wall was completely buried on the south face so that the Wall top was level with the field. The Ministry of Works' official photographer, Mr Broadrim, took a number of photographs of the Wall between 1956 and 1958, showing the state of the Wall while work was being undertaken, as part of the official archive. Anderson noted that stones upturned during ploughing in the past had been thrown into the thorn hedge that stood on the Wall top. There had also been a stone wall with posts and rails along the Wall mound.

Up to ten courses of original Roman facing stones survive in an excellent state of preservation in this section of Wall and Anderson says that it was only necessary to reset the top course or two. He remarked on the thin string or bonding course of stonework that stretched across the width of the Wall. A large number of chamfered stones were found during operations in the length of Wall east of the fort and these were stored in the south-west corner of Mc49. The author located these blocks in 1991 during the course of recording the fabric of the Wall. These chamfered stones have been recorded and are now housed at Birdoswald fort.

While working on this length of Wall in 1956, the Ministry of Works masons came across the remains of a cist burial adjacent to the Wall face. Although burials of this nature in such a specific location are very unusual, no record of this discovery was ever noted or published, although a photograph of the remains exists in the English Heritage Photographic Archive (Crow and Jackson 1997, 65). A similar cist was uncovered at Sewingshields during excavations in 1976–7 prior to consolidation by the Department of the Environment.

The farmer at Birdoswald, Mr Baxter, showed Anderson a cremation urn, which had been unearthed in one of the fields south-west of the fort and pointed out the red patches in the soil. The curator of Tullie House Museum, Mr Hogg, visited the site to see the find and another, complete urn, was found soon after (Wilmott 1993; this volume p 276).

On the north face of the Wall east of the fort Anderson photographed another section of Roman mortar spread, which had partly covered the outline of the individual blocks (Figs 186–7). This method of pointing the facing block joints was applied, as an experiment, to a section of the south wall of the south granary when consolidation was carried out at Birdoswald after the 1992 excavations (Wilmott 1997, 119). This method, as applied by the Romans, may have resulted in the idea that the Wall was white washed or plastered. Anderson notes that once the frost got at it the mortar did not survive very long and soon needed to be replaced with a modem mortar.

Fig 186
South face of the Wall newly exposed to the east of Birdoswald.

Fig 187
Original Roman lime mortar and pointing on the north face of the Wall to the east of Birdoswald.

At the east end of the Wall is Mc49, which had been briefly examined in 1898, partly consolidated in 1941 and excavated in 1953 by Professor Sir Ian Richmond prior to full consolidation of the site (Richmond 1956). The cost of work at Harrows Scar in 1959, as supplied by Anderson, was as follows: road widening of the track through the milecastle – £150 1s 5d; excavating the cutting back under the east wall of the milecastle – £60 2s 3d; and the building of the retaining wall – £28 15s 0d.

The problem of the river undermining the steep slope of the west bank of the Irthing river had been recognised by F G Simpson and attempts were made to stabilise the bank. The work included tipping a large amount of soil over the cliff edge onto a grille of timber and brushwood, which was intended to stabilise the bank. In 1953 a proposal to inject subsoil grouting was turned down. Other solutions included revetting the scarp with a drystone wall construction and tar spraying the area. By 1955 the soil from the excavations at Birdoswald fort was being tipped down the slope in an effort to give it a more gradual gradient down to the riverbank.

When work commenced in 1956 on uncovering the Wall east of the fort, the soil that was removed was also tipped over the cliff face at Harrow's Scar to help alleviate the steep slope of the west bank of the river and save the milecastle from possibly sliding down the bank. Anderson says that in January 1959 they got it nicely built up and grassed over when it collapsed down the slope into the Irthing, partly blocking the river and bringing down trees in its wake. The Superintendent of Works considered there was the danger of a further collapse on the south east side of the milecastle, threatening to engulf the only access road to Underhaugh Farm, and was of the opinion that the saving of the milecastle was beyond human effort (EH file AM 10350/01).

During an inspection of the site in October 1967 it was noted that approximately 100 tons of soil from the escarpment had fallen away and that the cliff face was within 3ft 9in (1.1m) of the masonry. Plans held by English Heritage include architects drawings made in 1961 to try and solve the problem of slippage at Harrow's Scar.

T51 a (Piper Sike)

Taken into guardianship in 1952 this turret was excavated in 1970 by Dorothy Charlesworth and members of the Cumberland and Westmorland Antiquarian and Archaeological Society before its consolidation by the Ministry of Works (Charlesworth (1973).

T51 b (Lea Hill)

This was taken into guardianship at the same time as Piper Sike turret and was excavated in 1958 by Miss Charmian Phillips with the help of Charles Anderson and the Ministry of Works who then consolidated the remains.

Pike Hill signal tower

Found, and partly destroyed, in 1870 when the road over it was lowered. The remains were examined in 1927, 1931 and 1932 (Birley 1961, 140). The signal tower was taken into State guardianship in 1971. The stone wall on the south side of the road was taken down and replaced on a slightly different alignment and a public footpath created to allow visitors safe access from the turret to the signal tower.

T52a (Banks East)

The turret, discovered in 1927 and excavated in 1933, was the first section of curtain Wall to be placed in the guardianship of the Ancient Monuments department in 1934. The site and adjacent land were given by the landowners Lady Cecilia Roberts and Mrs W Nicholson, after which the Ministry of Works masons carried out consolidation of the fabric. Later Anderson supervised repairs and first-aid work to the structure, adding new mortar where necessary.

Hare Hill

This short section of Wall came into guardianship in 1972. The masons exposed the lower courses at the base of the Wall on the north side, the rest of the upper fabric having been rebuilt by the Earl of Carlisle in the late 19th century. The south face of the Wall had been robbed in the medieval period, leaving only the core. A cost for the cleaning of the site, excavation to the Wall and consolidation and pointing together with the formation of a path and the erection of fencing was made in 1967 by the Superintendent of Works and estimated at £1000.

Walton

This is the most westerly section of Wall that Anderson and the Ministry of Works masons uncovered. The 20m length of Wall was given into Care in 1963 and authorisation given by F Gilyard-Beer in 1964 to uncover it after work had finished at Willowford West. This was finally done in the early 1970s under the direction of Dorothy Charlesworth (Snape 1996, 24). The masons exposed up to five courses of the porous red sandstone but it was evident that the core and facing stones would not survive the inclement conditions. During the winter months it was covered with bales of straw given to Anderson by one of his farmer friends. The Wall was then uncovered in the spring for visitors to view. In the early 1980s it was decided that the site should be permanently covered to preserve the deteriorating remains and consequently it was clamped with soil and given a grass covering.

In 1968 Anderson wrote to the Area Superintendent of Works in York asking to be relieved of all duties in the western sector of the Wall:

> "Under the present conditions which prevail on this sector of the Roman Wall, which perhaps encouraged by the conditions of 'The New Deal' has given the powers that be, the unauthorised power to make conditions even more unpleasant, therefore I would consider it a favour if I could be relieved of all duties on this sector. The harmony that existed at one time has now disappeared. You will understand it grieves me very much to submit this application, but under these conditions which I find most unsatisfactory I have no desire to continue."

Consolidation methodology

The main aim of the Ministry of Works during the Anderson years was to preserve, not restore the monuments in its care. The Ministry was concerned that the Wall should not be reconstructed, rather that the buildings and walls of the Monument should be consolidated as found. No new stonework would be added and minimal restoration carried out, and done so that it could be recognised as such. The masons on the Wall followed the methods of consolidation as recommended by the Ministry.

After clearing the top of the Wall of any trees, accumulated soil and associated debris down to the original Roman core, the Wall face was then exposed to its foundations. It was often the case that the core of the Wall survived better than the pointing on the face, so that the task of building a modem mortar and stone capping to protect the core and to provide a water run off was of some skill. About 18in (457mm) of the top of the core stones were removed, cleaned and reset in a mortar bedding mix of Portland cement and sand in varying proportions of between 1:4 and 1:6. This was designed to shed water from the top of the Wall and prevent percolation of moisture into the remaining Roman core.

In most cases it was necessary to remove several of the top courses of masonry facing stones, as these were normally loose and out of alignment, and required re-building. These building stones were numbered before removal to ensure that they were replaced in their original positions. The stones were washed clean and a bedding mix similar to that applied to the core was laid down and the stones reset in the Wall. It was envisaged that the consolidation work would have a life expectancy of 25 years.

The joints on the face of the Wall were lime pointed. The hydraulic lime pointing mix contained a 'trowel full' of ordinary Portland cement (opc) to each bucket of lime (for a record of the mortar mixes used on the Roman Wall *see* Appendix 4, table 70). Below the reset facing stones the joints were raked out where necessary to a depth of 1.5in (38mm) to remove the dirt and loose mortar. The joints were then thoroughly cleaned with water before the new pointing was applied. After the lime mortar on the Wall face had partially set, it was sprayed with a water syringe, which cleaned the sand and gravel in the lime mortar to give it a weathered appearance. It was desirable to avoid pointing during frosty weather but where this was unavoidable the work had to be protected by a covering of hessian sacking. It was also necessary to protect the new mortar during hot weather by damping the covering.

Efforts were made to match the pointing with the nearest original mortar. By adjusting the grit content of the mix and the

use of judicial washing and brushing, the masons hoped to produce a mortar that blended with the original work. A technical note issued in 1977 said that the use of pigments for colouring core binder was not recommended and that every effort should be made to achieve the original colour with selected aggregates or naturally coloured binders such as French hydraulic lime (DAMBH Technical note, May 1977).

Mr Anderson made it a habit to keep samples of the Roman lime mortar from each section of Wall on which his team worked over the years. He said: "I used to keep it in little plastic bags in my office at Corbridge, but I suppose modern times have done away with all that sort of thing."

He remarked that the locating of sand must have been a problem for the Romans when they built the Wall, as it had been a similar problem for his team in its consolidation work. He noted that nearly every site had a slightly different texture.

> "The sand would be coarse with a lot of gravel in it in some sites while others would have very fine soft sand, almost like river sand. I suppose the sand would be mixed with lime about 3 to 1. They would need an awful lot of sand."

Anderson commented that the texture of the original Roman lime mortar was studied for colour and the sand makeup. Samples were then mixed until they got the makeup similar to the original on that particular section.

In 1985 Mr J A Griffiths, Superintendent of Works for the North, based in Carlisle, commenting in the Roman Wall Mortar Mixes Report said:

> "One fact becomes patently obvious and that is that the bedding mix is invariably weaker than the pointing mix. The general philosophy that experience seems to have indicated is that thermal movement in large masses of mortared masonry is better able to be absorbed without fracturing when the hardening agent in the mortar is hydraulic lime and when the mix is calculated so that in its composition it does not compete with the stone for hardness. The practice of adding Ordinary Portland Cement to the hydraulic lime-based mortar was to provide a pointed surface more resistant to the rigours of summer and winter weather.
>
> With the demise of the last economically available source of hydraulic lime, technical officers (of the Department of the Environment) have been obliged to use Ordinary Portland Cement as a hardening agent together with the use of hydrated lime as a plasticising agent. Two problems have emanated from this: the difficulty of achieving the right colour of mix when dried out, and the considerable fracturing of the surface pointing caused by the imbalance in thermal expansion and contraction within the Wall owing to the very hard pointing. Experimentation had proved that the mix of Ordinary Portland Cement-based mortar on the Wall cannot be made any weaker, as to do so renders the mortar very susceptible to frost action. From the practical standpoint it is evident that for the well-being of the Monument as a whole an acceptable substitute for Ordinary Portland Cement as a hardening agent is urgently needed (Johnson and Wright 1985, 11–12)."

The Hadrian's Wall Mortar Project was begun in the 1980s to evaluate three mortar types: lime-based mortars, hydraulic lime-based mortars and cement-based mortars. This led to the development of a wider full-scale research project, known as the Smeaton Project, which has been investigating the properties of lime-based mortars for several years. Presently English Heritage uses a hydrated lime and white cement mix that does not set as hard as the surrounding facing stones and also has an acceptable colour match to the original Roman mortar. Mortar trials will also be carried out on consolidating a short stretch of Wall at Willowford using a hydraulic lime and sand mix at 2:7 to assess its suitability and durability. Ordinary Portland Cement is no longer used by English Heritage in the consolidation work on Hadrian's Wall.

Clayton Wall and the National Trust

Some consideration should be given to the initial method of excavating the Roman Wall and associated sites, which allowed both interested visitors and academics to view the previously buried structure.

John Clayton's life-long interest in the Roman Wall was certainly influenced by the Rev John Hodgson, who had begun opening up parts of the monument in the early 19th century. Clayton (1792–1890), the owner of the Chesters estate, began acquiring tracts of land along the line of the Wall and opening up sections of the monument as well as carrying out excavations, with his main campaigns probably taking place between 1848 and 1873. He set out enthusiastically to uncover and preserve his 'Wall Estate', and now lengths of so-called 'Clayton Wall' are to be seen at Peel Crags, Hotbank Crags and Cuddy's crags, within the National Trust Estate. He employed workmen to uncover sections of Wall to expose the surviving masonry and used the fallen facing stones from alongside the monument to re-build it to a uniform height. The re-used material was laid, without mortar, in a dry-stone manner in level courses on the original Roman remains and new core work was added from the fallen debris. A turf capping, taken from the surrounding grassland, was added to the top of the Wall (Woodside and Crow 1999, 103).

The re-built Wall also functioned as an effective field wall along the top of the Crags. In some sections the re-build was so carefully matched to the original work that it can be difficult to tell what is Roman work *in situ* and what is Clayton's re-built Wall (Johnson 1989, 130). On close examination the original Roman work can generally be distinguished by areas of either surviving hard mortar between the stone joints or crumbling and perished mortar mixed with earth in which grows the lime loving plant Maidenhair Spleenwort (*Asplenium trichomanes*).

It is acknowledged that once Clayton had opened up sections of the Wall, the technique he applied to the core and facing stones was in the best interests of the monument and assisted in maintaining the surviving Roman integrity of the Wall.

The National Trusts' method of preserving the fabric of the Wall within its estate generally followed the principles as set out by John Clayton and was carried on into the early part of the 20th century by F G Simpson. However, Simpson did comment on the effect that the opening of the Wall by Clayton had on the monument. He noted the serious damage done by frost and rain on account of the wide joints in the Wall and the condition of the mortar:

> "The latter, although extremely hard and well preserved at certain points, is for the most part soft, and in many places entirely decayed. As a result of exposure of the Wall from about the year 1848, the mortar was soon washed out of the joints, from the face inwards, causing the heavy, wedge-shaped stones to slide forward and downwards, thus affecting not only the top courses, but, frequently, the full height of the exposed face, which bulges and finally collapses, carrying away the whole front at that point" (Simpson 1976, 78).

He considered that the only practical method of preservation was to re-bed some of the facing stones at vulnerable places such as corners of gateways with a new mortar but in the main the work was to be dry-built. The facing stones were not re-dressed or altered but laid directly upon one another with the space at the back of the blocks being packed with small pieces of broken core.

Although the restoration work carried out by Clayton has been relatively successful, problems, unforeseen by Clayton, have occurred. The sections of 'Clayton Wall' that pass through the National Trust Estate have suffered from frost, rain and stock damage, as well as from the countless visitors who have walked on top of it over the decades. The erosion caused by the ever-increasing numbers of the public walking on the turf capping of the Wall increases the effects of water and ice entering the core and joints causing further weakness and instability. The areas of 'Clayton Wall' that do collapse also include areas of original Roman work, which survives to varying heights in the central sector. In these areas the National Trust now uses a hydraulic lime and sand mortar to tail-bed the facing stones into the core to ensure that repair work on these vulnerable sections is kept to a minimum (H Beamish, National Trust Archaeologist, pers comm).

One of the aims of the Hadrian's Wall National Trail is to encourage the public to use the path provided alongside the Wall instead of using the top of the monument as a convenient walkway. The National Trust in recent years has been actively engaged in re-seeding and re-turfing the top of the relevant sections of 'Clayton Wall'.

The Consolidation controversy of 1958

Since 1933, when the first piece of the Roman frontier (Corbridge) was taken into guardianship, there have been differing views as to the best method of preserving and protecting the Wall and its associated structures for future generations. The National Trust preferred the dry-stone walling and turf capping method, as it saw the Wall as an attractive feature in the landscape while the Ministry of Works considered the use of a cement capping and lime pointing to be more appropriate to a national monument of such historical and archaeological significance. At Housesteads the Trust wished to retain the turf capping on the fort walls and on the rest of the Wall in their ownership and for which they had responsibility when it became clear that the site would be placed in guardianship. Both parties solicited the views of archaeologists and professionals to support their preferred methods of preservation and at times the relationship between the Trust and the Ministry became fraught. The amount of correspondence held by both the National Trust and the Ministry of Works (now English Heritage) regarding methods of preservation is substantial.

On 10 October 1957 a meeting between the National Trust, the Ancient Monuments Board and the Ministry of Works was held at Lambeth Bridge House, London to try and establish a way of consolidating the Wall that was satisfactory to all concerned. Those attending included Lord Esher, the Hon Nicholas Ridley, Mr Romilly Fedden and Mr C Acland of the National Trust, Sir Mortimer Wheeler, Mr Raleigh Radford and Professor Ian Richmond from the Ancient Monuments Board, and Mr Baillie Reynolds and Mr F Gilyard-Beer from the Ministry of Works.

The Chairman, Sir Edward Muir, said the Ministry would continue to use the methods that they considered most effective on sections for which they were responsible, but in the central sector a compromise had to be achieved between the National Trust and Ministry of Works. He suggested that where the Trust had to undertake repairs in the sections they owned, original core-work and facing stones should be consolidated by the Ministry's methods, such pointing being undertaken as was necessary for adequate protection, the Wall being thereafter built with the recovered facing stones in the customary National Trust method with a turfed walk on top. In order to determine whether this proposal was practicable there should be consultation between the Trust and Ministry so that a section of the Wall in National Trust ownership could be treated by the new method. It was agreed by all the parties that the compromise should be tried in an effort to reconcile the views of the National Trust and the Ministry of Works on the treatment of the Wall.

The report prepared for the National Trust in 1949 (National Trust files HW/EG 1948-1950) concluded that the Roman core could not be left unprotected to disintegrate. Two methods of protection had been used, the turf sod and the re-constructed core. Of the two, the former would appear to be the less misleading and the more harmonious aesthetically while the latter may be more long lasting. Perhaps the best solution, they concluded, would be to combine the advantages of both methods: by placing a protective course of stone in cement-mortar under the turf capping.

As early as 17 and 20 August 1947 letters had been printed in *The Times* regarding the methods of consolidation of the Wall, but in 1958 the archaeologist Jacquetta Hawkes wrote an article entitled 'Battle of Hadrian's Wall' regarding the Ministry of Works method of exposing the Wall and consolidation technique. This was printed in *The Observer* on 9 February 1958. A further article followed on 30 March. Mr Romilly Fedden, the secretary of Historic Buildings for the National Trust, replied in *The Times* on 16 February that at the meeting between the National Trust and the Ministry Ministry of Works a programme of conservation for the important sections of the Wall owned by the National Trust had been agreed with the Ministry. This provided for the retention of the turf capping on the Wall and at the same time the Trust was to avail itself of the Ministry's expert advice to ensure that the archaeological interest of the Wall in the Trust's keeping was carefully preserved. Such comments raised the public's awareness of the Wall and questions were asked in the House of Commons (*Hansard*, 2 April 1958, cols 1323–56). Mr Francis Noel-Baker (Swindon) quoted one of the allegations:

> "It is reliably reported that on the section near Birdoswald four workmen are employed with only occasional supervision. They dismantle the Wall,

> nine feet [2.7m] at a time, stacking the square masonry and rubble filling and consolidating the foundations. The Roman mortar, which varied in colour from one age to the next and therefore shows repairs and alterations, is destroyed without record. Far worse, the work emerging from the hands of these excellent workmen is not Hadrian's Wall at all. It is a copy – and one which has lost all the gifts of time."

He continued by saying that in a second article in *The Observer*, Mrs Hawkes said:

> "The Minister stated that Roman masonry is never dismantled and rebuilt unless the stones are on the point of falling."

Dame Irene Ward (Tynemouth) said that both Mr Eric Birley and Mr John Gillam had replied to the newspaper article, paying tribute to the skill of the workmen engaged in the work. They also said that the Minister's reply that the views expressed in the article were "absolutely inaccurate and unfounded" were in complete accordance with their own personal observation over a long period of time. Mr Eric Fletcher (Islington, East) said:

> "There is the problem of whether or not the Department should preserve a monument in the precise form in which it is found, with all the accumulation of debris which has grown up around it since it was built, or whether there should not be a radical reconstruction, but a renovation in such a way to make the monument more easily intelligible to, and appreciated by, this generation". He continued: "it may well be that in the course of preservation something is done which necessarily or inevitably disturbs the original nature of the original fabric and the way in which the stones were placed. But I noticed that Mrs Jacquetta Hawkes points out in her article in *The Observer* of 30th March: 'It would be unfair to say that historical evidence is being lost in this way, but indisputably it could be.'"

Mr Nigel Nicholson (Bournemouth East and Christchurch), who was a lay member of the Ancient Monuments Board, said that Mrs Hawkes was not only one of the most distinguished archaeologists of her day but was able to marry up scientific fact with a sense of landscape and culture. He continued saying that:

> "When the Ancient Monuments Board came to consider this matter of Hadrian's Wall, it went into it with the greatest care. It consulted not only with those archaeologists outside the Board who know most about the subject, but also consulted with the National Trust – and with private landowners. In each of these cases the Board came to the conclusion that there was no single treatment of the Wall which was suitable for every part of it."

He continued by saying the Board noted that a large part of it is a reconstruction dating from the 19th century and that part of the Wall west of Housesteads ('Clayton Wall') was more or less a fake in the sense that although the original stones were re-used they were pulled apart and replaced in an order that did not necessarily correspond to the order in which they were originally found. He said:

> "The question arose, when new parts of the Wall were uncovered, should the Ministry treat them in exactly the same way as Mr Clayton did, and which the National Trust followed, or should it evolve a method which would be archaeologically less indefensible. The Ministry decided, and in this it had the complete backing of the Ancient Monuments Board for England, to preserve as much as possible of what it found, and to consolidate, render it waterproof, and, as far as possible, render it proof against the ravages of weather, sheep and trippers. If one has to choose between the National Trust method of preservation and the Ministry of Works method, the 'Ministry's' method is certainly sounder from the purely archaeological point of view."

Interestingly Mr Nicholson suggested that the Ministry should make some serious research into a new mortar to consolidate the remains.

Mr Harmar Nicholls (The Parliamentary Secretary to the Ministry of Works) then addressed some of the issues arising from *The Observer* article. He said that there was no suggestion in the article that the general policy was wrong or deserving of particular criticism. The charge, he said, was that of faulty implementation of the policy. The articles suggested that the use of careless workmen and the lack of general supervision risked destroying archaeological evidence. He then went into some detail of the methods used to uncover the Wall:

> "In sections of about twenty yards [18.3m] at a time a trained archaeologist and a Department architect accompany the Superintendent of Works on to the site and decide the character of the work to be undertaken and give detailed instructions to the charge-hand. In this case, the charge-hand [Charles Anderson] was a man of great experience, and in his private capacity is a member of the Society of Antiquaries of Newcastle. They pass detailed instructions through the Superintendent to the charge-hand, who then instructs his leading hand and the workmen as to the detailed methods of handling and the removal of waste. He tells the workmen exactly how he wishes the work to be carried out. The method of handling and of moving it follows a drill which has been very carefully thought out and under which careful instruction is given until the men themselves have some experience of the work involved. The leading hand is on the spot the whole time the work is being carried out. This procedure is meticulously carried out and even the authors of the article, after having given this great message of carelessness and unskilled work, could merely say: 'It would be unfair to say that evidence is being lost.'"

He then went on to point out that the Ministry's methods have constantly been kept under review and have been approved by the Ancient Monuments Board for England as well as by established archaeologists such as Professor Sir Ian Richmond, Professor Eric Birley and John Gillam. Other members of the Ancient Monuments Board, including Mr Raleigh Radford, F Gilyard-Beer and Mr Rupert Bruce-Mitford, discussed the controversy and expressed confidence in the methods used by the Ministry of Works (now English Heritage).

The National Trust has had only limited resources and staff to carry out their responsibilities and maintain the Wall in a satisfactory state and as a consequence parts of the Wall have suffered over the years. Although there are still conflicting views on the most appropriate and effective way of preserving the Wall for future generations the National Trust has accepted that all new sections of Wall that are excavated and consolidated on their estate are carried out in accordance with the guidelines prescribed by English Heritage. English Heritage acknowledges that as far as the 'Clayton Wall' is concerned it is acceptable for the monument to be maintained with a turf topping and that any repairs to the fabric blend in with the adjacent stonework. Both English Heritage and the National Trust now employ professional archaeologists on all newly excavated sections of Wall, as well as ensuring that there is a full and detailed recording of the existing fabric of the Wall and the associated structures before any work is carried out.

Recording

Charles Anderson's combined interest in photography and the Roman Wall work meant that the photographic record he made of the work in progress has provided an invaluable archive that would otherwise not have been made. These photographs have provided a unique record of virtually all of the now exposed and consolidated sections of Roman Wall as they existed prior to excavation by the Ministry of Works. This record enables present day archaeologists to view the Wall as it was then being uncovered and consolidated.

Anderson also used an 8mm cine camera to record in colour various aspects of the work in progress, which he showed to interested organisations and groups along the line of the Wall. The film, which has been transferred to video tape, shows a range of activities carried out by the masons on the Wall. Some of the scenes are preceded by a caption denoting the activity. The winter conditions along the Wall are vividly depicted by scenes of workmen clearing their way into Housesteads through several feet or more of snow, and the use of snow ploughs along the Military Road near Limestone Corner.

The uncovering and consolidation of the monument at Willowford is extensively covered showing the method used by the Ministry of Works to preserve their ancient monuments: the felling of the tress on the top of the Wall before exposing and cleaning the Wall face and core; numbering, dismantling and cleaning the facing stones; re-bedding the facing stones and core with a cement and lime mortar; pointing the blocks with lime mortar; and washing the mortar joints in the Wall face to produce a slightly roughened effect to leave the monument in its final consolidated state.

The film includes the Durham Colleges Board Extra Mural Studies Summer School at Corbridge in August 1955 under the direction of Mr I Maclvor, BA. This shows excavations being carried out on sites XI, XX and Temple III, as well as a section on cleaning and recording finds. Also recorded is the excavation of the hoard of Roman armour, weapons, tools and implements at Corbridge in 1964.

In 1963 Anderson filmed the discovery of the Roman auxiliary kilns in the playing fields of Irthing Valley School (now the William Howard School) at Brampton (Hogg 1965, 133–68). The opening of the National Trust section of Wall east of Sycamore Gap towards Highshield Crags is shown, but not the main consolidation programme that exposed a large amount of original Roman mortar. The latrines at Housesteads fort were filmed while workmen cleared the backfilled material from the earlier excavation, before consolidation, as well as scenes from the fort during the excavations within the Commanding Officer's House and Hospital undertaken by Dorothy Charlesworth in the late 1960s and early 1970s. A video copy of Anderson's 8mm film is held by the Museum of Antiquities archive in Newcastle and the author has a personal copy given to him by the family.

After his retirement Mr Anderson initially offered the negatives to the hundreds of photographs he had taken along the Wall to the Department of the Environment, but he became disheartened by the Department's apparent lack of interest and so these were eventually given to the Vindolanda Trust, where they remain. In 1997 the (then) Royal Commission on the Historical Monuments of England made a full set of photographic prints, courtesy of the Vindolanda Trust, and these are deposited in the National monuments Record in Swindon.

No doubt Anderson had been influenced by the various eminent archaeologists with whom he had come into contact and with whom he had closely liaised, recognising the obligation to make some form of permanent record of his work uncovering the Wall and noting any unusual details. His dedication to the work can be seen in the numbers of inscriptions that were recovered from fallen material, photographed and recorded in various archaeological journals (*see* Appendix 4, Table 72).

No archaeologist was assigned full-time to carry out recording of the exposed sections of Wall, as the Inspector of Ancient monuments, who was based in London, made regular visits to view the work in progress and gave instructions on how to proceed. Mr Anderson was generally given a free hand to carry out excavation and consolidation within the guidelines and the instructions given by the Inspector. The photographic record confirms that Mr Anderson observed carefully what was being uncovered and took a close personal interest in ensuring that the highest standards of work were maintained by the men under his control.

A walk along the Wall

In 1974 the Cumbrian author Hunter Davies published an account of his journey along the Wall from Wallsend to Bowness, during the course of which he met and talked to Charlie Anderson (Davies 1974, 214-223). Anderson, who was now 65 years old and due to retire shortly, took Davies to Black Carts and explained to him the process of how the Wall was uncovered and consolidated. Anderson was always willing to talk to anyone with an interest in the Wall and to pass on any information that may have been of use. Davies wrote:

> "Charles Anderson is one of the grand old men of the Wall, yet he never gets acknowledged in the reference books. All students of the Wall know about the work of Simpson and Richmond and Birley. Their contribution is in every book on Roman Britain and will never be forgotten as long as the Wall is studied. Yet Charles Anderson has given a lifetime to working on the Wall. More than anyone else, he can say that the Wall we see today is his."

Anderson showed Davies some of the photograph albums of pictures he had taken over the years he had worked on the Wall, including one photograph with himself and either F G Simpson or Sir Ian Richmond. Anderson spoke with admiration of the work of Simpson, Richmond and Birley and it is apparent that they had a mutual appreciation of the work being done by Anderson. He mentioned to Davies that he would like to see a replica of the Wall built to full height and was enthusiastic about the replica then being built at Vindolanda. Such a replica has also now been constructed on the line of the Wall at Wallsend as part of the development of Wallsend fort (*Segedunum*) by the Tyne and Wear Museums Service.

Anderson mentioned to Davies that Simpson used to leave a penny piece in the pivot hole in the doorway of every milecastle that he worked on. At the end of their time together Anderson presented Davies with three tiny altars, copies of ones he had helped to preserve at Carrawburgh temple. In 1971 the BBC asked to film some of Hadrian's Wall as part of the British Empire series. Having seen some of the consolidation work being carried out, they wished to film part of this and to interview Anderson.

In recognition of the work that Charles Anderson carried out over nearly four decades on the Wall, with his work force of 26 masons and labourers, he was awarded the British Empire Medal in 1968 and the Imperial Service Medal in 1974. He was also made an honorary member of the Newcastle Society of Antiquaries of Newcastle upon Tyne in 1969. On 28 September 1969 an article was published in *The Sunday Express* on his work on the Wall, in which Anderson is quoted:

> "The more I do it the more fascinated I become and the more I admire the Romans for their sheer engineering ability. I don't think many of the things we are putting up today will be standing in the year 3800. There is a compulsion about the job in which you discover new things every day and it spreads to every man involved. I have chaps who have been with me since before the war and who wouldn't dream of leaving until they have retired."

Anderson's pet Alsatian dog was, naturally enough, called Hadrian.

Anderson understood the everyday life of farmers along the Wall and would take the time to talk to them regarding their concerns about the poor profits in agriculture, the problems caused by the ignorance of visitors, the effects of the weather and suchlike before dealing with issues like access to the site and the disposal of spoil from the excavations. The farmers in the area came to trust and respect him and he was a friend to many with whom he came into contact. He recognised that some farmers disliked 'the men from the Ministry' and went out of his way to re-assure them and to explain what he was trying to do to preserve the Monument. This invaluable ability to win their respect made a huge difference to the smooth running of the consolidation of the Wall.

On 21 March 1974 Charles Anderson finally retired as the Ministry of Works foreman on Hadrian's Wall. In 1987 the World Heritage Committee of UNESCO recognised the importance of the monument by confirming it as a World Heritage Site. There is little doubt that the valuable contribution made by Charles Anderson and the masons of the Ministry of Works helped push Hadrian's Wall towards the international recognition that it has now acquired.

Charles Anderson passed away after a short illness on 3 November 1998, aged 89.

4
The linear elements of the Hadrian's Wall complex: four investigations 1983–2000

by Tony Wilmott and Julian Bennett

with contributions by Julian Bennett, Gery Friell, Allan Hall, Helen Moore, David Earle Robinson, M-R Usai, and James Wells

Introduction

by Tony Wilmott, Julian Bennett and Gerry Friell.

The linear elements of Hadrian's Wall

Although the best known of the linear elements of the Hadrian's Wall system is the Stone Wall itself, the visitor to the frontier today can see far more of the linear earthworks that formed such an important integral part of the system. As a complex of directly inter-related earthworks, well preserved and documented, these components of the World Heritage Site are one of the most significant archaeological resources of their type in Britain. They contain evidence relating to the structural sequence of Hadrian's Wall, methods of construction, the appreciation by their builders of the strategic capabilities of the Wall landscape, and the logistics of the work. In broad terms, although with great dimensional variations, the linear works consist of the following components.

The curtain wall

In the original plan for the building of the frontier, the Stone Wall with integral milecastles and turrets (pp 137) ran from Wallsend to the River Irthing. Although it has been generally accepted for many years that the Wall was begun at Newcastle, and built westwards, with a later eastward extension to Wallsend (Hooley and Breeze 1968), it has recently been suggested (Breeze and Hill 2001) that a start at Dere Street, with work progressing to east and west, is consistent with the evidence and possibly more likely. The foundations for the Wall were generally some 3.15m wide, and were either built directly on the ground or in a shallow trench. In Wall miles 7–22 the Wall constructed upon these footings is known as Broad Wall, and above offsets on both faces this Wall averages at 2.85m in width; a measurement close to 10 Roman feet. Wing walls attached to the sides of turrets and milecastles were almost invariably built to this Broad Wall gauge, in anticipation of the erection of curtain wall to the same thickness. It is clear that some of the more strategically placed of these installations (Symonds 2005) and the broad foundation had been completed prior to a decision to reduce the Wall width to the dimensions of the so-called Narrow Wall, at 2.25m wide (close to 8 Roman feet). Most of the milecastles and turrets were linked by stretches of Narrow Wall, often built on broad foundations, and this left offsets, or 'points of reduction' at the points where wing walls and foundations met Narrow Wall curtain. These offsets were all on the southern side of the Wall, forming a continual face to be seen from the north side. The Turf Wall, which ran from the River Irthing to the Solway, is described below, but it should be noted that its replacement in stone measured in the order of 2.75m (close to 9 Roman feet). This has been termed Intermediate gauge (intermediate, that is, between the Broad Wall and the Narrow Wall), but in reality little evidence survives for exact measurements.

Factors such as the height of milecastle gate arches and the angle of rise of steps within milecastles (p 140) have made it possible to estimate the height of the Wall at around 4.4m or 15 Roman feet (Simpson 1911, 419; Brewis 1927, 115; Hill and Dobson 1992, 46–9). There are a number

of different ideas on the treatment of the Wall top. It is very likely that there was originally a Wall-walk for patrolling, as is suggested by the presence of footbridges carrying the Wall over the rivers North Tyne and Irthing (Bidwell and Holbrook 1989, 134–5). A Wall-walk suggests a parapet on the north side at least. The evidence as marshalled by Hill and Dobson (1992, 29–30), however, suggests that such a parapet would not have been provided with crenellations as has often been suggested. A further, less likely alternative is that there was no Wall-walk, and the Wall top was sloped to allow water to run off.

The Wall foundations were generally clay bonded. In both the Broad Wall, and in the stone replacement of the Turf Wall, foundations often included flags at ground level, above which the Wall face was offset, which frequently resulted in the cracking of the flags on the line of the Wall face above. Above the foundations the two wall faces were built in squared, coursed rubble (*sensu* Hill 1981) with facing stones tapered to the rear to bond with a core of clay-bound rubble or soil and stones. There are some signs of mortar, usually a sandy, pale brown, and rather weak material. Rebuilds of the Wall, which were probably Severan in date, were constructed with a strong white mortar (Crow 1991, 59). At Denton (Bidwell and Watson 1996) evidence suggests that the surface of the Wall was plastered. Elsewhere apparent evidence for lime washing might equally have been the result of brush pointing (Wilmott 1997a, 119) or of the leaching of lime from mortar.

The last part of the complex to be discovered was the Turf Wall, the existence of which was predicted by Cadwallader Bates (1895), and proved by Francis Haverfield at Appletree, near Birdoswald in 1895 (Haverfield 1897, 187). It was not until 1934 that it was finally confirmed that the Turf Wall had extended from the Irthing to Bowness-on-Solway (Simpson, Richmond and McIntyre 1935a, 217–18). Part of the original conception of the Hadrian's Wall frontier, this earthwork was the counterpart of the Stone Wall, and formed the main curtain from the River Irthing at Mc49 (Harrows Scar) to the western end of the Wall at Bowness-on-Solway. The reason for the contrasting construction materials of the curtain to east and west of the Irthing remains obscure. The Turf Wall was constructed on a flat base, either of several layers of turf, as at High House (Simpson *et al* 1935b), or of cobbles as at Burgh-by-Sands (Austen 1994, 38–40), and possibly at Mc53 (Banks Burn; Simpson and Richmond 1933a, 267–70). The base of the Wall was normally some 6m wide. At High House, sufficient evidence has survived to suggest that the southern side of the Wall sloped at an angle of about 1:4, while the north face was almost vertical towards the base, perhaps changing to a more gentle slope higher up. The height of the Turf Wall has been estimated at some 12ft (3.66m). The Wall was constructed using whatever materials were to hand, and Breeze (1982) has suggested that the term 'Earth Wall' would be more accurate. Certainly where turf was available for building it was clearly stripped from the areas to the north and south of the Wall (p 118). As with the Stone Wall the treatment of the wall top is not known for certain. In a reconstruction drawn for Simpson *et al* (1935b) the Wall is reconstructed with a boardwalk on the top, and a breastwork of split timber. Evidence from pollen analysis (p 117) at Appletree, however, indicates that any breastwork would more likely have been hurdling made from the birch and alder scrub woodland that grew in the area (Wilmott 2001a, 44).

The stone replacement of the Turf Wall was mostly upon the same line, although the Stone Wall diverges from the Turf Wall line from Mc49 (Harrows Scar) westwards to Mc51 (Wall Bowers). A further complication occurs at Garthside (T54a), where there are two successive earthwork walls, one of clay and the second of turf, on divergent alignments, both predating the stone rebuilding (Richmond and Simpson 1935). The stone rebuild seems to have occurred in two stages; the sector between the River Irthing and Wall mile 54 was built during the reign of Hadrian, with the remainder replaced after the return from the Antonine Wall (*see* Willis, this volume pp 347–9).

The Wall berm, ditch, glacis and counterscarp bank

Lying to the north of the curtain wall(s), the Wall ditch is a consistent feature from coast to coast, except in the Solway marshes and where the Wall mounts the crags of the central sector. Even in the latter area the ditch tends to reappear in the gaps between hills. The early Turf Wall was equipped with a ditch, so in the area where its stone replacement diverges from the original line

there are in effect two Wall ditches. There are wide variations in profile, dimensions and completeness, and this is often due to the varied character of the geological material through which the ditch was cut, although it seems to have been cut with edges as steep as it was possible to create. In general the ditch is some 8.75m wide and 2.80m deep. There is a widespread view that the ditch was intended to be V-shaped in profile, often with a squared cleaning out, drainage, or ankle breaker slot in the bottom (Daniels 1978, 20; Breeze and Dobson 2000, 43). From the very small number of full-depth sections of the ditch that have been excavated it seems that this 'ideal' profile has never actually been recorded, and the idea of it has developed from a misunderstanding of early references, particularly the description of the ditch section by Philip Newbold (1913a; Wilmott, 2006a). The ditch was often not completed, the most famous location for this being at Limestone Corner (p 82). The unfinished areas show some evidence for the construction of the ditch. At Limestone Corner this proceeded from west to east, whereas other exposures show the work running in the opposite direction.

On the north side of the Wall ditch lies a bank of upcast, which seems primarily to derive from the first excavation of the ditch and possibly, although by no means certainly, by subsequent cleaning out of the feature. The bank varies enormously in size and shape throughout the length of the frontier; in some places it is a broad, even, low bank, elsewhere a high, crested, narrow earthwork, and again in places just a series of mounds. Recent fieldwork by Welfare (2004) has examined the different types of ditch and counterscarp types in the Central Sector of the Wall line, and has demonstrated that there was a huge variation in the ways in which these aspects of the system were deployed, particularly in the gaps between the ridges along which the Wall runs in this area. In this important paper, which together with his work on the causeways across the ditch at milecastles (Welfare 2000) revives the study of these neglected aspects of the frontier, Welfare makes a distinction between two types of earthwork on the north bank of the Wall ditch: the glacis and the counterscarp bank. It seems to this author that this is a useful terminological distinction, which will help future discussion to be advanced with more precision. The glacis is defined by Welfare as the usual spread northwards of upcast from the ditch, which accentuates the northern ditch edge, but tapers in height northwards over a distance of 10–15m, and is characterised by a low, very gently sloping profile, deliberately levelled and smoothed. The counterscarp bank comprises a distinct, narrow, and comparatively high, crested earthwork, characteristically built to emphasise the edge of the ditch in areas where it was not possible to dig it to great depth. It occurs in particular to the immediate east of the Central Sector.

The berm separating the Wall from the ditch was generally about 6m (20 feet) wide in the Stone Wall sector and 1.9–2.4m (6–8ft) for the Turf Wall, although wider berms have been recorded to the west.

The recent unexpected discovery of additional obstacles placed on the berm at Byker and at Throckley (Frain *et al* 2005; McKelvey and Bidwell 2005), following similar discoveries at Buddle Street, Wallsend (Bidwell and Watson 1989), has resulted in extensive study of this hitherto neglected part of the frontier system (Bidwell 2005). The evidence for obstacles takes the form of regularly spaced pits, which seem to have been emplacements for forked branches to create a defensive entanglement – yet another element to add to the system of defence in depth, and further evidence that the purpose of Hadrian's Wall was militarily defensive. Bidwell suggests that wide berms were provided to allow for the positioning of these entanglements, although they may not have been provided everywhere.

The Vallum

It is generally accepted that this series of earthworks was added to the frontier complex some years later than the construction of the curtain wall, and that the decision to build it was either contemporary with, or later than the decision to add the garrison forts to the Wall. The Vallum runs from western Newcastle to Bowness on Solway though, like the Turf Wall, the question of the crossing of the Solway marshes is unresolved. The essential element of the Vallum is a ditch, nominally 6m wide and 3m deep, with a flat bottom. Recent excavations have shown that the depth and profile of the Vallum ditch vary, although the width seems to be reasonably constant. The ditch is flanked by two mounds, each set back some 10m from the ditch edges.

The mounds are 6m in width, and are usually of earth, sometimes faced with turf cheeks. At each fort a causeway of un-dug earth was left and revetted on each side with stone. The causeways were surmounted by free-standing stone gates that were closed from the fort side, the first of which was found at Birdoswald (Simpson and Richmond 1933c). Unlike the Wall ditch, the Vallum ditch was continuous, being cut continuously through the dolerite outcrop at Limestone Corner (p 82). This attests to its perceived importance in the system. Gravel or stone metalling has been identified in different places on both berms of the Vallum, but this is patchy and probably does not imply a road or track along the Vallum allowing east–west communication to the south of the wall, as was once thought.

A further element in the anatomy of the Vallum is the so-called marginal mound, which occupies part of the south berm on the south lip of the ditch. Although this has generally been attributed to the deposition of material cleared from the bottom of the ditch, the work reported on below indicates that it might have been a primary feature, at least in some places. This is discussed extensively below (p 135).

The distance of the Vallum from the Wall varies. In general there was a preference for the earthwork to run close to the rear of the Wall where topography allowed, and in these areas the Vallum is forced to deviate to skirt the southern side of the forts. In the central sector, however, the Wall runs along the top of the crags of the Great Whin Sill while the Vallum, laid out in long straight stretches, lies in the valley below to the south. Similarly, from Mc68 (Boomby Gill) to Bowness-on-Solway the Wall follows the line of high ground along the rivers Eden and Solway, while the Vallum, again in economical long, straight, alignments, follows the nearest practicable line. Between Kirkandrews-upon-Eden and Burgh-by-Sands this creates the broadest distance between Wall and Vallum on the entire line.

The gaps that are visible in the mounds, together with the crossings over the ditch, are variously explained. Gaps in the north mound opposite each milecastle have been claimed as original, although all crossings other than those at forts are probably secondary, and are thought to date to the abandonment of Hadrian's Wall during the Antonine move into Scotland and the occupation of the Antonine Wall. In general it seems that the Antonine slighting of the Vallum consisted of a regular provision of some 35 crossings every mile, around 45yd (41.15m) apart (Simpson and Shaw 1922). The clear traces of these breaks to be seen today show that the Vallum was never restored to its former condition and purpose.

The Military Way

The last of the linear elements of the complex is the road known as the Military Way. This is a secondary feature of the frontier, and this is demonstrated by the fact that it utilised the north mound of the Vallum in many areas. Link roads from the Military Way connect it to some turrets and milecastles. In general the road can be clearly seen in the central sector. The antiquary William Stukeley (*above* p 1) mentions this in his protest letter to the Princess of Wales. The road consists of a base of large stones with a gravel or stone-chip surface. It is usually about 6m wide and is cambered to a height of some 0.15m (Simpson 1913). Additionally, recent excavations at Denton have identified a narrow track immediately behind the Wall.

Potential for environmental analysis

The structure of the system has been the most thoroughly researched aspect, while the environmental evidence contained within and sealed by the earthworks has been little appreciated until very recently. The potential for environmental analysis of samples from beneath the Turf Wall was eloquently stated by F G Simpson on his realisation of the potential of palynological evidence as early as 1935, when he wrote that "samples from the Turf Wall throughout Cumberland would enable us to reconstruct a detailed picture of the local flora in Roman days, a novel possibility beyond the dreams of older generations" (Simpson and Richmond 1935b, 244–7).

Perhaps surprisingly, no specific broad-scale attempt to explore this primary research objective has yet been made. As primary elements in the Hadrian's Wall system, the Turf Wall and the glacis or counterscarp have the potential to seal buried, undisturbed ground surfaces. These will contain evidence (pollen, soil chemistry and plant and insect macrofossils) for the environmental conditions of the immediate locality, on the eve of construction. The less

stratigraphically secure ditch fills might serve to augment the results from the standing earthworks, and would contribute to understanding of silting processes and chronology, and possibly to aspects of environmental change during the lifetime of the earthworks. The sheer length of the works from coast to coast effectively means that a transect of the late pre-Roman Iron Age landscape is preserved beneath the earthworks. The investigation of this resource has the potential to provide a detailed picture of the landscape of this period in coastal, lowland and highland environments, from east to west. Study of the environment of the Wall zone through work on pollen in lake and mire deposits (summarised by Huntley 1999) has provided a broad regional framework of environmental trends, datable through radiocarbon techniques. The deposits sealed beneath earthworks, however, give a specific local picture at a historical point in time (the AD 120s).

Preservation

Although the survival and condition of much of the earthwork components of the Hadrian's Wall World Heritage Site is surprisingly good, it is under significant and increasing levels of threat. Arable farming in some areas, mainly eastern Northumberland, has gradually obliterated upstanding monuments, and may be continuing to damage sites; we lack, however, adequate direct evidence to assess the degree of continuing damage to archaeological horizons below or within the plough soil. Forestry has made a significant impact in the past, and the future removal and management of replanting schemes where

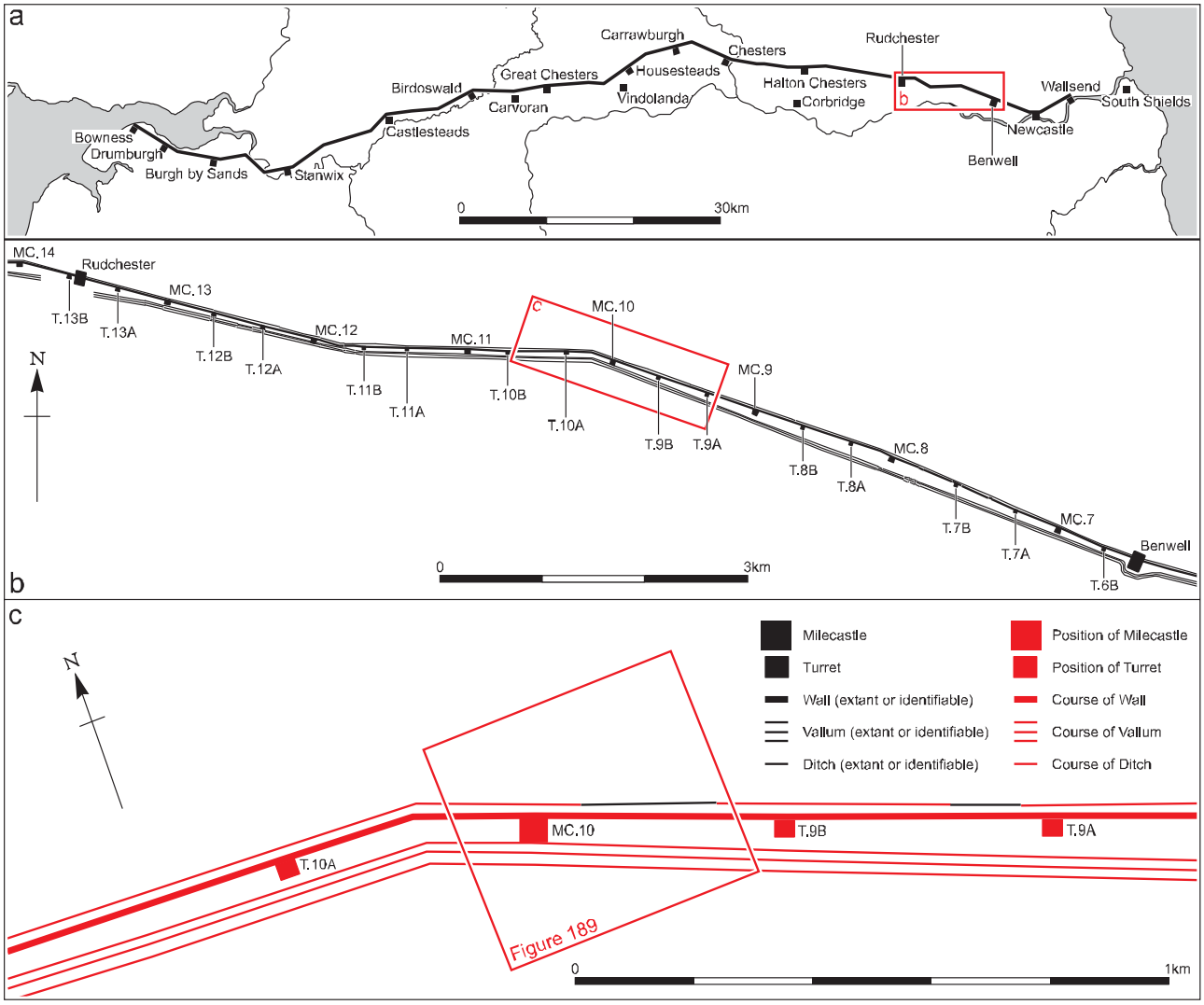


Fig 188
Location of Wall Mile 9 on Hadrian's Wall, and of Fig 189.

these are desirable or necessary has yet to be addressed. The extensive areas of pasture (mainly sheep, but significant areas of cattle farming also exist) have contributed to the preservation of much of the best earthworks, but it has created and continues to create point damage of considerable localised and aggregated impact, particularly through ploughing and re-seeding for pasture. Public access and unregulated or sporadic agricultural movements (tractors, etc) already have a significant impact in some places and pressures are likely to increase in future as a result of this kind of activity. Although development control measures are generally effective in managing those threats – which are covered by planning restrictions – there are still a number of direct development threats that arise.

Management responses to all of these pressures are still in the early days of development, and although the *Hadrian's Wall Management Plan* (English Heritage 1996) does provide a framework for positive intervention in these cases, in particular allowing for regular monitoring of the condition of the earthworks, details of such intervention are largely awaiting definition. Any work that contributes towards such definition is therefore timely. This is the context of two of the projects reported on here, at in Wall mile 9 and at Black Carts.

The Vallum in Wall mile 9 – evaluation, 2000

by Helen Moore and Tony Wilmott

Introduction

The site of Mc10 was evaluated as part of the Milecastles Project in 1999 (p 243). Following this work, the Co-ordinator for Hadrian's Wall, requested that, as part of the second season of the project, the team should examine the survival of the mounds of the Vallum in the field in which the milecastle lay (OS plot 4760; Figs 188–9). The line of the Vallum lies to the south of the milecastle at the foot of the hill. Although the earthworks are visible in a field to the immediate east, the field in question has been regularly ploughed for many years, and the Vallum completely levelled. Despite

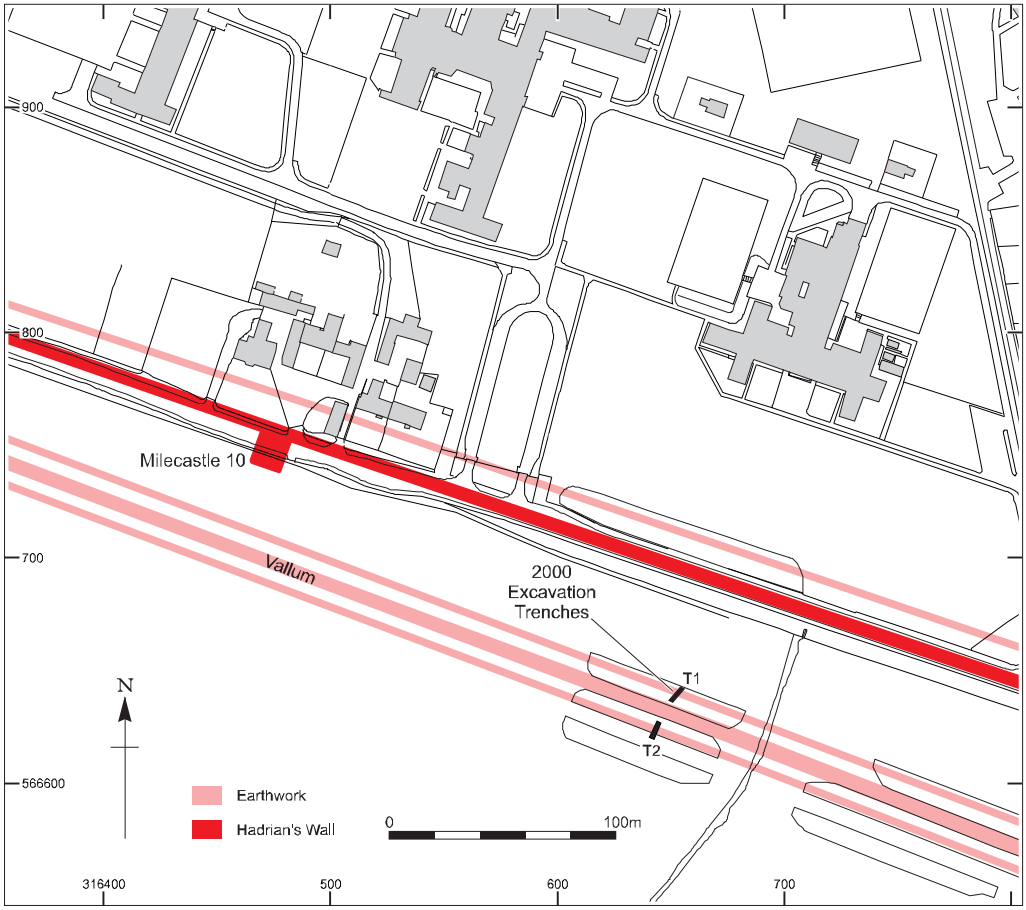


Fig 189
Wall Mile 9: location of 2000 excavation trenches on the Vallum.

this, when the field is freshly ploughed two parallel 'stripes' of pale clay are visible on the surface, and were thought to represent the surviving remnants of the Vallum mounds.

The original aims for the work were to establish the state of preservation of the ploughed Vallum mounds and of any buried soil horizon beneath them, and also to establish the impact on the site of past cultivation, and the implications of its continuance.

The evaluation

Two trenches (Fig 189) measuring 8m × 2m were excavated on the lines of the northern and southern Vallum mounds. The trenches were located by sighting up the field using 2m ranging poles as it

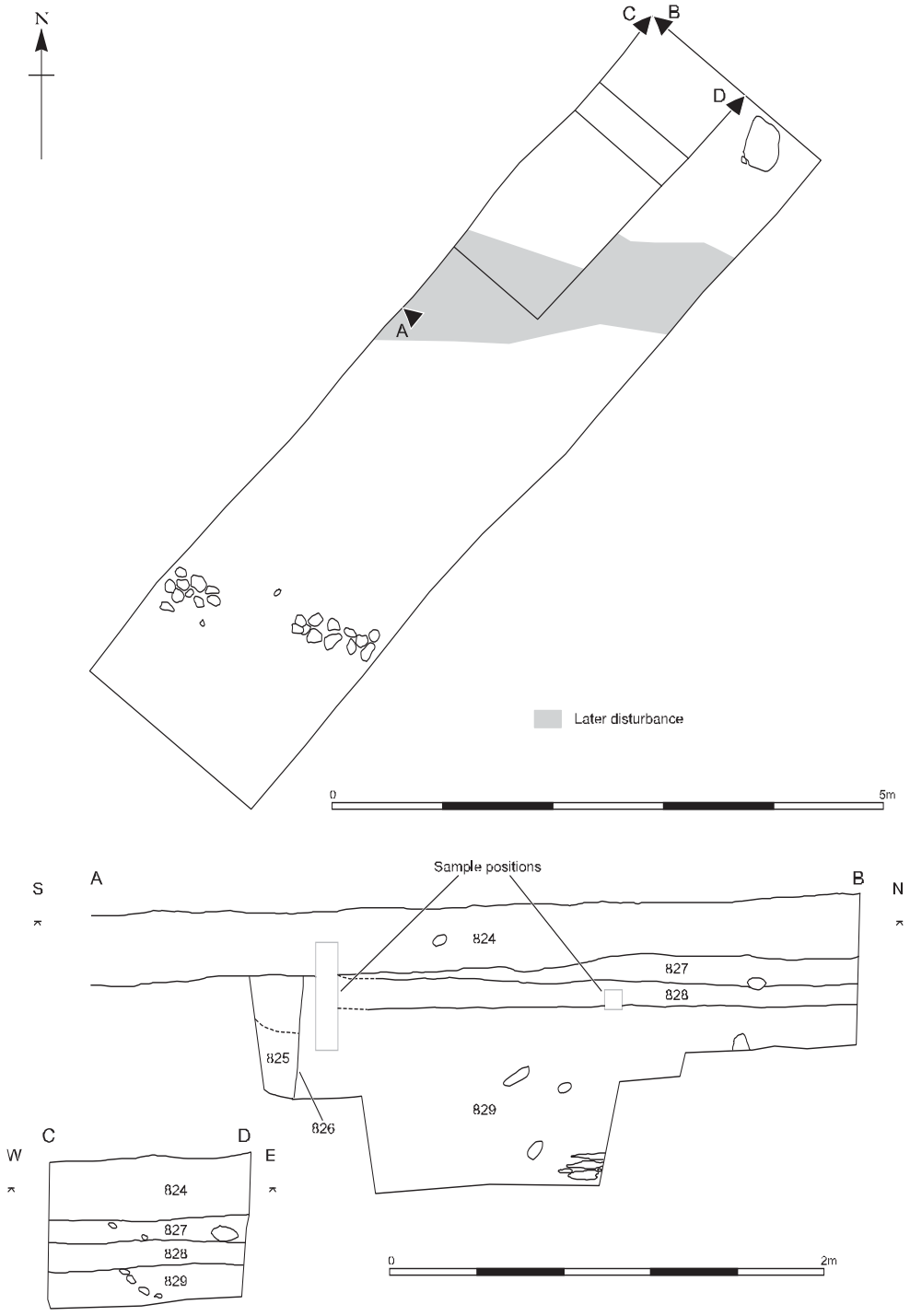


Fig 190
Wall Mile 9: plan and section of Trench 2.

was difficult to see the mounds at the eastern end of the field owing to the slope and dip of the land. They were each dug to include the edge of the Vallum ditch in order to confirm that the trench was correctly located in the event that no mound material was encountered. In each hand-excavated trench, a slot was dug at the opposite end to the Vallum ditch, to ensure that the mound would be seen in section if it still survived. These slots were 3m long × 1m wide. In the event of finding a buried land surface beneath the Vallum mounds, the soil horizons were to be sampled for palynological and pedological analysis.

Trench 1

Trench 1 was aligned north–south across the south berm and mound. It was expected that the Vallum mound would be constructed with material very similar to the natural subsoil as it would have been upcast from the excavation of the Vallum ditch, and so caution was taken in interpreting the pale orangey-grey sandy clay (822) that lay beneath the plough soil (821). It became apparent as the excavation deepened, that very little of the mound survived and it had been almost completely obliterated by ploughing. There was no distinct difference between the natural subsoil (823) and the mound material (which survived at its maximum depth to 100mm), and no buried land surface was visible beneath this. The mound was highest towards the south, and tapered in thickness towards the Vallum ditch.

Trench 2 (Fig 190)

Trench 2 was excavated across the north mound, and a slot was dug at the northern end of the trench. The ditch was located at the south end. Below the plough soil (824), the cut for an east–west land drain (826) was revealed. This truncated a deposit of pale mottled yellow-grey silty clay (827) 170mm thick. This was all that remained of the north mound, and tapered to the south to a thickness of 50mm. Directly below this was a mid- to light brown-grey sandy silt (828) varying in thickness between 100mm and 160mm. This deposit was interpreted as a buried soil horizon. It contained frequent charcoal flecks but no finds. It was sampled for pollen and soil analysis, and the locations of these samples were recorded on the section drawing. Subsequent analysis of these samples showed no pollen survival.

Interpretation

The evaluation confirmed that the streaks visible in the field after ploughing were the remnants of the Vallum mounds. Despite the fact that the earthworks had to all intents and purposes been levelled, their survival attests to the resilience of such structures, and to the fact that the obliteration of such features cannot be taken for granted at first appearance. The survival of a buried soil beneath the mound was remarkable, and shows that the potential for the survival of paleoecological remains exists even in such unpromising areas of survival. Such potential is important even though in this particular instance no pollen survived.

Transection in Wall mile 29 (Black Carts, Northumberland)

by Tony Wilmott, with contributions by David Earle Robinson and M-R Usai

Introduction

This report presents the results of a transection in 1997 of the linear elements of Hadrian's Wall and its associated earthworks centred on NGR NY 884 714 near the Black Carts turret (T29a), Northumberland, between the forts of Chesters and Carrawburgh (Fig 191). The excavation was essentially a mitigation exercise intended to assess stock and rabbit damage to a particular part of the Vallum, although it was decided to take the opportunity to add research value to this work by characterising the nature and survival of the archaeological resource in this relatively little-investigated sector of the frontier. The results of the work fully justified this approach, and much new information was gathered to inform both future research directions and local site management.

The site

by Tony Wilmott and M-R Usai

The sector of Hadrian's Wall around Black Carts is bisected by the modern east–west road, the B6318, which originated as the 18th-century Military Road. From Chesters this road runs along the line of Hadrian's Wall up the west side of the North Tyne Valley to Walwick, where the foundations of the Wall have been seen in the past beneath its metalling (Daniels 1978, 121). At Walwick, immediately west of the site of Mc28, the road deviates slightly southward to run along the north mound of the Vallum. It continues along the crest of this earthwork until it rejoins the Wall west of Mc30. The lines of the Wall and Vallum climb from the site of Mc28 (Walwick) to that of T28a, from which the slope becomes gentler up to the next summit at Mc29 (Tower Tye), 198m above OD. From here the ground

drops again across Walwick Fell, past T29a (Black Carts) to the Hen Gap, where a modern side road runs northwards through the Wall to Sharpley and Simonburn. Beyond this there is a further steep rise past the site of T29b (Limestone Bank) to the top of Teppermoor Hill, the site of Mc30 (Limestone Corner), where a triangulation point marks a height of 250m above OD.

Teppermoor Hill is a high outcrop of volcanic quartz-dolerite, or whinstone, and as such forms the easternmost outlier of the Great Whin Sill, along which the Wall runs in its central sector from Sewingshields (Mc35) to Carvoran (Mc46). The Whin Sill comprises an ancient rock that intruded up through the overlying Carboniferous sandstones and limestones (Fitch and Miller 1967) 295 million years ago (Crow and Woodside 1999, 23). In the central sector of Hadrian's Wall these later and softer rocks have largely eroded down to the intractable dolerite that forms the well known wave-like crag landscape in that area.

The Teppermoor Hill exposure of the Whin Sill has long been known to students of Hadrian's Wall by the geological misnomer 'Limestone Corner', and marks the northernmost salient of the frontier line. Although the name appears on no map it is sufficiently familiar to be used hereafter in this report. The dolerite dips beneath the surface drift of boulder clay to the west between Limestone Corner and Sewingshields, but lies just below the modern turf line eastwards from Limestone Corner at least as far as turret T29b. As the ground slopes down towards the Hen Gap, the dolerite dips eastwards beneath the later Carboniferous

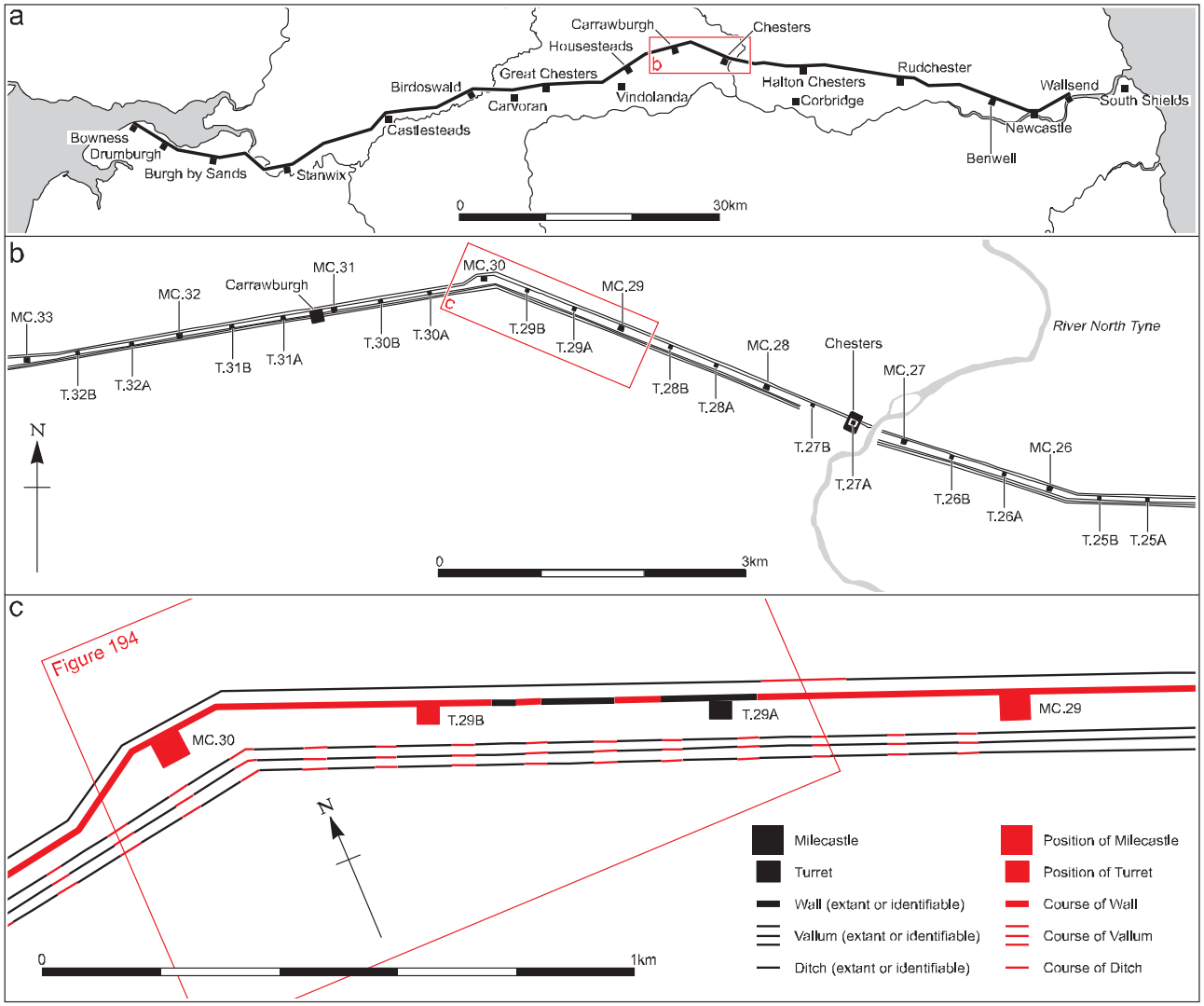


Fig 191
Black Carts: location of Wall Mile 29 on Hadrian's Wall.

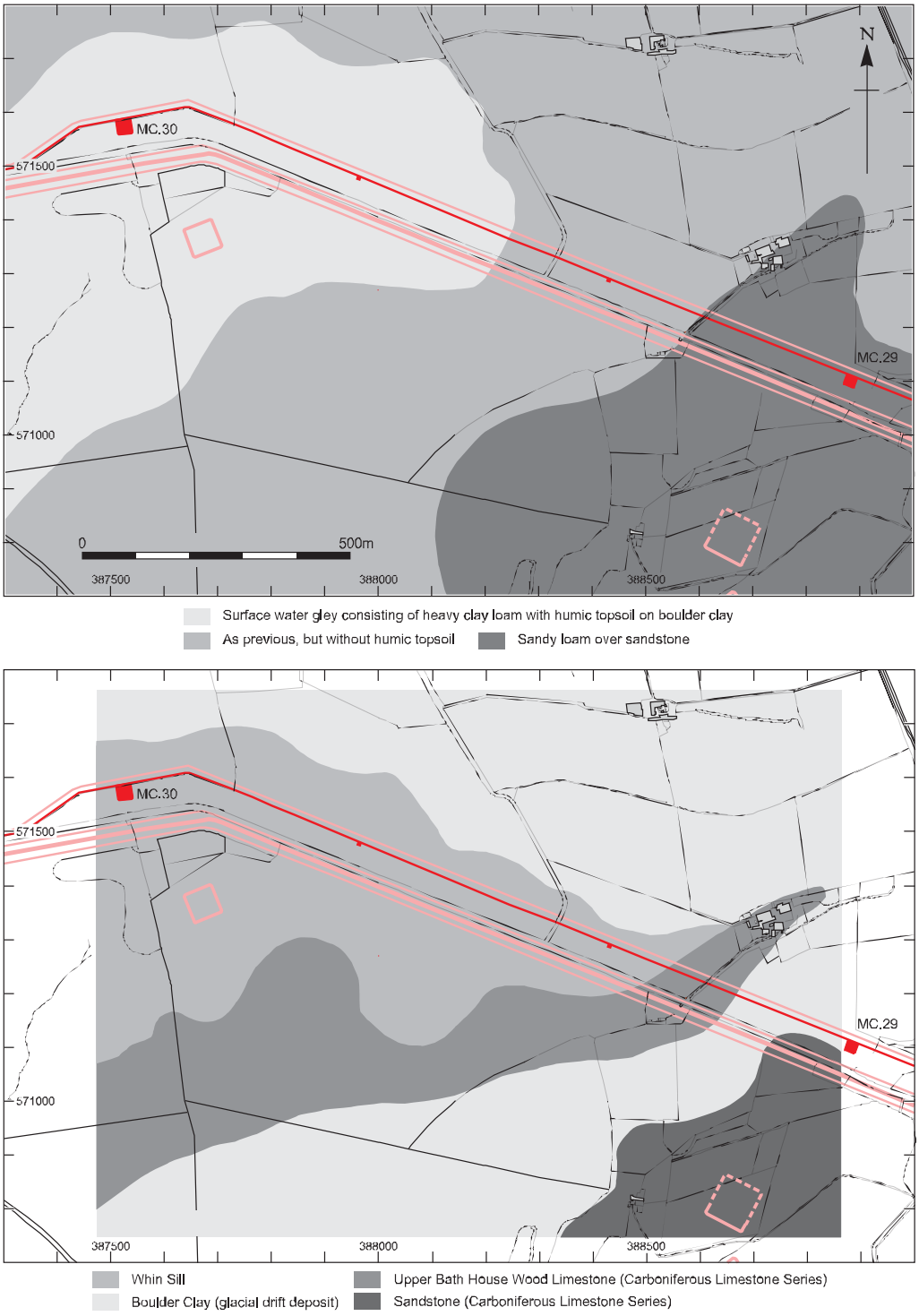


Fig 192
Black Carts: soils (above) and geology (below) of the Wall Mile 29 area.

strata. To the south and east the Upper Bath House Wood Limestone lies against the flank of the dolerite, and the valley fill east of and above this is a thick deposit of boulder clay. Rising towards Tower Tye deposits of Carboniferous sandstone emerge from beneath the boulder clay on the east side of the valley (Fig 192; Usai 1999a, 3–4). The area is thus geologically varied, with sandstone suitable for building, limestone suitable for the making of mortar, and quartz-dolerite, which is difficult to work and yet was

Fig 193
Black Carts: ditch and counterscarp looking east from the site of T29b. Note the mounds to the north of the counterscarp proper.

still utilised for aspects of the construction of the Wall and its earthworks. Modern soils in the area are as varied as their parent geology. Over the dolerite there is a surface water gley consisting of heavy clay loam with a humic topsoil (Wilcocks I association), and over the valley boulder clay the Brickfield 3 association is similar, but without humic topsoil. A light sandy loam of the Rivington I association occurs over the sandstone towards Tower Tye (Usai 1999a, 6–8). The soils over the sandstone were light and easy to cultivate, though very acidic. The lack of fertility in the soil would indicate only short-lived cultivation episodes.

The Roman earthworks are extremely well preserved in this sector, as are those formed from the collapse of the Wall and its installations; Mc29 and Mc30 are clearly discernible. T29a (Black Carts) together with the Wall on either side, which stands to a maximum of 12 courses high, is a consolidated monument in English Heritage guardianship, and is publicly accessible. Between the Hen Gap and the site of T29b the Wall is at first visible standing two or more courses high, gradually reducing in height and preservation until its line is marked by a low mound. T29b appears as a clear earthwork, and west of this the line of the Wall is represented by a linear depression with parallel low, stony mounds on either side. In contrast the Wall ditch is clearly visible throughout the sector as a silted linear hollow, and the counterscarp as a narrow bank on the northern brink of the ditch with a series of mounds to the north (Fig 193).

At Limestone Corner an attempt was made to cut the ditch through the dolerite bedrock, and the counterscarp here comprises huge dolerite boulders that were cut and removed from the ditch (Figs 76–7). The attempt was soon abandoned, however, as is graphically and famously shown by the block in the centre of the ditch, which proved immune to the assaults of Roman wedges, the marks of which can still be seen on its upper surface. West of Limestone Corner, where drift deposits cover the dip in the dolerite before it re-emerges at Sewingshields, the ditch was cut through the overlying boulder clay, and to the east, at the bottom of the slope just west of the Hen Gap, this is also true. At this point the ditch sides are riddled with rabbit holes. Although an attempt has been made to mitigate this damage by burying wire netting, this has been of limited effectiveness.

Although the Military Road is built on the north mound of the Vallum, the Vallum ditch and its south and marginal mounds still form substantial earthworks. Whereas the attempt to drive the Wall ditch through the dolerite outcrop at Limestone Corner was abandoned, the builders of the Vallum succeeded in cutting a continuous ditch through the hard material, and the great boulders removed from the ditch were incorporated into the Vallum mounds. Any soil cover over these boulders has long

since disappeared, at least in part owing to the burrowing of rabbits. On the slope from Limestone Corner eastwards the ditch has been kept relatively clear of silting by the excess ground water that runs down it in wet weather. At the bottom of the slope, silt carried in from both west and east has caused the ditch to be filled and virtually indistinguishable. Opposite T29a, the presence of a main farm access over the silted ditch has meant that the natural attrition of the mounds through weathering has been greatly exacerbated by the passage of cattle and farm vehicles.

Previous work

The earliest known archaeological work in Wall mile 29 was John Clayton's excavation of T29a (Black Carts) in 1873. This, the first ever examination of a Wall turret, resulted in the publication of the first thorough description of such a structure, including the suggestion that an internal timber stair might have been provided (Clayton 1876). The site remained exposed and has remained virtually unaltered since it was recorded by Clayton, and in 1877 by James Coates, who made three paintings, one of which one (Fig 80) includes a ground plan of the turret. The exposed stretch of Wall was taken into state guardianship in 1970, and re-excavated by Dorothy Charlesworth before consolidation the following year. The excavation showed that Clayton had thoroughly and completely removed all stratified deposits (Charlesworth 1973). The consolidation of the turret and Wall was undertaken by Charles Anderson and his team of masons (p 53), and Anderson's photographs of the turret before, during and after consolidation show contrasts between Clayton's conservation and that of the Ministry of Works, and also include shots of work in progress.

The story of the consolidation of Black Carts has been treated popularly and anecdotally by Hunter Davies (1974, 89–91, 217–18), with whose walk along the Wall the work coincided. No fewer than three centurial stones were found during the consolidation, and reported to *Britannia* by Anderson (Wright and Hassall 1972, 354; 1973, 329), while in more recent years six facing stones with quarry marks in the form of 'V's and 'X's (Hassall and Tomlin 1988, 333) have been noted by Alan Whitworth.

In 1912, Philip Newbold identified the sites of T30a and T0b (Carrawburgh East and West), and excavated T29b (Limestone Bank). In his report Newbold (1913a) wrote the first discussion of the broad wing walls that are attached to the stone wall turrets and identified by points of reduction on each interval structure in the Narrow Wall sector between the North Tyne and the Irthing. Newbold, clearly puzzled by the phenomenon, suggested that they might have been a clue to the form of the turret superstructure. The report also contains one of the first published ground plans of a turret (the plans of T49b, T50a and 50b were published by F G Simpson (1913) in the same year). Photographs in the report clearly show Hadrian's Wall standing to a height of four courses above a single course offset (standard A curtain) (Breeze and Dobson 2000, 71). Newbold also found the bottom of the Wall ditch at Limestone Bank, noting that "the two sides did not meet at a point, but fell away, so as to form a shallow gully 1ft (0.3m) deep and 3ft (0.9m) wide with vertical sides."

In the project design (Wilmott and Friell 1997) for the 1997 work it was not considered likely that this statement expressed the true dimensions of the ditch, and it was thought probable that the observation recorded a re-cut or the periodic cleaning out of the ditch. It was further postulated in the project design that the clearly defined counterscarp bank had been partly composed of upcast from ditch cleaning.

A section across the Vallum was cut to the west of Limestone Corner in 1952. Brenda Heywood has kindly allowed the results of this work to be included in this volume. Her report and section appear as Appendix 2 (p 419).

Project background

The degradation of the Vallum banks opposite T29a necessitated some conservation intervention to halt and repair the damage being caused. This would inevitably have required some excavation and other ground disturbance to enable consolidation to take place. Rather than restrict this to an engineering-led disturbance it was decided to take the opportunity to establish the original profiles in order to inform the nature of the reinstatement to be pursued for management and presentation purposes. Work on the Vallum alone would mitigate the threat; however, it was also seen as appropriate to address wider issues of the state of survival of the archaeology of the area.

The project was conceived as the full excavation of a staggered section across the full width of the Vallum, Wall, Wall ditch and counterscarp bank. This would maximise information retrieval, ensuring that the essential work to the Vallum was complemented and contextualised by the examination of all elements of the frontier system in this area. The original aims of the project could be divided into three groups. The first related to curatorial imperatives, the second were purely research driven and the third involved an assessment of the logistics necessary to undertake similar interventions in the future. The curatorial and research aims were:

1. To establish the state of preservation of the works of Hadrian's Wall in this sector.
2. To recover data to inform the appropriate level of reinstatement of the Vallum.
3. To recover data to assist in future interpretative work.
4. To contribute to the objective enshrined in the *Hadrian's Wall Management Plan* (English Heritage 1996, 7.2.2) which provides for "regular monitoring of the condition of the earthworks of Hadrian's Wall "
5. To establish the morphology of the works, and to examine the stratigraphic sequence with reference to the chronological sequence of construction.
6. To examine the robbing of the Wall.
7. To establish the postulated existence and state of preservation of any buried land surface beneath the Vallum mounds and the counterscarp, and to assess the potential of this surface for pollen and soils analysis.
8. To compare the preservation and content of the pollen record from beneath the Vallum mounds and the counterscarp.
9. To establish the presence/absence of evidence for pre-Wall arable cultivation in this sector.
10. To establish the potential for pollen and soils analysis, and for the survival of artefactual and ecofactual evidence within the filling of the Vallum and Wall ditches.
11. To produce an integrated environmental sequence for the area under investigation.

The project was also intended to inform the formulation of a design for a strategic project on the earthworks and ancient environment of Hadrian's Wall.

Methodologies

Fieldwork

Two trenches were cut, one on each side of the B6318 road (Fig 194), in order to sample all of the earthwork elements of the frontier in at the most appropriate points. Trench BC1 examined the Wall, Wall ditch and counterscarp, and was located on the rise from Hen Gap to Limestone Corner, 3m west of T29b. It measured 5m wide and 15m long, although only the centre 2.5m was fully excavated. Trench BC2 sectioned the Vallum south mound, marginal mound, ditch and north berm. It was situated almost directly opposite T29a. The trench measured 18m long and 5m wide. The trenches were some 500m apart. The TBM for Trench BC1 was at a level of 237.73mOD, while that for BC2, in the valley, was196.47mOD. During excavation the area over the Vallum ditch had to be widened and stepped in order to reach the bottom of the ditch in safety, while the sections cut through the earthworks were 2.5m in width. All excavation was done by hand, with no mechanical aid other than for backfilling and reinstatement at Trench BC2. Recording followed the methods then in use by the Central Archaeology Service of English Heritage (CAS).

Pedological results

Aluminium Kubiena tins were used to collect blocks of soils and sediments from the two trenches. Pedological observations of soil depth, colour, mottling, stoniness, structure and texture were carried out on two contexts from the Wall ditch fill (Contexts 28–9), on Contexts 224, 303, 298, 219 and 218 beneath the Vallum mound, and on some of the soils/sediments below the counterscarp bank in Trench BC1. Brief observations, with no standard description, were made of samples of the Vallum ditch fill, to assess their potential for analysis. Selected soil and sediment samples were described using mainly the criteria of Hodgson (1976).

Palynological results

by David Earle Robinson

Sampling involved hammering metal monolith tins into the exposed sections and then cutting them free in order to recover small intact columns of sediment. On preliminary analysis (Huntley 1998), the contexts sealed under the berm (monolith 831) were found to contain little or no

pollen – their only organic content comprising some occasional fragments of charcoal or coal. In contrast, and somewhat surprisingly given the well drained, highly-inorganic nature of the deposits, the contexts under both the counterscarp bank and the Vallum contained pollen in appreciable amounts. The pollen was poorly preserved, with a high proportion of unidentified grains, but sufficient numbers of pollen and spores could be identified to reveal the existence of an anthropogenic landscape and to enable some preliminary conclusions to be drawn about the nature and composition of the vegetation. In the light of this, further, more detailed work was suggested (Huntley 1998) and it was emphasised that this should be done in close collaboration with the soil studies carried out at the site (Usai 1999, 2004); and the use of contiguous high-resolution sampling was recommended in the interests of methodological development.

Detailed pollen analysis was carried out on samples taken from monolith 818 from the base of the counterscarp bank and 838 from the base of the Vallum mound. These were equivalent to, but not identical with, the monolith samples used for the soil studies. The samples were taken and prepared for pollen analysis at the University of Durham using methods described in Huntley (1998). The samples were weighed and tablets contained known quantities of exotic (*Lycopodium clavatum*) spores were added during sample processing in order to enable the concentrations of fossil pollen to be calculated.

The pollen analyses were carried out by the author – analysis of each sample was continued until either a full slide (22 traverses) had been counted or a sum of at least 500 pollen grains of terrestrial plants had been reached. Exotic (*Lycopodium clavatum*) spores were also recoded and unidentifiable grains were registered into categories – Broken, Corroded, Crumpled and Obscured – to give an indication of the state of preservation of the preserved pollen. With regard to the methodological aspects of the work, contiguous or closely spaced sampling proved to be inappropriate. The nature of the deposits did not allow the development or maintenance of the high-resolution pollen stratigraphy, which this approach was designed to detect and quantify.

Stratigraphy and structures

The description of the excavation is divided between the two trenches. Each trench description begins with natural strata and

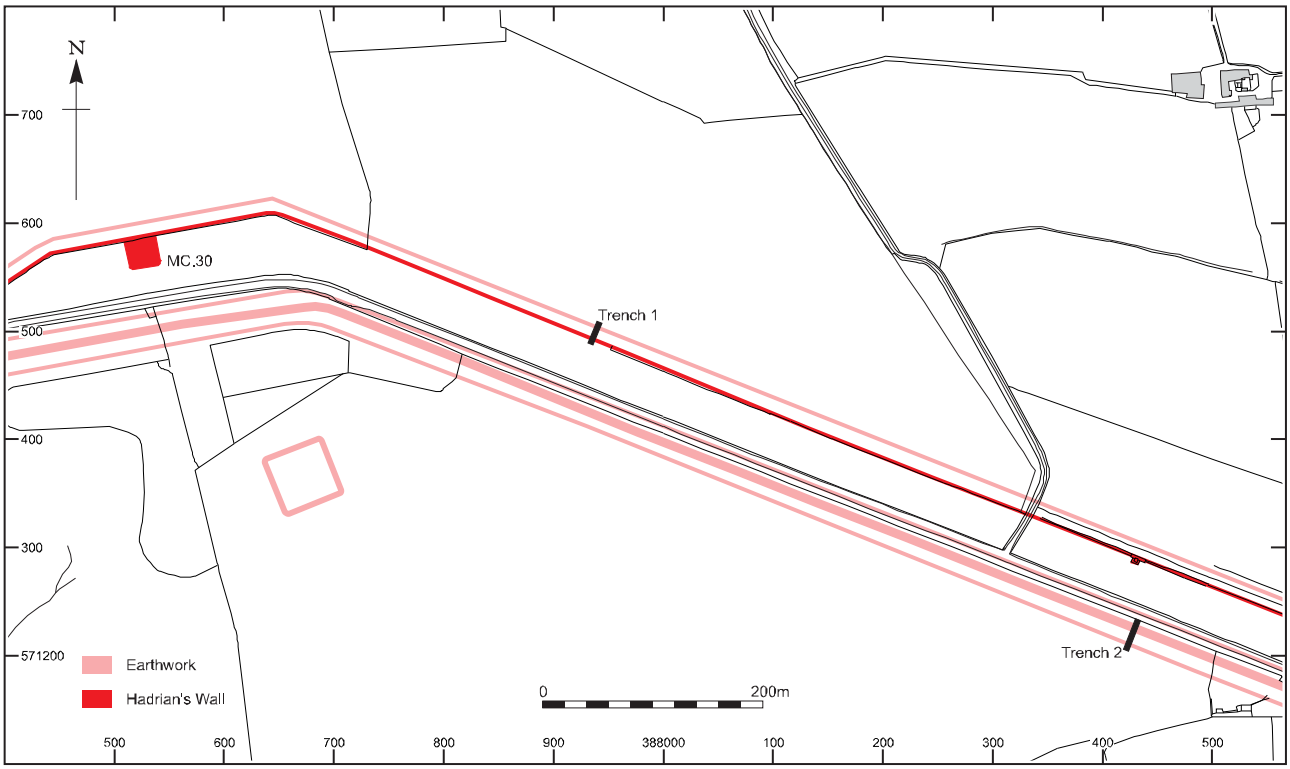


Fig 194
Black Carts: location of trenches excavated in 1997.

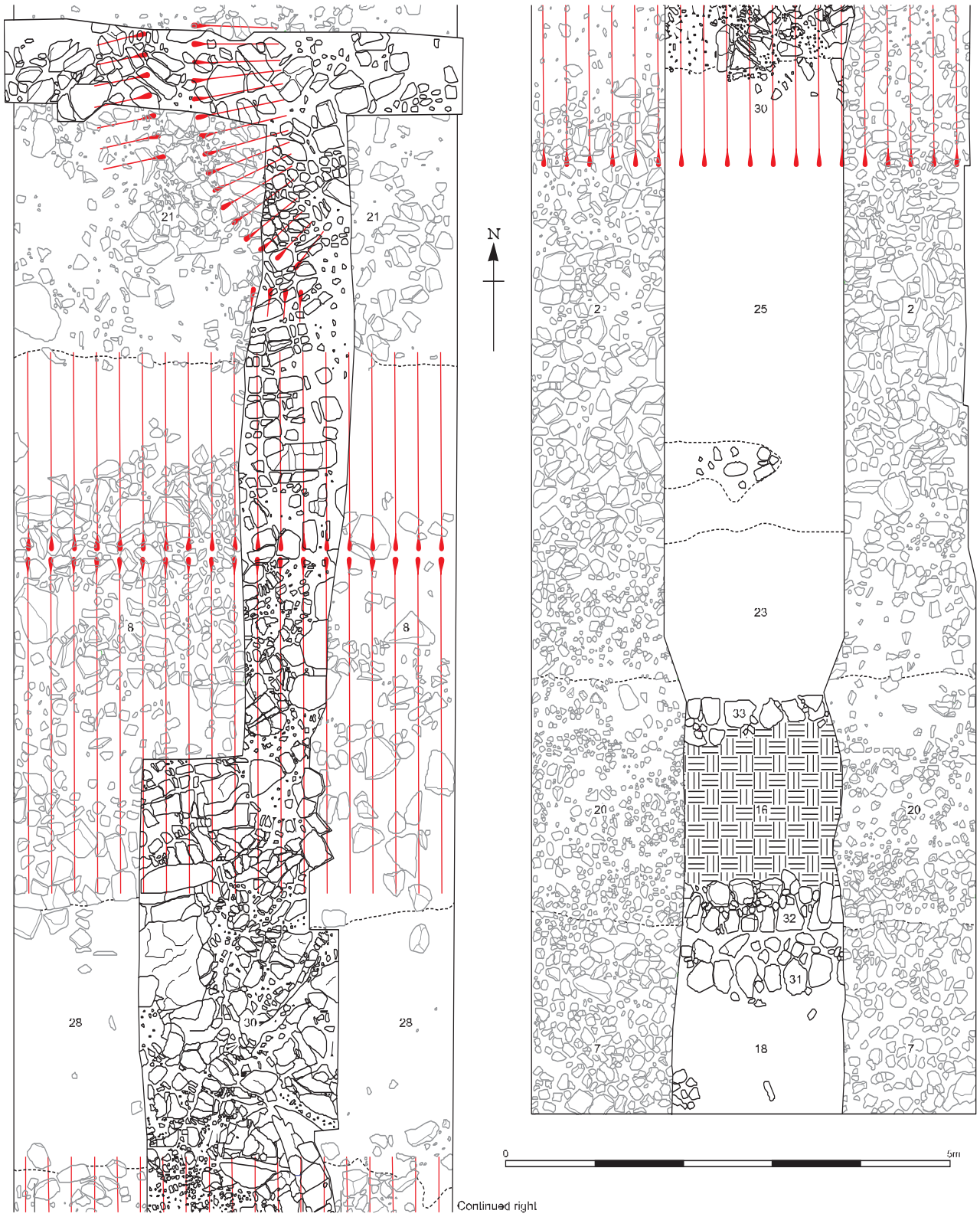


Fig 195
Black Carts: plan of Trench BC1 showing the surface plan in greyscale and the deeper central excavation in black. Gradients shown bt red hachures.

evidence for the pre-Roman environment. The elements of the frontier are then described in order from north to south.

Trench BC1

(Plan, Fig 195; Section, Fig 196)

Natural bedrock and soils

by M-R Usai and Tony Wilmott

Trench BC1 lay on the southern side of a low, natural, east–west ridge with its northern end on the crest. The natural bedrock throughout the trench was quartz-dolerite. To the south of the Wall ditch, the bedrock was sealed by a succession of buried soils consisting of orange-brown clay-silt (25, 26). A further similar deposit (23), which incorporated charcoal flecks, overlay these deposits, and was the surface upon which Hadrian's Wall was constructed. To the north of the Wall ditch, the functional equivalents of soils (25) and (26) were represented by similar deposits (17, 11). As contexts (11) and (17) were sealed by the counterscarp, they were sampled and assessed in order to establish whether they comprised the natural pre-Roman soil profile over the dolerite (Usai 1999a). It was concluded that these contexts were the result of *in situ* soil formation over a considerable period of time. There are no signs of unconformities and truncation, such as would arise from ploughing prior to wall construction.

The pre-Wall environment

by David Earle Robinson

The pollen spectra of the two samples, sample 5–6 from context 11 and sample 11–12 from context 17, are very similar (Fig 197, Table 1, Appendix 2 Tables A1, A2). They are characterised by relatively low values for trees – mostly alder and oak (5.8–9.4%) and high values for hazel

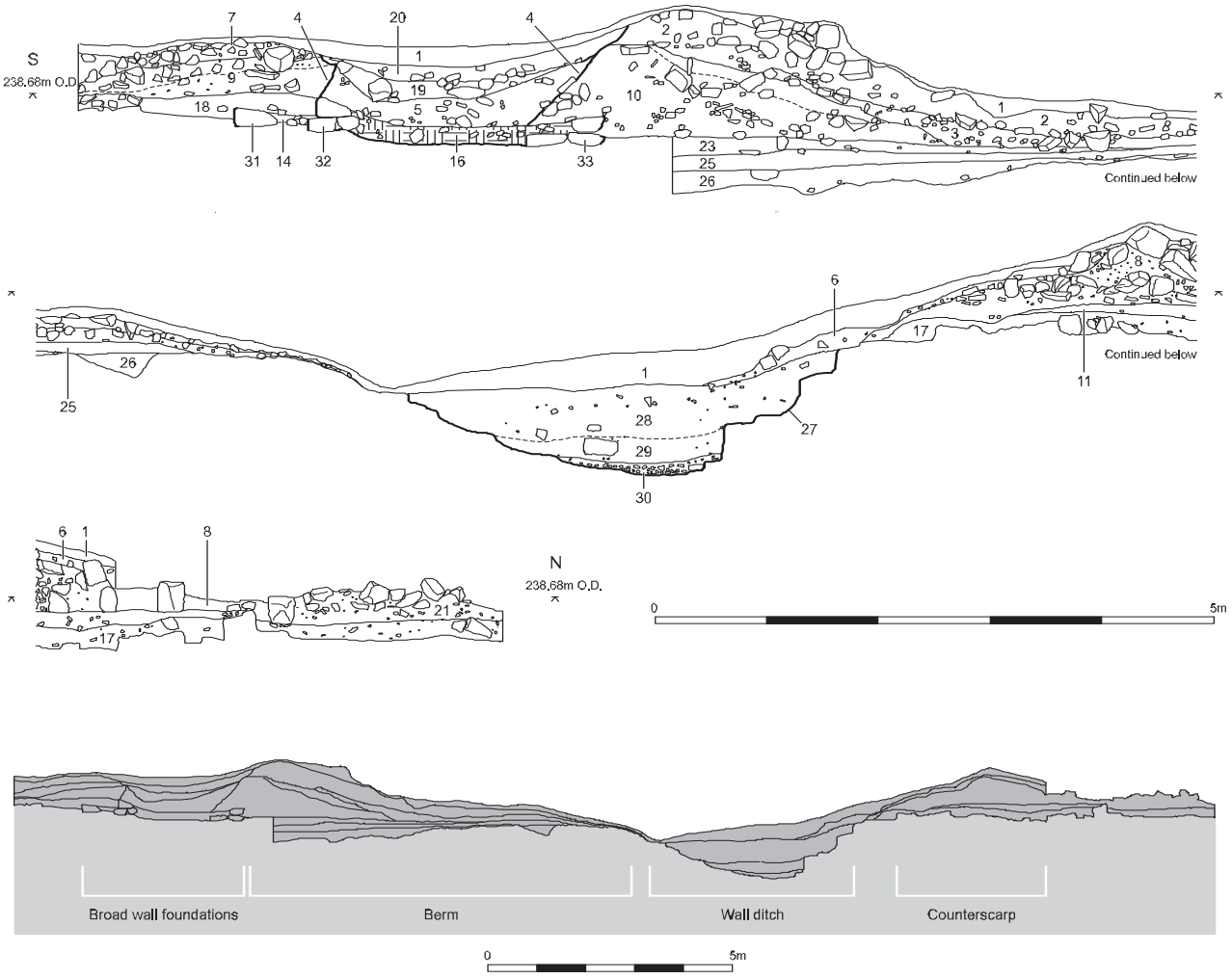


Fig 196
Black Carts: west-facing section of Trench BC1.

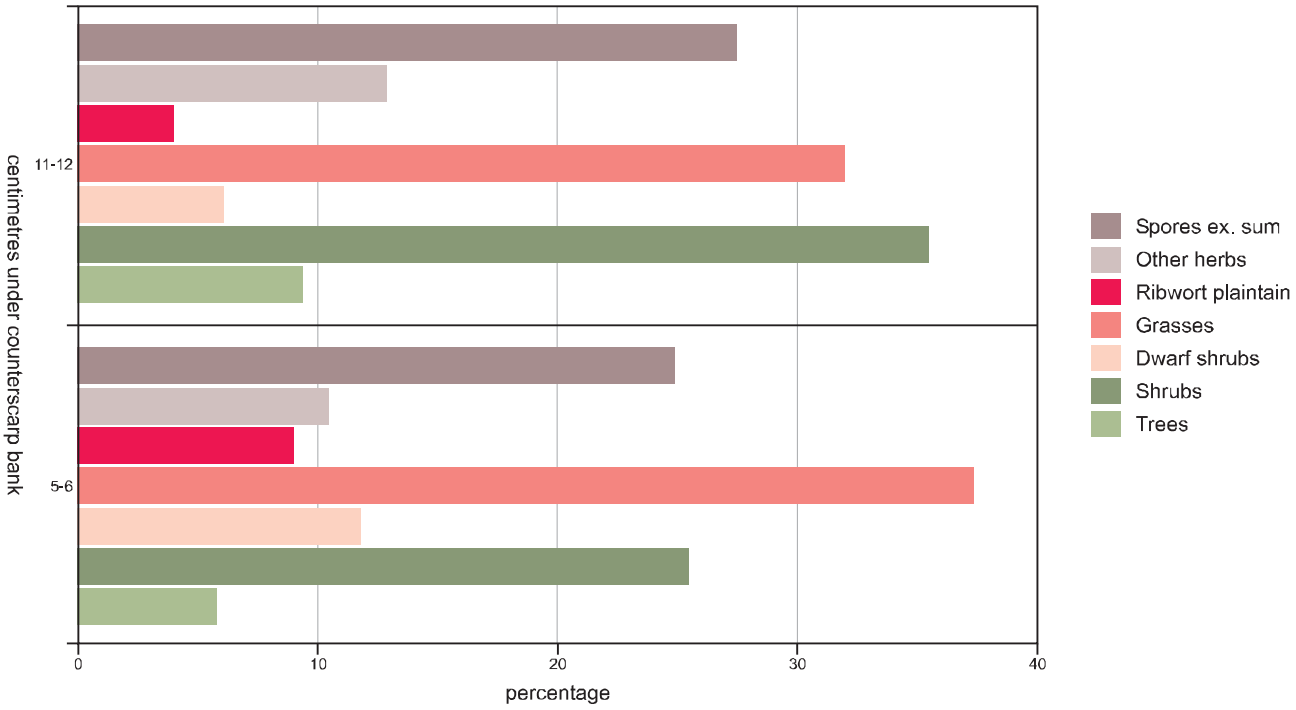


Fig 197
Black Carts: pollen data from beneath the counterscarp bank.

(25.5–35.5%) and grasses (32–40.2%). Dwarf shrubs, including heather (6.1–11.8%), and herbs are relatively abundant with ribwort plantain (4–9%) playing a substantial rather than a dominant role. The grass pollen includes one possible cereal grain (sample 11–12). Of the herbs, sedges are relatively abundant (5.9–6.5%) and there are consistent presences in the samples of pollen of carrot family, daisy-type, lettuce family, rose family, bedstraw family, dock, sheep's sorrel and scabious. There are single occurrences of daisy family, cabbage family, goosefoot family, dead-nettle family, greater/hoary plantain, buttercup family, meadowsweet, nettle and woundwort-type.

There are high values for spores, corresponding to 24.9–27.5% of the pollen counted – they are not included in the pollen sum used in calculating percentages. These mostly include ferns, notably polypody and bracken, with minor occurrences of bog moss, moonwort and parsley fern. There are approximately two thirds as many unidentifiable as identified grains. Corroded pollen grains are by far the most abundant, and this is commonly the case in mineral soils, due to the actions of the soil fauna and microflora.

The clear dichotomy in the pollen spectra between contexts 11 and 17 seen in the pollen assessment (Huntley 1998) is not obvious here. The differences between the two analyses may result from local variation in the pollen content of the sediments or that the low numbers of pollen grains counted for the assessment did not give a representative picture of the pollen spectra present.

The counterscarp (Fig 198)

The counterscarp consists of two elements: a linear bank, which occupies the crest of the small ridge crossed by Trench BC1, and a range of small, low mounds to the immediate north on the downslope. The bank (8) was 4.5m wide and 0.7m high at the apex, measured from its contemporary ground level. It was constructed of sub-angular, split, dolerite boulders and blocks up to 0.6m long. These appeared to have been carefully laid rather than dumped, and the bank retained a cohesive structure. It was very apparent that the counterscarp here was deliberately built, and was not merely a loose dump of material. There was no berm between the bank and the Wall ditch. The south side of the bank continued and maintained the line of the north edge of the ditch, accentuating the profile. The back slope of the north was very much gentler.

The mounds to the north of the bank appeared from the evidence in areas of animal disturbance to have been dumps of loose dolerite rubble. One of these was

investigated in an attempt to determine whether these were earlier than, later than, or contemporary with the counterscarp. It was found that the rubble dump (21) had the same relationship to the underlying buried soil (17) as did the constructed counterscarp, and was thus contemporary.

The Wall ditch (Fig 199)
The north edge of the ditch (27) was cut into the natural dolerite in the southern flank of the ridge on which the counterscarp stood. It measured only 2m wide and 0.8m deep (compare Appletree and Crosby-on-Eden, pp 106, 122), with a stepped profile formed by the splitting out of naturally angular dolerite blocks along horizontal bedding planes and vertical fissures. The ditch was precisely the sort of shallow gully described by Newbold (1913a). The bedrock in the bottom of the ditch was water-worn, and it had clearly operated as a run-off gully for a very long period. The fills of the ditch (28, 29, 30) comprised layers of orange-brown and brown water-lain silty sands with few inclusions. Given the amount of water wear on the rock in the ditch bottom, it seems that the rock was exposed for a long time, and this silting is thus considered to be a relatively recent phenomenon.

The berm
The berm between the ditch and the Wall was 8m wide, and was almost level. The surface contemporary with the Wall was that of the uppermost buried soils (23, 25), which were truncated towards the edge of the ditch. The soils under the berm were assessed for pollen but none was found (Huntley 1998).

Fig 198
Black Carts: section of the built counterscarp bank.

Hadrian's Wall (Fig 200)
The remains of the Wall, although heavily robbed, could still be interpreted in terms of the long-established sequence of Wall construction between the North Tyne and the Irthing. Here the interval structures and foundations were built first, the foundations and the wing walls on the turrets and milecastles to Broad Wall gauge (nominally 10 Roman feet: 3m). The curtain wall was later built to Narrow Wall gauge (nominally 8 Roman feet: 2.4m) on the northern edge of the foundation leaving an offset to the south, and the points of reduction at the ends of the wing walls; the phenomenon that so puzzled Newbold (1913a).

Fig 199
Black Carts: the Wall ditch in Trench BC1 looking west. The profile and fill of the ditch are shown by the darker silt seen here in section.

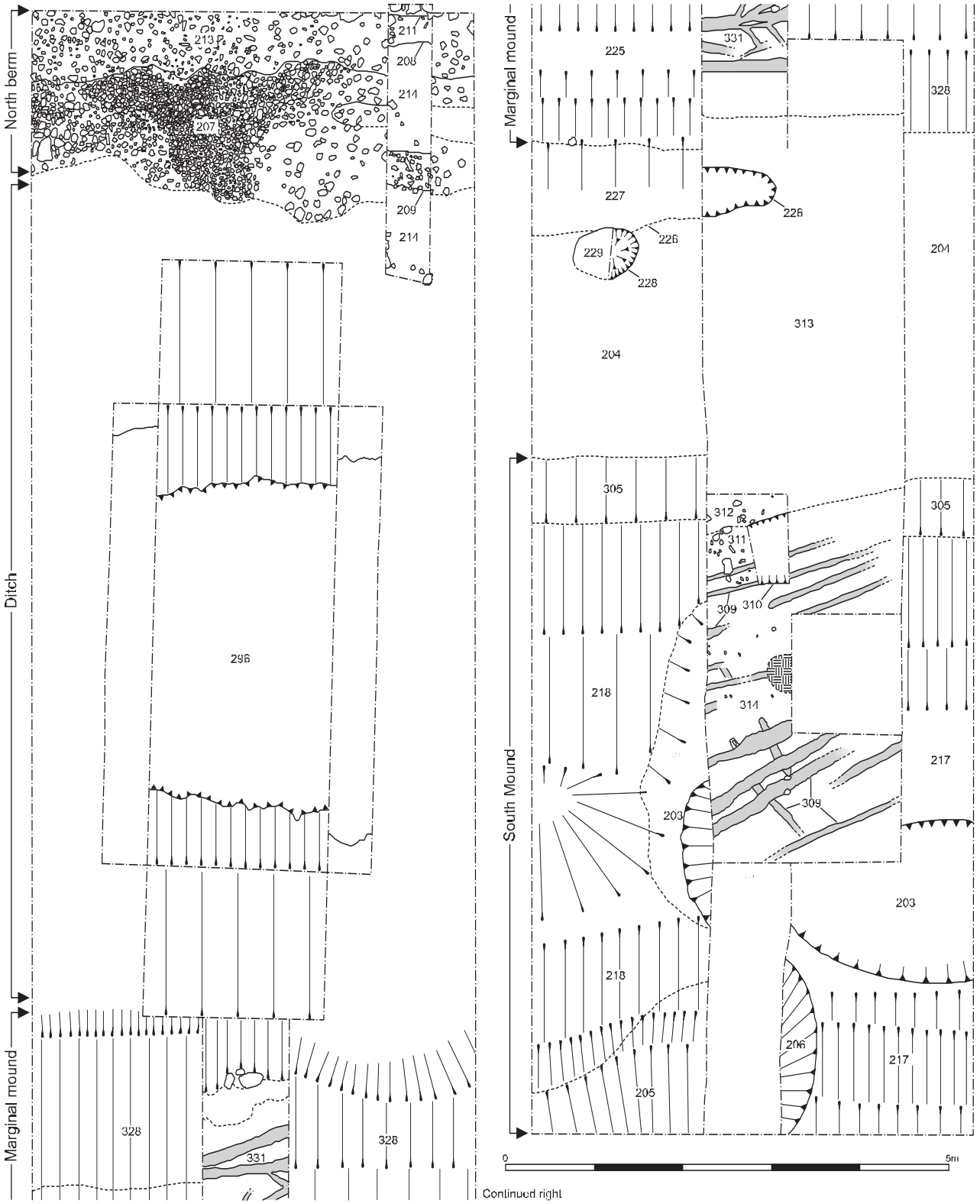
Fig 200
Black Carts: the footings of Hadrian's Wall in Trench BC1, looking north, showing the two outer faces of the Narrow Wall foundation spanned by the ranging rod, with the southern face of the original Broad Wall footings in the foreground. The robber trench is the same width as the Narrow Wall, and the spoil mounds on either side of the robber trench can be seen at the upper level.

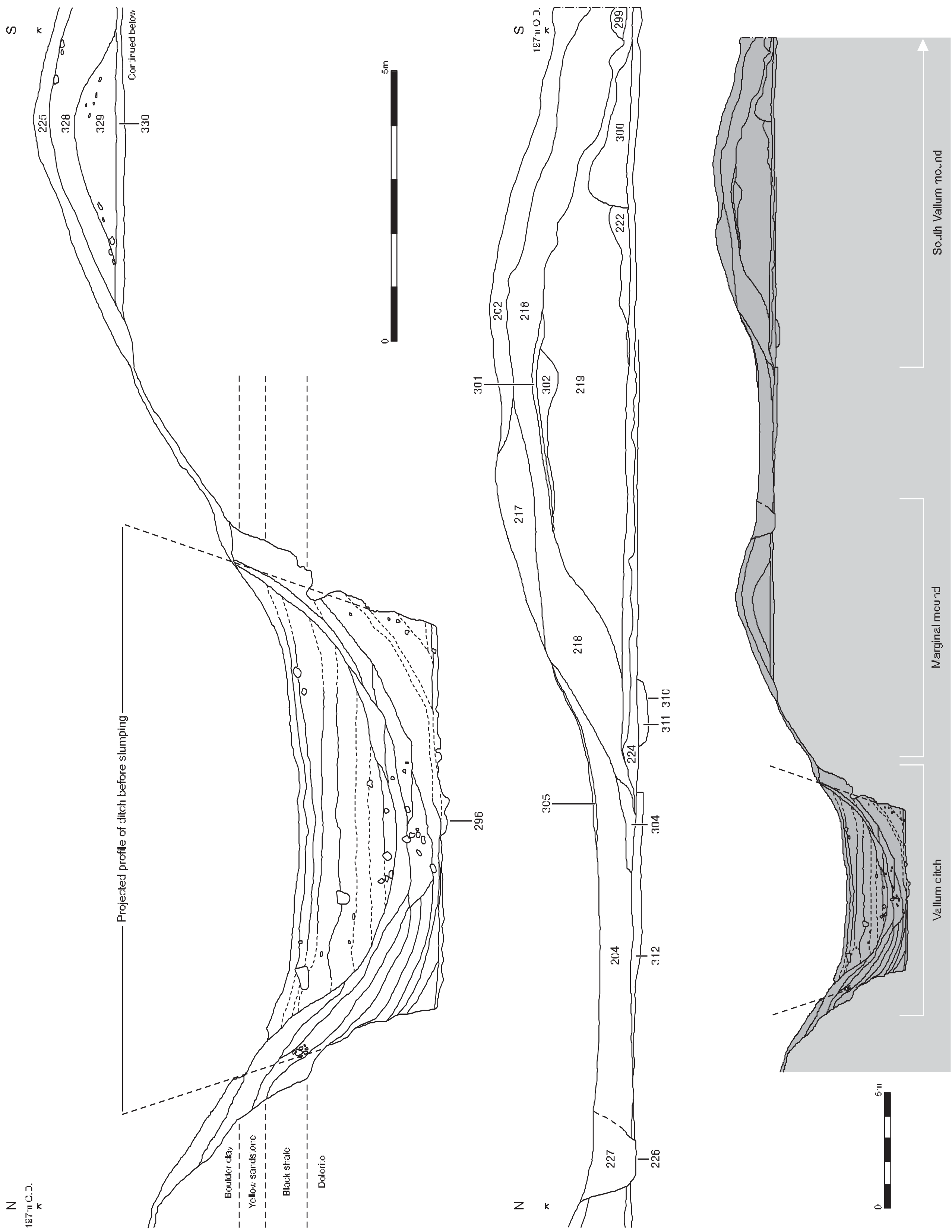
All that remained of the Broad Wall foundation in Trench BC1 (31) was a single course of the southern face with some core work behind it. The remnant projected 0.7m to the south of the south face of the Narrow Wall, and it is probable that the north faces of the foundation and Narrow Wall coincided. If so, the broad foundation would have been very broad at 3.3m, probably to allow for the kind of offset in the upper courses recorded by Newbold nearer T29b. The facing stones comprised blocks of dolerite, which were neither dressed nor deliberately faced, but had been split out of the stone bed by exploiting the straight fissures that occur naturally, with the straight split edges used as a tolerably even face. The core consisted of smaller dolerite fragments, and there was no sign of any bonding material.

The Narrow Wall curtain (16) was 2.6m wide. The bottom course was of large, unshaped dolerite boulders with flat upper and lower faces (32, 33). The second course was the first proper facing course, and was offset slightly from the foundation on the south side. Again the facing stones comprised dolerite blocks that had been split to size and shape taking advantage of the natural bedding and fissuring of the rock; no post-quarrying dressing had been attempted. The core, which was bonded with a light-brown sandy clay dissimilar to the underlying buried soils, consisted of broken dolerite waste. South of the Wall a dark brown soil layer (18) overlay the broad foundation, but respected the bottom course of the curtain wall as built.

The Wall was robbed except for the two courses of Narrow Wall. Few, if any, facing stones were recovered during excavation, and it is probable that most of these were removed during a first phase of robbing. This would have caused the clay and stone core to collapse *in situ*, producing a linear mound of stone and soil some 8m wide (9, 10). This mound was subsequently cut longitudinally by a robber trench (4), which removed the buried foundations. From this trench, upcast and stone unsuitable for re-use was thrown on each side of the Wall footings (2, 3, 7) creating two parallel banks. Subsequently the robber trench was backfilled in the natural course of silting and slumping from the edges and banks (5, 19, 20). Most of the robbing debris consisted of dolerite rubble, but the two facing stones found incorporated in these banks were sandstone.

Fig 201 (opposite)
Black Carts: general plan of Trench BC2.


North berm
Ditch
Marginal mound
213
211
208
214
207
209
214
296
328
331
328
Marginal mound
225
331
328
227
226
226
229
228
204
313
204
305
312
311
305
309
310
218
314
217
South Mound
203
309
203
218
206
217
205
0
5m
Continued right


N
S
Projected profile of ditch before slumping
Boulder clay
Yellow sandstone
Black shale
Dolerite
Continued below
225
328
329
330
296
5m
0
301
302
202
218
219
217
218
300
222
299
311 310
224
305
304
204
312
227
226
South Vallum mound
Marginal mound
Vallum ditch

Trench BC2
(Plan, Fig 201; Section, Fig 202)

Natural strata and soils
by M-R Usai and Tony Wilmott
Trench BC2 was situated at a point where many of the geological complexities of the area came together. The south Vallum mound sat upon the solid sandstone, which dipped sharply northwards. At the south edge of the Vallum ditch it was covered by boulder clay 1.10m thick. At this point the sandstone was only 0.25m thick, as revealed in the side of the Vallum ditch. Beneath the sandstone was a 0.5m thick deposit of black shale, which was clearly part of the Carboniferous limestone, sandstone and shale deposits. Beneath the shale, at 1.85m below the level at which the Vallum was constructed, the top of the dolerite was seen in the ditch edge and base. The strata cut by the Vallum ditch were thus boulder clay, sandstone, shale and dolerite, and these formed the material of which the mounds were constructed.

Soil development patterns are much more complex than in BC1 (Usai 1999, 2004). Soil development appears to have been truncated not just once but twice – firstly by ploughing, then possibly by de-turfing before construction of the Wall. There is also a discontinuous iron-pan, which apparently coincides, at least in some cases, with ancient hoof prints and plough marks. Context 303 is interpreted as a remnant of the original soil profile, with context 224 being a remnant of the plough soil formed from it. Context 224 may subsequently have been truncated by de-turfing. Context 298 is the iron pan formed at the boundary between contexts 224 and 303. It is discontinuous and has not therefore hindered horizontal and vertical movement of water. There seems to have been considerable movement of the clay fraction within the various layers and it should be borne in mind that pollen might have moved in a similar way.

The pre-Vallum landscape
by David Earle Robinson and Tony Wilmott
The evidence for the pre-Vallum landscape was contained and defined in the buried soils sealed by the south and marginal mounds of the Vallum (303, 330). The earliest artificial feature to be cut into these soils was a 0.75m wide, 0.10m gully (310, fill = 311) that ran east–west beneath the south Vallum mound. There was no hint as to date or function for this gully. After it had been filled, the gully was cut by a network of ard marks, which scored its fill and the buried soil. These were fairly widespread, being evident beneath the south mound (Fig 203) and the marginal mound (Fig 204), as well as (with less certainty) on the north berm of the Vallum. The ard marks (308, 331, fill = 309) were up to 80mm wide. Where the plan seems to show a broader mark, this actually comprises multiple marks on the same alignment. The majority of the marks ran south-west to north-east, although there were also a series taking the opposite alignment, south-east to north-west, and, under the marginal mound, a hint that a more nearly east–west alignment also existed.

Above the buried soil and ard marks there was a layer of hard iron panning (298). When the surface of this deposit was excavated in plan, it was found to have fossilised a mass of sub-circular depressions (306; Fig 205). These were interpreted on site as possible hoof prints, although when casts of these depressions were examined by Drs Sebastian Payne and Polydora Baker they proved unidentifiable. Examination of recent hoof prints in the area, however, demonstrated that on ploughed ground there is a tendency for hoofs to tear up clods, rather than to leave legible imprints. This gives a very similar effect to that observed in the iron pan level. There is no sign that the hoof prints were those of cloven-hoofed beasts, and the most likely identification is that these were horse prints.

The pollen spectra of sample 14 (context 224), sample 16 (context 298 – iron pan) and sample 17 (context 303), resemble each other closely (Fig 206, Table 1, Appendix 2 Tables A1, A2). The pollen assemblages are characterised by low values for trees – mostly alder and oak (4.5–6.7%), shrubs – mostly hazel (3.5–7.2%) and dwarf shrubs – heather (0.4–1%), and high values for grasses (40.2–45.5%) and other herbs, especially rib-wort plantain (27–32.3%). The grass pollen includes a single possible cereal grain (sample 17). Of the herbs, sedges are relatively abundant (2.8–4.1%), as are pink family (2.2–3.2%), rose family (1.9–2.7%), buttercup family (0.4–1.7%), nettle (0.2–1.0%) and daisy family (0.2–1.1%). Carrot family, lettuce family, bird's foot trefoil, greater/hoary plantain, dock and sheep's sorrel are represented in two of the three samples and there are single occurrences of mugwort, meadowsweet, bedstraw family, scabious and sundew. Values for spores are relatively low

Fig 202
Black Carts: east-facing section of Trench BC2.

Fig 203
Black Carts: ard marks beneath the Vallum south mound, Trench BC2. The hoof-marked iron-pan deposit is in the foreground.

Fig 204
Black Carts; ard marks beneath marginal mound, Trench BC2.

Fig 205
Black Carts: hoof prints sealed by the Vallum south mound, Trench BC2. The hoof prints can be seen in the brown material beneath the mound to the right of the picture, which in turn seals the ard-marked natural soil seen to the left, against the mound section.

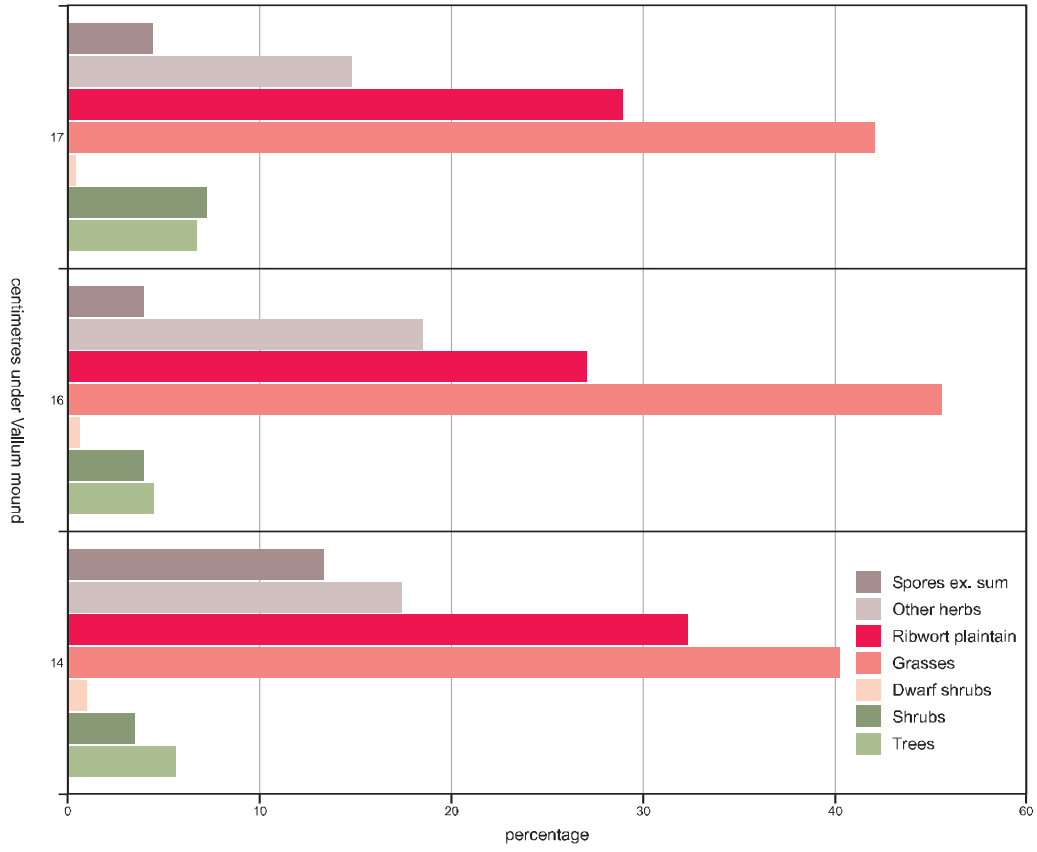


Fig 206
Black Carts: pollen data from beneath the Vallum south mound.

Table 1 Black Carts, Hadrian's Wall: pollen data summary percentages.

	under Vallum mound Monolith 838			*under Counterscarp bank Monolith 818*	
sample	14.0%	16.0%	17.0%	5–6%	11–12%
trees	5.6	4.5	6.7	5.8	9.4
shrubs	3.5	3.9	7.2	5.8	9.4
dwarf shrubs	1.0	0.6	0.4	11.8	6.1
grasses	40.2	45.5	42.0	37.4	32.0
ribwort plantain	32.3	27.0	28.9	9.0	4.0
other herbs	17.4	18.5	14.8	10.5	12.9
spores (not in % sum)	13.3	3.9	4.4	24.9	27.5

(3.9–13.3%), mostly comprising ferns, polypody and bracken, with minor occurrences of bog moss and moonwort.

The north berm of the Vallum (Fig 207)
The natural buried soil (214) was directly covered with an uneven spread of compacted and loose cobbles (207), which appeared to be scored by east–west wheel ruts (208, 209, fill = 213). These features were not recent, as they were cut by the foundation (211) for a modern drystone field boundary wall (210).

The Vallum ditch (Fig 208)
As already noted, the ditch (296) was cut through boulder clay, sandstone, shale and dolerite. It was 3m deep in total. Where cut through rock it was virtually square in section, and measured 4m wide. In the top metre, where the ditch was cut through clay, the ditch sides had slumped such that the slope of side was less steep and the width of the ditch expanded to 7.5m at the top.

The ditch is silted or filled up to less than half its total depth (1.4m). The fills were recorded largely in section, and the sequence of filling, silting and slumping over time is tolerably well understood, but probably not very archaeologically significant, as it seems to bear little or no relation to any human intervention after the ditch was cut. There was certainly no sign of deliberate backfilling at any time, and the suggestion of a re-cut in the section seems to be due to a change in the silting pattern in the ditch, and not to human activity. All distinctions in fill were slight, and only really visible after the section had been allowed to weather. The sections on each side of the trench through the ditch were slightly different, showing that silting patterns were localised throughout.

There seem to have been three broad phases of silting. The first was the deposition at the base of the ditch of a thin, sandy primary silt (289). Above this the second phase is marked by deposits of dark blue-grey to dark grey-brown clay and shale with an admixture of silt and differing concentrations of yellow flecking, small pieces of sandstone, and dolerite fragments (273–9, 281–3, 286–8 and 290–5). These clays were concentrated against the sides of the ditch, and seem to have slumped from the upper edges of the ditch where it was cut through clay and shale. If this was the case, then the upper edges slumped to the point at which they had a secure angle of repose at an early stage in the life of the ditch. A simple calculation of the quantity of clay deposited and the extent to which the upper edges of the ditch had eroded suggests that the original ditch edge was cut to *c* 70–75° (Fig 190). On the south side of the ditch, one layer in the fill (287) consisted of a lump of sandstone that had sheared away from the ditch side and had slid down until stopped by a shoulder of unweathered dolerite.

The deposition of these clays produced a rounded profile to the ditch bottom, and it is this that gives the impression of a re-cut.

Fig 207
Black Carts: track on the north Vallum berm.

Fill deposits above this point consisted of more-or-less level strata (215–16 and 257–62), which comprised silts rather than clays. The slope of the ground (and experience during the excavation) shows that the Vallum ditch acted as a watercourse in wet weather. Water running down from Teppermoor Hill on the west side and Tower Tye on the east carried down silt, which caused the ditch to fill up in the valley bottom. The character of the upper silty ditch fills suggested a waterborne origin for this material within a depositional regime that continues today.

The marginal mound (Fig 209)
The marginal mound was located, as the name suggests, on the south lip of the Vallum ditch. It was 4.2m wide and 0.812m in surviving height. It comprised two lower layers of clay (328, 329) below a shale cap (225). It is an important observation that the marginal mound consisted of clean materials similar to those in the south Vallum mound proper. It also had the identical stratigraphic relationship with the underlying buried soil deposits and ard marks as the south mound (Fig 204).

The south Vallum mound (Fig 210)
The south Vallum mound was separated from the marginal mound by a berm 3.7m wide. The Vallum was 8.1m wide and 1.35m in surviving height, and was made up of the material won from the ditch. At the base was a deposit made up of an admixture

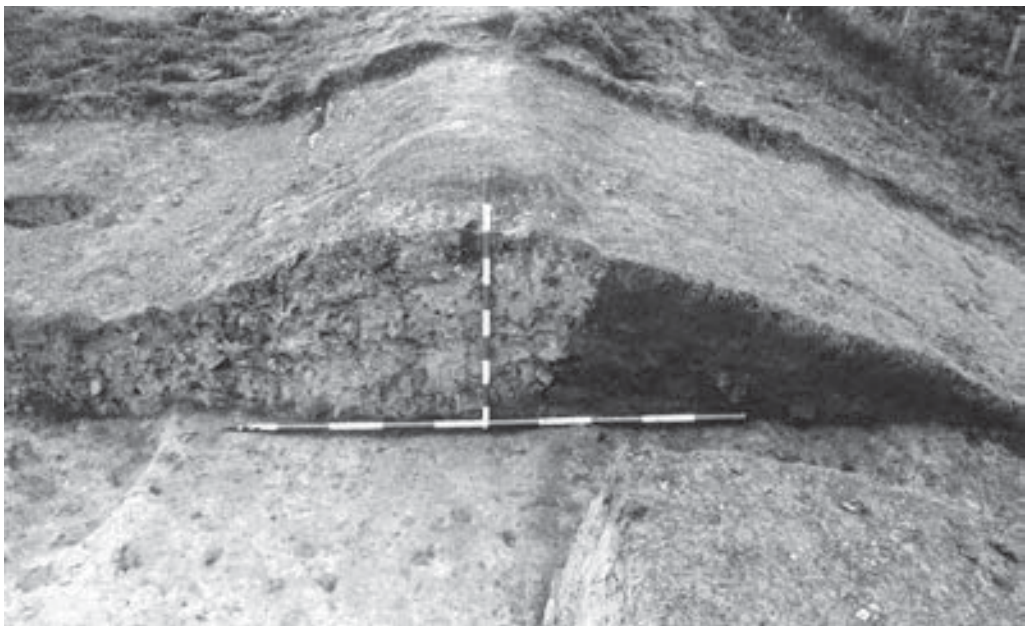


Fig 208
Black Carts: the Vallum ditch as excavated down to dolerite bedrock, Trench BC2.

Fig 209
Black Carts: section of the marginal mound, Trench BC2. The darker area to the right is due to differential drying during excavation.

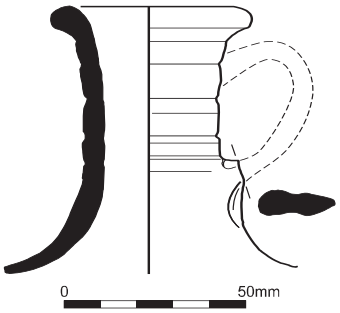
of natural materials (224), above which were deposits of clay (219–23, 299–300), shale with sandstone (218, 301–3), and small dolerite rubble (217). The order in which these materials were deposited was very broadly in reverse of their natural order of deposition; the clay from the top of the natural sequence, then the black shale and then the dolerite. It was noticeable that there was very little dolerite on the mound, and examination of the surface of the field to the south showed that such material had not spread to any meaningful extent to the south of the tail of the Vallum mound.

There was clear evidence for the post-Roman degradation of the south mound through erosion (304–5), and by small cuts or animal scrapes (202–6, 226–9), and the berm between the two mounds became thoroughly silted up with a very mixed clay soil (204).

Fig 210
Black Carts: section through the south Vallum mound, Trench BC2. Note the bulk of the mound made up of clay and dark shale, but with a dolerite capping.

Finds

Finds from the site generally comprised a few pieces of modern ironwork in the topsoil deposits in Trench BC2. There was a single Roman find from the upper silting of the ditch on its south side; the neck of a coarse-ware flagon of 2nd century date, which might derive from the nearby turret (Fig 211).



Interpretation

The pre-Wall landscape

by David Earle Robinson and Tony WIlmott

What kind of landscape did the Romans encounter – the surveyors, the engineers and the construction teams – when they came to build Hadrian's Wall? This question has occupied many people and several studies have been launched over the years in search of an answer. These have mostly involved analysing ancient pollen preserved within the peat bogs and lake sediments on either side of the Wall in order to trace the development of the local vegetation before the Wall, during its construction and use and following its abandonment (Barber *et al* 1993; Dumayne and Barber 1994). The disadvantage of these so-called off-site pollen data is that, whereas they give a very good idea of what was happening in the area as a whole, they are often difficult to relate precisely, both in time and space, to events happening directly on the Wall. There is always the difficulty of correlating the landscape changes and human activities revealed by the off-site data with specific and precise historical events such as construction of the Wall (see especially (Dumayne-Peaty and Barber, 1997; Dumayne *et al* 1995; McCarthy 1997). Much more suitable in this respect, are on-

site data, for example those obtained from sediments sealed under or within the Wall and its earthworks during construction, as these can be related to events directly at the time of the Wall building. These data can, however, be rather more difficult to acquire, particularly in freely draining mineral soils such as those found at Black Carts.

The two sets of samples reveal two very different local cultural landscapes, although each of these was clearly under human influence. The samples from under the Vallum mound, in particular, reflect intense human activity: low values for trees, shrubs and dwarf shrubs reveal that the immediate area was virtually treeless with no heather. The high values for grass and ribwort plantain, and the range and diversity of herb species, are consistent with the presence of grazed pasture/meadow. The greater/hoary plantain may well indicate bare trampled soils in areas of heavy use and the nettle pollen suggests the presence of nutrient-enriched soil. The only direct indication of arable agriculture is the presence of one possible cereal pollen grain. However, the broad pollen types and family groups to which many of the pollen grains have been assigned (state of preservation or taxonomic uniformity prevented more precise identification) potentially include many arable weed species.

The samples from under the counterscarp bank reflect quite a different local landscape – one that was under less intense human influence. High values of shrub and grass pollen and relatively high values for trees and dwarf shrubs are consistent with open scrubby woodland combined with heath and grassland. Values for ribwort plantain are much less than those seen under the Vallum mound, and the spectrum of herbs present also reflects less heavy human usage. High values for ferns agree well with the presence of woodland or scrub. However, fern spores are tough and resistant to decay and their presence is often accentuated by differential preservation under conditions such as those prevailing here.

The Black Carts pollen analyses have already been placed in a general context by Huntley (1998), who summarised the results of a number of pollen analyses from deposits associated in some way with the Wall. No pollen was found under the fort at Wallsend (Huntley 1995) or from adjacent to the Vallum mound and berm at Denton Bank, east of Newcastle upon Tyne (Huntley 1998). A mixture of alder woodland and open grass/sedge dominated communities, but with no clear indication of arable agriculture, emerged from analysis of the buried soil under the Newcastle Milecastle (Huntley 1988). At Wallhouses (Balaam 1983), it was the core of the north Vallum mound itself that revealed a pollen spectrum indicating an essentially open landscape with a little woodland and cultivation; no pollen was found in the deposits sealed beneath the Vallum. Wiltshire (1997) produced evidence of dense alder woodland from under the original Turf Wall at Birdoswald and a similar woodland scenario, albeit in a more advanced stage of clearance, at Appletree (Wiltshire 1997). Arguably the best data produced so far comes from analyses carried out at Tarraby Lane (Balaam 1978) on five profiles associated with both the Turf and Stone Walls. All of these showed a predominantly wooded landscape.

In summing up, Huntley (1998) concludes that there were marked differences between the landscape east and west of the high Pennines at the time the Wall was constructed. The west appears to have remained wooded for longer, with the Romans perhaps responsible for major clearances, whereas the east was predominantly cleared before the Romans arrived. The Black Carts site shows a clear affinity to developments elsewhere in the east.

Sampling and analysis of these deposits has paid dividends despite initial concerns about their unpromising nature and appearance. Pollen analysis has revealed the presence, prior to wall construction, of a well developed cultural landscape of varying character, pastoral and arable, extending mosaic-like across this region. It is clearly worth considering further work of this nature along the line of the Wall – although high-resolution analysis of the buried soils does not appear to be a practical option.

The pollen picture demonstrates that the valley bottom was subject to more human intervention than the valley side, and this is confirmed by the evidence for ploughing. At some time before the construction of the Vallum the ground was ploughed using an ard-type plough, and leaving characteristic U- or V-shaped grooves. Such ard marks have now been found at many sites on the eastern flank of the Wall; indeed it seems clear that these should be expected in any excavation of the Wall to the east of the central sector over the Great Whin Sill.

Fig 211 (opposite) Flagon neck from Trench BC1.

They have been found on virtually every modern excavation from Wallsend to Carrawburgh (p 128).

The ard marks lie beneath a thin soil pocked with probable hoof marks, perhaps suggesting that animals crossed a ploughed field immediately before the Vallum mounds were built on the site. Survival of hoof marks in buried ground surfaces, although rare, is not unprecedented; the hoof prints of cattle survive buried beneath blown sand in a Bronze Age surface at Glesborg, Denmark (Boas 2000, 10), and a palimpsest of the prints of humans, cattle and wheeled vehicles has been found in the latest pre-amphitheatre deposits at Chester. The Black Carts hoof prints appear to be those of horses, however, and the picture of an *ala* of Roman cavalry crossing a ploughed field prior to the building of the Vallum is as irresistible as it is unprovable.

A major problem in interpreting the pre-Roman landscape is the difficulty of identifying and dating the settlements from and for which the land was ploughed. Elsewhere in the Wall zone prehistoric agriculture is represented by the earthworks of cord rig (Woodside and Crow 1999, 32, 131; Gates 1999, 16), which were probably formed by the use of ard ploughs. Gates (1999, 20–1) has argued that cord rig is associated with a number of settlements within the Northumberland National Park, suggesting the practice of a mixed farming economy into the Roman frontier period. At Black Carts it is possible to speculate that the settlement associated with the ploughing might have been the enclosed settlement of Late Iron Age or Romano-British form at Tower Tye (NY 8864 7065). This rectangular enclosure with its internal divisions and at least six round houses may be the culmination of a long period of settlement, and lies only 600m south of the site, on Walwick Fell (Gates 1999, 42).

Frontier structures

The northern and conventionally primary group of features of the linear frontier are the Wall, Wall ditch, and counterscarp, and these are the three elements explored in Trench BC1. In general the Wall ditch, as well as the Vallum ditch, varied in its size and profile according to the nature of the subsoil and possibly subsequent cleaning and erosion, among other factors. At Black Carts the variation was so extreme as to be unique. The ditch hereabouts was originally excavated from west to east. This is shown graphically at Limestone Corner. The ditch had been dug continuously from the west through the boulder clay that overlies the dolerite. Where the dolerite outcrops on Teppermoor Hill, the attempt was made to continue the line of the ditch by bodily removing huge blocks of stone, which were then incorporated in the counterscarp. As noted above (p 82) this attempt was soon abandoned. The situation at Black Carts demonstrates a sophisticated response to the problem, involving the use of terrain to give a false impression of the scale of the earthworks. The slope from Teppermoor Hill to the Hen Gap forms a west–east aligned ridge, which is effectively a dolerite outlier of the Great Whin Sill. The slope from the northern side is somewhat sharper than that to the south. It might be expected that the curtain wall would have been constructed along the crest of the ridge as is the case, for example, along the Whin Sill west of Housesteads or of the Turf Wall at Birdoswald.

At Black Carts, however, this is not the case, and the Wall is set somewhat south of the ridge crest, which is actually crowned by the narrow linear bank of the counterscarp. The counterscarp rises sharply from the northern edge of the ditch, and is built with stone that has been carefully laid, and that, despite the proximity of the ditch, shows no sign of ever having slumped. The ditch was cut into the southern slope of the ridge, with its deeper side, therefore, on the north. Although the ditch was merely 0.8m deep from ground level on this side, the combined factors of the slope, the depth of the ditch and the height of the counterscarp gave a total apparent depth of at least 1.5m. This is admittedly still shallow, but is considerably greater than would have been possible had the Wall been on top of the ridge and the ditch on the downhill slope, and would have given the visual impression that the ditch was more formidable than it was in fact. The ditch at Black Carts was narrow and shallow, as described by Newbold (1913a), and was formed by levering out blocks of dolerite using the naturally occurring vertical fissures and horizontal bedding planes to do this. Some of the blocks won from the ditch may have been used in the construction of the Wall, but irregular or small pieces were probably incorporated in the counterscarp, which was raised on the natural ground surface of the ridge, preserving a buried soil horizon. It should be noted that the examination of the berm showed no signs of the kind of

obstacles found here in other areas, despite the fact that the berm was very wide. Bidwell (2005, 66) is clearly correct in noting that their absence is in part due to the hardness of the rock.

The foundations of the Wall at Black Carts showed the classic pattern for this area. Broad foundations were laid first, then the Narrow Wall constructed on the north edge of the foundation, leaving a single course foundation offset projecting 0.7m to the south. The courses of Wall and foundation that were recovered consisted of dolerite blocks with no trace of bonding material of either mortar or clay. The core also appears to have been dry-built; a type of construction that also appears on the Whin Sill (Bennett 1983, 44). The adjacent field walls, which were built of re-used Roman stone, are predominantly of sandstone, although occasional dolerite blocks occur. This implies that while dolerite was used for foundation and core material, much of the facing stone was cut from the sandstone outcrops towards Tower Tye. Despite this, the surviving dolerite blocks in the Wall and counterscarp amount to considerably more material than could have been derived from the shallow ditch alone. This may be the context for the range of mounds of broken dolerite rubble that are such a feature of the landscape to the north of the built counterscarp (Fig 93).

The difficulty of quarrying deeply for dolerite, and the reluctance of the Wall builders to undertake this, is demonstrated by the abandonment of work on the ditch at Limestone Corner. During the excavation, however, it was noted that the natural surface of the dolerite could be easily and conveniently exploited. The upper surface is criss-crossed with natural fissures, and the upper bedding plane is shallow (some 300mm). The simple use of a crowbar in these fissures allows useful blocks to be broken from the surface, as was proved on site by experiment (for simple surface quarrying of this sort see Hill 2004, 47). Blocks usually have at least one clean, straight face, and it is these blocks that were used, without further dressing, for the Wall foundations. The counterscarp was constructed from less regular material. Surface working on a widespread, almost opencast method would create a great deal of small rubble. It is suggested that the heaps of such rubble to the north of the counterscarp represent the spoil from such a quarrying method. It may be that quarrying in this way to the north of the wall and ditch had the additional value of lowering the ground level slightly on the downslope, making the linear barrier still more formidable when viewed from *barbaricum*.

The Vallum excavation at Black Carts showed a number of features of interest. Firstly, the basic measurements of the work, estimated from those of the Vallum ditch and south mound and berm imply an overall width for the Vallum system in this area of 39.5m, or approximately 129.6ft. This is close to the standard theoretical width of 120ft (Heywood 1965, 85) or in Roman terms, one *actus* (*below* p 134). Small variations in the width of individual elements of the system are, as Heywood (ibid) pointed out, a function of different treatments of the Vallum to account for different soil conditions. They are also the result of the various post-construction histories of the monument, thus the edges of the ditch at Black Carts had slumped and there is evidence that the south mound had spread southwards by slumping and through the ploughing of the tail of the bank.

The south mound sealed the ard-scored subsoil and the hoof-marked topsoil, which was altered by the deposition of iron compounds and the resulting iron panning on its surface. The lower part of the south mound was built with boulder clay from the top of the ditch. Above this was shale and sandstone, and a thin skim of dolerite from the base of the ditch capped the mound. The quantity of dolerite used in the mound was small, and it seems likely that most of this material was deployed in the north mound. If so, then this would explain why the 18th-century Military Road veered off the line of the Wall; it would be utilising a ready-built, flat-topped stone bank ideal for the purpose. The conclusion from this must be that the south mound was constructed first using the spoil won from the top of the ditch. This seems to be the first time that this observation has been stressed in terms of building sequence, as other Vallum ditch sections have been located in areas where the geology was homogeneous throughout the depth of the ditch, and distinctions of the kind seen at Black Carts were not possible.

The Vallum ditch at Black Carts has a profile, which clearly demonstrates that no re-cutting has taken place. There are three clear phases: a primary silting, the collapse of the upper edges of the ditch, followed by a long sequence of natural silting with

waterborne sits, which continues today. This pattern of silting is very similar to that found elsewhere. At Denton in particular, the loose sandstone through which the top of the ditch was cut had collapsed into the corners of the square-cut ditch. This was deposited as a first fill, and lay at a steep angle against the edges of the ditch. It was followed by a sequence of sediments laid down by water action interleaved with debris collapse from the ditch side. As at Black Carts, there were no episodes either of deliberate filling or of re-cutting (Bidwell and Watson 1996, 35, 47).

Other excavated profiles show very similar patterns. At Halton Chesters the profile was cut through mixed deposits with clay at the top and shale beneath. The shape shows the clay eroded to a similar profile, although it remained sharp where cut through shale. Again there was no sign of a re-cut (Simpson 1976, 156–67). In Wall mile 63 on the line of the North West Ethylene pipeline the published section of the ditch, which was cut through gravel and sand, shows the corners silted first by collapsing upper edges and no re-cut (Drury 1996). At Irthington in Wall mile 58 the natural was hard red sand. Here the section shows no primary silt and the angle of repose of the ditch fill demonstrates that the bottom fill in the corners of the ditch comprised the eroded edges. The excavator, Richardson (1972b), remarked that the "steep sides of the ditch would inevitably result in rapid silting through deterioration of its lips." Even where the ditch was cut to a sloping profile in boulder clay at Appletree (p 106) the initial fill was slumped clay from the upper edges of the ditch.

It is clear from the above that extensive stretches of the Vallum in all parts of its length were not interfered with in terms of backfilling or re-cutting and were left to silt up or erode in a natural manner.

The marginal mound at Black Carts was constructed of clean material comprising clay at the base capped with black shale, in a similar, clearly sorted 'reverse natural stratigraphy' to that observed in the south mound. In addition, the marginal and south mounds shared the same stratigraphical relationship with the underlying strata. The logical conclusion from empirical observation alone is that the two mounds were not only contemporary, but simultaneously constructed. Both mounds were built of clean material derived from the ditch with the clay from the top of the ditch at the base, followed by shale.

The marginal mound has been little discussed since the work of Simpson and Shaw (1922) and Richmond (1950). It's problems were succinctly reviewed by Heywood in 1965. She favoured (although not without reservations (Heywood 1965, 91–3)) an interpretation of the mound as the result of cleaning out the ditch from time to time, but particularly as the result of a recomissioning of the Vallum following the retreat from Antonine Scotland. This interpretation has enjoyed general acceptance (Breeze and Dobson 2000, 131). At Black Carts, however, there is no evidence of any re-cut, or of any cleaning out. The slumping of the clay edges at the top of the ditch profile provided a stable angle of repose to the sides. The calculation of the quantity of clay that had slumped over the primary silt and the amount of material that had been eroded from a ditch edge of 70–5° gave a similar result, implying that no re-cutting of slumped material had taken place. The slumping was followed by natural silting. The material of the marginal mound was not characteristic of a scouring of the ditch, but of derivation from its original excavation. The investigation of the marginal mound at Black Carts has important implications (p 135), informed and supported by results from the similar transect cut at Appletree in Wall mile 50.

The metalling on the north berm of the Vallum adds to the number of sites where evidence for tracks associated with the Vallum have been found. These are discussed below (p 133).

Transection in Wall mile 50 (Appletree, Cumbria), 1999

by Tony Wilmott, with contributions by James Wells and Allan Hall

Introduction

This section reports on a transection in 1999 of the earthworks of Hadrian's Wall in the Turf Wall sector at the location known as Appletree, Cumbria (NY 597655). The site lies 1.9km west of Birdoswald Fort, within the short stretch (2.86km) of Hadrian's Wall between Mc49 (Harrow's Scar) and Mc51 (Wall Bowers), where the Turf Wall exists on a different line to its stone successor (Fig 212). Appletree represents one of very few places on the whole frontier where all of the linear components of the system can be found in good condition, accessible and

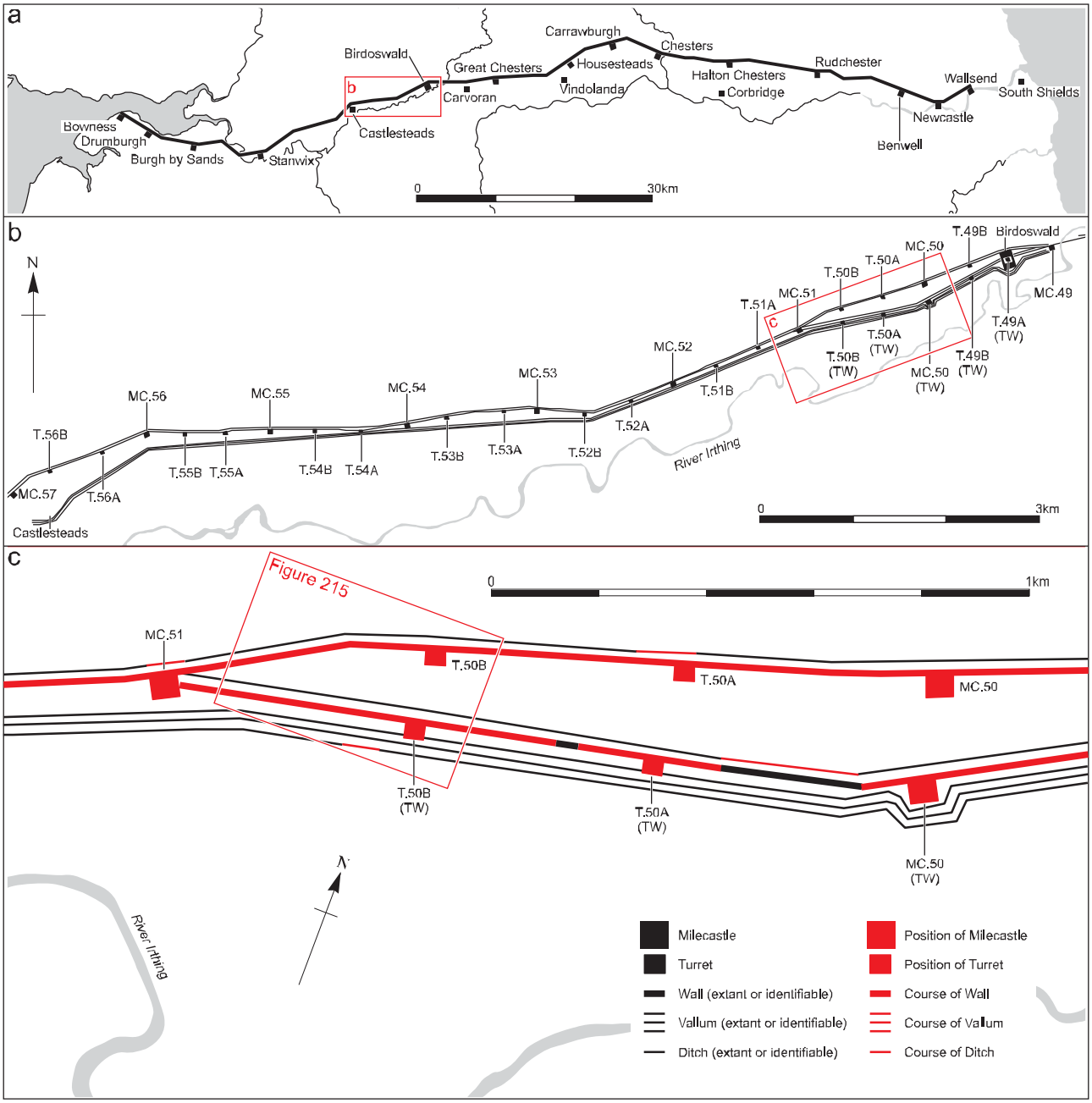
undisturbed by each other. These components are: the Turf Wall, Turf Wall ditch and counterscarp bank, the Vallum (including both main mounds, ditch, and marginal mound), and the Stone Wall ditch and counterscarp bank. The Stone Wall itself lies under the Banks-Gilsland road.

At Appletree the works are interrupted by the course of the Wall Burn and the track to Lanerton Farm, which cuts through all of the above elements except the Stone Wall and its ditch.

Previous work

Appletree is the site of the first discovery of the Turf Wall, by Francis Haverfield in 1895. Haverfield's excavation consisted of a section, which cut through the Turf Wall, the Turf Wall ditch, the counterscarp bank and the Vallum. A watercolour painting (Fig 213) of the section of the Turf Wall, ditch and counterscarp was made by Mrs E Hodgson and was published in the report on the work, together with a line drawing

Fig 212
Appletree: location of Wall Mile 50 on Hadrian's Wall, and of Fig 215.



of the entire section (Haverfield 1897a). In 1896, the third Pilgrimage of the Roman Wall visited the site and viewed the section. It has since become a tradition that the portion of Haverfield's section that transects the Turf Wall is re-excavated periodically in order that it might be viewed by the participants in the decennial Pilgrimages of Hadrian's Wall. Within this context, the section had been re-cut and viewed on nine occasions (1896, 1906, 1920, 1930, 1949, 1959, 1969, 1979 and 1989), and in August 1999 the twelfth Pilgrimage and tenth viewing of the section took place during the course of the present project.

The site is not only notable for the discovery of the Turf Wall. Samples from the Turf Wall were submitted by F G Simpson and Ian Richmond to Dr Arthur Raistrick of Armstrong College for analysis. The samples contained identifiable pollen, which was published in a brief table. This seems to be one of the earliest archaeological realisations of the potential of palynological evidence. Simpson and Richmond (1935b, 246) wrote that:

> "The result is to tell us, not merely the fact that the Wall was here turf-built, but to indicate also the type of vegetation characterizing the surrounding landscape. Samples from the Turf Wall throughout Cumberland would enable us to reconstruct a detailed picture of the local flora in Roman days, a novel possibility beyond the dreams of older generations."

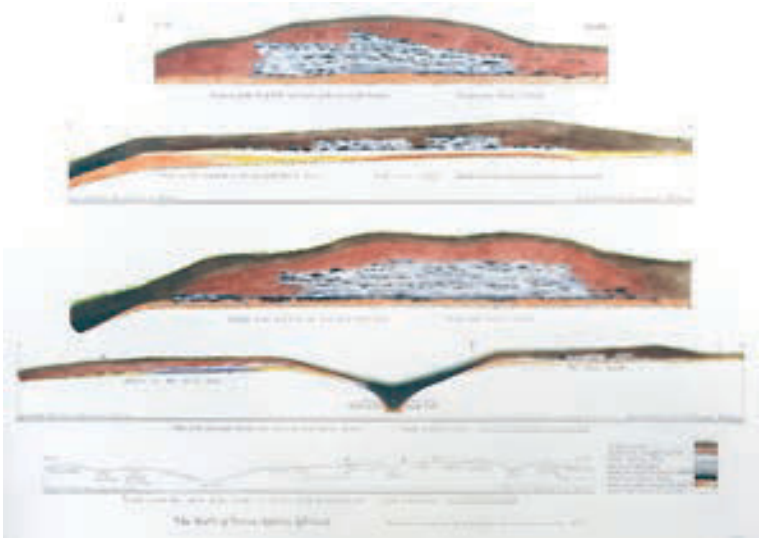


Fig 213
Appletree: the Turf Wall as recorded in 1895 in a watercolour by Mr T and Mrs E Hodgson (Society of Antiquaries of London).

It is an extraordinary fact that until 1979, Mrs Hodgson's watercolour painting was the only record of the section to be produced. On the occasions of the last two Pilgrimages, the Appletree section was cut by the staff of the predecessor organisations to the English Heritage Centre for Archaeology (CfA). In 1979 Julian Bennett (for CEU) recorded the section and some pollen sampling was carried out by Nick Balaam, although the results of this work were not published. In 1989 the staff of the Birdoswald excavation cut the section under the direction of the present writer (for CAS). The section was sampled for pollen and for soil micromorphological data by Maureen McHugh and Patricia Wiltshire, and was structurally recorded and published by Alan Whitworth and Kate Wilson (Whitworth 1992; Fig 214). The results of the scientific analyses undertaken by McHugh (1993) and Wiltshire (1992) were published in the monograph report on the 1987–92 Birdoswald excavation (Wiltshire 1997, 38–40). The work showed that the area had been extensively wooded before its wholesale, unselective clearance. Three clear episodes of burning indicated either primary woodland clearance or subsequent moorland management. When the Turf Wall was built, the area was dominated by wet moorland and bog. The Turf Wall was thus built across grazed moorland, which had been cleared of trees some considerable time previously. The conclusions on the nature of the pre-Roman environment and the fact that turfs were obtained to build the Wall from the immediate vicinity were confirmed by additional palynological work during the present project (Wells 1999).

In 1975 the late Charles Daniels excavated a section through the works in advance of a gas pipeline. This work took place somewhat to the east of the present site, but has never been published except in summary form (Goodburn 1976, 309), although a pollen report has been produced (Donaldson 1976). For ease of reference it will be referred to here as Appletree East.

Project Background

The 1999 excavation was designed to maximise the information recovered from the re-cutting of the Appletree section for the Pilgrimage, in view of the possibility that

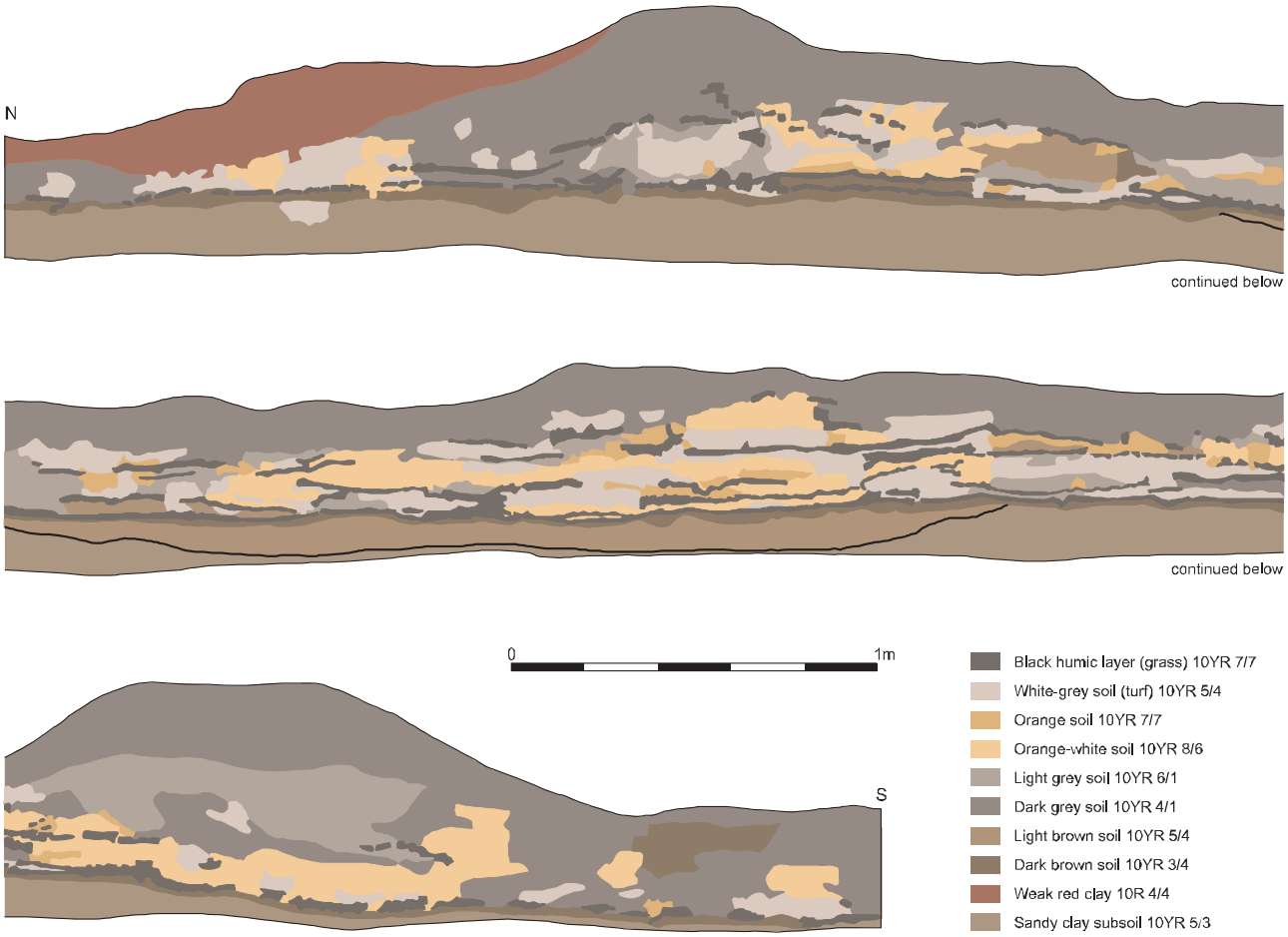


Fig 214
Appletree: the Turf Wall as recorded in 1989 by Alan Whitworth and Kate Wilson. Colour key added by John Vallender.

this may be the last time that such a viewing occurs. It was considered useful to place the Turf Wall at Appletree into its wider context by sectioning all of the associated earthworks in order to examine stratigraphic relationships. The principal objectives were:

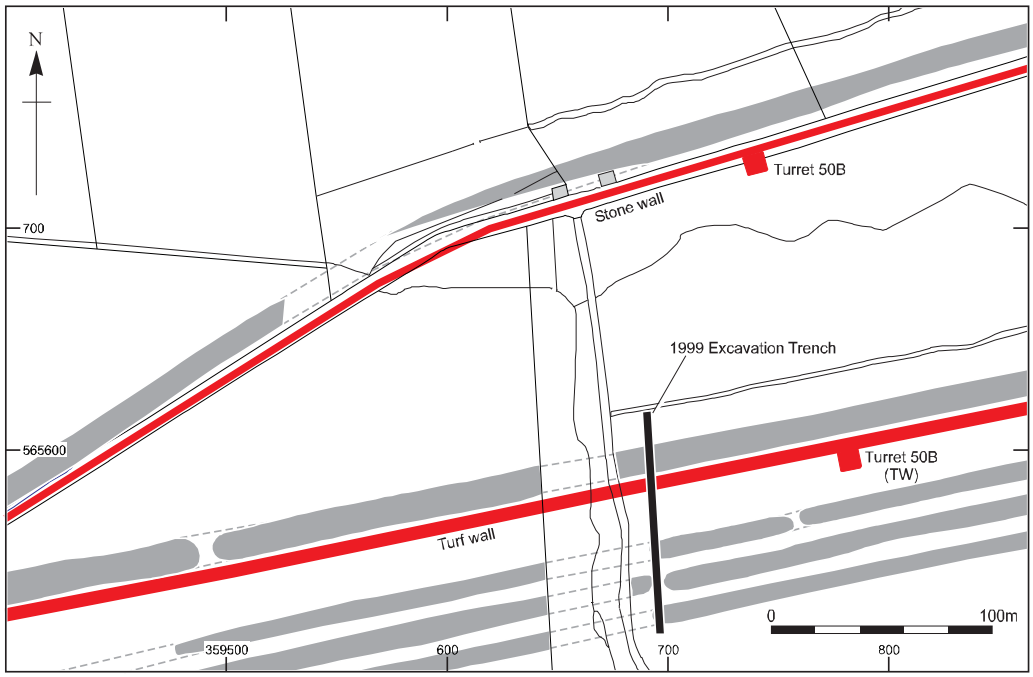
1. To establish whether the sequence of building the Wall was identifiable in the gross stratigraphy.
2. To test existing theories and assumptions on the sequence of construction of the various elements.
3. If (as generally assumed) the Turf Wall was the first element to be constructed, to establish whether the surrounding landscape was denuded of turf to provide materials.
4. To establish whether such denudation is apparent beneath the counterscarp bank and the Vallum mounds.
5. To compare the preservation and content of the pollen record from beneath the Turf Wall, counterscarp bank and Vallum mounds.

Fieldwork methodology

A single trench, 3m wide and 100m long was excavated through the sequence of frontier features, to include the Vallum mounds and ditch, the Turf Wall, its ditch and counterscarp bank (Figs 215–17). The line of the traditional excavation of the Appletree Turf Wall section was utilised, and extended to north and south. The trench was excavated to the level of the natural clay subsoil, sectioning all of the features of the complex. All excavation was done by hand with the exception of the removal of turf over flat areas where it was possible to use a machine. The backfilling and reinstatement was mechanical, with turf laid back by hand. Recording followed the methods currently in use by the CfA. Field visits were made for geoarchaeological advice by M-R Usai (1999b). Palynological samples from the Turf Wall and ditch fills were taken and assessed by J Wells (1999), while A Hall (2000, 2003) analysed samples for plant macrofossil remains.

Fig 215
Appletree: location of trench excavated in 1999.

Fig 216
(opposite and page 108)
Appletree: plan of trench excavated in 1999.



Structures and stratigraphy

The excavated structures and features comprised the various elements of the frontier system. These are described in order from north to south (Figs 216–17).

The glacis (Fig 218)

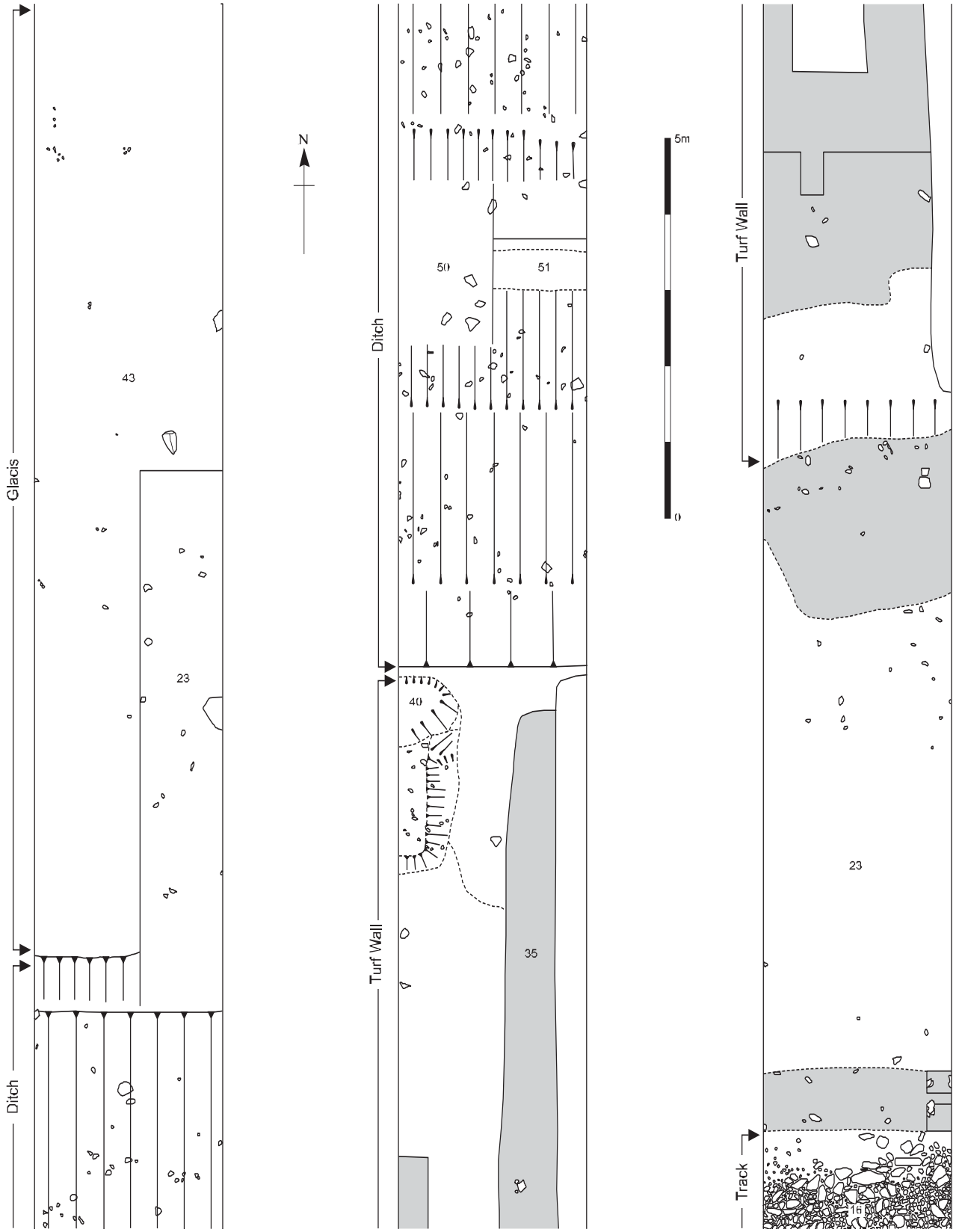
The glacis to the north of the Turf Wall ditch consisted of a low, broad mound 16.5m wide and 0.49m in surviving height. The height was consistent across the entire width of the earthwork, and may have been truncated by agricultural or other activity. The bank was constructed of greyish-pink clay with some small stones (43). This material lay directly upon the surface of the undisturbed, natural whitish-pink clay (23). There was no organic interface between the two deposits, indicating that the mound was laid directly on a surface that had been denuded of turf and topsoil.

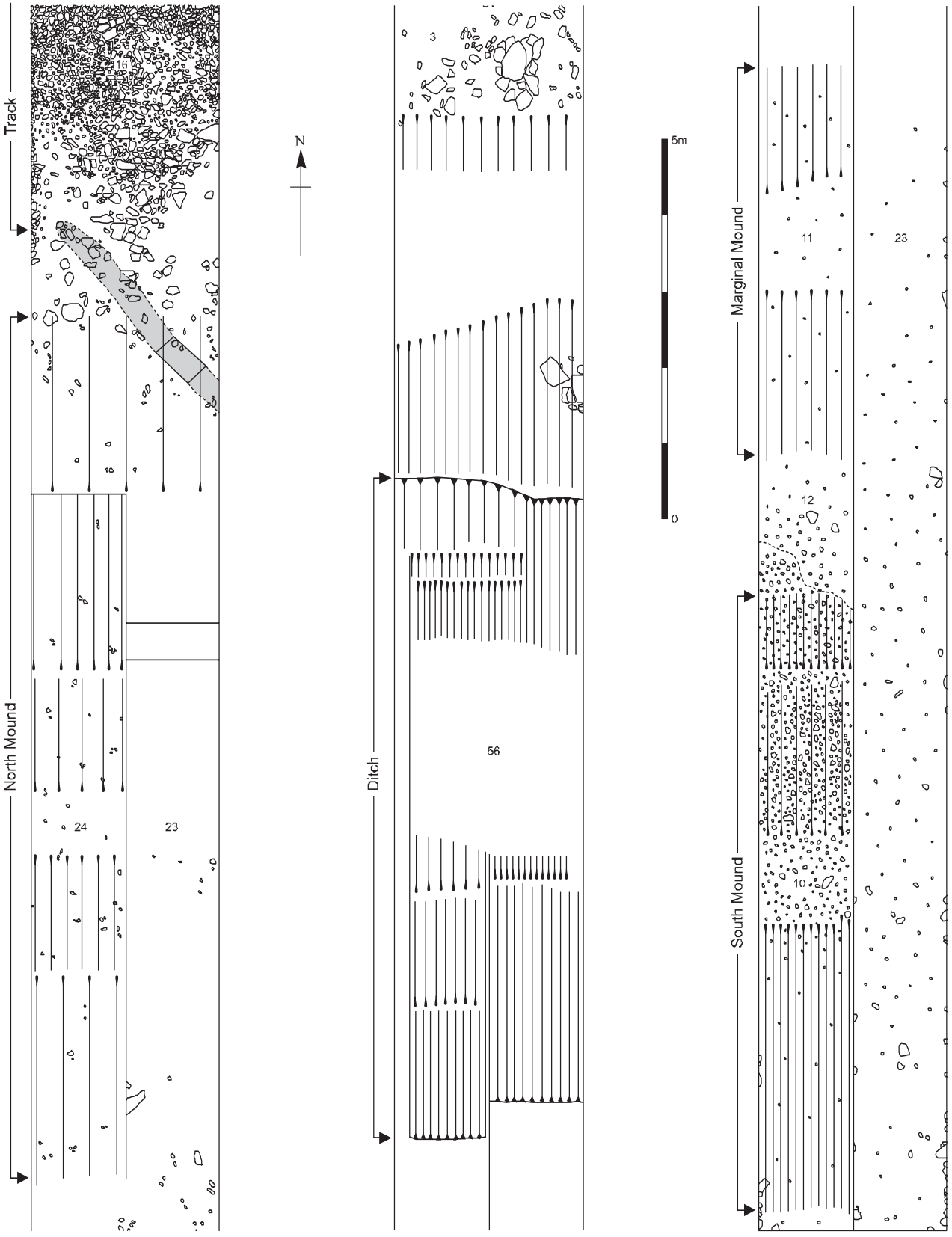
The Turf Wall ditch (Fig 219)

The ditch was broad, at 10.61m, and measured 2.97m in overall depth. The angle of slope of the sides varied, being slightly shallower at the top than at the bottom, but the average slope was in the region of 40°. There was no indication of a drainage channel or 'ankle breaker' in the bottom. The bottom fill of the ditch comprised a 110mm deep layer of spongy black peat (51) above which was a deposit of slumped boulder clay (50) 160mm deep. This boulder clay was in turn sealed by a thick (0.46m) layer of material comprising organic and sub-soil deposits, within which the outline of individual turfs could readily be discerned (45). This thick layer had clearly been tipped from the south side, as it was thicker and higher against the south edge of the ditch. The upper fill (44) was 305mm deep at in the centre, and comprised a friable deposit of light-grey sandy clay with occasional stones. This material represents the natural silting of the ditch after the deposition of the re-deposited turfs and before the development of the modern topsoil (01), which comprised the top 210mm of the fill of the ditch.

The Turf Wall (Figs 213–14, 220)

Beneath the Turf Wall, as Haverfield (1897a, 186) had observed, "the subsoil was found to be overlaid by a black line 1–2in [25.4–50.8mm] thick." This distinct horizon (53) represents the vegetated old ground surface at the time when the Wall was constructed. It is the pollen from this deposit that is so important in demonstrating the nature of the landscape at the time of the Wall's construction. Above this the Turf Wall material (54) survived to a height of 0.45–0.5m and was 9.5m deep. The first layer of turfs was laid upside-down, grass-to-grass, on the ground surface, and


Glacis
Ditch
43
23
N
Ditch
Turf Wall
50
51
40
35
5m
0
Turf Wall
23
Track


Track
North Mound
16
24
23
N
Ditch
3
56
5m
0
Marginal Mound
South Mound
11
23
12
10

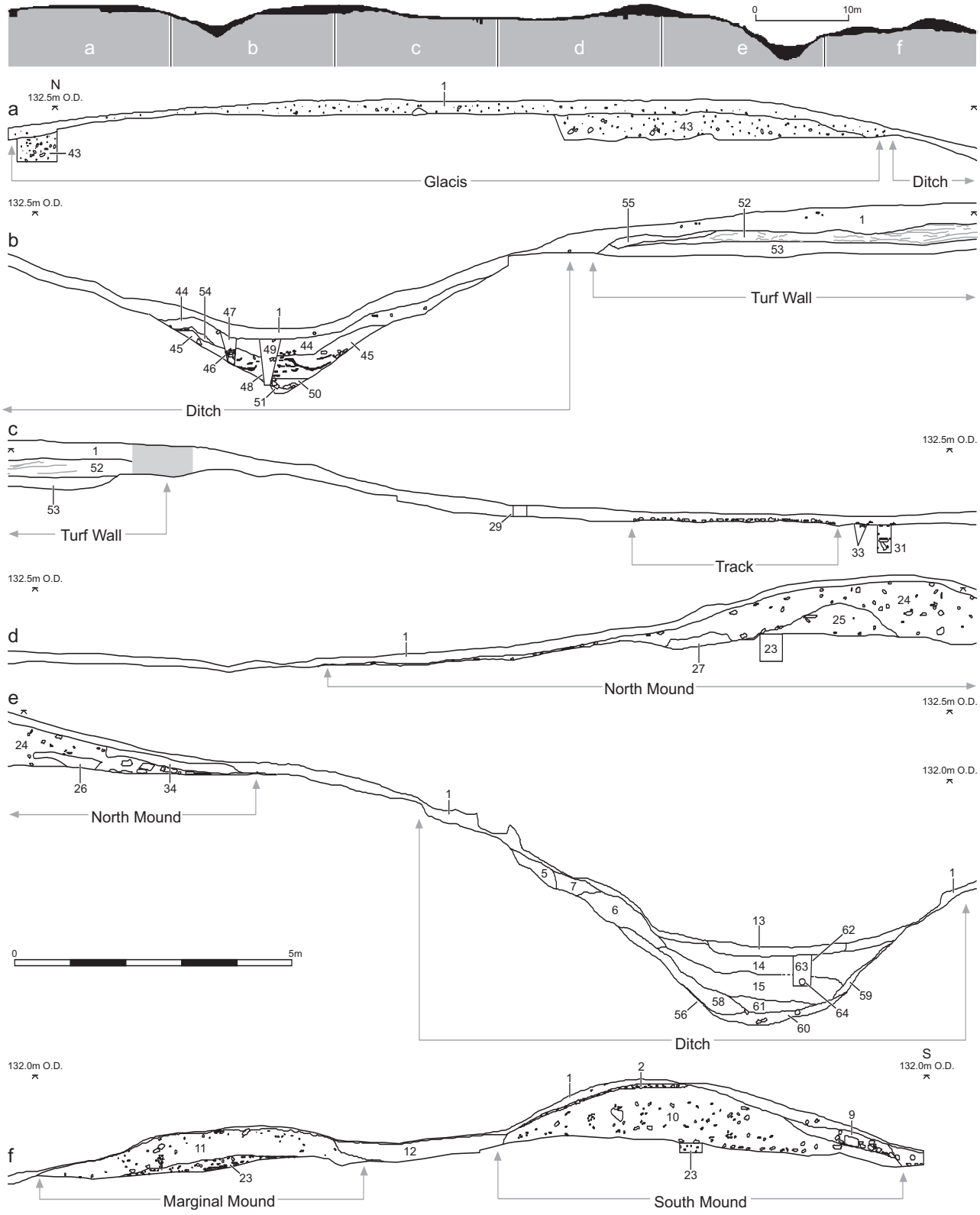

0
10m
a
b
c
d
e
f
N
132.5m O.D.
Glacis
Ditch
Turf Wall
Track
North Mound
Marginal Mound
South Mound
S
132.0m O.D.
0
5m

Fig 217 (previous page) Appletree: east-facing section of trench.

Fig 218 Appletree: box section through glacis, showing no line between the natural clay and the bank material.

the second layer was then placed grass-side uppermost. No clear evidence existed for a regular, 'brickwork' construction. The centre of the Wall comprised a soil dump, and turfs of widely varying sizes were levelled with mineral soil. On the north edge of the Turf Wall was a dump of clay (55).

The track (Fig 221)

To the south of, and parallel to the Turf Wall, at a distance of 5.59m lay a metalled track (16). The concentrated metalling was 2.17m wide, but stone had spread northwards for a further metre. This spread probably resulted from ploughing or other later disturbance. The stones of the track were predominantly rounded river pebbles, with a moderate scattering of angular or sub-angular pieces of greyish sandstone, and occasional large sandstone pieces. None of

Fig 219 Appletree: section through the Wall ditch. Note the distortion of the profile of the base through the insertion of a modern ceramic field drain.

Fig 220 Appletree: section through the Turf Wall excavated in 1999.

Fig 221
Appletree: metalled track between the Turf Wall and the north Vallum mound.

Fig 222
Appletree; section through the north Vallum mound. Note the pale primary core.

the stone showed any sign of having been dressed. The track comprised a single layer of metalling 40–60mm deep laid directly on the natural boulder clay. As with the counterscarp bank there was no sign of any organic turf layer beneath the track.

The north Vallum mound and berm
(Fig 222)

The north edge of the north Vallum mound lay 12.13m to the south of the track. It was 9.2m in maximum width, including some post-construction slumping, which was particularly noticeable on the southern side. It survived to a height of 1.07m. The mound was raised upon a slight natural ridge. The first elements in its construction were three smaller mounds, which were later embodied in the greater earthwork. Beneath the northern and southern edges there were a pair of dumps of light-orange sandy boulder clay (26, 27), each measuring 1.20m wide and 0.2m high. Between them was a 'core-mound' of yellowish-grey, stony boulder clay (25) 2.54m wide and 590mm high. This material was placed on ground previously denuded of any turf or topsoil (Usai 1999a). The material of the 'core-mound' was so similar to the natural boulder clay that it was necessary to excavate a small sondage into the underlying clay in order accurately to distinguish between the *in situ* natural (23) and the built mound. This difference was only discernible through a slight contrast in compaction as the mound material was

slightly more friable. The main body of the mound was constructed from brownish-red stony boulder clay (24).

Between the foot of the mound and the Vallum ditch there was a 4.61m wide berm. Above a deposit of material that had slumped from the mound was a spread of stones 2.5m in width (03; Fig 222). This comprised a lower deposit of large, irregularly shaped, flat stones over which was a patchy layer of small, rounded pebbles. The area of intact stone spread at the foot of the north mound was protected from erosion and other disturbance by an overlying deposit (34) of red-brown sandy silt, which was probably weathered down from the top of the Vallum mound. The stones were not, therefore, primary. A group of flat stones (04) on the northern lip of the Vallum ditch, 2.15m to the south of the intact surface, appeared to comprise a part of this spread which had slumped into the ditch.

Fig 223
Appletree: the Vallum ditch looking north from the marginal mound.

The Vallum ditch (Fig 223)

The ditch (56) was 10.23m broad at the top. Its original profile had relatively shallowly sloping sides, averaging *c* 45°, and a concave base 3.12m wide. The relatively shallow profile was probably an attempt to prevent too much slumping of the boulder clay-cut sides. The ditch was 4.33m deep measured from its lip on the south berm. The bottom fill of the ditch comprised a primary silting (60) of reddish-brown sandy silt, 240mm deep. This was followed by the slumping of the clay sides of the ditch, resulting in the deposition against each side of silty clay layers (58, 59). This had the effect of altering the profile of the ditch quite radically, creating a more stable angle of repose for the ditch sides, within which subsequent silting took place. The first deposit to form after the sides slumped was a sticky, dark-grey humic clay silt (61) 260mm deep. The main body of the silting above this comprised a dark silty clay with a considerable damp organic content (15). A large amount of brushwood was found within this deposit, which was 470mm deep. On the north side of the ditch this layer was overlain by further deposits of silty clay derived from slumping of the clay edges of the ditch (05, 06, 07). Above (15) and the slumped clay was a 320mm deep layer of greenish-grey clay-silt with a substantial organic content (14). This, like (61) and (15) had the appearance of naturally accumulated, horizontally laid, water deposited silt, and represented a long period of waterlogging and natural accumulation, akin to marsh formation. The brushwood found within the sequence appears also to have been naturally deposited through the decay of bushes, which had grown in the ditch, or on its edges. The uppermost layer within the ditch (13) was the modern, active, vegetated soil. It comprised a highly organic, waterlogged, dark-grey clay-silt, which differed from the topsoil on the rest of the site, but which clearly represented the latest phase of the natural processes that had caused the deposition of earlier silt layers.

The marginal mound

The marginal mound lay on the southern lip of the Vallum ditch. It was 6.12m wide and 0.512m in maximum height. The mound comprised light orange-brown silty clay, with lenses of clean reddish and grey sand, and occasional stones (11), all of which occur as constituents of the natural glacial boulder clays of the area. It was raised directly on the natural boulder clay (23),

causing some confusion as to where the interface between mound and natural surface lay. There was no sign of any buried soil or old ground surface beneath the marginal mound.

The south Vallum mound (Fig 224)

This mound was 8.5m wide and survived to a height of 1.13m in the centre. It was separated from the marginal mound by a flat berm 2.39m wide. The main body of the mound consisted of a dark red-brown re-deposited boulder clay (10), identical to the clay on which it was raised; and as with the north mound, it was necessary to excavate a sondage into the natural clay in order to establish where the base of the mound was – like the north mound the difference was in its compaction. There was no trace beneath the mound of any buried soil or old vegetated ground surface.

On the south side of the mound, the red clay was overlain by a thin deposit of yellow-orange silty clay (09), also re-deposited. The top of the mound was covered with a surface of small, rounded pebbles (02), which were interpreted during the excavation as deliberate metalling. It remains possible that these derived from a stony pocket within the natural boulder clay, and were simply an aspect of re-deposition in the construction of the mound.

Post-Roman activity

The post-Roman archaeology of the site consists partly of the gradual silting-in of the two ditches, which is described above. The topsoil (01) that developed over the site was a grey-brown clay silt, except in the Vallum ditch, where it was altered by constant waterlogging (13). On the berm between the south Vallum mound and the marginal mound, a thick (0.32m) deposit of topsoil developed (12). The improvement of pasture in the area required the excavation of land drains. Two of these (48, fill 49 and 46, fill 47) were cut in the Turf Wall ditch fill, one in the Vallum ditch fill (62, fill 63), and three (29, fill 28; 31, fill 30; and 33, fill 32) in the vicinity of the track.

In the part of the trench that sectioned the Turf Wall ditch, most of the material removed comprised disturbed backfill from

Fig 224
Appletree: section through the south Vallum mound.

the excavations of the section for previous Hadrian's Wall Pilgrimages. The latest cut revealed was cut 35 (fill 36), which was clearly the 1.7m wide trench excavated in 1979 and re-excavated in 1989. During the 1989 excavation it was found that the 1979 trench had been lined with polythene. Following this lining enabled the 1989 trench to follow exactly the edges of the 1979 trench.

The Turf Wall section in the east side of this cut was protected by a series of galvanised steel sheets. These served to support the section edge, and very effectively maintained a clean section for examination. The sheets were replaced following the 1999 excavation. On the western side of the 1999 trench, outwith the limits of the 1979/89 excavation, the basal turf layer of the Turf Wall was seen in plan. On the western edge of the excavation this had been cut by a number of other, sub-rectangular, features measuring *c* 3m long. In one instance (37, 40) the feature had been re-cut on at least one occasion in the same place. These trenches must represent openings in the Turf Wall for previous Pilgrimages, although their size shows that the section was not invariably completely exposed.

Pollen analysis

by James Wells

Introduction

As noted above, the section of the Turf Wall at Appletree has previously been subject to pollen analysis (Simpson and Richmond 1935b; Donaldson 1976; Wiltshire 1992, 1997). The latest of these investigations (Wiltshire 1992) analysed a single sequence, which incorporated three organic layers, the lowest of which was interpreted as the pre-wall land surface. The pollen results revealed that a relatively open, probably grazed moorland existed immediately prior to construction of the Wall with the main taxa represented being a mix of alder, birch, hazel, oak, heather and wild grasses. Other species present in low but consistent numbers were sedges, ribwort plantain, ferns and bracken. There was some variability in the pollen frequencies, but this was insufficient to suggest anything other than a local source area for the turfs.

A sampling strategy was proposed for the present project that could confirm and build on the results of the previous investigation. Multiple profiles were taken from the Turf Wall cross section, which ensured the inclusion of the lowermost buried land surface. In this way it was hoped to reveal any spatial variability in the pollen record of that one layer. In addition it was decided to sample the fills of the Turf Wall and Vallum ditches in order to establish the potential of the pollen record of the sediments in these features. Monolith samples were taken from three points along one cross-section of the Turf Wall (TWS). One monolith and three Kubiena tins of sediment were also taken from the Turf Wall ditch (TWD) where organic horizons were revealed. Finally, one monolith tin was taken of the very organic sequence in the base of the Vallum ditch (VD). A sub-sample from each level was prepared for pollen analysis using the methodology outlined in Barber (1976). Andrew (1990), Moore *et al* (1989) and the Ancient Monuments Laboratory pollen reference collection were used for critical identifications. One slide was prepared for each sampled level and all were counted to either a minimum of 100 grains of land pollen or all pollen in 10 traverses of the slide, whichever was first achieved. Nomenclature follows Stace (1991). All results detailed in the following sections are based on a limited amount of data produced during an assessment exercise.

Results

The results of the pollen assessment are presented in Appendix 2, Table A3. Although pollen concentrations have not been calculated, the number of exotic *Lycopodium* spores per level have been included in the table; in broad terms a low value suggests higher pollen concentrations.

Pollen was generally well preserved and present in high concentrations in all levels. The main taxa represented in all samples were alder, hazel, heather and wild grasses. Additional species that were common in low numbers and in most samples were oak, ribwort plantain, polypody and bracken.

Turf Wall samples

In all the Turf wall contexts (Sample numbers 924–6) the main taxa listed above dominated each sample, while both ribwort plantain and bracken also present in all contexts. Pollen frequencies vary between samples but in general terms both alder (10–20%) and grass (15–20%) values are relatively stable. Hazel and heather values fluctuate so that in five of the eight samples, hazel values are between 10–20% and ling is

at 40–50% – in the other three samples this situation is approximately reversed. Values per sample for ribwort plantain are variable (< 1–8%), but the mean is *c* 4%.

Two samples (925/150mm and 926/205mm) were taken from the soil of the assumed buried land surface underneath the Turf Wall. Uncertainty during sampling of the third proposed sample from this layer (924) meant that a turf layer was sampled rather than the probable soil layer, which was very discrete (50mm thick). The two buried land surface samples showed a considerable amount of similarity in their respective pollen assemblages, both being samples dominated by ling. The only aspect of these two assemblages that might distinguish them from the rest of the ling-pollen-dominated group of samples is the high values of ribwort plantain in each.

It is therefore hypothesised that the three hazel pollen dominated samples (924/95mm, 926/165mm and 926/165mm) may indicate a turf source area at some distance (< 10m) from the immediate location around the construction site. If such a distinctive split between the ling and hazel dominated samples had not been revealed then the variability of the pollen frequencies could have been dismissed in terms of ultra-local variability in floral – and therefore pollen – distributions, and this must remain a possibility. The source area of the hazel-dominated turfs is probably still from very close to the site and the higher values of hazel may suggest that the turf was removed from closer to a field boundary or woodland edge. The underlying similarity of the pollen spectra from all turf and buried soil samples certainly indicates that the source area was local.

Pollen analysis of theTurf Wall ditch and Vallum ditch fills

It is worth stating immediately that pollen analysis of the fills of archaeological features is notoriously difficult to interpret. Pollen taphonomy, local pollen bias, poor dating and lack of off-site data for correlation are some of the many problems faced by the investigator. Only a very detailed and meticulously planned sampling strategy can help overcome some of these problems. The present investigation was not at this level, although it was considered worthwhile assessing the organic-rich deposits of the two fills on the basis that they may hint at the subsequent changes to local plant populations post-construction.

Turf Wall ditch samples:
Two samples (921/45mm and 919/50mm) were taken from the Turf Wall ditch fill. As noted above, the bottom fill was a naturally deposited peat, over which was boulder clay slump, followed by dumped turfs from the Turf Wall. The basal peat was sampled, (sample 921/45mm) as was the thickest and most continuous (sample 919/50mm) organic deposit within the dumped turf.

The stratigraphically lower sample, 921/45mm revealed a pollen spectrum similar to the hazel-rich turf samples, the main differences being the high alder (39%) and low ling (3%) values. Grasses remain well represented at 19%. This suggests that the commencement of deposition occurred in an environment not dissimilar to that at the time of Turf Wall construction although alder appears to have increased locally. In the re-deposited turf layer, sample 919/50mm, the pollen assemblage has hazel dominating at 70% of Total Land Pollen (TLP). Alder maintains a significant presence (10%) as do grasses (13%), but, significantly, there is a marked increase in birch to 5% TLP. This result comes from turfs that have been re-deposited from the upper part of the Turf Wall, and probably further reflects the diversity of the local terrain from which turf was taken for Wall construction.

Vallum ditch samples:
The basal section of the Vallum ditch fill was recovered in a monolith (927), and incorporated some of the underlying natural sand and gravel. Overlying this was a sequence of organic-rich silts, 440mm of which was retrieved. A section of wood, either a root or a branch, was in the section (between 240mm and–320mm depth) and has been identified as *Fraxinus* (ash) by Rowena Gale. Two samples were prepared for assessment for pollen – one from the top (927/45mm) and one from the base (927/375 mm) of the recovered material.

The lowermost sample has a broadly similar pollen assemblage to that recorded from the base of the Turf Wall ditch deposits with both high hazel (42%) and alder (33%) values. There was marginally more oak (6%) and sedge (7%) pollen recorded than in other samples, and previously unrecorded occurrences of pine, willow and a possible cereal grain. The uppermost sample is markedly different from any of the other assessed samples, being dominated by alder pollen (96%).

From this limited evidence it is only possible to say that the deposits of the Vallum ditch might have commenced accumulating in an environment similar to that at the time of construction. At some time later the local environment became dominated by alder. This resurgence of alder was not picked up in the Midgeholme Moss pollen diagram (Innes unpublished) and so would indicate that this increase in alder was probably a very local event.

Plant Macrofossils

by Allan Hall

Introduction

Samples of up to 10 litres of sediment were collected for the investigation of turfs within the Turf wall. This was undertaken as part of an English Heritage-funded project to study archaeological turfs. The opportunity was also taken to examine material from one of the basal fills of the Turf Wall ditch. In the event, the ditch fill proved to contain considerable quantities of insect remains, which were examined briefly by Harry Kenward.

Methods

Subsamples of 3kg were taken from three of the samples collected:

1. Sample 903 (Context 53): lowermost peaty layer in Turf Wall (?OGS), (sampled from base of section)
2. Sample 906 (Contexts 52, 53): combined material from basal peaty layer (?OGS) and turfs above.
3. Sample 902 (Context 45): basal peaty fill Turf Wall ditch

All three sub-samples were soaked in water and subjected to gentle manual disaggregation. The resulting residues were sieved into several fractions (smallest mesh 0.3 mm) and examined for plant remains (and other components) under a binocular microscope. The abundance of remains was scored on a semi-quantitative scale from 1 (one or a few fragments or individuals) to 4 (abundant, a major component of the whole sub-sample). Selected remains, especially insects, were extracted for further examination. The residues were boiled gently with a little sodium carbonate to facilitate further breakdown of the peaty sediment and then were re-examined, using sieves as before.

Results

Sample 903:
The small- to moderate-sized residue consisted mostly of un-disaggregated humic silt/amorphous peat and clay, with sand with a little gravel. There were some angular pieces of charcoal up to 10mm, and moderate numbers of *Cenococcum* (soil fungus) sclerotic (resting bodies). After boiling with alkali, a much smaller residue was obtained, of which the largest fractions were sand and charcoal. There were a very few poorly preserved insects of no interpretative value.

Sample 906:
This sample was soaked for several days before initial disaggregation in water. The small residue, which was mostly of sand, also contained quite a lot of charcoal and some *Cenococcum* sclerotic, but no other remains apart from two rather fresh-looking (presumably modern) grass caryopses.

Sample 902:
Some lumps of peaty material were examined prior to disaggregation. They were found to comprise slightly silty/sandy, but basically very well humified organic material with (?)ancient rootlets and some other vegetative fragments. The initial disaggregation resulted in a large residue, mainly of pellets of amorphous organic sediment, with sand and some clasts of clay and a little gravel. Also noted were some woody roots, which might be penecontemporaneous, eg roots growing into peaty deposit from above before being deposited en bloc into the ditch. Some plant material appeared to have become dry and not to have been fully wetted during processing (this is unlikely to be a function of the long period of sample storage of nearly one year, however).

There was a modest range of identifiable plant remains, of which the more abundant were nutlets of sedges (of more than two kinds), and of (?)tormentil (mostly rather well preserved), as well as shoots of the moss *Ceratodon purpureus* (again, usually well preserved, with rhizoids-root-like structures attached, and in some cases the remains of perichaetial leaves indicating material that had been fruiting). Most of the plant material, however, was somewhat worn, especially the mosses (other than *C. purpureus*). According to Dr H Kenward reports (pers

comm) the rather large assemblage of beetles among the insect remains was typical of what might be found in poor, rough grazing land. It included *Geotrupes* and *Aphodius* dung beetles, some ground beetles and larval apices of click beetles ('wireworms'). The state of preservation of the remains varied, consistent with an origin in turfs (were there is typically a mixture of old, partly decayed, specimens and fresh corpses).

Disaggregation following treatment with dilute sodium carbonate produced a much smaller residue in which the coarser (> 2mm) material consisted of woody root fragments. A single caryopsis of the heath grass, *Danthonia* and a pinnule (frond) fragment of bracken, *Pteridium,* were the only additions to the list, although a modest number of beetle remains were also released by this additional processing.

Discussion

The two samples from the Turf Wall failed to provide firm evidence for the nature of the vegetation growing on the turfs at the time they were cut. In this respect they do not provide any corroborative evidence to add to that from the pollen analysis of the same deposits. The presence of modest amounts of charcoal from branch or trunk wood in both the samples from the Turf wall is perhaps unexpected. The most likely explanation for its occurrence here is that it formed during the burning of brushwood cleared from land in the vicinity of the Wall during its construction. It may then have become incorporated into the earthwork because the fires had been lit on turfs that were subsequently cut and placed into the Turf Wall.

Taken overall, the list of plant taxa from the ditch fill sample is not inconsistent with the acid grassland vegetation existing in the area of the site today (and the nature of the insect remains seems consistent with this). If, as seems to be the case, the biological remains represent material derived from turfs, they indicate that areas of cropped turf were, indeed, established by this time. It might, however, be argued that (unless the turfs had been brought from some distance) such vegetation must have been established locally in order for any reasonable sized turfs to be cut at all.

One feature of the Turf Wall ditch fill assemblage was the presence of moderate quantities of the moss *Ceratodon purpureus.* This species is common in a variety of unshaded habitats on bare soil (especially on heathland, but also on fallow land), on walls and on rotten wood. Watson (1968, 155) notes that "it is a conspicuous plant in its typical state in spring, when patches of bare ground or burnt heathland are often purple with the countless setae [the stalks bearing spore capsules] of fruiting *Ceratodon.*" Certainly, it has been noted in the succession following burning on lowland heaths and commons – for example in Middlesex (Richards 1928) and Surrey (Summerhayes and Williams 1926) – typically at a stage after the ash left from bonfires has become leached. It seems reasonable to suggest that disturbance to the acid grassland/heathland in the area caused by the builders of the Turf Wall led to the establishment of such patches of *Ceratodon*, which were subsequently incorporated into the monument and thereafter fell with turfs from the Wall's decay into the ditch below.

The much better state of preservation of plant remains in the ditch fill sample is perhaps merely a function of the greater degree of waterlogging in that feature. Because of their raised position within the turf wall bank, the turfs of the Turf Wall – although retaining some micro-stratigraphic integrity (the humic and bleached layers had seemingly undergone very little mixing over the centuries) – had mostly decayed except for the most resistant materials.

Interpretation

The pollen and plant macrofossil assessments have provided additional useful information about the vegetation in and around the Appletree area, which supplements that previously published for the present site and Appletree East. It confirmed that deforestation had taken place by the time of turf cutting with only alder and hazel maintaining a significant local presence. There is still no evidence for arable agriculture, with ling and wild grasses dominating the pollen record, and thus suggesting a grazed moorland environment. The presence of waterlogged re-deposited turfs in the ditch facilitated the survival of plant macrofossils and insect remains, which confirmed the view of the local vegetation at the time of Wall construction.

The sequence of building activity at Appletree was very clear. First, the line of the Turf Wall must have been surveyed

and laid out on the ground. The Wall was built on an intact vegetated land surface while the counterscarp and Vallum were constructed on ground that had been truncated by the removal of turf and topsoil. This shows that the turf on each side of the strip on which the Wall was to be built had, across a large area, been removed for use as building material, and placed directly on the marked-out strip.

The key factor in the relative dating of the other features of the complex is the fact that they all appear to have been built upon the stripped clay land surface that was the product of the construction of the Turf Wall. It is important to attempt to judge how long vegetational regeneration would have taken, although without experimentation this is not a simple matter. The difficulty encountered in finding the interface between natural clay and the base of the counterscarp and Vallum mounds shows that clay was heaped upon clay, and that all interfacial material, including all active soils, had been comprehensively removed. It is unlikely under such circumstances that vegetation would return quickly, as it would have had to grow upon sterile clay. It was, however, noticed during excavation that any rhizomatous roots, such as those of bog grasses, that had been only partially removed in stripping, would recover quickly, and green shoots from such rhizomes were visible after some five weeks in late summer. Similarly, the presence of the moss *Ceratodon purpureus* may indicate a possible agent of regeneration. It is possible, therefore, that limited regeneration occurred quite quickly after the construction of the Wall, but a wholesale re-growth would have taken much longer – a matter of years.

The Turf Wall at Appletree was thus constructed by removing turf from a broad area in the vicinity. Both here and at Appletree East the lines of individual turfs were observed in the fabric of the Wall. The pollen evidence in both cases, however, shows that the vegetation was not grass sward, rather wet grassy moorland. This being the case, there would have been few areas in which 'regulation'-sized and shaped turfs could be cut. Most of the turfs would have broken into clods, and this explains the variation in the size of the turfs used to build the Wall. The experience of the Appletree excavation team in attempting to cut turfs at the start of the work (for replacement after backfilling) was an instructive piece of experimental archaeology in this regard, as it proved almost impossible to cut decent sized turfs. It seems likely that good-sized turfs would have been used for the faces of the Wall, while smaller turf pieces, clods and any loose soil left on the stripped clay surface would have been shovelled up and incorporated within the core.

There is evidence at Appletree that clay from the ditch was also used to reinforce the north face of the Turf Wall (Whitworth 1992, 53). This echoes the use of clay instead of turf at Garthside (Simpson and Richmond 1935b), although in fact the Wall builders used whatever materials were to hand, prompting Breeze's (1982) remark that 'earth Wall' might be a better description.

The pollen evidence from the area of Appletree may address the question of the treatment of the top of the Wall. The impression gained is of an open area, with alder and birch scrub in the vicinity. One natural resource that seems to have been in short supply was large timber. The reconstruction of Mc50 TW (High House) presented by Simpson *et al* (1935b) shows a timber boarded Wall-walk, and a split-timber breastwork. This would be a profligate waste of a scarce resource, and seems inherently unlikely. The birch and alder scrub vegetation, however, might have produced material suitable to the manufacture of woven wattlework hurdles. If the Wall was equipped with

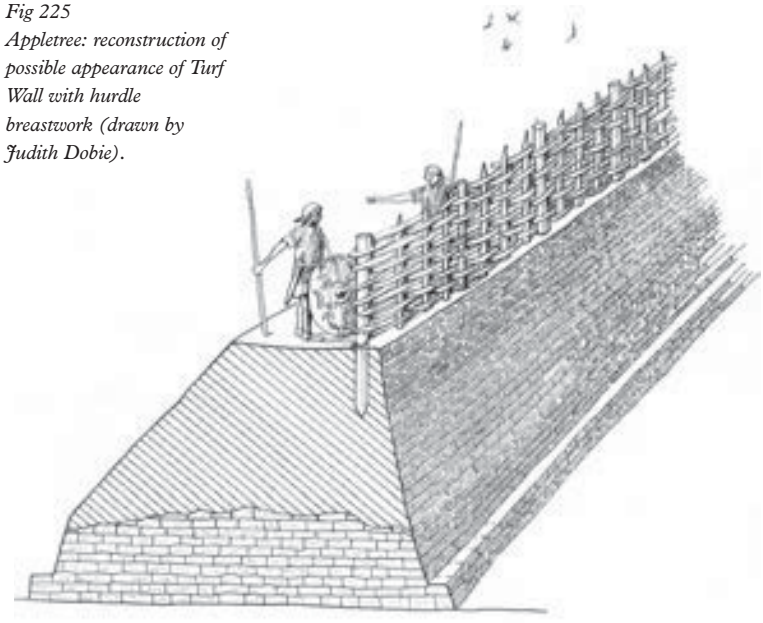


Fig 225
Appletree: reconstruction of possible appearance of Turf Wall with hurdle breastwork (drawn by Judith Dobie).

some form of breastwork, the use of such hurdles is more probable (Wilmott 2001a, 45, fig 12; Fig 225).

The dimensions of the Wall ditch varied in the Turf Wall sector, although in the few excavated exposures it is generally V-shaped in profile (p 131), as at Appletree. It seems likely that the ditch was cut to as steep a profile as possible given the ground conditions, although the surviving profile might have been altered in different places by cleaning and erosion. The material derived from the digging of the ditch was deposited to the north of the ditch in a very broad, low, smoothed-out bank or glacis (*sensu* Welfare 2004).

The Turf Wall was destroyed when the Stone Wall was constructed as its replacement. The lapse of time between the construction and destruction of the Turf Wall is demonstrated at Appletree by the stratigraphy in the Turf Wall ditch. Here there was time for a peaty primary deposit to form, and for the clay edges of the ditch to slump on top of it before the turfs of the Wall were dumped into the ditch from the north. The deposition of the demolished Turf Wall into its ditch is also observed to the east at Birdoswald (Wilmott 1997, 47).

The fact that the newly discovered track, situated 5.59m to the south of the Turf Wall was laid directly on the stripped clay surface suggests that it was an early feature, associated with the Wall in its turf phase. It cannot, therefore be interpreted as part of the Military Way, which was constructed following the return from Antonine Scotland. By the time this was built, vegetation regeneration would surely have occurred. The track was narrow, at 2.17m wide, and may have been short-lived, as it showed no signs of resurfacing. It also lacks the structural features of the Military Way, which is generally much broader at some 6m (Breeze 2006), well built of stone and cambered. Only a little way to the west of Appletree, between Pike Hill and Mc53, the road was found some 12m south of the Wall. It was substantially constructed, complete with stone kerbs (Simpson and McIntyre 1933b) and very unlike the Appletree track. A number of other options for the context of this track have been considered (*see discussion* pp 133–34).

On the Vallum, several of the observations made in 1999 contradict those reported by the original excavator. Haverfield (1897a, 187) stated that "the two principal mounds ... rest ... on a distinct though broken black line of original surface. The old surface line beneath the marginal mound is also plain" The present project found no evidence to support this; on the contrary, there was no black line at all, broken or not, beneath the principal or marginal mounds. A feature of interest was the sequence of construction apparent in the north Vallum mound. The three small primary mounds were built using dumps of the upper, natural light-orange, sandy, boulder clay. It is possible that these were constructed as marking-out mounds and subsequently incorporated in the greater mound of dark, reddish coloured lower clay. The south mound was entirely constructed of this lower clay. Unlike at Black Carts (p 101), therefore, the north mound was the first to be worked on.

The stone spread on the berm has previously been explained as a metalled road or patrol track. The stones are very rough and irregular for this, and do not appear as metalling in the way that the new track does. Also, the relationship of the stones with the north mound is that the stone overlies slumping. This shows that the stone is not primary. There is a possibility even that this material has spread from a post-medieval boundary wall now destroyed.

The 1999 section showed that the material of which the marginal mound was constructed was clean sandy clay similar to that used to build the primary elements of the north Vallum mound. When guiding the fifth Pilgrimage of 1920, Mrs Hodgson stated that the marginal mound was more mixed than the larger mounds and was considered to be the result of cleaning out the ditch (Hodgson 1920, 283). The marginal mound was, in fact, only more mixed because of the inclusion of bands of silty sand, which occur within the natural upper boulder clay. This material was extremely clean, with none of the organic admixture that one might expect from material cleared from the bottom of a wet ditch, and that actually existed as the primary filling of the Turf Wall ditch. The ditch itself showed no evidence in section that re-cutting or cleaning had taken place. The natural slumping of the sides created a stable angle of repose within which organic silts developed. The burden of the evidence would seem to suggest that the marginal mound was constructed using the upcast spoil from the original excavation of the ditch.

Transection in Wall mile 61 (Crosby-on-Eden, Cumbria), 1980–4

by Julian Bennett

Introduction

This report summarises the results of excavation and geophysical survey work undertaken in 1980–1 and 1984 on the line of Hadrian's Wall at Wall mile 61 (Crosby-on-Eden), Cumbria, in advance of the laying of a gas pipe-line. The work was funded by the then British Gas Corporation, and was directed by the writer for the then Central Excavation Unit, English Heritage.

The site

The Crosby transection across Hadrian's Wall was dug at Ordnance Survey Grid Reference NY 4460 6063, a point some 330m east of the recently confirmed site of Mc62 (Walby East) (pp 170–3; Figs 226–7). The local drift geology hereabouts consists of reddish-yellow boulder clay, over which are fine and coarse loamy soils, slowly permeable and seasonally waterlogged. In this area, it is believed that the Hadrianic frontier comprised a ditch and turf curtain in its first phase, with the addition of the Vallum in a second phase, and the replacement of the turf curtain by a Stone Wall in a third (cf Daniels 1978, 18–19 and 30–1). At this particular point the curtain was believed to underlie the minor road from Wallhead to Walby, for a slight hollow visible in the field to the north was generally accepted as marking the line of the ditch, while an even slighter hollow in the field south of the road was considered to reflect the course of the Vallum. In 1980 both of these fields were used for pasture, although archaeological evidence indicated that a root crop had been grown on them at some earlier date.

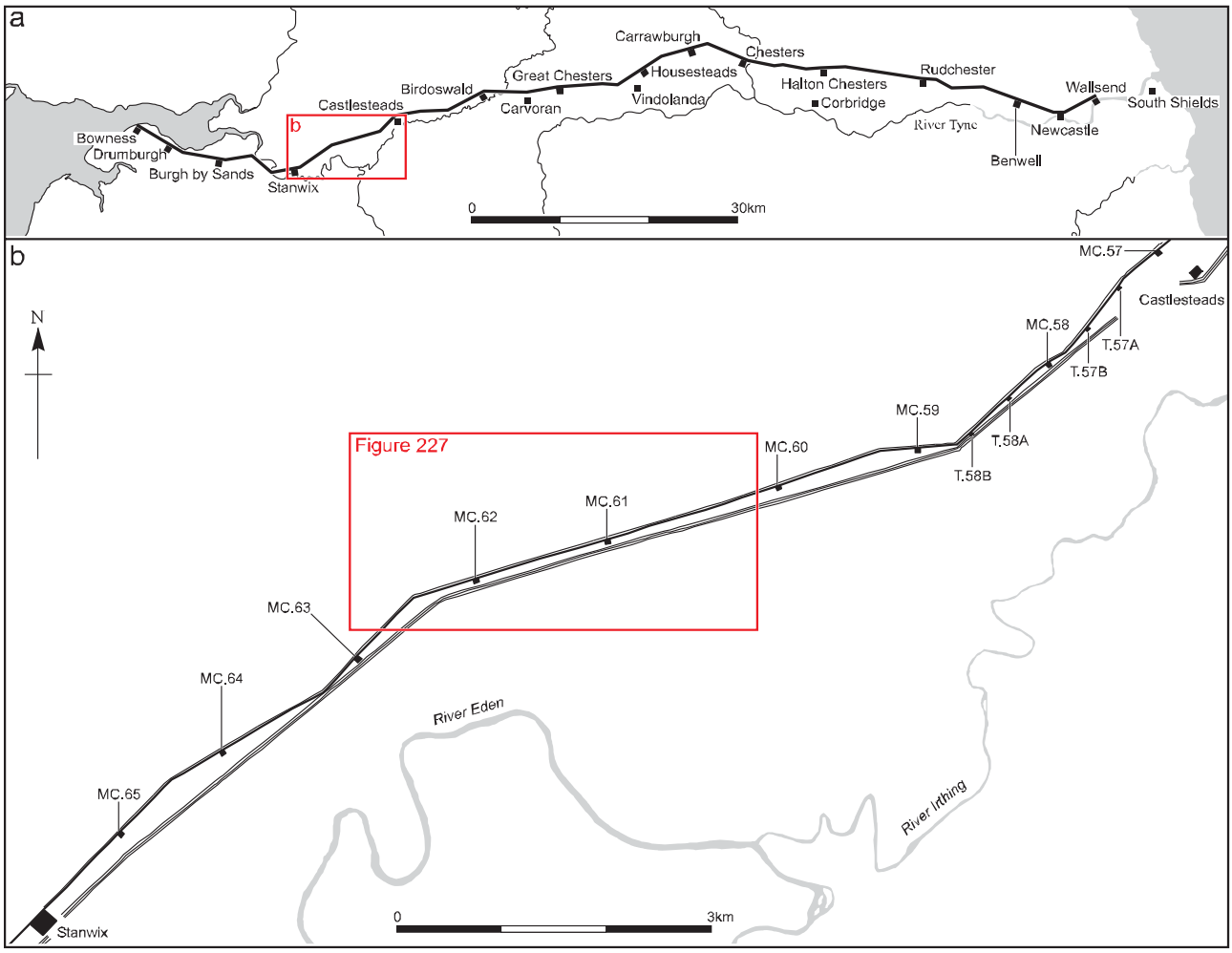


Fig 226 Crosby-on-Eden: location of Wall Mile 61 on Hadrian's Wall.

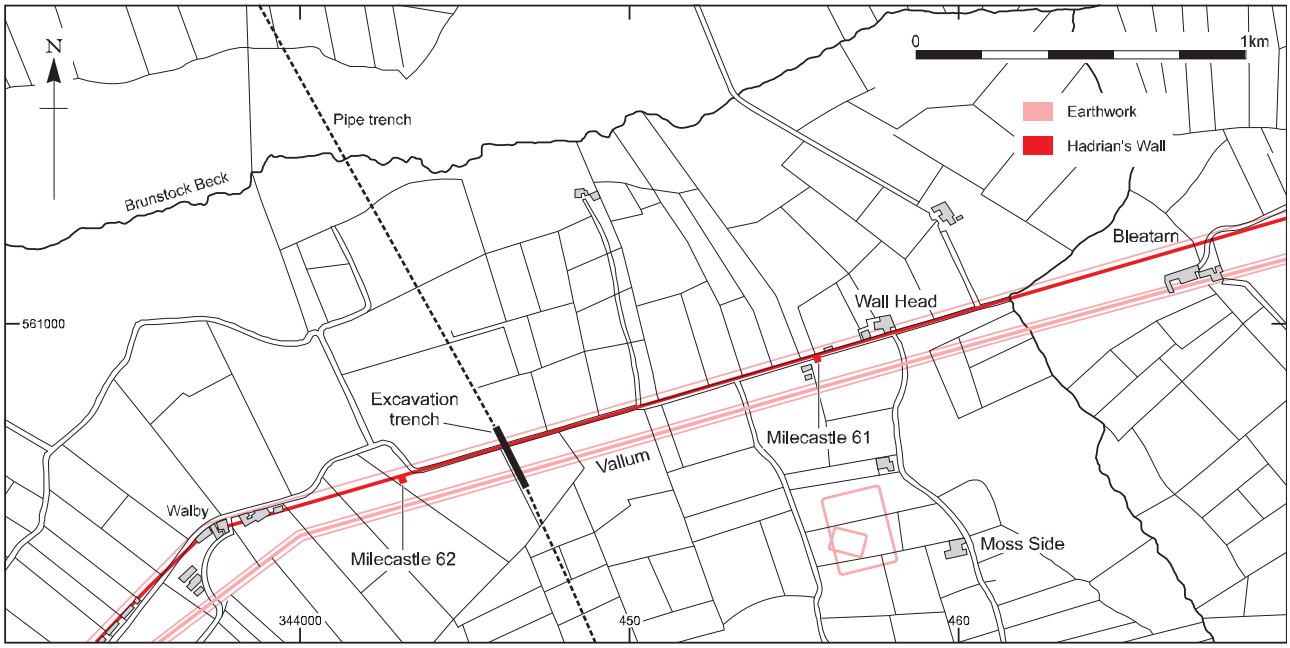


Fig 227
Crosby-on-Eden: location of excavation trench.

Fieldwork methodology

Before the excavation the site was surveyed using a Martin-Clark Resistance meter and a Fluxgate Magnetometer (Gater and Miller 1980). The whole area proved magnetically quiet, the few anomalies located reflecting local drainage networks and igneous deposits within the boulder clay. Eight resistivity traverses, however, identified a marked linear belt of increased resistance in the assumed area of the Vallum, and isolated areas of higher resistance nearer the road. The size and pattern of the principal anomaly suggested a metalled roadway, but later excavation revealed it to be the Vallum ditch, the well drained fill contrasting markedly with the waterlogged undisturbed subsoil on either side. The smaller anomalies noted to the north were thought to indicate either a trackway, a well drained ditch or a small bank, but excavation revealed them to be the levelled and spread remains of the Turf Wall.

Using the geophysical survey results as a guide, the 1980–1 transection was laid out along the line of the proposed pipeline for a total distance of 171m on either side of the Walby–Wallhead road, a baulk being left for the road itself (Fig 228). The width of the transect was adjusted to enable fuller excavation of the Wall and Vallum areas, with narrower connecting sections where few archaeological features were anticipated. The topsoil was removed mechanically, the archaeological features revealed planned and then examined by hand, although flooding and subsidence precluded the total emptying of the Wall ditch.

In 1984, when the pipeline was finally cut through the area, the Walby–Wallhead road was closed, allowing the intervening baulk to be removed to examine and record the archaeological features beneath it. A record was made by both the British Gas Corporation and the writer.

Structures and stratigraphy

The major excavated features were the various components of the frontier system, and are described in order from north to south.

The counterscarp

The deposit immediately beneath the counterscarp throughout the North Trench was a heavily leached, light-coloured sandy-loam (2004). It was identified as a truncated subsoil horizon from which the original surface had been removed (Keeley 1985). It is presumed that this was the result of the removal of turf for the construction of the Turf Wall curtain. There was no indication of any pre-Wall cultivation, although depressions and hollows with a very dark-grey silty fill indicated areas where there had been localised waterlogging in the pre-Wall period.

Directly over the truncated subsoil there was a low transverse mound of mixed humic sandy soils (2002), evidently the original counterscarp formed when the Wall ditch was dug, using material excavated from the ditch. The absence of any sealed organic material at the interface between the

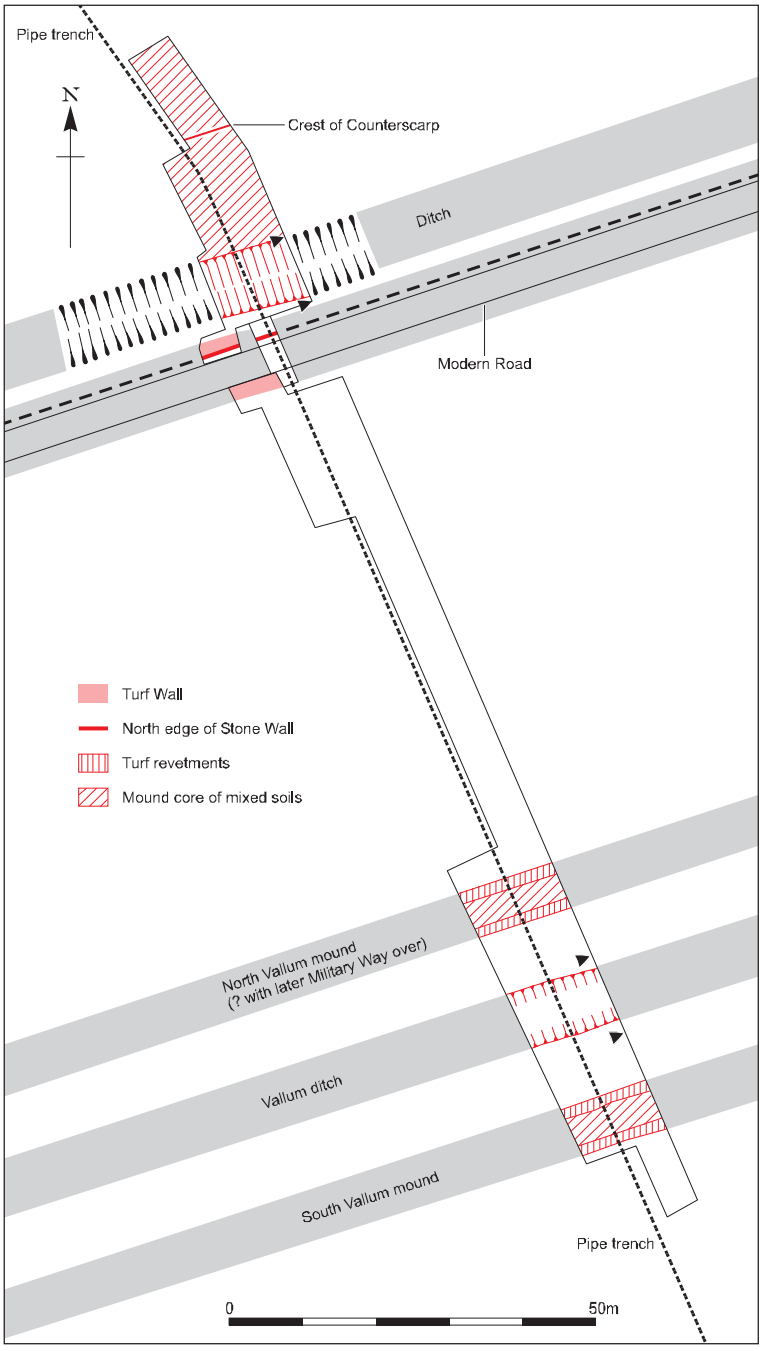


Fig 228
Crosby-on-Eden: plan of excavation trench.

truncated soil and the material of the counterscarp indicates that no vegetational regeneration had taken place, and therefore that no great length of time intervened between the removal of the original turf and the formation of the counterscarp. There was a pronounced 0.4m high 'crest' to this feature some 14m from the north edge of the North Trench and 17m to the north of the excavated northern edge of the Wall ditch. From this 'crest' the counterscarp tailed off in both directions. To the north this was quite rapid, taking place within 0.9m of the crest, although occasional spreads of the material were detected at the very northern end of the trench, while to the south it diminished with a much gentler slope, to disappear at the edge of the Wall ditch. The profile therefore, with its steeper slope to the north, was the reverse to what is traditionally expected, in which the scarp is considered to be contiguous with the north edge of the Wall ditch.

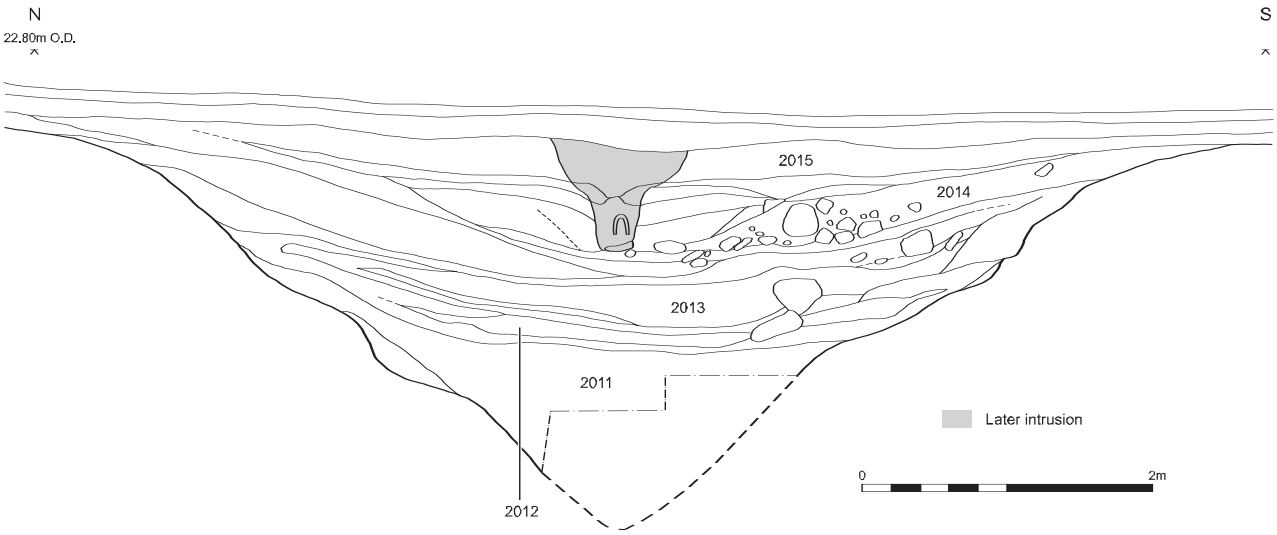
The Wall Ditch (Figs 229–30)

The Wall Ditch was 8.1m wide at subsoil level. While subsidence and flooding precluded its complete excavation, the preservation of the original cut beneath the primary silt demonstrated that it was originally V-sectioned, with sides of about 40, and was about 6m wide at subsoil level and 3m deep from the modern ground surface; 2.7m from the subsoil horizon.

The fill embodied five principal stratigraphical units. The primary silt, a reddish silty clay (2011), had a reasonably level upper surface, suggesting that it formed and stabilised in waterlogged conditions. The bulk of this deposit evidently derived from natural erosion and slumping of the ditch sides relatively soon after it was cut, thus preserving the original profile. The absence of any stone construction debris indicated that it had formed before the Turf Wall was replaced by the Stone Wall.

The primary silt was sealed by a well defined secondary deposit, consisting of alternate layers of peat and sticky grey clay interleaved with lenses of progressively lighter coloured and finer sandy material (2012). These laminated deposits suggest a phase when there was standing water within the ditch, allowing the peat to form, interrupted by intervals when the ditch served as a watercourse, resulting in the deposition of the finer particles. Slumping of the edges evidently reached its maximum during this phase, while the discovery of two roughly dressed sandstone blocks and loose masonry chippings in the southern part of the general matrix indicated that it had formed during construction of the Stone Wall.

The tertiary fill consisted of lenses of a sticky and sandy clay (2013), presumably the result of further erosion of the ditch sides. On the south side of the ditch, it was sealed by the fourth fill, a firm deposit of dark brown sandy clay almost solidly packed with weathered and eroded sandstone blocks (2014). More than 50 large blocks were present, together weighing some 12 tonnes, but there was only a single dressed facing stone among them. The general nature of the deposit, the eroded nature of the blocks, and the presence of only a single dressed facing stone, suggests that it derived from the core of the Stone Wall some time after the facing stones



had been robbed for re-use elsewhere. The final fill consisted of alternate lenses of clay and sand (2015). These appeared to be deliberate levelling deposits, and their general nature suggested that they were formed by the re-deposition of part of the remnant counterscarp once mechanical cultivation of the adjacent field began on a regular basis.

The berm (Fig 231)

The space between the excavated southern edge of the Wall ditch and the surviving northern edge of the Turf Wall varied in width from 1.9m to 2.4m, a discrepancy resulting from the differential erosion and removal of deposits at the edge of both features. When allowance is made for both the probable original width of the ditch and the north face of the Turf Wall, the berm was evidently not less than 4m wide in its primary state. Spreads of sandstone chippings on the berm (2035) presumably derive from the construction of the Stone Wall. It is not clear, however, to what extent the original area of the berm may have been eroded before this occurred. That said, ephemeral spreads of masonry chippings detected in the upper levels of the ditch fill suggested that at the time the Stone Wall was constructed the south edge of the ditch had already eroded back to a line not far north of that located during the excavation.

The Turf Wall (Fig 231)

The fossilised subsoil identified beneath the counterscarp bank and its spread core was also located beneath the remnant Turf Wall (2031). Here, however, thin spreads of dark, compressed organic matter of varying depth on its upper surface suggested surface vegetation left *in situ* together with its associated root system. In places this spread was somewhat thicker, filling hollows in the original subsoil, which were considered to be the result of a combination of frost action, waterlogging and localised erosion. Soil analysis subsequently substantiated these observations, identifying the soil as a stagnopodzol of the Dunsmore series, with clear evidence of wetness (Keeley 1985). The sample was superficially similar to earlier sections through the Vallum mounds at White Moss, 1.3km to the east (cf Haverfield 1895, 460–2; Hodgson 1897, 392), and a core sample taken in the vicinity of White Moss during the excavation validated this comparison. There was no evidence to suggest that the buried ground surface at Crosby had ever been cultivated, and it was considered most likely that the soil had originally supported acid grassland or moorland vegetation before the construction of the Turf Wall.

The north edge of the Turf Wall was indicated by a cohesive mass of laminated dark-grey friable loam (2032) laid directly over the *in situ* vegetation. Owing to later disturbances, this only survived 0.2m high and 0.5m wide, and for a maximum west–east distance of 2m, but it was possible to identify discrete lines of organic material within the matrix,

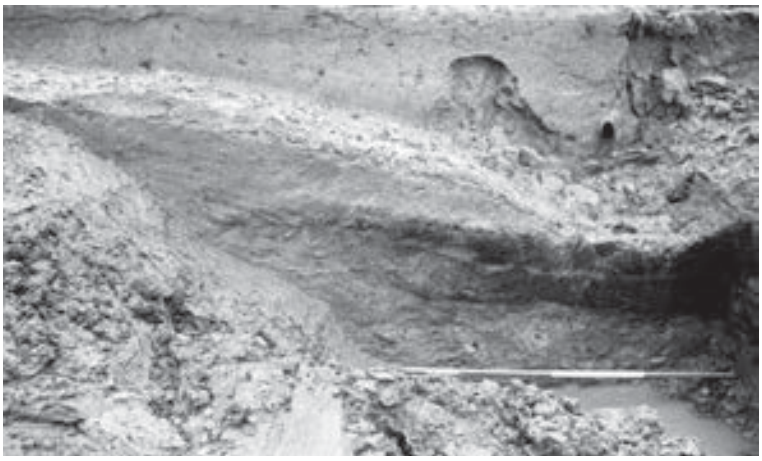


Fig 229
Crosby-on-Eden: east - acing section of Wall ditch.

Fig 230
Crosby-on-Eden: east-facing section of wall ditch during excavation.

Fig 231
Crosby-on-Eden: plan of the Turf Wall and its stone successor in relation to the berm and Wall ditch.

presumably the surfaces of individual turfs used in its construction. A spread of similar material, if somewhat less compacted or extensive, was located to the south of the Walby–Wallhead Road (2033). Likewise laid directly on the uncleared surface of the pre-Wall soil, it survived to a maximum height of 0.25m, with occasional lenses of dark organic material marking individual turfs. It was delimited to the south by a discontinuous gully (2034), 0.8m wide and 0.1m deep, thought to be a water run-off from the rear face of the Turf Wall, and indicating that its maximum width at this point was 9m (29ft 6in).

The surviving matrix of the Turf Wall south of the Walby–Wallhead road merged without any clear break into spreads of dark-grey and brown clay- and sandy-loams (2036), which in turn sealed the gully marking the south edge of the Turf Wall curtain. Nowhere more than 0.18m deep, these deposits extended south of the gully, where they lay directly over the truncated subsoil horizon, gradually diminishing in thickness until they petered out some 20m beyond it. A 2m wide spread of sandstone chippings marked the upper surface of the deposit, suggesting that it represented both surviving core and re-deposited core material from the Turf Wall, spread out and levelled at the time the Stone Wall was built.

The Stone Wall (Figs 231–2)

The 0.3m deep foundation trench for the Stone Wall (2035) was cut through the remains of the Turf Wall. The footings themselves had been mainly removed except for a single row of clay-packed sandstone flags left *in situ* along and against the north side of the foundation trench (2038). While later robbing had destroyed all evidence for the south face of the foundation trench and Wall, the minimum width of the robber trench was recorded as 2.8m. Consequently it is safe to assume that the Stone Wall here was originally built to Intermediate Gauge, at 2.75m (9ft) wide.

The intervallum area

As already noted, the deposits identified as representing the levelling of the Turf Wall

Fig 232
Crosby-on-Eden: flagstone foundation of Stone Wall and material of Turf Wall, looking north.

continued for a further 20m beyond the gully that marked its south face. They directly overlay the truncated subsoil throughout, indicating that this area had been stripped of turf before their deposition, and that vegetation had not regenerated in the interim, although occasional spreads of dark organic material marked what had once been waterlogged hollows in its surface.

Despite a careful search, there was no evidence for the Military Way in the intervallum area. At White Moss, 1.3km east of the excavation site, the *agger* of this road can yet be seen running between the Wall and Vallum for some distance, before veering south towards the north Vallum mound as it passes south of Wallhead. East of the River Irthing, the Military Way is known to have been built on the line of the north Vallum mound after this had been systematically breached (Simpson and Shaw 1922, 417–18) and the lack of any evidence for it at Crosby suggests a similar arrangement here.

The Vallum mounds

The north and the south Vallum mounds proved to be identical in form and build. Careful dissection revealed that they sealed a thin lens of black loam, marking the original vegetation cover remaining *in situ* on the original underlying leached subsoil (2061). The original revetments for both mounds were indicated by parallel, compacted and laminated masses of firm black loamy soil with thin lenses of organic material, representing the original turfs used in their construction. Each revetment was 1.5m wide and stood to a maximum of 0.18m high (2062, 2064, 2082, 2084), indicating that the mounds were originally *c* 6.5m wide overall. Between each revetment were dumps of yellowish-red clay, with occasional spreads of friable loam, evidently individual turfs or fragments thereof, forming the make-up for the mound cores (2063 and 2083).

The Vallum berms

As excavated, the Vallum berms were about 8.9m (29ft) wide, although the probable original profile of the Vallum ditch indicates that they were initially *c* 9.25m (30ft 3in) across. It was possible to identify the truncated subsoil horizon on both berms, for they had been covered by 150mm thick spreads of multi-coloured clay, generally reddish or yellowish in colour (2066 and 2086). Similar spreads were noted beyond each Vallum mound, again lying directly over the truncated subsoil (2065 and 2085). The spread to the north of the north mound extended to a maximum distance of 10.67m into the intervallum area. These deposits were so close in colour and composition to the material used in the mound cores that, in the light of evidence for the deliberate obliteration of the Vallum ditch (*see below*), it is reasonable to conjecture that they derive from a deliberate levelling of the Vallum mounds. If so, the absence of any sealed organic layer at the interface between the truncated subsoil and the spread mound material suggests firstly, that these areas had been initially stripped of turf (presumably for constructing the mound revetments), and secondly, that the mounds were levelled before the regeneration of any surface vegetation.

There was no evidence whatsoever for any metalling on either berm that might relate to the 'Vallum patrol-track' identified at other points along the Vallum's course (Horsley 1732, 120; Williams 1983, 35–9; this volume pp 133–4).

The Vallum ditch (Figs 233–4)

Excavation revealed the Vallum ditch to be 7.5m wide at subsoil level, 5.3m wide at the bottom, and 1.6m deep from the present ground surface – 1.2m from subsoil level. Rapid erosion had sealed the original edges of the ditch cut, however, showing the sides to have been cut to a constant

angle of 73. By projecting this angle towards the subsoil level, the original width of the ditch could be established as *c* 6.2m.

The ditch fills proved most difficult to interpret during excavation owing to the complex slipping, folding and even interleaving of the strata. Careful analysis, however, identified nine discrete deposits. The was the primary silt, being a well defined 60–200mm thick spread of yellowish-red clay over the ditch bottom (2071), presumably derived from rapid weathering of the ditch sides. It was sealed by three separate peat deposits. Two of these (2072 and 2073) had formed in the angle at the junction of the ditch edge and the surface of the primary silt, on the two opposite sides, and should represent the growth of vegetation in these somewhat shaded and protected zones. Interestingly enough, and confirming the interpretation, the deposit to the north, the side exposed to the sun, was only 1.5m wide, while that to the south, in the shade, was almost 2m across.

The peat deposit on the north side (2072) was in turn overlain by a mass of dark loam (2074), which contained identifiable blocks of mineralised topsoil with dark edges, indicating decayed vegetation (Fig 230). Measuring between 120mm 200mm 80mm and 200mm 200mm 120mm, and many slightly inclined with respect to the horizon, these blocks cannot be anything other than decayed and degraded turfs – the angles at which they lay suggesting they had been thrown into the ditch bottom. Above them was a mass of red clay (2075), evidently representing slumping from higher up the north slope of the ditch.

A similar sequence was revealed on the south side of the ditch, although in this case the peat (2073) was sealed by a mass of mixed grey and yellow-red clays (2076), and this in turn was covered by a loose deposit of light grey clay (2077), both deposits evidently deriving from successive slumping of the southern edge of the ditch. On both the north and the south sides, however, these well defined dump/slump fills were interleaved with the third and final peat formation (2078) in such a manner as to suggest they had been deposited while it was forming, that is, while it was still waterlogged, yet at some unknown interval after the initial peat growths had fully developed.

Considered together, these levels might suggest a localised sequence whereby vegetation had been allowed to grow over the primary silt on both edges of the ditch, after which there had been a period of waterlogging during which turfs were deliberately thrown into the ditch in combination with some natural slumping of the ditch edges. Some confirmation for the sequence is provided by the

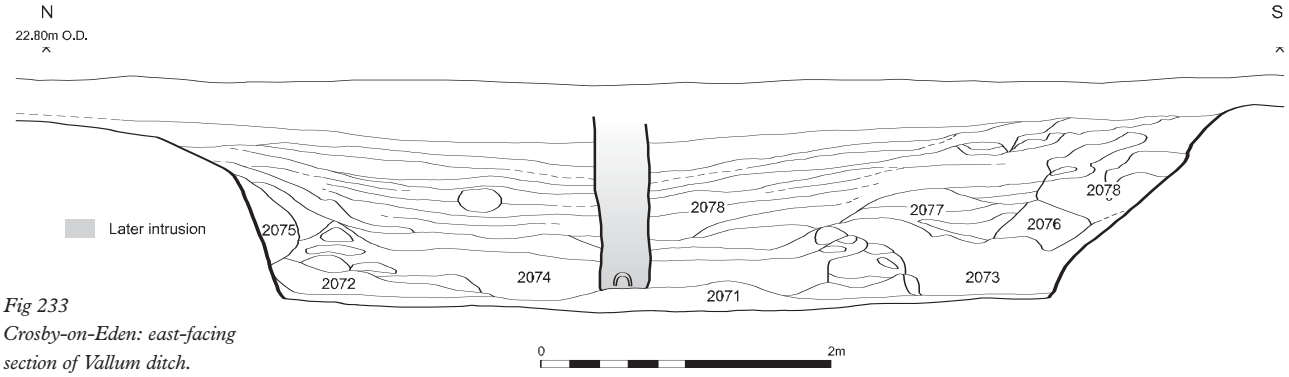


Fig 233
Crosby-on-Eden: east-facing section of Vallum ditch.

Fig 234
Crosby-on-Eden: Vallum ditch section during excavation.

behaviour of the upper levels of the final peat formation on the south side of the ditch, for it had evidently been compressed and forced to bulge upwards by the initial slumping on this side.

The ninth, and final, ditch fill was formed from alternate lenses of yellow-red clay soils (2079). Not only did their colour and character suggest that they derived from the adjacent Vallum mounds, but the uppermost layers actually merged with the similar spreads on the Vallum berms.

Wall robbing

The robber trench for the Stone Wall, containing many small sandstone pieces (2039), merged with a wide hollow to the south of the Wall line (2041). The base of this also contained several sandstone pieces, and was scored with several north–south ruts, of varying widths, suggesting that it represented a later trackway making use of spread debris from the Wall robbing to provide a hard surface. This seems to be the road along which carts laden with stone from the Wall travelled during robbing, and is the predecessor of the modern road (for a similar rutted robbing road cf Wilmott and Rahtz 1985, 47).

Finds

Very few artefacts were found during the excavation. A single piece of unworked struck brown flint, discovered in the topsoil in the intervallum area, was the only putative evidence for pre-Roman activity, but could be of any date. Five sherds of Roman pottery, however, were recovered from the fill of the Wall ditch. Four of these came from level 2013, the tertiary fill, which followed on from the construction of the Stone Wall, and they were identified as coming from cooking pots and a plain rimmed dish of Black Burnished Ware Category 1, types current from AD 120–?350. The fifth sherd, from a grey ware jar of a type assigned to the period AD 80–130, was found in the uppermost ditch fill (2015) – that thought to have derived from the final levelling of the counterscarp bank.

Interpretation

Excavation and soil analysis demonstrated that the area transected at Crosby was not cultivated in the period immediately before the construction of the Turf Wall. Instead, it had supported an acid grassland or moorland environment. The extent of the fossilised truncated subsoil located during the excavation indicated that turf, presumably for the construction of the Turf Wall, had been removed from a linear strip not less than 24.38 m wide north of the Wall and not less than 19.81m to the south, with turf lying beneath the course of the Wall curtain left *in situ*. The north edge of the Turf Wall was marked by a built revetment, behind which were spreads of soil that seemed to represent degraded turf blocks and additional fills dumped to level-up the horizontal courses. These extended for a width of 9m, and probably comprised the foundation for the Turf Wall rather than of the curtain proper. Assuming that the turf stripped from the area of the counterscarp bank was used to construct the curtain, the digging of the Wall ditch logically followed construction of the turf barrier. It was originally cut to a sharp V-profile, at about 6m wide and 2.7m deep at subsoil level. Variations in the profile and dimensions of the Wall ditch no doubt reflect a combination of local soil conditions, later cleaning and subsequent erosion, among other circumstances. It is not known when the Turf Wall was replaced by its intermediate stone successor, and no new evidence emerged at Crosby.

As with the Turf Wall, there have been relatively few extensive excavations on the Vallum, although basic details are well attested (p 75) It is not unusual for the actual dimensions of the Vallum ditch to vary quite considerably from the ideal (pp 74–5). Such variations, like those in the Wall ditch, usually result from local soil conditions, the solid, comparatively well drained boulder clay of the Northumberland uplands, for example, allowing a deeper ditch than the low-lying sandy-clay soils of the Solway Plain. At Crosby the greater width recorded for the base of the Vallum ditch can be explained by its shallowness, although the angle of rest in both sides, at 73°, is directly comparable to sections recently recorded at Throckley and Wallhouses (Bennett 1983, 41; Bennett and Turner 1983, fig 7). A probable explanation for the shallow ditch might be deduced from the soil analysis, which demonstrated that the general area was periodically waterlogged in ancient times. In such circumstances, there was little to be gained by digging the Vallum ditch to any great depth. The mounds were apparently founded on turf that had been left *in situ*, implying that there had been time for vegetation to regenerate between the building of the Turf Wall and the construction of the Vallum. Parallel revetments were built on this strip to retain a core of mixed soils, doubtless the upcast from the Vallum ditch.

The revetments themselves were built of stacked turf. Assuming that all the spoil from the ditch was used in their

construction, then the Mounds were probably not much more than *c* 1.5m high, and most likely finished off with a flat top.

The fill of the Vallum ditch at Crosby was very unlike that at Black Carts and Appletree. Vegetation formed over the primary silt on both edges of the ditch, and then the ditch was deliberately backfilled, first with turfs, and then with clay, both of which materials probably came from the Vallum mounds. This pattern resembles closely the situation at Cockmount Hill (*J Roman Studies* 1940, 163–4), where a lateral section through one of the later crossings of the Vallum ditch was made. Here the ditch edges had eroded and the ditch silted, almost to an angle of rest. Vegetational growth on the collapsed material indicated a time-lapse of 5–15 years before the causeway was formed with re-deposited material from the Vallum mounds. The parallel is so close that it is reasonable to conclude that the excavation at Crosby cut through a secondary deliberate crossing.

While there was little direct evidence for the late- or post-Roman history of the Wall in the vicinity of Crosby, it has been noted that silting of the Wall ditch seems to have continued until it was sealed by the deposition of a thick layer containing perhaps as much as 12 tons of sandstone rubble, evidently derived from the substance of the Stone Wall. The virtually complete absence of facing stones from this deposit, and the weathered appearance of many of the blocks present, suggests that the stone tumble represented natural erosion and collapse of the rump of the Wall core after the faces had been robbed. The rutted hollow track behind the robbed Stone Wall represents the act of robbing.

Discussion

by Tony Wilmott

The four projects described above form a small corpus of modern excavations on the linear elements of the Hadrian's Wall system in a number of locations along the frontier. A further example from this volume can be added; the section of the Vallum undertaken as part of the Birdoswald Spur project (p 257). As such they offer an opportunity to discuss a number of comparative aspects of the morphology, construction and development of the frontier as a whole.

The pre-Wall landscape

by Tony Wilmott and Julian Bennett

The first issue to be addressed is that of the nature of the landscape on which the Hadrian's Wall system was imposed. It is only very recently that evidence for this aspect of the history of the Wall zone has been gathered, despite the prescience of Simpson and Richmond (1935b, 246; this volume p 75) in their recognition of the potential significance of pollen evidence. The immediate local pollen and stratigraphic evidence to be found beneath the Wall and Vallum provide, in combination with the regional picture from bog pollen sequences (Huntley 1999) a powerful tool for understanding the immediate pre-Roman landscape. As Bidwell and Watson (1996, 40) put it: "The building of the Wall produced one of the most important prehistoric monuments in northern England by sealing and preserving a transect of the pre-Roman landscape some 73.5 English miles in length."

The exploration of this resource of buried soils and pollen records is an essential aspect of the study of Hadrian's Wall. It gives evidence for the nature of the pre-Roman landscape and landscape use within which the frontier system developed, and it can also give an insight into the process of construction of the Wall and the difficulties inherent in the operation, particularly for the Turf Wall sector.

Black Carts adds to a growing list of sites on the eastern flank of Hadrian's Wall to show evidence for pre-Wall ploughing. From east to west these are: Wallsend (Bidwell and Watson 1989, 25); Walker (Jobey 1965, 80); Byker (McKelvey and Bidwell 2005, 10); Newcastle fort (Snape and Bidwell 2002, 1527); the Westgate Road Milecastle (Harbottle *et al* 1988, 153); West Denton (Bidwell and Watson 1996) – where furrows of a cord rig system also pre-date Roman features; Denton West Road (Bennett 1998); Throckley (Bennett 1983, 55–8; Frain *et al* 2005, 36); Rudchester and Halton Chesters (Gillam *et al* 1973, 84–5); Wallhouses (Bennett and Turner 1983, 66); and Carrawburgh (Breeze 1972, 85; 1974).

North of the Wall at Greenlee Lough, ard marks associated with cord rig earthworks lie beneath a Roman temporary camp (Topping 1989, 162). The ard marks at Rudchester are also demonstrably part of a system of cord rig agriculture, and the evidence from Tarraby Lane near Carlisle

(Smith 1978) has also been identified as potentially part of a cord rig system. Cord rig underlies the ramparts of the one of the temporary camps on Haltwhistle Common (Topping 1989, 170–1).

At Throckley, Bennett *et al* (1983) showed that the ground had been ploughed on several occasions before the building of the Wall. They suggest that the short lengths of the marks might indicate deep-ploughing episodes, initially to clear the ground, but subsequently to break up land that had been left fallow. Reynolds (1980, 100–3) has suggested that such marks would not survive regular ploughing to a consistent level, as this would tend to produce a ploughzone or tilth of uniform depth (as modern ploughing does). Ard marks would survive in those cases where deep ploughing penetrated below this tilth from time to time. Reynolds suggests regular cultivation with lighter tools, and the use of the ard when land needed to be taken back into cultivation after standing for a period of time. This interpretation would also be viable for the Black Carts ard marks, which lay below the plough soil stratum that took the imprints of hoofs.

Bennett *et al* (1983) suggest that the ard marks could date to the Neolithic or Bronze Age and to the primary episodes of ploughing in the area, and point out that the potential date of the agriculture attested by these marks might span a very long period of prehistory. Although cord rig clearly underlies several Roman installations, it also has a potentially long time frame (Topping 1989, 171).

There is no evidence to suggest that all of the sites were in cultivation at the same time, or that they were cultivated immediately prior to the construction of the Wall, indeed at Byker the evidence was that an episode of ploughing took place before the development of the grassland landscape that existed when the Wall was built (Bidwell and McKelvey 2005, 10). Despite this differentiation, however, the fact that at most sites, like Black Carts, there is no intermediate soil horizon between the plough-marked soil and the Roman works above might suggest that time lapses between ploughing and construction were not very long.

At Denton a long sequence of cultivation evidenced by ard marks appears to have been succeeded by reversion to grassland, possibly with some scrub. The furrows (possibly made with the use of an ard) of cord rig that followed (Bidwell and Watson 1996, 17) represented a single ploughing episode, probably in the year before the construction of the Wall. The excavators note that if the ploughing and seeding took place in autumn, the farmer might have been expelled by the Roman army in the spring, at the start of the building season, and would thus have been unable to harvest his crop. At Newcastle ard marks pre-date cord rig, which was overlain by early, pre-fort Roman activity (Snape and Bidwell 2002, 15–29). At South Shields, a Middle Iron Age round house was overlain by Late Iron Age plough marks prior to the laying of the earliest Roman surfaces (Burnham *et al*, 1993, 284). Here at least there is an archaeological sequence with a C^{14} date to act as a *terminus post quem*, although this is the only such example.

At Black Carts, however the time-lag also appears to be short as the ard marks and hoof prints are directly sealed by the Vallum mound.

Evidence from the central sector of the Wall is sparse, although the existence of the settlements at Milking Gap and Bradley Farm, together with cord rig at Cawfields Farm, Greenlee Lough and Haltwhistle Burn (Topping 1989; Woodside and Crow 1999, 130–1) suggests the continuation of a mixed farming economy in these areas also, either before or during the Roman period. On the western fringes of the uplands of the central sector, at Appletree and Birdoswald a more pastoral landscape is apparent, and settlements were sparse.

The patchwork landscape is clearly shown by the contrast between the pre-Roman situation at Birdoswald and Appletree, sites only 1.5km apart. At Birdoswald, a dense, damp woodland was felled by the builders of the Turf Wall, while at Appletree, they encountered open, grazed moorland (Wiltshire 1997). On the other hand, it has been suggested that dense woodland characterised the area north of the Wall at Fozy Moss (Dumayne 1994), and on the spur that was later the site of Birdoswald fort (p 203). This picture from localised, site-specific studies is confirmed by the evidence from the regional pollen evidence derived from wetlands, which demonstrates that the principal effort of deforestation had occurred before the Romans arrived in the area (Huntley 1999, 51).

Moving towards the western end of the Wall, at Crosby soil analysis demonstrated that the area transected was not cultivated in

the period immediately before the construction of the Turf Wall, but had supported an acid grassland or moorland environment like that at Appletree. This shows a marked contrast to the situation a few miles west at Tarraby (Smith 1978) and at several sites in Carlisle (Charlesworth 1979; Topping 1989, 177; McCarthy 2002, 41), which demonstrate the practice of prehistoric agriculture. Despite this, on the basis of the available evidence, it is easy to conclude that the Tyne–Solway isthmus west of the River Irthing was less densely cultivated than the east.

Such indeed seems confirmed by the relative paucity of 'native' settlement sites in the area when contrasted with the numbers identified in Northumberland, Tyneside and Durham. That said, while settlements of this generic type are seemingly absent from the immediate environs of Crosby, there are notable concentrations on both sides of the Solway Firth, especially in the upper reaches of the various river valleys, and round houses of Iron Age type have now been located in Carlisle at the Lanes and the Cumberland Infirmary site (McCarthy 2002, 45), and in the immediate area (Higham and Jones 1976). The blanks in our distribution maps, however, might easily reflect a lack of fieldwork rather than a lack of prehistoric population: compare, for example, the almost total lack of settlement evidence for Annandale, an area populous enough to warrant its own Roman census official in the Trajanic period (Rivet 1982).

The few settlement sites that have been comprehensively excavated in the region have produced no undisputed evidence for pre-Roman occupation. Consequently, it has been argued that with only a few exceptions, most of them belong to the Roman period (Higham 1982; Jones and Walker 1983). This view has been questioned, and an immediate pre-Roman phase has since been tentatively identified at some sites, as at, for example, Boustead Hill, Ewanrigg, Swarthy Hill and Dobcross Hall (Bewley 1986; 1992; Higham 1986a). Certainly, the lack of any evidence to support the idea of a massive population influx in the region in the Roman period, together with the sheer number of sites represented and the evidence for pre-Wall cultivation at Tarraby Lane and Carlisle, provide *a priori* evidence that some at least should pre-date the Roman period, although by how long is not known (Bewley 1986, 33–4).

The attested evidence for clearance and cultivation need not prove the dominance of a primarily arable regime, as some of these could result from a secondary stage in woodland clearance, the breaking of topsoil in order to promote suitable pasture or grassland for grazing (Reynolds 1980, 103–4). Evidence for reversion to grassland following episodes of ploughing might represent a land-management regime in which the rotation of fallow played a part, to allow land to recover. It is clear from the available evidence that a mixed landscape greeted the builders of the Wall, involving arable cultivation where ground conditions permitted, pastoralism, and patches of residual natural vegetation. This evidence for agricultural land use begs the question of the impact of the building of the Wall on the local population. Tolan-Smith (1996, 77) has stated that, as well as the immediate impact on mobility from north to south; the area for arable cultivation was drastically lessened. Higham (1986a) has estimated that 85–120,000ha of land would have been confiscated by the imposition of the corridor between the Wall and the Vallum. It has long been suggested that settlements were abandoned during the construction of the Wall. The classic example is at Milking Gap near Mc38, where an enclosed settlement of five round houses lying between the Wall and the Vallum may have been abandoned when the Vallum was constructed, as the few Roman finds there need not date after *c* AD 130 (Gillam 1958). If this is the case, then it might be necessary to add the site of Bradley Farm (Woodside and Crow 1999, 44).

The case for the abandonment of these settlements rests on an assumption, namely that the area between the Vallum and the Wall was forcibly depopulated. It is clear that a great deal more evidence is required in order to approach an understanding of the impact of the imposition of the frontier upon the existing agricultural population of the Wall zone, particularly on the eastern flank where cultivation appears to have been more extensively practised, although confiscation and expulsion is a very clear possibility.

Frontier works

The ditch, glacis and counterscarp bank

The projects produced three cuttings across these elements: at Black Carts, Appletree and Crosby-on-Eden.

The work at Black Carts was particularly informative in demonstrating the reaction of the Wall builders to the presence of the quartz-dolerite geology through which they had to pass. Although this is discussed in detail above (p 101) it is appropriate here to summarise the findings. That the ditch was excavated from west to east in this sector has long been known from the analysis of the unfinished ditch at Limestone Corner (p 74), where the decision was made not to continue with the ditch to any significant depth. The creation of the Wall ditch was, however maintained, and although this ditch was shallow and narrow, it was made to appear more formidable by the construction of a narrow, quite high, built, drystone counterscarp bank constructed on the northern lip. The careful siting of the counterscarp on the top of a natural ridge used the terrain to help in the creation of the illusion that the ditch was more formidable than it actually was. The ditch was cut through dolerite, but would not have yielded sufficient stone to create the built counterscarp, let alone blocks for Wall building. The quarrying of dolerite must therefore have taken place. It was shown during excavation that natural fissures and bedding planes make it possible to lever out at exposed surfaces blocks of dolerite with roughly square faces. It is suggested that the small mounds of waste stone, which form a feature of the counterscarp to the north of the built bank, derived from the opencast working of dolerite over a broad area to the north of the Wall.

The dimensions of the Wall ditch varied throughout the length of the Wall depending on the ground conditions. As we have seen, the variation at Black Carts was extreme. In the Turf Wall sector, at Appletree it measured 10.61m wide and was 2.97m deep, while at Crosby 6m wide and 2.7m deep at subsoil level. In both cases it was cut to a near V-shaped profile. These measurements might be compared with those recovered at other sites west of the Irthing: at Walby, where it was U-sectioned, the ditch was 10.51m wide 3.73m deep (Richardson 1978); at Hadrian's Camp it was V-sectioned, where it measured 8.53m wide and 3.5m deep Richardson 1972); and at Tarraby, where it was 6.47m wide and at least 1.82m deep (Smith 1978, 24). The ditch is generally V-sectioned, and it seems likely that it was cut to the steepest profile possible given ground conditions, with alterations to the original profile being caused by erosion, cleaning, slumping and similar events (Wilmott 2006a). The material from the ditch at Appletree and Crosby was incorporated into the glacis. At neither site was there any berm between the ditch and glacis; the bank continued the line of the ditch edge in a shallow slope, probably intended to avoid slumping of the bank material. At Appletree the glacis was a very broad, low, smoothed-out clay bank, while at Crosby the evidence suggests a steeper edge to the north of the bank than against the ditch edge.

In general terms, the excavations on the ditch have served to show that Welfare's (2004) distinction between the counterscarp bank and the glacis is a valid one. At Black Carts there is a clearly defined bank, while Crosby and Appletree both feature a low, broad glacis. It is clear that different ground conditions provoked different responses, and that the counterscarp bank was probably used to make a shallow ditch appear more formidable. The work has also shown that the idea that there was a standard ditch profile that was ideally V-shaped with a basal square-sectioned slot to be false; an aspect treated in greater detail elsewhere (Wilmott 2006a).

The curtain

The stone and turf curtain was examined in the three major sections, and additionally in exposures during the Milecastles Project at Walby (Wall mile 62/3, p 176), Grinsdale (Wall mile 68/9, p 180) and Wormanby (Wall mile 70, p 185). At Black Carts, the only section made through the primary Stone Wall, all that survived was a single-course foundation of Broad Wall gauge with the superstructure built to Narrow Wall specification. This pattern was predictable for this area, especially as both T29a and T29b feature Broad Wall wing walls and points of reduction to the narrow curtain, the features that so puzzled Newbold (1913a; this volume p 83). The foundations of the Wall were built of dolerite blocks, although there was evidence that the superstructure, or much of it at least, was constructed of sandstone from nearby outcrops. The argument that dolerite was won from the shallow ditch and from opencast quarries to the north of the ditch is made above (p 101).

The suggested removal of dolerite building material from a broad surface area at Black Carts echoes the well attested open-area removal of turf for the construction of the Turf Wall west of the Irthing. This was graphically demonstrated at both Appletree and Crosby-on-Eden. At

both sites it could be demonstrated that the line of the Wall was marked out, and turf was then removed from the areas north and south of the Wall line. The Wall was built by piling this material onto a band of turf that was left *in situ* to mark the desired line. This was most clear at Appletree, where the base of the glacis, the Vallum mounds, and the track to the south of the Wall were all placed upon natural boulder clay that had been denuded of turf and topsoil, and on which no regeneration had taken place. At Crosby, the glacis was similarly constructed on ground denuded of turf and topsoil, although the Vallum mounds showed humic bands between the mound material and the subsoil, suggesting either that the ground had not been stripped to the south of the Wall, or that the Vallum had been built here after regeneration had taken place.

The destruction of the Turf Wall took place when the Stone Wall was constructed as its replacement. The lapse of time between the construction and destruction of the Turf Wall is demonstrated at Appletree by the fill pattern in the Turf Wall ditch. A peaty primary deposit formed, and the clay edges of the ditch slumped on top of it before the turfs of the Wall were dumped into the ditch from the north. The deposition of the demolished Turf Wall into its ditch has also been noted at Birdoswald (Wilmott 1997, 47). On other sites, such as Crosby-on-Eden (p 123), Stanwix (Smith 1978, 23–4) and Burgh-by-Sands (Austen 1994, 39) the Turf Wall material was not deposited into the ditch. This is probably because at Appletree and Birdoswald the construction of the Stone Wall on a new line, and the provision of a new ditch, made the primary Turf Wall ditch unnecessary. West of Mc51 the new stone Wall was built on the line of the Turf Wall, and it was necessary to retain the primary ditch. At Crosby it is the occurrence of masonry chippings within the ditch that defines the point at which the stone Wall was constructed. As at Appletree, primary silt was followed by slumping, and the chippings appeared in the subsequent natural silting sequence. In this area it may be presumed that the Wall material was removed and deposited or spread elsewhere. At Crosby this is graphically illustrated by the fact that spread material from the Turf Wall covered an area 20m wide to the *south* of the Wall. This also was partly sealed by masonry chippings from the building of the stone Wall. By contrast on the berm between Wall and ditch there was no spread Turf Wall material, and the chippings lay on the ground surface. At Stanwix (Smith 1978, 23–4), Turf Wall material filled a hollow way to the south of the Wall. This evidence suggests a deliberate effort to ensure that the integrity of the ditch and berm to the north of the stone curtain was maintained from the Turf Wall phase in these areas.

The stone successor to the Turf Wall was recorded at Crosby, but was also seen in three other locations during the Milecastles Project. At Crosby, the Wall was almost totally robbed, although a single row of flat flags lay along the north side of the foundation trench. As is characteristic of the Stone Wall in this sector there was no foundation trench beneath these footing flags (cf Simpson 1913, 301; 1932, 150). As elsewhere, the face of the Stone Wall was set back from that of its turf-built predecessor (Hodgson and McKelvey 2006, 50). The minimum width of the robber trench, and thus the Wall foundation, was 2.8m. All of the exposures of the Wall made during the Milecastles Project showed the same foundation pattern. At Walby West, in Wall mile 62/3 the width was about the same as at Crosby (although most of the foundation was found, the excavation stopped just short of the south face (p 125)). This is typical of the flag foundation width of 2.75–2.89m, which is found to the west of Mc53 (Simpson *et al* 1934b, 134; Hodgson and McKelvey 2006, 46). At Walby West and also at Grinsdale in Wall mile 68/69 (p 176) the facing stones of the flag foundation had a linear crack some 240mm from the face. This represents the pressure point where the face of the curtain wall stood on the flag foundation, which was offset to the north, and is a virtual signature feature of the stone Wall in the former Turf Wall sector (Richmond and Gillam 1952, 19; Caruana and Fane-Gladwyn 1980, 21). At Wormanby (Wall mile 70; p 185), where a single course above the flags survived, a very slight offset was recorded on the south side. At Wormanby also, the stone Wall was cut into a remnant of the Turf Wall as at Crosby. Though turf work survived also at Mc 61 (Walby East; p 174), there was no trace of it at Walby West.

East–west communications

The project has produced some evidence for east–west communications in the form of the track discovered at Appletree immediately behind the Turf Wall, and the presence of 'metalling' on the Vallum berms.

The Appletree track was clearly an early element in the Wall system, as it was constructed on ground stripped of turf for the building of the Turf Wall. It lay close to, and functioned with the Turf Wall before the replacement of the Wall in stone to the north in the late Hadrianic period (p 111). This is the third observation of such a track. At Denton a metalled track was laid down immediately behind the stone Wall, either when the Wall was built or shortly thereafter. Three layers of metalling were found here, with dating evidence to suggest that the track survived in use into the third century (Bidwell and Watson 1996, 34). To the west at Tarraby Lane, Stanwix an unmetalled hollow way some 10m south of the Turf Wall was filled with the spread debris from the demolition of the Turf Wall (Smith 1978, 23–4) which here took place after the return to Hadrian's Wall in the 160s (recent doubts on the Roman date of this feature (Bidwell 1999b, 23) would seem to be misplaced given the source of the filling of the hollow way). Although these observations may be of the same phenomenon they are clearly not manifestations of the later Military Way, as the construction of the Military Way is far more substantial. Bidwell and Watson (1996, 34) compare the Denton track with the nearest observation of the Military Way at Lemington, where it was built of substantial stones set in boulder clay (Tait 1962, 142). A similar comparison may be made between the small metalling of the track at Appletree and the description of the Military Way at Pike Hill (Simpson and MacIntyre 1933b fig 28), where the road kerb and metalling was also of large stones. All three of these observations show that the track was early in the building sequence. At Appletree it is clear that the track was built to relate to the Turf Wall, and the same is true at Tarraby as here the track predated the replacement of the Turf Wall in stone.

It has been suggested (Bidwell and Holbrook 1989, 153) that to the east of Portgate a service road lay south of the Wall, connected by tracks at least to the fort at Benwell via the Vallum gateway at the fort, and possibly to other milecastles and turrets. This, they suggest, would have lain well to the south of the Wall, and Bidwell and Watson (1996, 34) deny the possibility that this could be represented by the Denton track. Noting that communications to the postulated service road would have been obstructed by the building of the Vallum, they conclude that the track might have been laid out either while the Vallum was being built or shortly thereafter to make communication possible between milecastles and turrets to the north of this barrier.

The Appletree track was a substantial feature, but there is a problem with its course. An excavation in 1936 between Mc50TW (High House) and Birdoswald, at a distance of 237.75m (260yds) east of the former, was undertaken to examine the relationship between the Vallum and the Turf Wall (Simpson and Richmond 1937, 171–2). This showed a space 12.19m (40ft) wide between the Turf Wall and the Vallum ditch, there being no north Vallum mound in this area. This space became narrower, at 6.1m (20ft), 365.76m (400yds) farther to the east. No trace of the track was reported. If the track had been at a consistent distance from the Turf Wall (5.59m at Appletree) it would have been noticed, probably beneath the spread remains of the Turf Wall, which were observed over a thin vegetation line between the line of the Turf Wall and the Vallum. It is possible that the track veered away southwards from the parallel course and was either cut by the ditch or overlain by the mound of the Vallum. Such an explanation is more likely at Mc50TW, where the track would need to be diverted to the south in order to pass south of the milecastle. The description of the 'patrol track' at Mc50TW (Simpson and Richmond 1937, 170), situated on the south berm of the Vallum, recalls the Appletree track, and it is conceivable that this is a remnant of this track partially overlain by the south mound. Only further excavation will clarify the place of the track in the chronology and function of the Wall, however.

Metalling was observed on the south berm of the Vallum at Black Carts and on the north berm at Appletree there was a stone spread, also seen in an earlier cutting near the 1999 excavation site at Appletree East (Daniels 1978, 217). Metalling on the south berm has otherwise been found only at Burgh-by-Sands (Austen 1994, 41).

On the north berm metalling has been observed at Black Carts (where wheel ruts cut into it are unlikely to be of Roman date), and also in Wall mile 30, west of Limestone Corner (Appendix 2). Elsewhere it has been recorded at Carvoran, High Shield (Wall mile 38), Mosskennels (Wall mile 35), near Mc34, and Down Hill (Wall mile 20)

(Heywood 1965; Bidwell and Holbrook 1989, 152). These occasional patches of metalling were probably installed for short-term local reasons, and cannot be regarded as part of a road system on the berm as once thought. As shown above there is considerable doubt over the alleged Roman date of the 'metalling' at Appletree.

The Vallum

The Vallum was fully sectioned at four points during the projects reported upon in this volume: at Crosby, Appletree, Birdoswald (pp 255–8) and Black Carts. In addition the surviving mounds were examined at Throckley in Wall mile 9. The earthwork has been sectioned in a number of locations since it was first cut in 1893 at Great Hill (Soc Antiqs Newcastle 1894), and its general symmetrical form as a steep sided, flat bottomed ditch with flanking berms and mounds on each side is very well established. The overall intended width of the Vallum is in the order of 120 feet (Swinbank 1965, 85), and the actual intention was probably to span a width of one *actus* (= 120 *pes Monetalis*, = 116ft 6in, = 35.51m). Though this measurement is on average fairly consistent, the variations noted in the three sections reported here are typical of the range recorded through excavation (Table 2). The design was varied to meet local conditions, in particular the nature of the subsoil and geology. Variations such as the presence or absence of kerbs to the mounds, revetment to the ditch or differing ditch profiles are therefore largely matters of local detail rather than broader significance (Swinbank 1965, 85–6).

It is generally considered that the defining and most important element of the Vallum was the ditch, as this was a continuous feature laid out from end to end of the work, and completed whatever the difficulties. The classic example of this is the point where the ditch cuts through the dolerite outcrop at Limestone Corner, where the ditch was cut, deep and flat bottomed, through the solid dolerite. This was graphically shown in the Black Carts section, where the contrast between the continuous Vallum ditch and the compromise reached for the Wall ditch could not have been plainer. In the original plan causeways across the ditch were left only at the forts.

Spoil derived from the ditch was deployed in the mounds. It was possible at Black Carts to determine which mound was built first from the order of deposition of re-deposited natural strata in the mound. The south mound consisted of the clay and shale derived from the upper natural strata, with a thin cap of dolerite. The dolerite quarried from the bottom of the ditch must, therefore have been used to form the north mound, and this later provided a good foundation for the 18th-century Military Road, obviating the need to destroy the Wall itself in this area. The implication is clearly that the south mound was built first. There are very few places where similar conclusions can be reached. At West Denton Tait's (1962) excavation showed that the south mound was first laid out by building a mound revetment using turf stripped from the site, and was then constructed with the clay from the upper geological layers, capped with stone. The north mound was largely constructed with, and was kerbed by, stone from the deeper strata, and was thus built second. At Denton (Bidwell and Watson 1996, 35) the south mound consisted of clay and small sandstone fragments, while the north mound appears to have contained more sandstone. It is possible again that the south mound was the first to be built here. At Down Hill (Soc Antiqs Newcastle 1894, xxvi), the upper sandstone is deployed in the south mound, and underlying fireclay in both, but the south

Table 2 Comparative dimensions of the width of Vallum elements from excavated sites.

	N mound	*N berm*	*ditch*	*S berm*	*S mound*	*total width*
Wallhouses	4.40m	6.60m	8.00m	7.10m	(min) 3.60m	(min)29.70m
Denton	5.95m	8.15m	5.70m	9.50m	6.80m	36.10m
West Denton	(19ft) 5.79m	(26ft) 7.92m	(24ft) 7.31m	(32ft) 9.75m	(18ft) 5.49m	(119ft) 36.26m
Black Carts	–	–	7.50m	7.90m	8.10m	–
Appletree	9.20m	4.61m	10.23m	8.10m	8.50m	41.05m
Limestone Corner	6.78m	7.60m	8.75m	8.30m	6.10m	37.53m
Crisby-on-Eden	6.50m	8.90m	6.20m	8.90m	6.50m	36.90m

mound would appear to have been the first built. There is no consistency throughout the length of the Vallum however, as at Halton Chesters the lower part of the ditch was cut through shale, which was used in the south mound (Simpson 1976, 159–61) implying that here the south mound was the second to be raised. Similarly at Appletree the north mound contained a core of the upper, yellow boulder clay sealed by the lower red clay, while the south mound was built second, using the lower red clay only.

The marginal mound, which lies on the south lip of the ditch, and occupies part of the south berm, has long been understood to represent material derived from the cleaning out of the Vallum ditch. This idea must be questioned as a result of the excavations at Black Carts and Appletree. At Black Carts a substantial marginal mound was built of clean material, clay and shale, like the south mound itself, and it directly overlay a subsoil scored with ard marks – in the same stratigraphic relationship as the main south mound. On the face of it, empirically, stratigraphically, the two mounds should be contemporary. Given the clear sequence of slumping followed by silting that we have seen in the ditch fill, the marginal mound is not derived from cleaning out the ditch, unless – and only unless – it was taken from the ditch after an early episode of slumping of the edges, and that this clearance was undertaken with archaeological scrupulousness, being entirely taken back to the clean rock-cut ditch bottom and edge. An explanation for the similar appearance of a clean marginal mound at nearby Limestone Bank has been sought in the idea that the bank was the result of rapid clearance of early slumping due to frost action (Daniels 1978, 33). A similar conclusion was reached where the material of which the marginal mound was constructed was clean sandy clay similar to that used to build the primary elements of the north Vallum mound. In neither case did the ditch section show any evidence in section that re-cutting or cleaning had taken place. The natural slumping of the sides created a stable angle of repose within which organic silts developed. The burden of the stratigraphic evidence indicates that the marginal mound was constructed using the upcast spoil from the original excavation of the ditch. Similarly, in 1958, a section west of Mc42 at Cawfields showed a large marginal mound composed of clean material comparable with the south mound upcast. Heywood (1965) noted that this could hardly be evidence for a re-cut of the Vallum ditch, as the ditch section showed no evidence at all for re-cutting. This is entirely in accord with the Black Carts and Appletree results.

These three observations suggest that for some of its length the marginal mound may be primary, or at least near-primary. This idea is supplemented by the fact that often, as in the stretch from Denton westwards to Halton Chesters (Bidwell and Watson 1996), the south berm is wider than the north. Thus at Denton the measurements are 9.5m (S berm) and 8.15m (N berm) and at Halton Chesters 7.2m (S berm) and 6m (N berm). The phenomenon has also been noted at Wallhouses (Bennett and Turner 1983, 67–8), where the measurements are 7.1m (S berm) and 6.6m (N berm), and at Heddon-on-the-Wall (Tait 1962). It seems possible that in these areas provision was made for a marginal mound, which was never actually built. At Cawfields the berms of the Vallum again are wider on the south than the north, was set out with great precision (Simpson 1976, 116–19). The appearance of a deliberate three-mound Vallum is reinforced by the fact that this is the very stretch in which Heywood observed a marginal mound of clean material, and suggested that this was not the result of ditch-cleaning, as there was no evidence in the ditch for re-cutting.

Simpson and Shaw (1922), in a paper written before much excavation on the Vallum had taken place, concluded that the Marginal Mound was the result of ditch cleaning, and that this "operation obviously resulted in considerable enlargement as well" (Simpson and Shaw 1922, 366), suggesting that the cleaning of the ditch had been carried out beyond its original edges, cutting away the original ditch and creating a new, broader one. If so, then no evidence of the earliest ditch would survive. In the same place they note that "later examination uniformly confirms the first conclusions, that the disturbed and discoloured material of which this mound is composed represents a later clearing or re-cutting of he Ditch." The number of interventions backing this statement up was tiny. That this assumption remained in circulation is shown by an interim statement (*J Roman Studies* 1940, 163) on a section at Cawfields excavated in 1939. Here,

according to the excavators, the ditch "had been re-cut as the presence of the well known marginal mound attests." On the published section of the ditch an entirely conjectural 'original profile' is shown is a dotted line (cf Wilmott 2006a). The assumption that the ditch was re-cut and made larger, to a different profile to an accepted 'standard' shape, was based purely on the presence of the marginal mound and its current interpretation. Heywood's subsequent work at Cawfields, demonstrating a clean marginal mound, the apparent care in the layout of the three-mound Vallum in this sector, and the evidence in low-lying gound at Cawfields that the ditch edges had been revetted in turf founded on flagging (*J Roman Studies* 1940, 163–5) – surely the primary form of the ditch here – casts grave doubt on the interpretation of the marginal mound as resulting from a re-cut.

The systematic slighting of the Vallum with causeways every 41m (45yds) or thereabouts, and has been fully discussed by Simpson and Shaw (1922) and by Brenda Heywood (1965). The causeways were presumably constructed by shovelling the material from the breach made in the mounds back into the ditch to create a crossing, and this was demonstrated by excavation at Wallhouses (Bennett and Turner 1983, 75). Excavations at Cockmount Hill in 1939 across the axis of a crossing (*J Roman Studies* 1940, 163–5) showed that the sides had eroded rapidly and growth had taken place before the causeway had been built, and the same was true of a causeway near Walby (Richardson 1978). At Wallhouses (Bennett and Turner 1983, 67–8) another causeway was encountered, and it seems likely that the fill of the Vallum ditch observed at Crosby-on-Eden was also the result of the construction of a causeway. Based on observations between Wall Burn and Whittledean, Shaw and Simpson concluded that the Vallum was reconditioned (Simpson and Shaw 1922, 414–16). The date later put on this operation was the return from Antonine Scotland. This interpretation has enjoyed general acceptance (Breeze and Dobson 2000, 131). The evidence was that in this stretch there were gaps in the main mounds, no causeways, and a marginal mound. This led to the view that the marginal mound was the product of the removal of causeways and of the re-cutting of the ditch, especially as the marginal mound was not breached by the causeways. The latter consideration may not be crucial, as Simpson and Shaw (1922, 402) observed that the main mounds were not always totally breached to full depth to create the crossings, and in places the depth to which they are breached may be about the height of the marginal mound. The observation was further made that at Cockmount Hill and at Carrawburgh, where a sequence of surviving causeways ended, the marginal mound began. It seemed also that the ditch was wider in these areas, so the enlargement of the ditch was argued. This is where the observations that at Hare Hill, Down Hill, immediately west of Limestone Corner (Appendix 2), and near Mc23, the marginal mound is comprised of loose and dirty material, come into play (Heywood 1965, 91–2), as the interpretation was that the marginal mound was created when the crossings were removed and the Vallum reconditioned. This conclusion does not explain the situation at Wallend Common (Simpson and Shaw 1922, 401), where there is a ditch, no causeways, but breaches in the mounds, and no marginal mound. More importantly the whole idea is thrown into disarray at Black Carts, where, as the OS map shows, there are many extant crossings, but between two of these, excavation has showed a substantial, apparently early, marginal mound built of clean material, and no evidence whatever for the re-cutting of the ditch.

The issue of the marginal mound and its relationship with the crossings remains ambiguous at best. It is important, because if the mound is primary it is a second obstacle to the south, making the earthwork even more formidable as an obstacle than is currently understood. In the 13th edition of the 'Handbook', Charles Daniels certainly swung towards the view that it was an early aspect of the scheme, saying (Daniels 1978, 33) that "The date of the 'marginal mound' is also uncertain: in many cases it comprises silty material cleared from the ditch, although near milecastle 42 it was mostly clean soil. It has been connected with the late clearing of the ditch, but it probably belongs much earlier in the history of the barrier."

5
The Hadrian's Wall Milecastles Project: 1999–2000

by Tony Wilmott

with contributions by Paul Austen, Polydora Baker, Julian Bennett, Nicola Hembrey, Peter Hill, J P Huntley, Helen Moore, David Shotter and Jacobo Weinstock

The numbering and structure of the milecastles

by Paul Austen, Tony Wilmott and Julian Bennett

A major part of the first plan for Hadrian's Wall (p 72) was the provision of milecastles and turrets. It is generally assumed that there were 81 milecastles, designed to be located at intervals of one Roman mile (1,480m). There is some considerable variation in the precise spacing, often introduced in order to take account of topographical features, and consequently several milecastles remain imprecisely located. Between each pair of milecastles were two evenly spaced turrets. For convenience of reference, the structures are numbered from the east, and the universal numbering system invented by Collingwood (1930) and refined by Birley (1961, 71–7) assumes the existence of these interval structures all the way from Wallsend to Bowness-on-Solway. Milecastles (Mc) are numbered 0–80, and turrets (T) are referred to by the letters (a) and (b) after the number of the milecastle to their immediate east, together with their local names. For example: Mc48 (Poltross Burn), T48a (Willowford East), T48b (Willowford West), Mc49 (Harrow's Scar).

The milecastles were built to be integral with the curtain wall, which invariably acts as the north wall of these structures. Although the known milecastles conform to a generally recognised overall plan, there is no such thing as a typical milecastle. The only feature common to all is a pair of single-portal gates in the centres of the north and south walls, connected by a central roadway. Those milecastles that have been investigated, or that are known as upstanding earthworks show that they were generally about 18–23m long and about 15–18m wide, although there is considerable variety in size and shape.

Some were built with their long axis parallel to the curtain wall (short axis milecastles), while in most the long axis runs north–south (long axis milecastles). The external south-east and south-west corners are always rounded in the same way as fort corners, but there is diversity in the interior face of the corners: some reflect the curved face of the exterior, while others have right-angled internal corners.

The form of milecastle gateways also varies. There are four recognised types (most recently discussed in detail by Hill and Dobson 1992, 33–7). Type I is a simple form, in which two pairs of responds are provided on the north and south sides of the wall, through which the gate passes. This would have allowed the construction of an arch at the front and rear of the gate. Type II, found on Narrow Wall structures, has a set of arch responds for the outer face of the gate only, and Type IV is a variant of this form found in Broad Wall milecastles. The distinction between Types II and IV lies in the different size of masonry employed, although Hill and Dobson (1992, 35) have shown this distinction to have little useful meaning. It seems possible that the flush piers provided on the inside of this gate type were intended to support a timber lintel in place of an arch (ibid). The final gate form, Type III, had two pairs of arch responds, but the inner pair projected back into the milecastle. This may have been to increase the floor area in the tower above, and the existence of this type of gateway on both the northern and southern sides of this kind of milecastle has been held to suggest the existence of a tower over each gate (ibid, 36).

The most variable factor of the milecastles appears to be the plan of the interior buildings, where the number and dimensions of buildings vary substantially from one installation to another.

All of the milecastles to the east of the River Irthing (up to and including Mc48) were constructed in stone, but those on the west side of the Irthing (Mcs49–80) were built initially with turf or earthen ramparts and timber gate towers (Breeze 1982, 76). The Turf Wall milecastles were rebuilt in stone, at the same time as the stone curtain wall replaced the Turf Wall. In general they tend to be larger and squarer than their Stone Wall counterparts. West of Birdoswald, where the new Stone Wall was built at a distance of up to 200m north of the Turf Wall between Mc49 and Mc51, a completely new stone milecastle (Mc50, High House) was provided directly to the north of the Turf Wall structure (Mc50TW).

In the Stone Wall sector, the milecastles and turrets are known to have been constructed together with the foundations in advance of the stone curtain Wall itself (p 72); the situation on the Turf Wall is less clear, although the freestanding stone turrets were certainly built before the turf curtain. It is probably the case that the milecastles of the Turf Wall were built with the curtain in order to ensure effective use of the available building material. On the Stone Wall, the milecastles and turrets were provided with short wing walls built to the broad gauge of 3.05m (10ft) in order to allow the Broad Wall curtain to be bonded to the structures. West of the North Tyne the Wall width was reduced to the so-called Narrow Wall curtain at *c* 2.43m (8ft) (p 72). Where this meets the wing walls of the interval structures it creates the vertical offsets or 'points of reduction' visible on the south face of the Wall.

Historiography

The historiography of these aspects of mural studies was magisterially presented by Eric Birley (1961), but a short summary may be appropriate here in order to bring the story up to date, and to examine the background to current thought on the milecastles and turrets.

Milecastles were first so-named by Robert Smith in 1708 (Birley 1961, 89), and the usage was confirmed by Clayton (1855a) in his report on his excavation of Mc42 (Cawfields). The term was finally established by Percival Ross (1904) (to the exclusion of synonyms such as 'castle-steads', which Bruce had continued to employ (Birley 1961, 90)).

The correct number of milecastles was first theoretically put forward by John Horsley (1732, 119). Clayton's work on Mc42 was the first excavation of one of these 'interesting appendages to the murus' (Hodgson 1840), and established for certain that it was provided with a northern gate. At the time the received view, as expressed by Bruce (1853, 67), had been that there were generally single gates to the south only. J Irwin Coates painted several views of Mc42 in 1877 and 1891 (Figs 114, 116–18). The twin gates were confirmed as a fundamental part of the design of all milecastles by Clayton's subsequent work at Mc37 (Housesteads) in 1853 and Mc39 (Castle Nick) in 1854. Coates also recorded these sites (Figs 108–110). Although Francis Haverfield produced an outline plan of Mc49 (Harrow's Scar) in 1898, it remained for J P Gibson and F G Simpson (1911) to produce the first full plan of a milecastle and its internal buildings, following their excavation of Mc48 (Poltross Burn).

Gibson and Simpson's seminal report began to outline ideas on the significance of differences in plan, particularly whether the long or short axis of the milecastle ran back from the Wall line, and the form of milecastle gateways. Simpson (1931) later addressed these issues in detail, offering for the first time the conclusion that the various combinations of gate type and long or short axis plan were the product of differing building styles used by the three legions responsible for the building work. In particular, a combination of structural and epigraphic evidence suggested that the Short Axis type with Type I gates were the work of Legion II *Augusta*, a conclusion based on the fact that three such milecastles have produced building inscriptions of this legion: namely Mc37 (Housesteads) RIB1634, Mc38 (Hotbank) RIB1637, 1638, and Mc42 (Cawfields) RIB 1666.

The long axis milecastles with Type II gateways were allocated to Legion XX *Valeria Victrix* on the basis of a building inscription (RIB 1852) from near Mc47 (Chapel House). This milecastle was investigated in 1935 (*Simpson et al* 1936b, 270–2). By a process of elimination, Long Axis milecastles with Type III gates were therefore allocated to Legion VI *Victrix*.

The accuracy of this interpretation has recently been questioned (Breeze and Dobson 2000, 68). Peter Hill (1989) in his analysis of the stonemasonry of the north gate of Mc37 (Housesteads) has demonstrated that the disruption caused in

the construction of the Wall by the decision to bring the forts onto the line affected the construction of milecastles, and that this disruption is visible in the standing stonework. It is therefore at least possible that this and other sites were completed by a legion other than the legion that began the work. Breeze and Dobson have therefore recently modified the analysis. While agreeing that the planning of milecastles does reflect the activities of the three legions that *began* the work, they accept that the inscriptions relate to the units that *completed* the work (cf Hill 1991, 38), and that these are not necessarily the same. They therefore call the three legions A (short axis, Type I gate), B (long axis, Type III gate) and C (long axis, Type II gate).

A further complication in this story has recently been advanced in an important study by Symonds (2005). It has long been apparent that some milecastles were constructed to the Broad Wall standard, with all four walls being of broad dimensions. Others are built to Narrow Wall standard, often with a broad north wall, continuing the Broad Wall curtain, and with east, west and south walls built to narrow gauge.

The distribution of wholly Broad Wall milecastles is an irregular one, falling into three groups. These Symonds associates with topographical factors, arguing that Broad Wall milecastles were completed first, before the decision to go over to Narrow Wall curtain (p 72), in order to secure particular points of weakness. Mc47 (Chapel House) and Mc48 (Poltross Burn) are identified as two exceptional Broad Wall milecastles, both larger than the norm, and with paired barracks. He suggests that these were completed early in order to garrison the potentially vulnerable corridor between the Tipalt Burn and the Irthing (an idea first hinted at by Breeze and Hooley (1968, 109), who referred to Mc47 as a 'priority milecastle'). The paired barracks would have been constructed when it was thought that the milecastles would provide the sole garrisons on the wall, before the decision to place the forts on the line. The provision of single small barracks in all other known milecastles would thus post-date this decision.

Symonds' other two groups are the Broad Wall Mcs23–27, flanked to the east by the main through route of Dere Street and to the west by the River North Tyne, and Mc9 (Chapel House) and Mc10 (Walbottle Dene), sited to secure the Dewley Burn passage through the deep defile of Walbottle Dene. While maintaining the logic of even spacing, Symonds shows not only that some milecastles were prioritised, but that there was a scale of importance, citing Mc35 (Sewingshields), where structural aspects indicate a very disjointed construction process. The crag-crest location of this milecastle, in an invulnerable position, might have set its completion low in the scale of priority.

Milecastle structure and function

The general appearance of milecastles is now well established. For the Turf Wall milecastles, the key site is Mc50TW (High House), and the reconstruction of the milecastle drawn for Simpson *et al* (1935b) has been very influential. Here the milecastle walls were some 6m thick (20 Roman feet) at the base. From the section of Turf Wall found near by, it was estimated that the Turf Wall, and thus the milecastle walls, were some 3.657m (12ft) in height, with the front of the wall almost vertical and the rear sloped at an angle of 1:4. The Turf Wall and its milecastles have, since the 1935 reconstruction, frequently been reconstructed with a boardwalk on the top, and a breastwork of split timber. This would have been a profligate use of timber, and evidence from pollen analysis (pp 118–9) in the Appletree sector does not suggest that large timber was plentiful. The sort of birch and alder scrub woodland attested from the pollen work suggests materials from which hurdles might be woven, and perhaps the breastwork for Turf Wall milecastles were made of such hurdles, saving large timber for the construction of the gates (Wilmott 2001a, 44).

The Stone Wall milecastles have prompted more discussion. The most conspicuous aspects of these structures were the stone gates. The three different plans have been noted above. Although Type II and Type IV gates may have had interior lintels, it is safe to say that all gates would have been arched on their outer faces. The pivots on which the inward-opening, harr-hung, double gates swung were housed in pivot holes behind the arches. Above the arches was the floor of the first storey of the tower, probably supported on joists placed at a level just above the extrados of the arch (Hill and Dobson 1992, 50).

A great deal of recent literature on turrets has been concerned with their reconstruction, particularly that of their roofs. This literature is also relevant to the reconstruction of milecastle gate towers, which are, after all, simply turrets with gates in the base. Parker Brewis (1932) was the first to attempt a reconstruction of the appearance of a Wall turret, based upon T18a (Wallhouses East). He deduced a total height of 30 Roman feet (8.86m) for the structures, and assumed a gabled roof (for a later consideration of turret reconstructions see Hill 1997a). The same conclusion on height, assuming two storeys above the gate, was reached for milecastle gates by Hill and Dobson (1992, 36). Gabled roofs similar to those proposed by Brewis were adduced by Baatz (1976, 22–33) for turrets on the German *limes*.

Crow (1991, 61) has suggested flat roofs for the turrets on the basis of evidence for crenellated parapets in the form of chamfered merlon capstones found at T7b (West Denton), T51b (Lea Hill), T54a (Burtholme Beck) and Mc79 (Solway House). The same conclusion had previously been drawn for the treatment of milecastle gateways at Mc27 (Lower Brunton) (Gillam 1953, 171) and Mc39 (Castle Nick) (Crow 1988, 151), where no roofing slate or tile was found among collapsed debris from the structures. Bennett (1983, 44) suggested that turrets were flat roofed, following his examination of T10a, although he later (Bennett 1988, 137) suggested that low pyramidal roofs sheathed in lead and surrounded by a crenellated parapet might have been used. Hill and Dobson (1992, 41) have opined that in the British climate a flat roof is "an abomination, to be avoided wherever possible", and suggest that a flat roofed tower with a crenellated parapet, and a pyramidal thatched roof carried on timber corner posts would account for the combination of merlon caps and no roofing material found at some turret sites.

The question of the height of the walls of stone milecastles (and of the curtain Wall itself) was recently revisited by Hill and Dobson (1992, 46–9). It was Gibson and Simpson (1911, 420–1) in their report on Mc48 (Poltross Burn) who first reasoned out the height of the Wall by measuring and projecting the angle of rise of a set of steps found within the milecastle, which were thought to lead from the milecastle interior to the wall top. This is augmented by the calculation of the height above ground level of the floor of the tower above the milecastle gate arch (Hill and Dobson 1992, 47). If this floor was at the same level as the wall walk, then this calculation also gives the wall top height. Both methods of reasoning arrive at an original design height of 15 Roman feet (4.44m).

Internal buildings in the milecastles are in two basic sizes: 6–9.8m ×◊ 3.6m and 15.8m ×◊ 3.6m. The smaller building is usually found singly, and is divided into two rooms; the larger type is usually built in pairs, and divided into four rooms – two examples are Mc47 and Mc48 (Breeze and Dobson 2000, 33; Symonds 2005). Small variations in size have been summarised by Hill and Dobson (1992, 49), who relate the size of the buildings to a possible garrison of 10–11 men.

Another continuing debate concerning the milecastles relates to their function. Dobson has stated that "the function of the milecastle, along with that of the Vallum remains one of the great mysteries of the Wall" (1988, 9).

Much of the debate on the function of the Wall as a whole revolves around the milecastles. It should be emphasised that, as these were part of the primary design of the Wall, their provision relates to the original conception of the Wall's function before the addition of forts and the Vallum to the system. As a starting point Dobson (ibid) defines the milecastle as "two things: a passageway, albeit a controlled passageway, through the Wall and accommodation for troops within a fortified enclosure". The fundamental question (ibid, 12) is why there were so many openings; gates, though essential, are also weaknesses in any defensive structure. Dobson argues that the number suggests not only confidence on the part of the designers and builders of the Wall, but also central planning without regard to topography. He regards the primary reason for the milecastles as the facilitation of patrolling, and that it was simpler to "provide them on a massive scale than to commission an investigation on the ground of what might have been required" (ibid).

The generally accepted view is that the Wall was placed to control movement rather than to prevent it, and it is this view that is advanced by Breeze and Dobson (2000, 40), who note that "civilians would be allowed through the gateways, though only, presumably when they had satisfied the guards of their peaceable intentions, and

on payment of customs dues". Such travellers would be passing in the course of trade, or perhaps trans-humance. Dobson (1986, 12) elsewhere, however, suggests that such passage was "permitted, but it was not the primary reason", citing patrolling and maintenance as the principal purpose of the gates.

In recent years, much has been made of the absence of observed causeways or access points across the ditch to the north of the milecastles. Dobson (1986, 15) rightly notes that it is "extraordinarily difficult to propose a theory of milecastle gateways which does not require such crossings". He goes on to point out (ibid) that the "removal of milecastle gates when the Wall was abandoned in favour of the Antonine Wall must imply crossings of the ditch at these points". The removal of the gates by means of smashing the pivot stones at this time is well attested (cf Allason-Jones *et al* 1984, 233).

Bidwell (1999, 35) has recently pointed to the lack of evidence for causeways over the ditch at milecastles and seems to doubt their existence except where archaeologically demonstrated. The only two milecastles to show excavated evidence for causeways are Mc50TW (High House), and Mc54 (Randylands) (Simpson *et al* 1935a, 225). Welfare (2000, 14) observes that the causeways at these milecastles have become viewed as an aspect of the design of the Turf Wall, rather than something that might be a typical factor in the construction of the Wall. He also emphasises the fact that the work on Mc50TW and Mc54 was the first attempt to find such evidence, and that it has not been deliberately sought since. If there was no general provision of causeways over the ditch in the first plan for the Wall, the milecastle gates could have been only provided for egress to the berm for maintenance purposes. This is untenable: if the number of milecastle gates represent an over-provision for civilian passage and patrolling, then this is doubly the case if they were used merely to allow maintenance parties onto the northern berm. Welfare (2000) has examined the field survey evidence and concluded that there is, in fact, *prima facie* evidence to suggest that the first plan for the Wall did include causeways across the ditch at milecastles. Bidwell (1999, 35) suggests that where causeways might have been removed and left no trace, excavation or geophysics might show the existence of road metalling on the berm.

A problem in the interpretation of causeways is that of chronology. It is not known fully how the chronology of ditch digging relates to that of Wall building. The central planning that gave rise to milecastle building might have been amended in the field by a decision on the part of the ditch diggers not to leave a causeway at a milecastle where topography made access difficult. Causeways could have been removed at any time during the Roman period for a variety of reasons, possibly as early as the decision to place the forts on the Wall; no pattern should be anticipated (with respect to Welfare 2000, 18).

There is one indication that milecastle gateways were considered to be a necessary part of the functioning of the frontier for a long period, however, and that is the fact that in every known case the milecastles on the Turf Wall were replaced in stone. This was a major opportunity to review the overall plan of the Wall following experience on the Antonine frontier, and to decide on selective rebuilding and consequent savings on labour and resources. The fact that milecastle replacement was wholesale clearly suggests a continuing role for the milecastles themselves, and for their gateways.

The question of the garrisoning of the milecastles has also been widely debated, varying between three ideas: that the fort garrisons provided the necessary troops; that other auxiliary units were deployed specifically for the purpose; or that a special force was deployed. Breeze (2003) has recently reviewed the issue and concluded that the question is still open, although he suggests that the second possibility remains the more likely.

Thus far, we have dealt with the *primary* plan, structure, and function of the milecastles, but there is much more to them than this. The milecastles, of all of the installations of the Wall after the forts and *vici*, are the most potentially archaeologically informative. While the earthworks and curtain wall in both the stone and turf sectors may yield data on morphology and landscape, they are lacking in dating evidence, or in detailed information on the development of the frontier system as a whole. The turrets, although ubiquitous, are small and seldom produce much in the way of information on either change or dating; they are either in use or not in use at any given time. Many were demolished, and the recesses in the Wall filled in.

On the other hand, the milecastles, with their substantial gates and internal buildings, contain complex and informative datable stratigraphic and structural sequences. The more complete milecastle excavations have shown considerable variety in the number, types and sizes of internal buildings. They have produced differing datable phases of occupation, building, and the opening or blocking of gates, as well as aspects of site morphology, which have been central to the interpretation of the history of the frontier. It is, therefore, sobering to reflect how few excavations aimed at examining the full history of the milecastles have been conducted. A considerable number of the milecastles on Hadrian's Wall have been partly investigated by small-scale interventions, ranging from the attentions of antiquarians to trenching in the first half of this century. Most work has, however, tended to concentrate on primary issues, establishing at most the gateway type and the overall dimensions of the milecastle. The number of milecastles that has been excavated on a sufficiently large scale to determine their overall plan is considerably smaller: only 13 milecastles can claim to have been extensively excavated: Mc9 (Chapel House) (Birley 1930a), Mc35 (Sewingshields) (Haigh and Savage 1984), Mc37 (Housesteads) (Clayton 1855b; Blair 1934), Mc39 (Castle Nick) (Clayton 1855b; Simpson *et al* 1936b, 268; Simpson 1976, 82–6; Frere 1983, 290; 1986, 378–81; 1987, 316; 1988, 434), Mc40 (Winshields) (Simpson 1976, 86–98), Mc42 (Cawfields) (Clayton 1855a; Simpson *et al* 1936b, 269), Mc47 (Chapel House) (Simpson *et al* 1936b, 270–2), Mc48 (Poltross Burn) (Haverfield 1888; Gibson and Simpson 1911), Mc49 (Harrows Scar) (Haverfield 1899; Richmond 1956), Mc50TW (High House) (Simpson *et al* 1935), Mc50 (High House) (Simpson 1913), Mc64 (Drawdykes) (Caruana and Fane Gladwin 1980), and Mc79 (Solway House) (Richmond and Gillam 1952).

The limited number of full structural histories that we have for milecastles is one problem in their interpretation, but there is a more fundamental question: in many cases the exact location of milecastle sites are unknown also. This problem has broad implications in terms of the modern management of the Wall, as without a clear understanding of the locations of sites, decisions upon management solutions are not possible.

It is unsurprising that one of the major *lacunae* in knowledge of the location of interval structures is in the urban area of Newcastle upon Tyne. When Collingwood (1930) drew up his schedule of numbered interval structures the existence of such structures all the way from Wallsend to Bowness-on-Solway was assumed, with eight milecastles postulated from Wallsend (Mc0) to the easternmost proven example at Mc9 (Chapel House). The precise form and dating of the Wall eastwards from Mc9 is still the subject of debate, as the existence of milecastles and turrets in this sector has never been fully confirmed by reliable observation. The theoretical spacing and numbering between Wallsend and Mc9 was shown to be seriously awry when the Westgate Road Milecastle was found. This is the only milecastle within the built-up area of Newcastle upon Tyne whose remains have been reliably recorded (Harbottle *et al* 1988). The problems associated with the interpretation of the sector of the Wall to the east of Mc9 have been discussed by Bennett (1998), and developed by Hill (2001a), both of whom identify the Westgate Road site as Mc4 (Bennett 1998, 31; Hill 2001a, 8). Hill's schedule of distances between interval structures is an excellent starting point for further work.

The second area in which many interval structures remain unlocated is in the west. Robbing of the Stone Wall in Cumberland was common in the post-Roman period, for there are few local exposures of solid rock. Re-used masonry from the Wall occurs in 12th century contexts in both Carlisle Castle and the Cathedral, as well as other early medieval sites in the region, clay-cob structures being more normal for lesser domestic structures at this date (Whitworth 1994a, 8–11). More extensive and dedicated robbing of the structure began in the post-medieval period, with the increase in the number of more permanent dwellings, perhaps as a by-product of the increased security after the Act of Union. Indeed, by the 19th century, so much of the Wall had evidently been robbed that henceforth farmers were compelled to dig below ground level before suitable stone could be found, most of this being re-used within two miles of its find-spot (ibid, 19–22).

Once robbed, what was left was often subjected to ploughing, causing further attrition of the remains. There are few surviving earthworks in this section to indicate the precise course of the linear

elements and the location of milecastles and turrets. Fewer than half the expected 24 milecastles in this length have been precisely identified, and only a handful of turrets. Between Stanwix and Burgh-by-Sands, more than six miles, five successive milecastles (Mcs66–70 inclusive) have not been located and the exact course of the Wall itself is mostly uncertain. Furthermore, this sector of the Wall, particularly in the stretch between Castlesteads and Burgh Marsh, has received little detailed archaeological attention other than a small number of mainly development-driven interventions. A quirk of the pattern of past research into the extent of the Turf Wall has ensured that the remains in this area have been little studied. During the 1930s a long-running campaign of excavation had, as one of its objectives, the establishment of the length of the Turf Wall and whether it actually extended as far as the western end of Hadrian's Wall.

Following the discovery of the Turf Wall in the Birdoswald–High House area, this question became important in the final unravelling of the history of the linear components of the frontier and their relationships one to another. A series of exploratory excavations in the 1930s sought the sites of the characteristic Turf Wall milecastles and turrets. This operation moved steadily westwards from Mc50 until 1934, when the campaign had reached T57a near Castlesteads, and it was decided to make a jump to the far end of the Wall (Simpson *et al* 1935a, 213). The idea was to attempt to find the final turret on the line. If this was a free-standing, stone-built turret, without integral wing walls, it would be typical of the turrets of the Turf Wall, and would afford positive proof that the Turf Wall did indeed extend from the Irthing to Bowness-on-Solway, and "the [Cumberland Excavation] Committee's quest of forty years duration would be ended" (*ibid*, 217).

Simpson's team trenched at Mc78 (Kirkland); (pp 187–92) simply to confirm its position. From here it would be possible to establish the sites of Mc79, and the turrets in Wall miles 78 and 79, by simple measurement. This approach was successful, T79b was found to be a Turf Wall turret, and the point was proven (Simpson *et al* 1935a, 217–18). This also meant, however, that the programme of methodical location of one site after another was suspended.

Subsequent work located other sites. Mc73 (Dykesfield) was located in 1948 (Simpson *et al* 1952, 16), Mc71 (Wormanby) and Mc72 (Fauld Farm) in 1960 (Bartle 1961), and Mc64 (Drawdykes) in 1964 (Caruana and Fane-Gladwyn 1980). In 1976, Mc65 was located through geophysical survey (Bartlett 1976) and its location was confirmed by trial trenching (Smith 1978, 35–6). Following this success, in 1981, as part of the Crosby-on-Eden project (p 121), it was decided to carry out some limited geophysical prospection with a view to locating milecastles in the immediate vicinity (Appendix 1; Gater 1981). The results were varied. Mc58 (Newtown-of-Irthington) appears not to have occupied its measured position, more likely because it was never there than because it had been robbed or ploughed out. Mc59 (Old Wall) and Mc62 (Walby East) were confidently located, while Mc61 (Wallhead) and Mc63 (Walby West) were tentatively identified. Only two of these surveys (Mc62, pp 170–4 and Mc63, pp 174–7) have subsequently been tested by excavation, with mixed results.

Project background

The first *Hadrian's Wall Management Plan* (English Heritage 1996, 6.3.1), identified some of the potential threats to the integrity of archaeological sites in rural settings, including that of cultivation. The varied landscape through which the Wall runs includes two broad zones where cultivation affects the line of the Wall and its associated structures: the fertile land in east Northumberland between Newcastle upon Tyne and Stagshaw, which is subject to arable agriculture, and the low-lying land in Cumbria west of Walton. In Cumbria it is common practice to rotate the land use over a number of years, leaving fields under grass for several years followed by two or three years of cereal or root crops before returning them to grass. In both of these areas archaeologists have lacked adequate direct evidence to assess the degree of continuing damage to archaeological horizons below or within the plough soil. Owing to their stratigraphic complexity and numerical ubiquity it was perceived that, of all the installations of the Wall, milecastles under cultivation potentially represented the largest single body of information under the greatest level of threat.

In 1998 one of the authors prepared a proposal (Austen 1998) for a project to assess and evaluate the milecastles under apparent threat. Thirteen of the original 81 milecastles on Hadrian's Wall were identified in this paper as being under potentially damaging land regimes, principally cultivation of cereal crops, either in rotation or annually. A proposed programme of field evaluation to investigate the condition of the remains and their vulnerability to further cultivation was put forward. The precise locations of four of these milecastles had not been established hitherto. During 1999 the proposal was adopted by the then Central Archaeology Service of English Heritage as a strategic project on the World Heritage Site, which would be useful more generally in informing ongoing investigations into the impact of ploughing on archaeological monuments.

A project design was therefore drawn up for the work (Austen and Wilmott 1999), and the project was carried out during the late summers of 1999 and 2000. The objective of the fieldwork was principally to provide data to inform discussions with the land owners and managers of these milecastles concerning their future management, although it was recognised also that new archaeological information would also be recovered. The management recommendations appeared in a series of interim reports (Moore and Wilmott 2001b–c; Wilmott 1999e–j; Wilmott 2001b–e) which were distributed to site owners and archaeological curators. The present paper is written to disseminate the archaeological information recovered and to set the work on each site into its broader research context.

Site selection

Nine known sites were identified where at least a part of the milecastle was in potentially damaging land use. These divided neatly between east and west, with the eastern sites (Mcs9, 10, 14, 17 and 19) being under arable cultivation and the western (Mcs62, 63, 78 and 79) being ploughed in rotation. Two unlocated milecastles (Mc60 and Mc70) certainly fell within areas subject to cultivation, while a further two (Mc11 and Mc69) were only possibly affected, as the broad areas in which they were expected to be found included land subject to cultivation as well as other regimes. Two other milecastles (Mc58 and Mc59) were also initially considered for the study, but their measured sites were subsequently reseeded as permanent pasture, averting any further threat. During 2000, Mc71 was identified as a further example of a milecastle site partially under threat from rotational ploughing, and it was therefore added to the list. The sites examined and reported on here are therefore the actual or theoretical sites of Mcs9, 10, 14, 17, 19, 62, 63, 69, 70, 71, 78 and 79.

General methodology

The methodological approach adopted varied from site to site, and details of this appear in the individual site summaries that follow.

The unlocated milecastles were sought through geophysical survey. It was felt that the survey carried out within the Crosby-on-Eden project on Mcs58, 59 and 61–63 were adequate to inform field evaluation on Mc62 and Mc63, while new surveys were commissioned for the two alternative possible sites of Mc69 and Mc70. At Mc63 a programme of test-pit digging was used to locate the milecastle, as the results of geophysical survey were not conclusive. Mc70 was so inconclusive that no field evaluation took place. At all other sites a series of trenches – from one to five – were excavated. The brief was to excavate through overlying plough strata or later disturbance to the top of intact archaeology, to record the archaeology, and to backfill the trenches. All trenches were hand excavated, and also backfilled by hand, except in the cases of Mc71 and Mc78, where the respective farmers kindly undertook mechanical backfilling. In all cases new information was retrieved through this process, as the removal of old excavation trench backfill (Mcs9, 78 and 79) or of robber trench fills (Mcs10, 14 and 78) was permitted within the brief.

Milecastle 9 (Chapel House): 2000

The site

Mc9 is on the western side of a ridge of high ground to the east of Blucher village (NZ 1785 6627). The line of Hadrian's Wall and the north wall of the milecastle lie below the south carriageway of the B6318, which has been slightly re-aligned here to link up with the roundabout to join Union Hall Road and the A69 dual carriageway (Figs 235–6). There is a wide verge of grass that covers the remains of the central part of the milecastle, but the

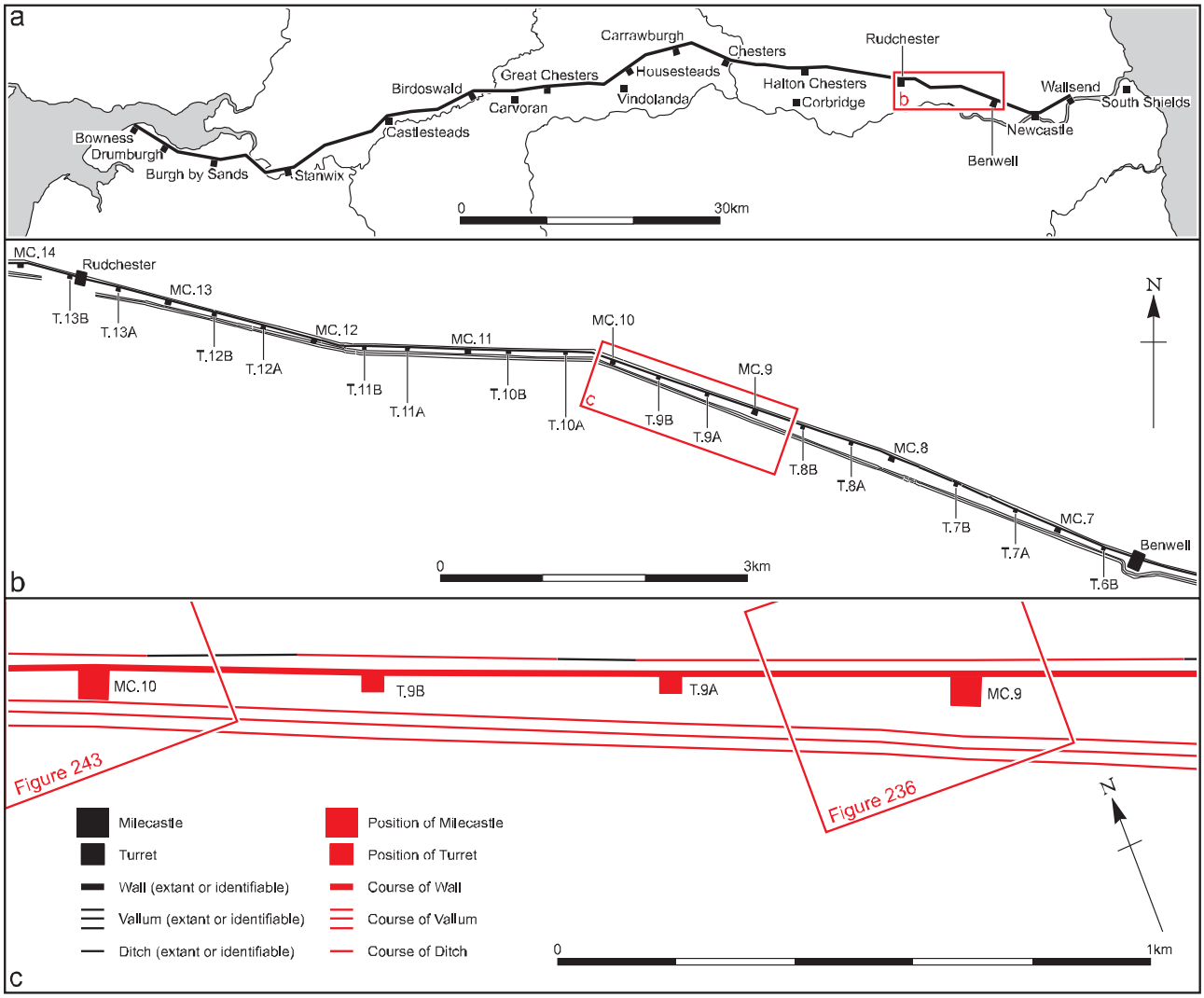


Fig 235
Milecastle 9: location of Mc9 on Hadrian's Wall and of Fig 236.

archaeological effect of the realignment of the road is unknown. The southern end of the milecastle extends for approximately 8m into the field south of the road, which has been cultivated for cereal crops each year, at least since 1945. A slight rise in the fence line between the verge and the cultivated field is indicative of the buried remains.

Previous work

The milecastle might have been first noted by John Horsley (1733, 138), although robbing and ploughing had obliterated all surface trace of it until it was re-located in 1928, and partly excavated in 1929 by Eric Birley. The north gate, of Type IV, built in large masonry with a single pair of gate responds, was located in 1951 (Daniels 1978, 73). It is one of the more completely excavated of the milecastles (Fig 237), and Birley's excavations were the subject of a detailed report (Birley 1930a), which included full reports on finds and pottery. The internal measurements of the milecastle were 14.9m east–west by *c* 18m north–south. The foundations of the side walls were 3.1m wide, the same as the Broad Wall in this sector. This was the first Broad Wall milecastle to be thoroughly examined, although some work also took place at around the same time on Mc10 (Walbottle Dene) (Spain 1930). It was found that the west wall and the western part of the south wall had been almost completely destroyed. Several stones of the north face of the south wall remained, at least two with inscribed Roman numerals on the faces. A single course of each face of the east wall, of large blocks, survived in good condition. The wall core was of clay and rubble, as was the foundation, although the east wall was mortared. Enough mortar survived to demonstrate that the wall above the footing course was offset by 154mm on each face, and was therefore 2.62m wide. The south-east angle was robbed, but the shape of

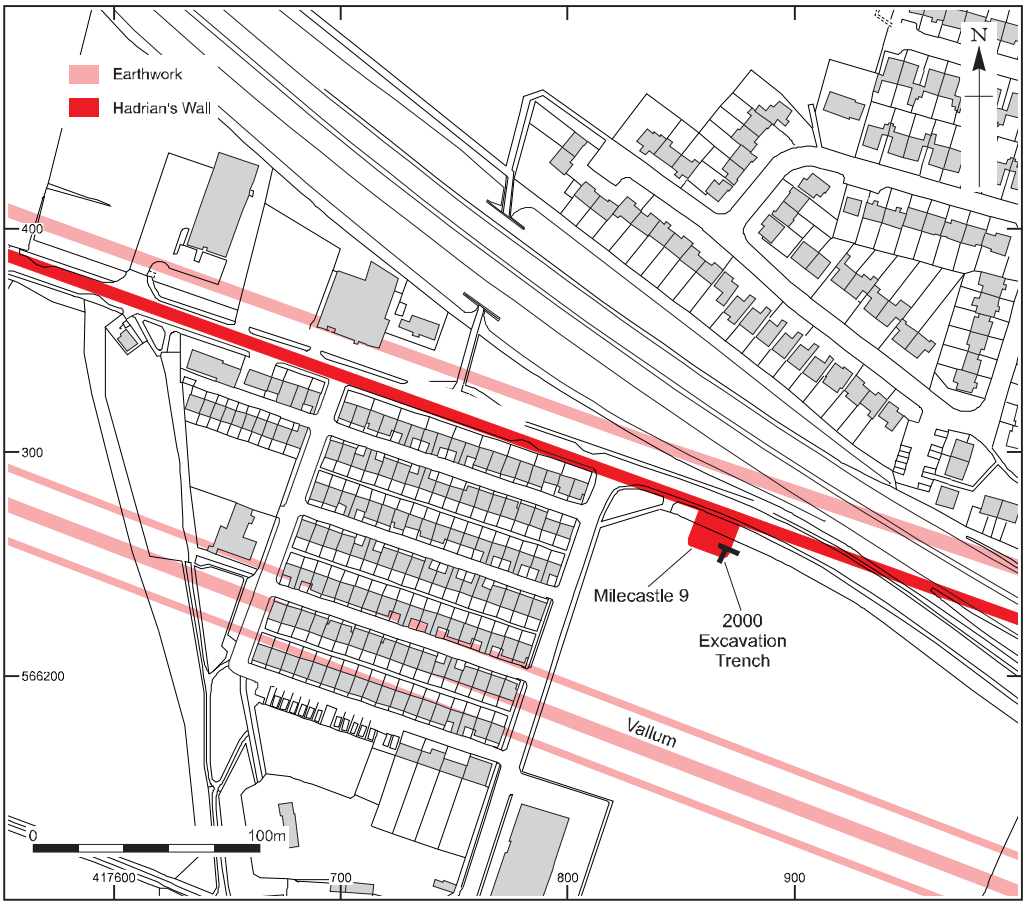


Fig 236
Milecastle 9: milecastle and excavation trench of 2000 against modern mapping.

the corner was rounded both inside and out. Little was left of the south gate, although the eastern pivot hole in the footing course of the gate jamb and the gate sill were intact. The sill, although the photographs show it much worn (Birley 1930a, pl xlv, fig 2), retained the upstand against which the inward-opening door shut. The gate passage was contained within the thickness of the wall.

The primary road through the milecastle was constructed of earth and gravel with a drain on the western side. The road was later made up so that it had an even slope from north to south. In the second period the road was re-made. Although most of this road was subsequently ploughed away, a drain associated with it survived within the south gate.

In the eastern half of the milecastle, and towards the southern side, there was a primary internal building, approximately 7.3m long by 4.5m wide, constructed with clay-bonded masonry and having clay floors. This contained two rooms, and was in an excellent state of survival, standing up to six courses high in places. A resurfacing of the road was associated with the laying of a flagstone floor in one of the rooms. In the 'second period' this building was extended by at least one additional room to the north. At the same time a clay and flag floor was laid in the original building, and the door sill was raised to provide a higher threshold.

West of the road there was clearly considerable disturbance, and the sequence is less clear. The published photograph (Birley 1930a, pl xlvii, fig 2) suggests that the archaeology was fragmentary, but rather more complex than the report indicates. Certainly early post holes were found, and although these were 76mm in diameter and as much as 254mm deep, they did not extend into the undisturbed subsoil. The published plan shows two rows about 1.8m apart of at least three post holes. This is clearly not wide enough to represent two walls of a building, and no firm conclusion was reached as to their function. In the second period, a stone building was erected of which a threshold and parts of the east and west walls only survived. This lay 1.05m from the road edge, from which it was separated by a kerbed path.

Mc9 is one of the few examples where external areas have been excavated. The burial of a male youth was discovered close to the south wall of the milecastle. It was aligned with feet to the east, and was laid out parallel with the milecastle wall. The fact that the head was missing appears to result from

later disturbance rather than from deliberate decapitation. Although interpreted as Roman, it may have been of early post-Roman date, and the same may be true of the parts of two further bodies found near the south-east corner. To the south of the milecastle, 9.6m from the south wall the north kerb of the Military Way was located in a trench that extended 15.6m southwards from a point midway between the gate and the south-east corner. This road was at least 5.4m wide, with a branch road 4.8m wide forking "from the east to the gate of the milecastle". Despite the length of this trench, no sign was found of an encircling ditch.

Several small finds were recovered, including four coins ranging in date from one of Julia (AD 79–81) to one of Valentinian I (364–75); a second century brooch; a sword scabbard chape; part of a sculpture of a female figure within a conventionalised temple, possibly one of the *Deae Matres*; a portion of a gaming board; and several mill stones. Pottery dated from the 2nd to the 4th centuries AD, material from the later period including both Crambeck and Huntcliff wares.

The dating of the two 'periods' identified in the work was interpreted in terms of the Wall Periods, which were formally promulgated in the paper that includes the report (Birley 1930a). These structural periods were therefore attributed to the reigns of Hadrain and of Severus. The pottery report would seem to confirm that this is broadly correct, or at least that the second period is indeed late 2nd–early 3rd century AD. The later finds attest to occupation into the later 4th century, although the structural and stratigraphic evidence for these periods had been removed by ploughing prior to 1929.

The evaluation

After alterations to the road system since 1929, very little of the milecastle remained within the ploughed field, and it was felt that a single T-shaped trench would sample both the east and south walls. The east–west bar of the 'T' was 9.5m long, and the north–south bar 6m long. Both were 2m wide. Excavation was carried out entirely by hand, and the intention was to excavate to the top of intact Roman archaeology insofar as this survived the 1929

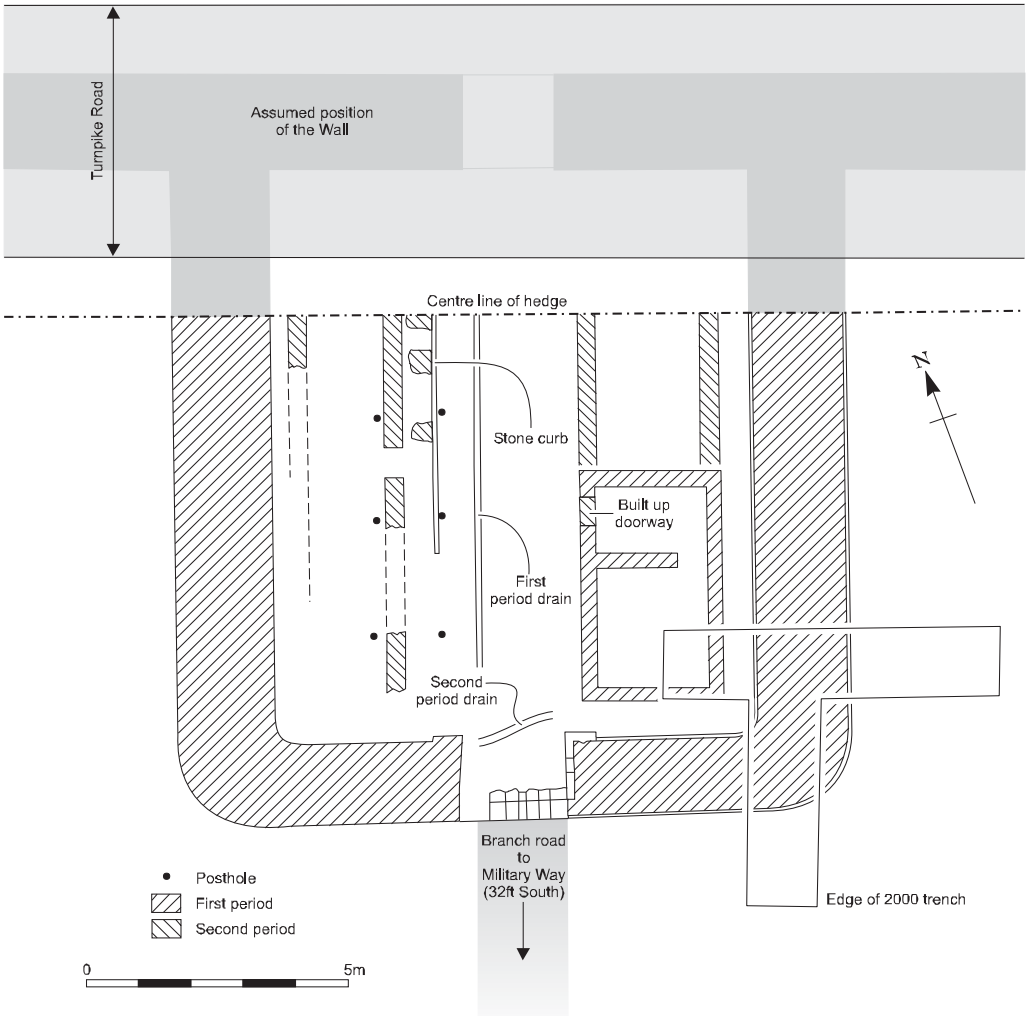


Fig 237
Milecastle 9: plan of milecastle based on Birley (1930) with location of 2000 trench superimposed.

excavations. In order to clarify the stratigraphy, and to distinguish between excavation fill and intact stratigraphy, the northern metre of the east–west bar, and an area in the south-west corner of the north–south bar were excavated to a greater depth than the rest of the trench. All recording was carried out according to the methods currently in use in English Heritage's Centre for Archaeology.

Structures and stratigraphy

The trench sampled parts of the excavated area, and areas of previously un-examined stratigraphy. The edges of the 1929 excavation were clear (Fig 238). The portion of the trench within the 1929 area included the east wall of the building on the eastern side of the milecastle, the east wall of the milecastle, and its robbed south-east corner. The method of the original excavator appears to have been to clear the interior of the milecastle of its horizontal stratigraphy, while leaving the walls of interior buildings upstanding. The photograph taken at the time (Birley 1930a, pl xliii, fig 1) demonstrates that the stratigraphy above the exterior milecastle walls was left *in situ*, and only the faces of the surviving facing stones were exposed.

Pre-Roman strata

The natural subsoil was not encountered in any part of the excavated area, even within the edges of cut features, such as the ditch to the east of the milecastle (Fig 239). The milecastle was built on a layer of yellow clay (1212=1219=1222). (Hereafter, such numbers refer to the layer or context numbers used in the excavations records.) This clay was the uppermost element of a series of strata at least 450mm deep comprising alternating layers of yellow clay (1212=1219=1222, 1224,1226) and brown silty soil (1223, 1225) (Fig 239).

Roman structures and deposits

The footings of the milecastle walls were 3.16m thick. The wall core (1201) consisted of 40% angular sandstone rubble up to 200mm in a matrix

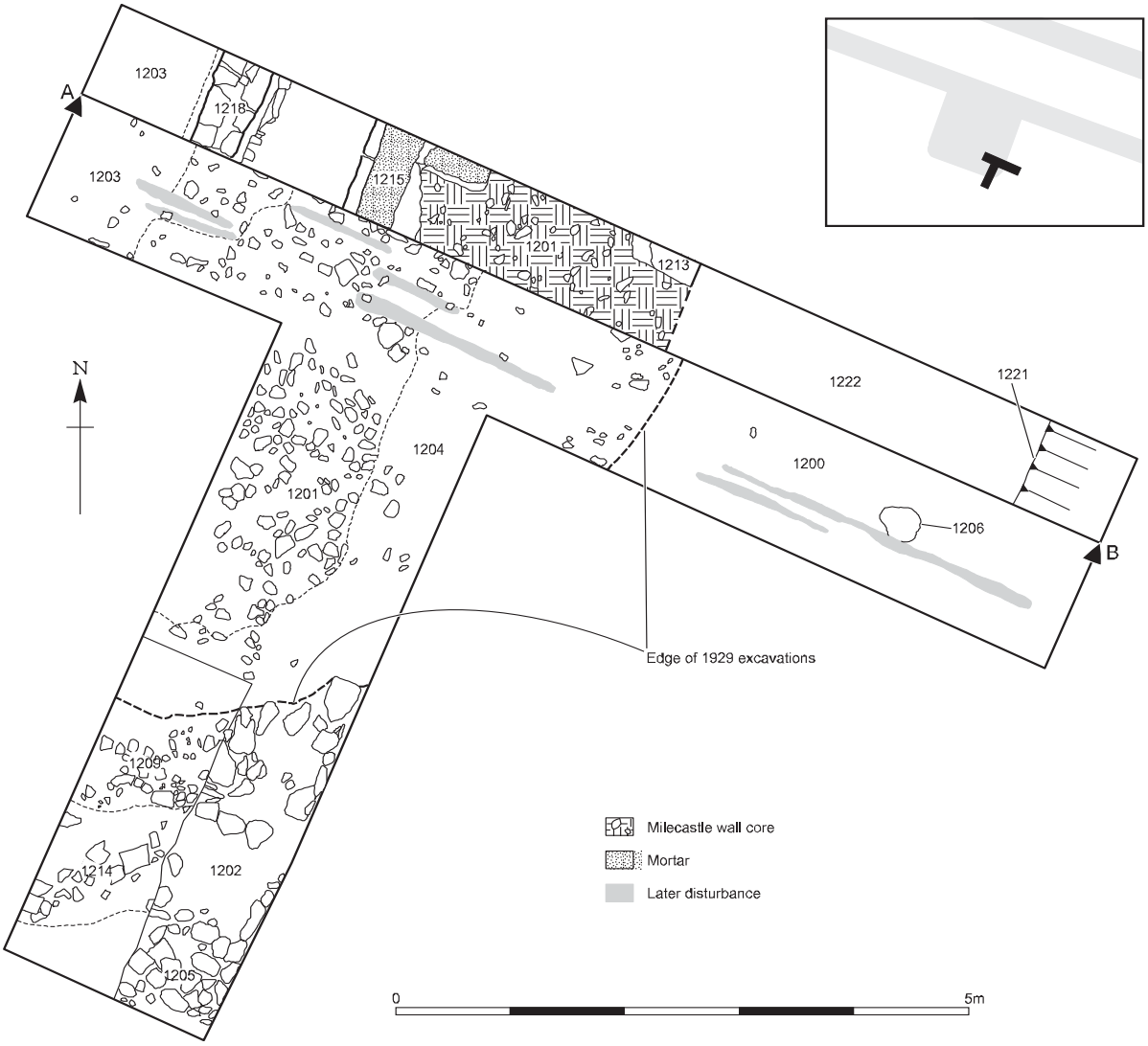


Fig 238
Milecastle 9: plan of 2000 trench.

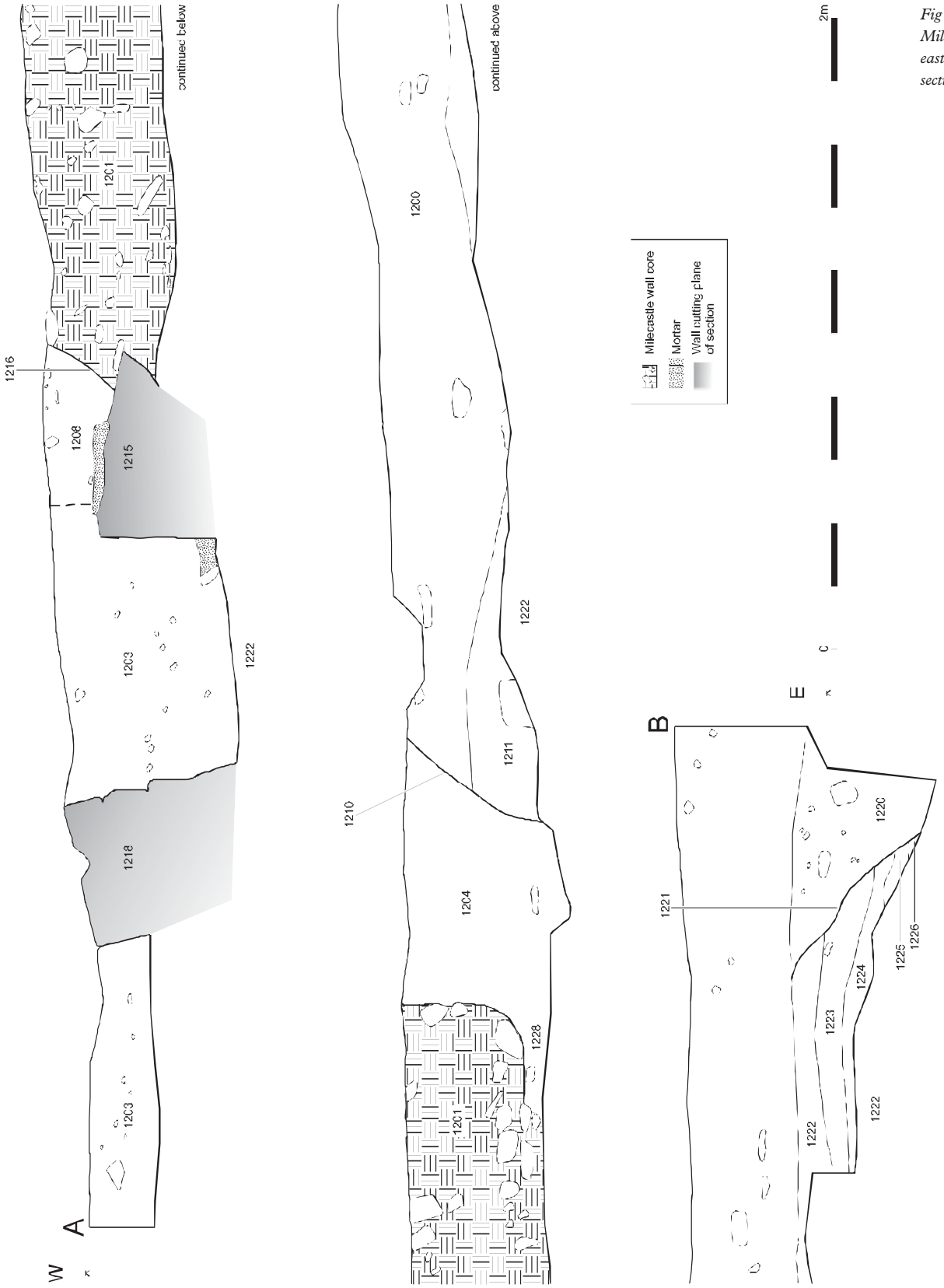


Fig 239 Milecastle 9: east–west section A–B.

Fig 240
Milecastle 9: view west along trench showing exterior milecastle wall, and wall of internal building.

of yellow-brown mottled clay, although some fragments of grey mortar were found in the core, suggesting that at least part of it, had been mortar bonded. This was faced with grey sandstone blocks (1213, 1215; Fig 238), which were dressed to a good square face some 390mm square, but were otherwise roughly dressed, and which tapered back from 700mm–1.05m into the core.

The facing stones were bonded with clay similar to that in the core, but the stones of the inner face of the east wall retained mortar on the top surface, which had bonded the next course to the footing. As Birley (ibid, 153) observed, this mortar showed that the actual wall face had been set back from the face of the bottom course. In the present excavation this offset was measured at 140mm wide. Birley'=s photographs show a similar offset on the north face of the south wall, where part of the second course remained intact (ibid, pl xliv, fig 1). The south-east corner was totally robbed, although the foundations of clay and rubble filled a foundation trench taht described a rounded corner on the interior and exterior faces.

The wall of an interior building was found 1.02m west of the east face of the east wall of the milecastle (Fig 240). This building was clearly the primary stone structure found by Birley in 1929. The wall (1218) survived to a height of three courses (880mm). It was built of clay-bonded coursed rubble, with a clay core, and was 540mm wide.

Outside the walls of the milecastle, around the south-east corner, there was a paved surface of small yellow sandstone slabs 40mm thick set in yellow-brown clay (1214; Fig 241). This surfacing was not noted in 1929. To the east of the milecastle, at a distance of 4.65m from the face of the east wall, the western edge of a ditch (1221) filled by dark soil and rubble (1220) was found. This ditch was cut from the same level as that from which the milecastle was constructed, and appears to have been a contemporary feature (Fig 239).

Post-Roman deposits

A deposit of loose, mid-brown sandy material containing up to 50% sandstone rubble lay over the exterior stone surface. It had originally been banked up against the milecastle walls (E wall, 1211: S wall 1209), and appears to have comprised destruction debris from the collapse or robbing of the structure. It can be inferred from a reading of Birley's report (ibid, 154) that this material sealed the burial outside the south wall that was excavated in 1929. Within the intact stratigraphy over the east wall, most of which comprised the clay and rubble wall core, the eastern edge (1216) and stony fill (1208) of a pre-1929 robber trench, which had been cut to remove stones from the west face of the wall was defined.

The edge of the 1929 trench (1210) lay 950mm east of the east face of the east wall of the milecastle, and the disturbed and mixed stony soil of the backfilling of the excavation (1204, 1203) was found in between the standing Roman walls. The excavation trench had been cut through an *in situ* layer of dark grey-brown silty loam (1200=1202) containing fragments of sandstone

Fig 241
Milecastle 9: exterior stone surfacing.

rubble, including a considerable concentration of such material close to the eastern milecastle wall (1205) and ranging from 290mm to 500mm in depth. The active plough soil above the archaeological deposits (1207) was uniformly 220mm deep, and clearly represented the depth of ploughing that had occurred during the period since the 1929 excavation. Beneath this, the surface of archaeological deposits was scored by parallel plough marks (1206) up to 10mm deep.

Finds

by P Austen, N Hembrey and J Weinstock

Most of the objects recovered from Mc9 (Hembrey 2003) were of modern date, and came from the plough soil overlying the archaeological deposits. A whetstone recovered could have been of any date. Roman finds included two glass vessel fragments (SF 2000 0 1364 and 1365) and fragments of ceramic building material and fired clay, as well as the following objects:

1. 1366, context 1200, pre-1929 topsoil (Fig 242)

Roughly rectangular fragment of iron-rich micaceous sandstone. One end of the upper face bears two uneven incised cross-hatched squares, one of which is highlighted by a dark red colour, probably the result of the square being scratched down to a dark red layer in the stone. The stone is broken such that only one square is complete, the other nearly complete, and no others are present. Wear suggests that one edge is an original surface; the fragment appears to be broken at the other edges. There is some evidence of burning on the upper surface. Probably a fragment of a stone gaming board; although no exactly comparable objects have been found, these objects were made by individuals when needed, rather than being mass-produced. A similar pattern of squares containing crosses was found incised on a fragment of marble at Richborough (Bushe-Fox 1928, pl XIV, fig 1, no. 2) although the Richborough example bears joined squares, where the fragment from Mc9 has squares.

max length 105mm, max width 94mm, thickness 15mm; the one complete square measures 24mm × 24mm

2. 1361, context 1200; pre-1929 topsoil

Small fragment of a ceramic counter, roughly semi-circular in shape (slightly less than half survives). Buff/orange, patchy black staining visible on both surfaces. diam 20mm, thickness 2mm

3. 1368, context 1204; backfill of 1929 excavation trench

Complete ceramic counter, fabricated from a samian vessel, with traces of the original surface surviving on both faces. One face displays three deep score lines; the other appears to bear a pattern, with four patches of glaze surviving.

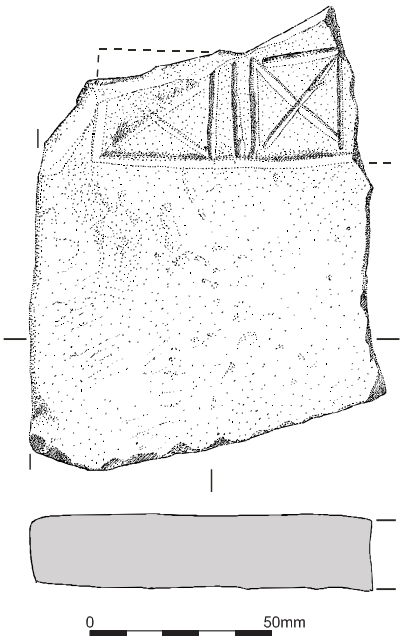


Fig 242
Milecastle 9: stone gaming board fragment.

Complete and fairly regular in shape, both edges and faces are fairly abraded. Max diam 27mm; thickness 5mm

Pottery (Austen 2006) was found chiefly in reworked contexts comprising either pre- or post-1929 topsoils (1200, 1202, 1205, 1207) and the backfill of 1929 excavation trenches (1203, 1204). Most of this was of medieval and post-medieval date. Unstratified Roman material comprised a fragment of amphora handle, two BB2 sherds (late 2nd–early 3rd century AD), a very abraded sherd of BB1 and four sherds from Yorkshire calcite gritted jars (late 3rd–4th century AD). The only stratified pottery was a single body sherd of BB2 of an undiagnostic form (Antonine–3rd century) from the upper fill of the eastern ditch (1220).

Eighty-one animal bone fragments were recovered. Most of the material belonged to cattle (skeletal elements present include, among others, metapodials, radius, femur, pelvis, tooth) but also a few remains of pig and ovicaprids. There were also some small carbonised and some calcined fragments. The state of preservation of the bones varies from relatively fresh to weathered with rounded edges, suggesting a number of different depositional histories. It cannot be certain which (if any) of the material is of Roman date (Weinstock 2001).

Interpretation

The banded strata that pre-date the construction of the milecastle are probably the most significant new discovery on the site. There are a number of possible interpretations. One is that they were laid as a building platform in preparation for the construction of the milecastle. It is also feasible, however, that

these features related to prehistoric occupation. If so it is possible that the double row of post holes only 1.8m apart, which Birley identified, was associated with them. There was clearly some confusion during the original excavation as to where these fitted in the sequence, and it was also recognised that the material upon which the milecastle was built was not the natural ground surface. It was observed that "in no case did [the post holes] extend into the undisturbed subsoil; and it is not easy satisfactorily to distinguish post holes made in an artificial layer" (Birley 1930a, 156). The post hole lines were so close together that they are clearly not the walls of an internal building. Only further research will confirm whether these belong to an earlier, possibly prehistoric phase.

No new data on the form or the construction of the milecastle itself has been recovered from this work, although the paved area outside the south-east corner and the ditch to the east are new elements in the archaeology of the site. The ditch was cut from the same level as that from which the milecastle was built, and was parallel to the east wall. A late 2nd–early 3rd century BB2 sherd came from its fill. It seems clear that the ditch and milecastle were associated. In 1929 a trench was cut 15.6m southwards from the milecastle and no trace of a southern ditch was found. It is thus improbable that the ditch found in 2000 is, as first assumed, part of a ditch system that surrounded the milecastle (unless the 1929 trench went through an entrance). The stratigraphic relationship is, however, unambiguous and the milecastle and ditch are certainly related in some way.

Milecastle 10 (Walbottle Dene): 1999

The site

Mc10 was discovered in 1864, when the bridge over Walbottle Dene was renewed. A strip of Wall four courses high, including a milecastle gateway, was exposed on the east side of the Dene (NZ 1648 6675). As Bruce (1867, 123) reported: "unhappily it was found necessary entirely to remove the Wall, but the remains of the gateway have been preserved, and for its better protection the fence of the garden opposite has been brought forward to enclose it."

The north gate is still extant within the garden of Walbottle Dene House immediately north of the B6318 road. The central part of the milecastle lies beneath the road, but the southern part is faintly visible as a platform higher than the surrounding land within the ploughed field immediately south of the road (Figs 235, 243).

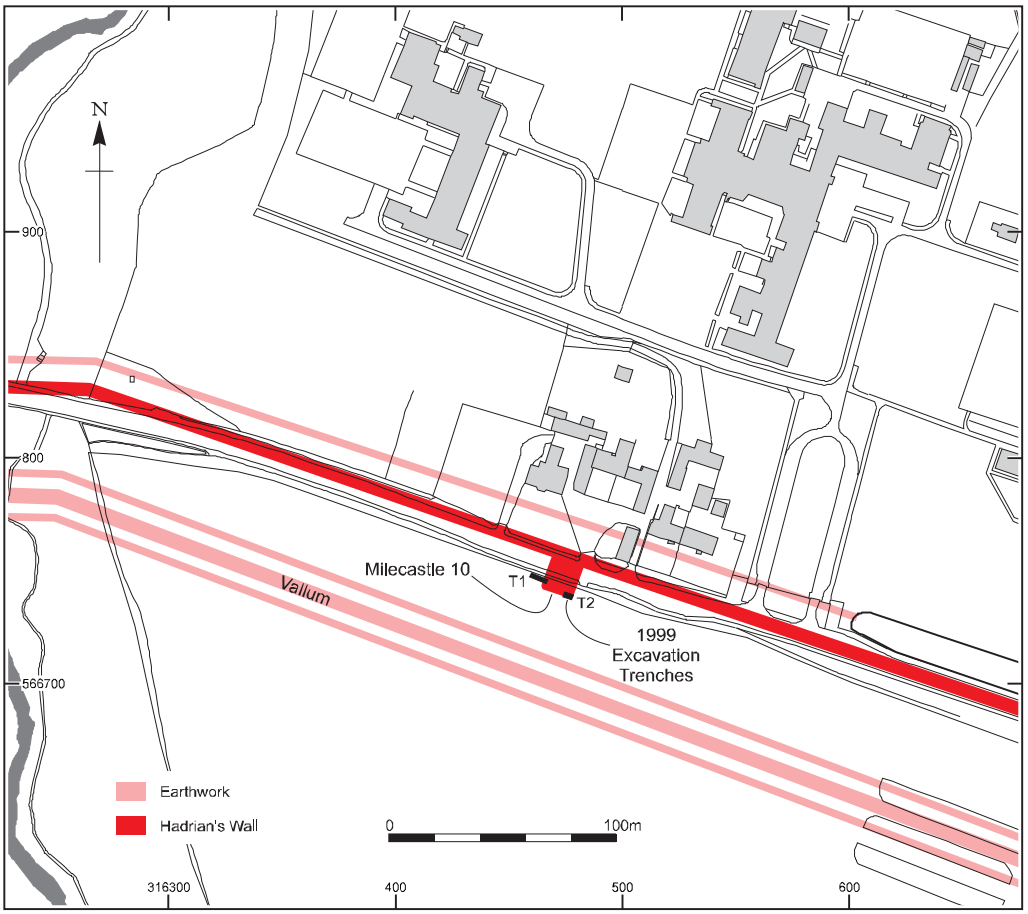


Fig 243
Milecastle 10: milecastle and excavation trenches of 2000 against modern mapping.

An examination of the site in 1928 was reported by Spain (1930, 533), stating that the milecastle had walls of "ithe same massive construction and thickness of the Great Wall"î (ie 3.1m), and that this was identical to Mc9 (Chapel House). The implications of these two adjacent Broad Wall milecastles has recently been considered by Symonds (2005; and p 139). A fragment of the curved south-west corner and the south gate were located. These were also very similar in construction to Chapel House. Mc10 is a long-axis milecastle measuring some 17.68m by 14.32m internally (ibid). Like Mc9, the gates are of Type IV, with a single pair of gate responds. Nothing has hitherto been known of the interior layout of Mc10.

In addition to the evaluation work, the opportunity was taken to undertake a stonemasonry survey on the extant stonework of the north gate.

The north gate

by Peter Hill

The north gate of Mc10 lies in the thick shrubbery of Walbottle Dene House, close to the boundary with the road. It has remained unexamined since its discovery, and Bruce's illustration of it (Fig 244) is the only known record. Owing to its location, access is extremely difficult, and drawing a reliable plan is not easily possible. The plan in Fig 246 is therefore somewhat schematic, based upon the measurements of the stones made on site.

The gate was examined in October 2001, and a technical report on the masonry submitted for inclusion in the site archive (Hill 2001b). The following account summarises and discusses the full technical report. The assessment of this gateway gave a rare opportunity to examine a gateway unworn by the feet of modern visitors. It was impossible to take full advantage of this owing to its location in a thick and prickly shrubbery, but some useful information has been gained. The purpose was to examine the tool marks and method of working in order to gain precise technical information about the standard of workmanship, the abilities of the builders, and the standard of supervision and overall direction of the work, and from this to see if further light could be shed on the history of the Wall. The stone-by-stone survey was made on an objective basis without regard to any received opinion. Due to the difficulty of access the judgements made must be seen as provisional.

North east pier

This pier now consists of two foundation blocks (NEF1 and NEF2) and one pier stone. The stone that formed the quoin of the pier (NE1/1) has been lost; the surviving stone is probably in its original position and has been designated NE 1/2.

NEFl (765mm × 810mm × 100mm to ground level) The visible parts of the stone are much weathered apart from the north face, which shows heavy punch furrows, range up to l0mm. This face projects some 90mm from the north face of the surviving pier stone. The top bed appears to be about straight, and the joint to the sill is tight and was probably worked with some care. The major feature of interest is the pivot hole for the gate. It is a sub-rectangular sinking on the south edge of the stone, 185mm wide and 115mm front to back. It is some 40mm below the top bed of the stone, and the base of the pivot hole about 30mm below that. The western edge of the sinking is about 75mm from the edge of the stone and EF1. The pivot must have been contained partly in the very wide joint between this stone and the first foundation stone of the passage wall. The base of the 95mm diameter pivot hole is somewhat smoothed and more or less flat, although it rises a little to the west side. No tool marks are visible in the pivot hole except for a single peck on the western edge; the sub-rectangular sinking shows a number of punch marks. The south edge of the stone and the western edge of the pivot hole are somewhat damaged.

*NEF2 (*910mm × 930mm (min.) × 100mm to ground level) Most of the top bed is hidden beneath

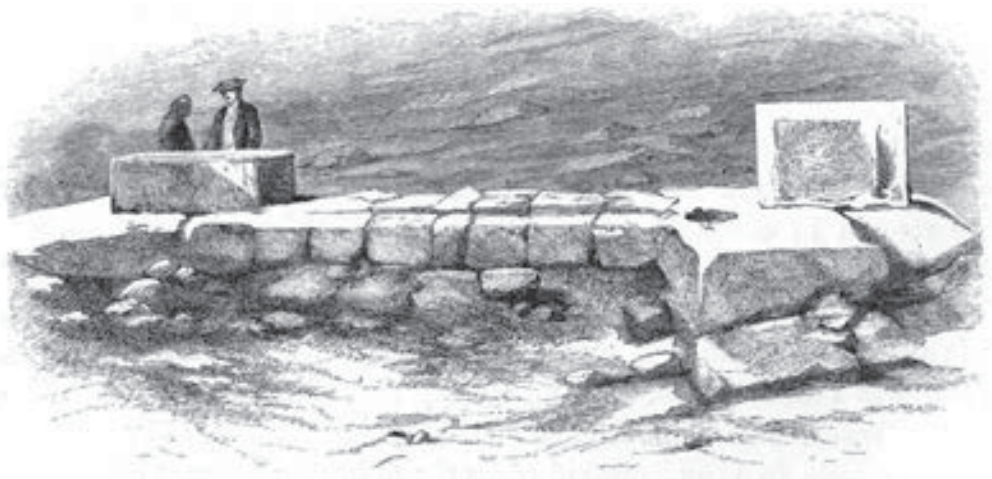


Fig 244
Milecastle 10: north gate of Mc10 as originally illustrated by Bruce (1867).

the pier stone NE1/1, but something could be seen of the back and south sides. The back tapers away from a point beneath the pier stone; no tool marks could be seen. Presumably the stone as quarried was not quite big enough to make the required size. On the east side, the top has been cut away at the front on the line of the east side of NE1/1, to a depth of 25–30mm; this sinking dies way after about 150mm as the top of the stone falls away naturally to the back. Some unquantifiable punch marks were visible. The north face, which stands 100mm above ground level, is worked with a punch in heavy furrows, range up to 10mm. The joint to the east is worked with a punch, range up to l0mm, and is approximately square to the north face. The stone was of fair Roman military engineering standard

NEI /2 (710mm × 630mm (at base)/530mm (at top) × 565mm). The bed height could be measured only on the east side. The face was very difficult to see, but it was clear that the left-hand side and some of the top were very carefully worked with a punch in fine pecks and short furrows, range 3mm occasionally 5mm. So far as could be judged the finish was remarkably neat and carefully worked. The lower part of the right-hand side was less good, and is 4–5mm lower than the remainder. It was more heavily worked, with a range which appeared to be nearer to l0mm but this is something of an estimate as the surface could not be clearly seen. The lower 40mm on the left hand side projects by *c* 10mm from the surface and appears to project slightly from the general line of the right-hand side of the face. The right-hand side of the face is 2–3mm under-square to the top bed. It was not possible to see whether the face has chiselled margins. The right-hand joint, against the missing NEI/ 1, is not a neat joint, with occasional pick furrows, range up to 20mm, at the top where it is 30mm under-square to the face. The remainder of the joint is probably worked with a punch or is natural, but is all much weathered. The left hand joint seems to be worked with some care for the first 200mm, and is about square to the face at top and bottom. Thereafter the joint tapers a little.

The back of the stone is probably natural and slopes out at about 20°∞E; this appears to be original as there are traces of a punch at top and towards the west side. The let hand and right-hand corners are lost in what seem to be later fractures. The generally unworked state of this face is of no importance, as the stone would have been backed by corework. The top bed is approximately straight, worked with a punch right to the edges in large pecks, ranging 6–7mm; it is workmanlike but not sophisticated. This stone is in general adequate, significantly raised in standard by the remarkably cleanly worked face.

What could be seen of the foundation blocks suggests that they were not untypical of Roman military engineering, tidily squared up in a manner appropriate to work at ground level, but not given a sophisticated finish. The same applies to the single foundation block for the east passage wall.

North west pier

This now consists of two foundation stones (NWF1 and NWF2), which are at ground level, and two pier stones, which may not be in their original position.

NWFI (640mm × 100mm to ground level on the south side; the north side is at ground level, the west edge is under the pier, and the east side is not only against the sill where the trunk of a holly tree grows). There are heavy punch marks on the back (south) edge, which would have formed the joint to the foundation of the passage wall. The top bed, where it projects from the face of the pier appears to have been reasonably good. The pivot hole survives at the south east corner of the stone. Like that on the north-east pier, it is contained within a sub-rectangular sinking about 50mm deep. The sinking measures approximately 235mm × 105mm, somewhat roughly cut in with a punch. The pivot hole and the south-east corner of the stone are both damaged, but the pivot appears to have been *c* 80mm in diameter, and 50mm deep below the sinking. The pivot hole looks relatively unworn and has punch marks in the bottom. Unlike that on the east pier, the pivot could just have been contained within the stone; it was really too close to the south edge although the pressure would have been on the north and west sides of the hole.

NWF2 (*c*1000mm × *c*1050mm × 75mm at ground level). The top bed, where it projects from the face of the pier, appeared to be worked more or less straight except at the right-hand end where it fell away somewhat. Where it projects at the back of the pier, by *c* 380mm, there are heavy punch marks, range up to 6–7mm in short, random furrows and pecks, and the surface slopes down markedly until buried. In general the stone is very irregular apart from the front edge.

NW1/1 (925mm × 590mm × 500mm). The majority of the face is worked with a heavy punch in furrows from top left to bottom right, range 10–12mm, and projects from the wall line by about 45mm. At the top is a very weathered margin, 2–3mm round, with a vestigial unmeasurable margin at the bottom; the left hand margin was not available owing to heavy vegetation. At the right-hand side is a very clear, 25mm wide chiselled margin, approximately straight with undulations of 2–3mm, except for the lower 40mm, which was not completed. This margin is square to the top bed. The east face, where it could be seen, is a flattish rock face, very weathered but showing some punch marks, ranging 10mm. The face angles in to the bottom, by up to 60mm. The upper edge has a chiselled margin 2–3mm round, caused by an area in the centre

worked with a punch. The south face, perhaps *c* 240mm long, was roughly worked back with a punch and is very weathered. At the point of return to the passage wall, the stone rises 10–15mm. The joint to the passage wall was worked with a heavy punch at random, ranging up to 24mm. The top bed, now very weathered, is 2mm round to 2mm hollow, ranging 2mm, occasionally 5mm. This stone might have been of monumental appearance when newly worked, but the face has a finish quite unlike that given to NE1/2. It is let down by the east face and the poor top and bottom margins on the north.

NW1/2 (530mm × 480mm × 485–490mm (variable)) The north face is a 50mm rock face, worked with a punch in furrows top right to bottom left and at random, range up to 15mm. There is a poor and very weathered chiselled margin at the top, and at the left-hand side a margin that is varies between straight and 5mm hollow. It is not a neatly worked face by any standard. The left-hand joint, against NW1/1, looks as though it may originally have been tight, but there is now a gap of 35mm at the front; the stone may have been moved, if indeed it originated in its present location (*see* p 153). The upper arris is approximately square to the upper margin on the north face. The right-hand joint is worked heavily with a punch, ranging up to 20mm in places, in a manner appropriate to a joint against squared rubble (Fig 245). For the first 200mm it is approximately square to the top of face A, but then falls away by 50–60mm. The appearance might originally have been better but it is now heavily weathered. The top bed, now much weathered, is straight to 2–3mm round, with traces of pecks range up to 3mm. It was probably at least a fair bed. There is what must be presumed to be a pinch bar slot centred 225mm from the north face and 185mm from the left-hand joint.

The back is very weathered at the top and the lower part now varies between approximately straight and 5mm round, clearly worked in pecks rather than furrows; this degree of care would be rather wasted as it would be backed by corework. The lower 200mm is relatively smooth and near straight; this could be natural but it appears to have been smoothed by some mechanical action. Near the centre of the lower edge is an unusual feature. This is best described as a l0mm wide slot, cut into the stone from the bottom bed, the 15mm thick outer wall of which has partly broken away. The maximum depth from the back of the stone is 25mm. The function of this feature is unknown. It was certainly not a lewis hole or a wedge hole, or even the start of either, as the slot is much too thin. It is perhaps not impossible that it is a natural feature, although this does not seem likely. This was not a good stone. The top bed shows the usual care taken with beds in Roman military engineering, but it was otherwise not the subject of any great care. Only the back shows pretensions to any sort of quality, and that is the one place where quality was totally irrelevant.

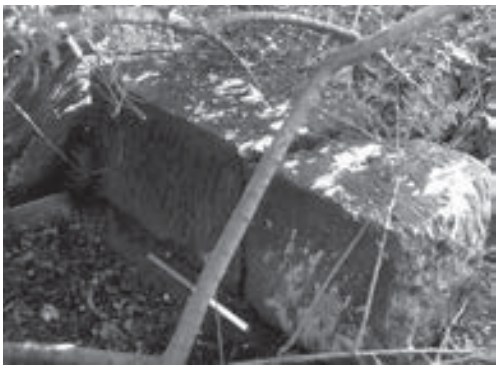


Fig 245
Milecastle 10: photograph of the north-west pier of the north gate in its present state (photograph by P Hill).

The sill

Little can be said about the sill., as close examination was impossible, which is unfortunate as it is the only complete milecastle gateway sill now visible. No technical assessment has been made of any milecastle sill in the course of other excavations.

The sill is complete. It is made up of seven stones between, and at about the level of, NEF1 and NWF1. All the stones are set with their long axes parallel to the axis of the gate, and all are checked out at their southern end to form a stop for the gate; there is no clearly defined central stop block as is found at some gateways (eg Housesteads east gate, north portal) but the central stone, no. 4, is narrower and a little higher than the rest. The upstand formed by the check is *c* 60mm high, except in the case of no. 4, which is 100mm high. The base of the check, which is 290–240mm wide, is 20–30mm below NEF3 which is itself 20mm below NEF1. The stones vary in both length and width, three appear to have been broken off at their north ends. All the stones are much weathered, with marks of a heavy punch, range up to 20mm; the work seems to have been relatively rough and ready, as one might expect on a sill that would be subjected to wheeled and foot traffic.

Discussion

The pivot hole in the foundation NEF1/ 1 is in a sub-rectangular sinking, which is reminiscent of the NE pier of the north portal of the east gate at Chesters fort (Hill 1997b, 34). In that case there was no pivot hole, but only a l0mm circular depression, which was not clearly understood at the time of that survey, and it was assumed that the pivot hole was in a separate stone that was perhaps related to the sinking in some way. In the light of the sinking in both the piers of the present gateway, which have not been seen elsewhere, it now seems likely that this was the start of a pivot hole that was not completed; if

correct, this would mean that only the south portal of the east gate was completed as such. As these square sinkings are not a normal feature of gate pivots, it may be that both Chesters fort and Mc10 were built by the same legion. The base of the north-west pivot seems to be unworn, in distinction to the east pivot. This suggests that only the eastern leaf of the gate was opened on a regular basis.

The single remaining pier stone, NE1/2, is interesting. The joints are in no way remarkable, but the face is finished to a higher degree than at any other extant milecastle or fort gate. It is not a first class piece of work as the right-hand half of the face appears, so far as could be seen, to be rather unevenly worked, but the stone still stands out as having received an unusual degree of skill and care. It is unfortunate the stone NEl/1 is missing.

It is important to note that Bruce's illustration does not accord with the present state of the gate. The single stone remaining of the north-east pier is shown in this drawing in approximately its present position and in such detail as to record the loss on the south-east corner of the stone.

The sill is depicted with the correct number and general form of the stones; even the slightly higher and narrower stone no. 4 of the sill is clearly identifiable. For the north-west pier, however, which now consists of two stones similar in size to that of the north-east, only a single stone is shown, and that at only half the bed height of that on the north east pier. Whether this is artistic licence or whether tumbled stones were later put in the place of this single stone is not known.

The accuracy of the drawing in other respects does suggest that these stones are not in their original position. Since the drawing was made, two stones that appear to have come from the curtain wall have been placed on the sill, one at each end close against the return faces of the piers, which shows that a certain amount of rearrangement has carried out. Relevant to this point is stone NW1/2, which is something of an enigma in that while the face is averagely poor work the back has every appearance of a re-used stone. The care taken in working the back is one indication of this, and the slot at the base is another. While it must be admitted than no function can be suggested for this slot in any position, its existence strongly suggests that the stone had some previous use or position.

Re-use of stone in the initial building of the milecastle is hardly possible as no Roman building is known to have existed in the vicinity. Re-use as part of rebuilding of the gateway in Roman times is a possibility but one for which no evidence exists. Accepting the general accuracy of the drawing in Bruce, the balance of probability is that the stone is not in its original position but was placed there after the excavation of the milecastle in 1864. If this is the case there must be is a strong possibility that stone NW1/1 was also placed in its present position at the same time. In view of the extreme difficulty of examining the stones under the present conditions, this suggestion must be no more than provisional until such time as further work can be undertaken in better conditions.

Although stone NW1/1 may not be in its original position it was clearly worked to be part of a pier, as shown by the slight rise in the surface of the south face, where the passage wall would have abutted it. This is very typical of pier stones in most milecastles. It must remain an open question whether it originated higher up the pier, and was discovered during excavation or the re-ordering of the garden. Whatever the truth of this, the stone is of a different quality from NE1/l. The heavy furrows on the face are rather similar to work seen on the north gate of Mc37 (Housesteads). The stone is adequate in quality compared to the relative sophistication of the face of NE1/1. The difference in quality is not easily explained, although if NW1/1 did come from higher up the pier it might reflect the abrupt change in quality reflecting interruptions in work at Mc37 (Hill 1989), and at the forts of Birdoswald (Hill 1992; Hill and Wilmott 1997), and Housesteads (Hill 1995).

The evaluation

The evaluation methodology proposed in the Project Design (Austen and Wilmott 1999) was to excavate two trenches, one 4m ×◊ 2m in size to transect the south wall towards the south-west corner of the milecastle and the second 2m × 7m, crossing the east wall and the eastern side of the interior. The first trench had been cut according to the OS location of the milecastle on the 1:2500 map. It was soon realised that the milecastle had been wrongly located on the map, and the trenches were amended. Trench 1 measured 2m × 8m and lay across the western side of the milecastle while Trench 2 at 2m × 4m targeted the eastern edge in order to demonstrate the true position and dimensions of the structure (Figs 243, 246). In both trenches the ploughsoils were stripped by hand and the underlying archaeology recorded in plan. Cut features were sampled in order to characterise them and to recover dating evidence.

Trench 1 (Fig 247)

Within Trench 1 a north–south linear feature (410, fill 411) proved to comprise a robber trench 2.98m wide for the external western wall of the milecastle (Fig 248). On the eastern side of the trench the bottom course of facing stones for the interior face of the wall were found *in situ*, while on the western side similar stones, albeit disturbed, might have comprised the remains of core work. The trench did not extend far enough to reveal the facing stones of the outer face. The construction trench for the wall

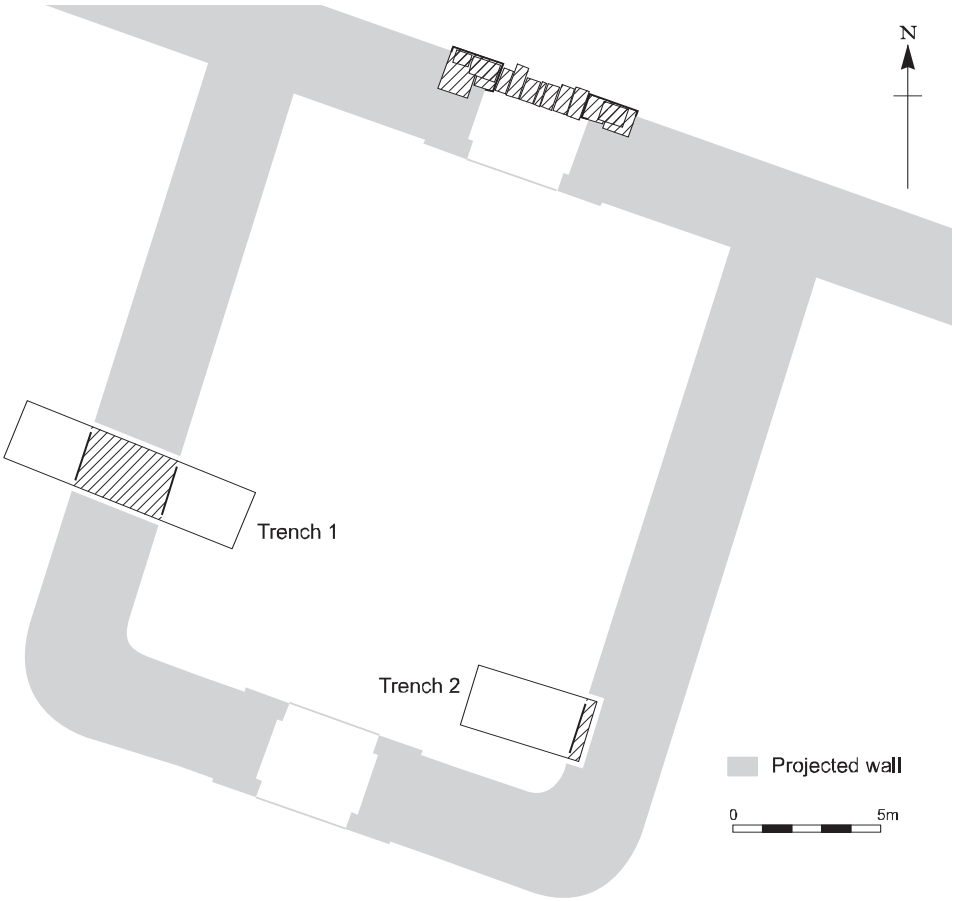


Fig 246
Milecastle 10: plan of Mc10 summarising trench positions and current knowledge. The gate plan is somewhat stylised from measurements taken on site owing to difficulty of access for accurate drawing.

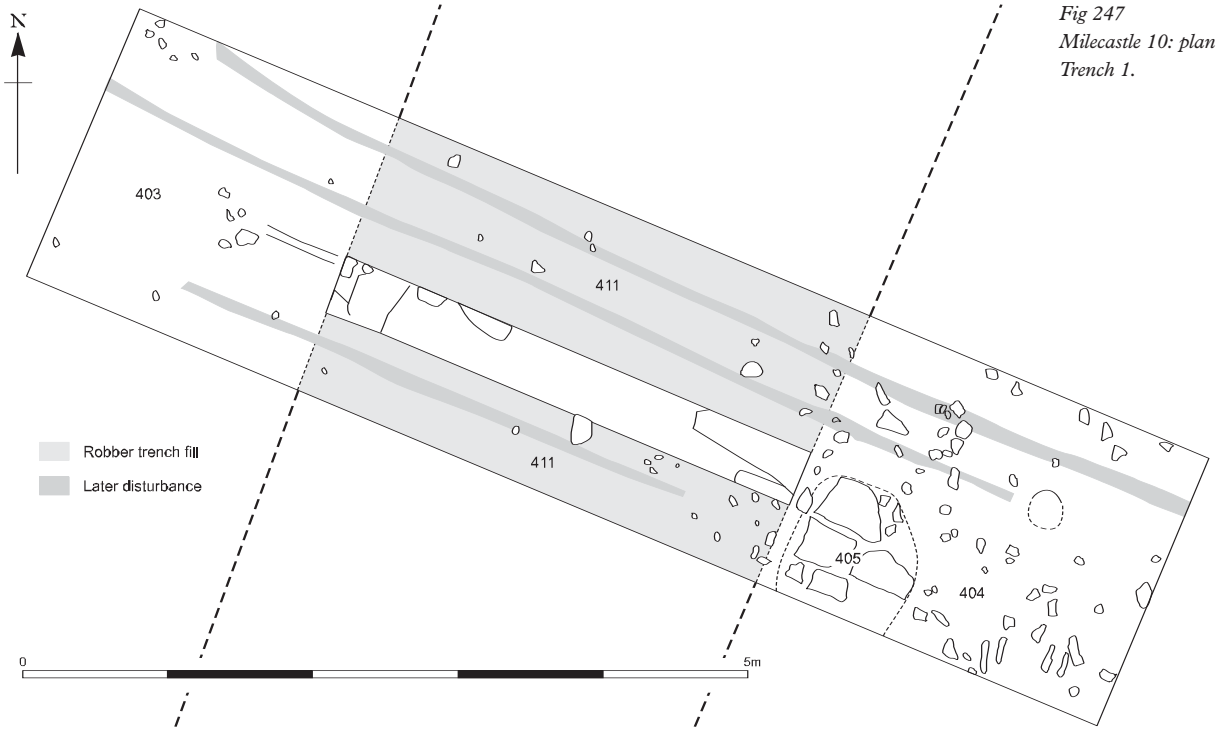


Fig 247
Milecastle 10: plan of Trench 1.

Fig 248
Milecastle 10: photo of Trench 1 showing section through robber trench and surviving wall face.

was not absolutely clear, but appears to have cut the dark yellow-brown sandy clay subsoil of the site. To the west of the robber trench this material (403) was clean, while inside the milecastle (404) it was less so. Within the milecastle a concentration of stones pressed into the upper surface of the subsoil may have been the remnants of cobbling. A damaged surface of five laid flagstones, the western edge of which was straight, and laid along the line of the robbed wall face (405) suggested that the milecastle interior was surfaced in stone.

The archaeological surface was heavily scarred by plough marks (406; 407; 408; 409) demonstrating that continuing agriculture has caused the attrition of the monument, probably in relatively recent times. Broadly 'modern' artefacts have been found throughout the plough soils. The upper (active) plough soil (401), throughout which ploughed-back straw was found, was 300mm in depth. The lower plough soil (402), however, contained no straw and appears to represent a 'buffer zone' 50mm deep between active cultivation and the upper surface of surviving archaeology.

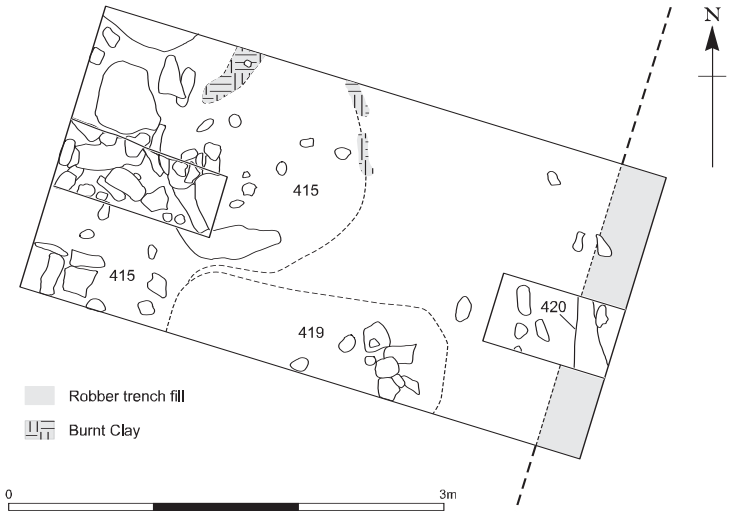


Fig 249
Milecastle 10: plan of Trench 2.

Trench 2 (Fig 249)
Trench 2 contained a complex sub-circular feature 2m in diameter (415). This was apparently constructed of stone and clay, and was very burnt. It would appear to have functioned as a hearth or oven. To the south-east of this feature a group of flat sandstone flags measuring 490mm square (419) might have been either an element of disturbed flagging or a post pad. This rested on a small layer of clay. All of these features were sealed by a deposit of stony clay-silt (416). A small sondage at the eastern end of Trench 2 cut through 416 to reveal the undisturbed natural subsoil (418), which was cut by a north–south linear feature (420). Although only the western side of this feature was revealed, it contained a large facing stone (422), which is interpreted as part of the eastern wall of the milecastle. The plough soils followed the same pattern as in Trench 1, and the archaeological surfaces are similarly scored with plough marks.

Finds

by P Austen, N Hembrey and J Weinstock

Mc10 yielded miscellaneous modern material including structural ironwork and four nails, which might be Roman or later. There was a small assemblage of tile and fired clay, and two pieces of oyster shell. Two undiagnostic flints (SF 9970 461) were also present. Two objects were worthy of note (Hembrey 2003):

1. 9970469, context 415, Roman hearth

Small fragment of micaceous sandstone, roughly triangular in shape; the top face bears an incised cross, splitting the fragment into four sections. There is one original edge. Probably a gaming board fragment (cf Allason-Jones and Miket 1984, no. 12.1; Philp 1981, 167, no. 217. Length 30mm, width 26mm, thickness 7mm; cf (similar)

2. 9970473, context 411, robber trench

Thick sandstone fragment, roughly triangular in shape (Fig 250). The upper face bears decoration in the form of a circle containing diagonal lines, possibly a spoked wheel, some of which are cut to outside the circle. Function is unknown and no comparable objects have been found; it may be graffiti or decoration, or may be part of a gaming board. Length 84mm, width 80mm, thickness 26mm.

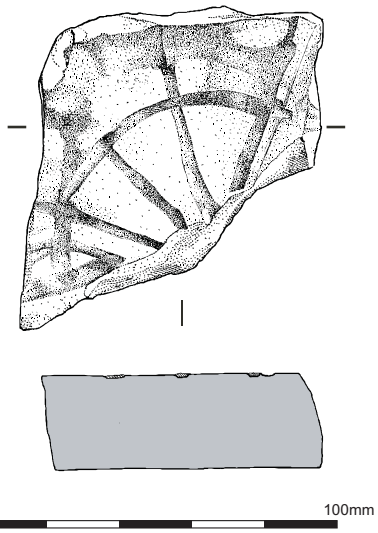


Fig 250
Milecastle 10: incised stone object.

Pottery (Austen 2006) was mostly unstratified, and included many post-medieval and modern sherds. Unstratified Roman material recovered from topsoil deposits (401, 402) and robber trench fills (411, 414) comprised 25 body sherds of undiagnostic oxidised wares and one of greyware, three abraded sherds of buff amphora, and three BB2 cooking pot rim fragments. The hearth (415) yielded eleven body sherds, mostly BB2, including fragment of the base of a bowl or dish (2nd–early 3rd century AD). The ground surface within the milecastle (404) produced six Roman sherds, including part of neck of BB2 cooking pot.

Eleven fragments of animal bone were recovered, some of which may be Roman. The group consisted entirely of cattle (Weinstock 2001).

Interpretation

The basic dimensions of Mc10 have been broadly confirmed by this work. The measured dimensions are, however, slightly different from the round figures (in feet) recorded by Spain. The width east–west of the milecastle is not 14.32m but 14.76m, and the exterior walls are not 3.05m but 2.98m thick. These are very minor corrections, however, and lie within any margin of Roman setting out or modern measurement error, or any combination of both factors. The north–south length of the milecastle, however, appears to have been accurately calculated by Spain at 17.68m. The work on the north gate has been extremely useful in demonstrating the differing standards of workmanship represented in the gate, and the possibility, however tenuous, that there was a hiatus in the building of the milecastle followed by a resumption of work to a different standard. The burnt feature in Trench 2 seems to be a Roman oven, which was constructed in the south-west corner of the fort.

Milecastle 14 (March Burn): 2000

The site

The site of Mc14 (NZ 1068 6768) (Figs 251–2) stands in a slight kink in the course of the Wall, as it rises westwards from the valley of the March Burn. The platform that marks the milecastle site is currently some 400mm high, and has clearly been spread by continuous and continuing ploughing. It was noted by both MacLauchlan (1885, 16) and Collingwood Bruce (1867, 129). The only archaeological intervention before the present evaluation was by C E Stevens, who trenched the site in 1946 as part of an exercise to see whether Mcs14, 36 and 41, and T36a, 40a and 40b conformed to the typology that had been established by Simpson (1931) and Birley. The only published reference to the work (*J Roman Stud* 1947, 168) is a terse comment to the effect that the milecastle was 18.3m wide internally, had 'broad' side walls and was "presumably of short axis type". The field in which it is situated is under regular cultivation. Masonry and burnt levels have occasionally been observed after ploughing, as have pottery and other artefacts.

The evaluation

by Helen Moore

Two trenches were excavated (Fig 252). Trench 1 (8m × 2m) was dug to determine whether the southern wall of the milecastle survived, and to sample the interior archaeology to assess survival and condition. Trench 2 (10m × 2m) transected the western wall of the milecastle and continued eastwards into the interior.

Trench 1 (Fig 253)

The plough soil (708) covering Trench 1, varied in thickness between 0.21m and 0.25m, depending on the gradient of the slope. It contained relatively little rubble to suggest the presence of a building below the surface. Immediately below the plough soil, however, a large spread of rubble was uncovered (719), most of it randomly distributed. Constructed on top of the rubble was a fragment of wall (720), 1.92m long × 0.28m wide, aligned on a north–south axis. It was constructed of sandstone slabs, of which there were two courses bonded together with a pale yellow sandy mortar. It was very badly robbed and plough-damaged and little of it survived. No other walls or structural features survived at this level within the trench to suggest a plan of the building, but it is probable that it may continue farther to the east beyond the trench. The rubble was spread more densely in the northern sector of the trench, which may suggest disturbed structural features in this area.

The rubble sat within a homogeneous deposit of mid-red-brown sandy silt (709), which seems to be

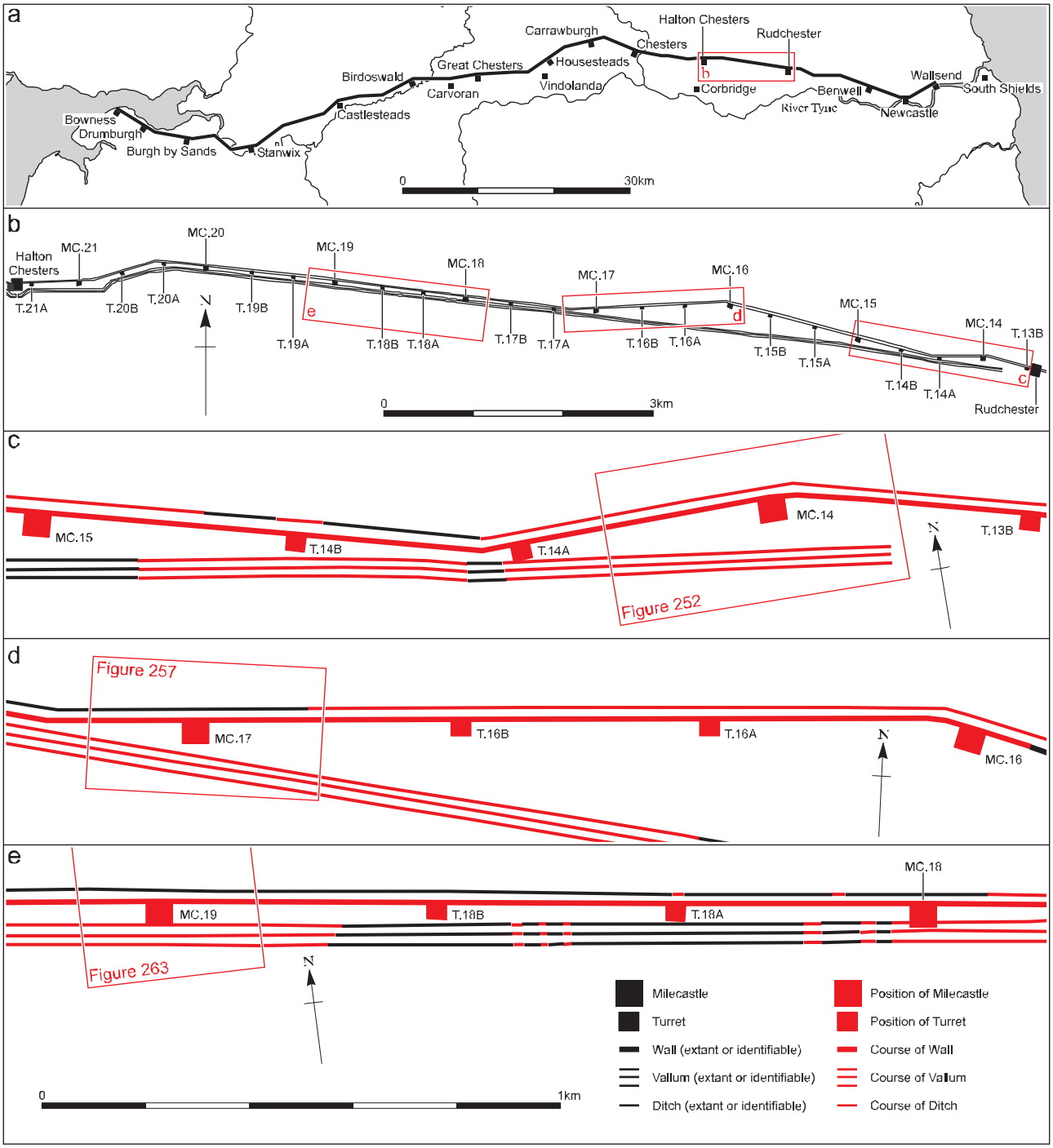


Fig 251
Milecastle 14: location of Mcs 14, 17 and 19 on Hadrian's Wall, and of Figs 252, 257 and 263.

an earlier plough soil. It was very fine and uniform in colour, which suggested that it had been reworked over a long period. It varied in depth from 0.34m to 0.50m, being much thicker at the southern end of the trench.

The southern wall of the milecastle was not visible at this level, so a decision was made to cut a small slot along the eastern side of the trench 0.50m wide and 5m long to ascertain if it still survived below the lower rubble and soil (709). The remnants of the south wall were discovered about 0.55m below the topsoil. Only the rubble core of the wall survived, the facing stones having been robbed away completely. What was left of the wall was composed of irregular pieces of sandstone bonded together with a yellow sandy mortar (722: Figs 254,

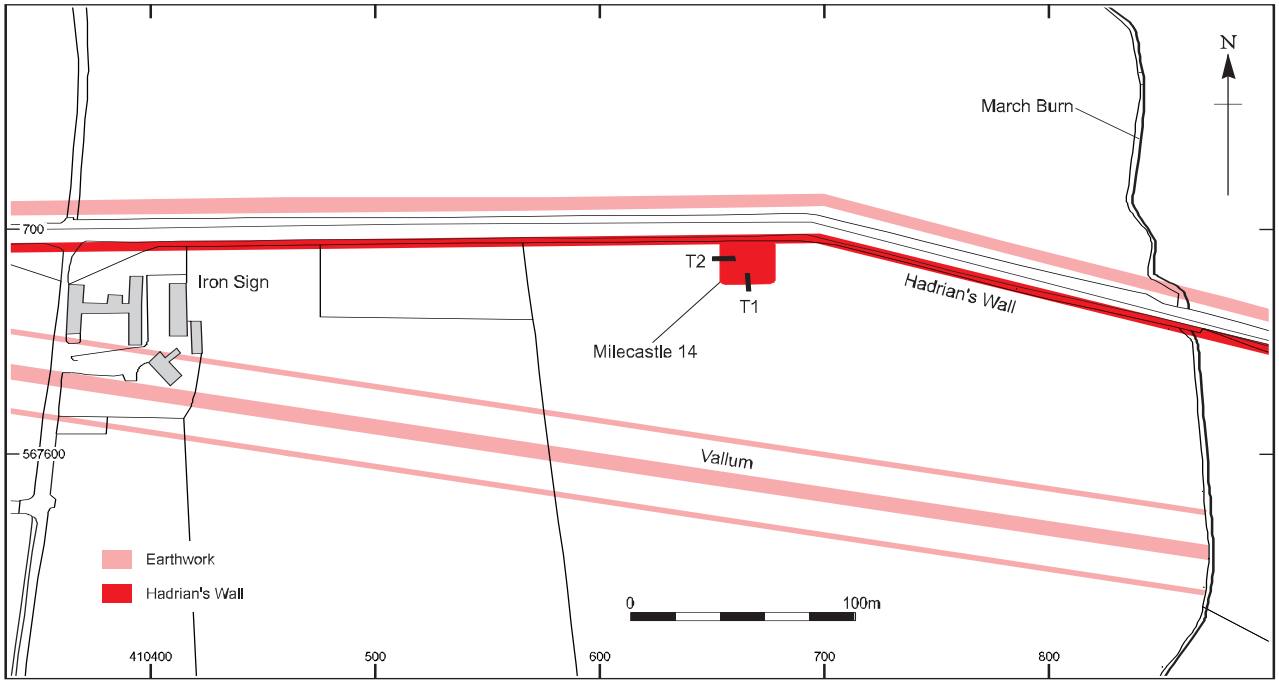


Fig 252
Milecastle 14: Mc14 and excavation trenches shown against modern mapping.

256A–B). This was very similar to the natural subsoil, except that it was darker in colour and contained frequent white patches and flecks of lime. The rubble was very loose and had probably been disturbed by stone robbing rather than ploughing. The mortar and rubble were 2.40m wide, while the robber trench, which probably retains the footing width, was 3.52m wide.

The natural subsoil (710) was visible below a large depth of the lower plough soil (709) at the southern end of the trench, approximately 0.70m from the top of the topsoil. The northern end of the trench was not excavated down to natural.

Trench 2 (Fig 255)

The topsoil (700) covering Trench 2 varied in thickness between 0.28m and 0.32m, owing to the gradient of the hill, which sloped downwards to the west. Directly below the topsoil on the western side of the trench lay a similar deposit to lower plough soil and rubble (709) noted in Trench 1 (701). This was cut buy a north–south aligned robber trench (706) filled with a deposit of loose mid-greyish-brown sandy silt with yellow mortar flecks containing large quantities of rounded and angular stones (707). The robber trench had a good eastern edge against a surface of crushed sandstone rubble in a sandy matrix (705). A deeper slot 0.50m wide and 6m long was excavated through the fill (707) of the large robber trench in order to confirm the identification, and to see if any walls survived *in situ* below its fill. At the western side of the trench below the robber trench fill, the western wall of the milecastle (716) was identified. All of the facing stones had been removed, but the wall core survived in the form of sandstone pieces bonded roughly together with pale yellow sandy mortar. This wall footing ran westwards beneath the supposed rubble and plough soil (701), and it became clear that this was the fill of an earlier robber cut, whose east edge had been removed by the excavation of the second robber trench (706), and whose west edge lay beyond the limit of excavation (Fig 256C–D). The excavated wall footing revealed beneath the fills of these robber trenches was 3.53m wide and 0.70m below the topsoil.

At the eastern end of robber trench (706), the fragmentary remains of another wall were noted (718), *c* 1.20m to the east of the western wall of the milecastle (Fig 256). All of the facing stones of this wall had also been robbed, and only the loose rubble and yellow mortar core survived. It was up to 760mm wide, and was 0.70m below the top of the topsoil. This fragment would appear to be the remnant of the western wall of an internal building within the milecastle, robbed simultaneously with the western outer wall.

At the east edge of the trench lay a second robber trench (703). This was not seen completely in plan, as it extended to the east beyond the trench edge. It had vertical sides and was filled with a dark grey-brown clayey silty sand (704), which contained large amounts of stone rubble, probably discarded from the robbing of the wall. In the small slot that was excavated, it was evident that any wall had been completely robbed down to the bottom of its foundations as none of it survived *in situ*.

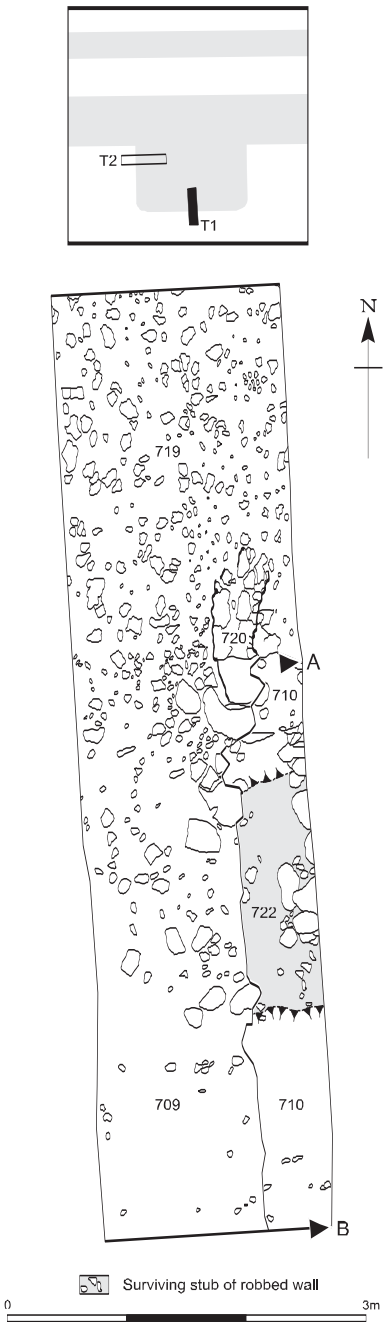


Fig 253 (above) Milecastle 14: plan of Trench 1.

Fig 254 (above, right) Milecastle 14: trench 1 showing section through robber trench.

It seems possible that this trench robbed the eastern wall of the internal building (Fig 256E–F).

Both robber trenches (706) and (703) truncated a sand and rubble surface (705), which is likely to be the floor surface associated with the internal building mentioned above. This surface was composed of a mid-orange grey-brown silty sand with frequent angular sandstone fragments rammed tightly together.

Observed in the base of robber trench (703) was a circular feature (713), which was *c* 90mm deep with concave gradually sloping sides and a rounded base. No finds were recovered from the fill (714), a homogeneous red-brown silty clay. It was not completely seen in plan as it was excavated at the base of a small slot through the robber trench, so it is difficult to determine what its form or function was.

The natural subsoil (702) was only observed at the base of the two robber trenches (706) and (703), and was approximately 0.75m from the top of the topsoil.

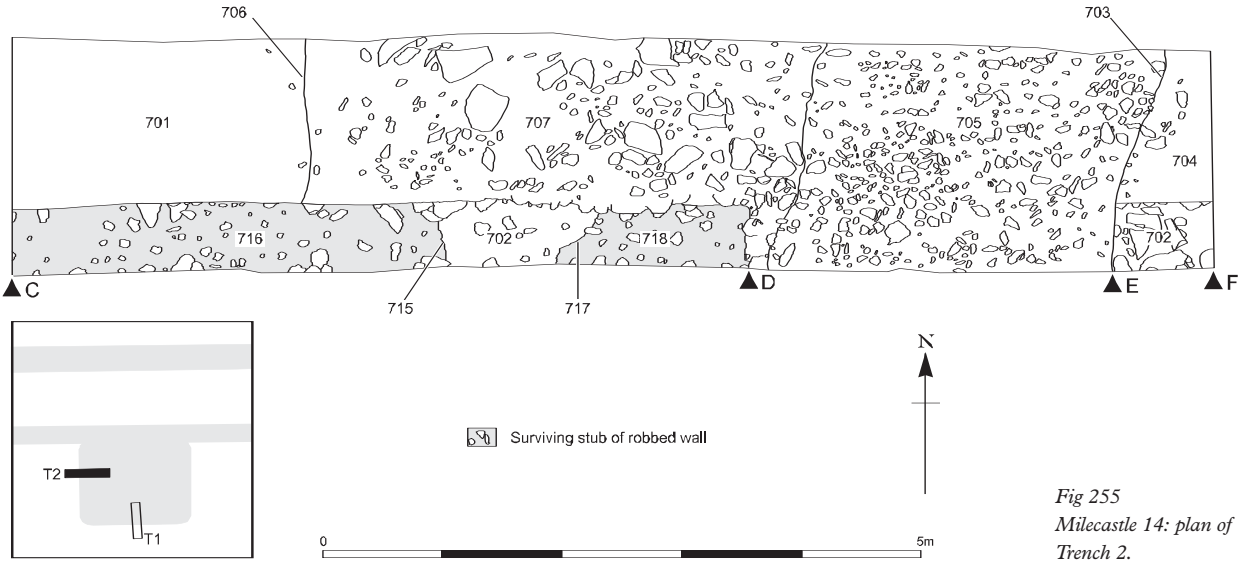


Fig 255
Milecastle 14: plan of Trench 2.

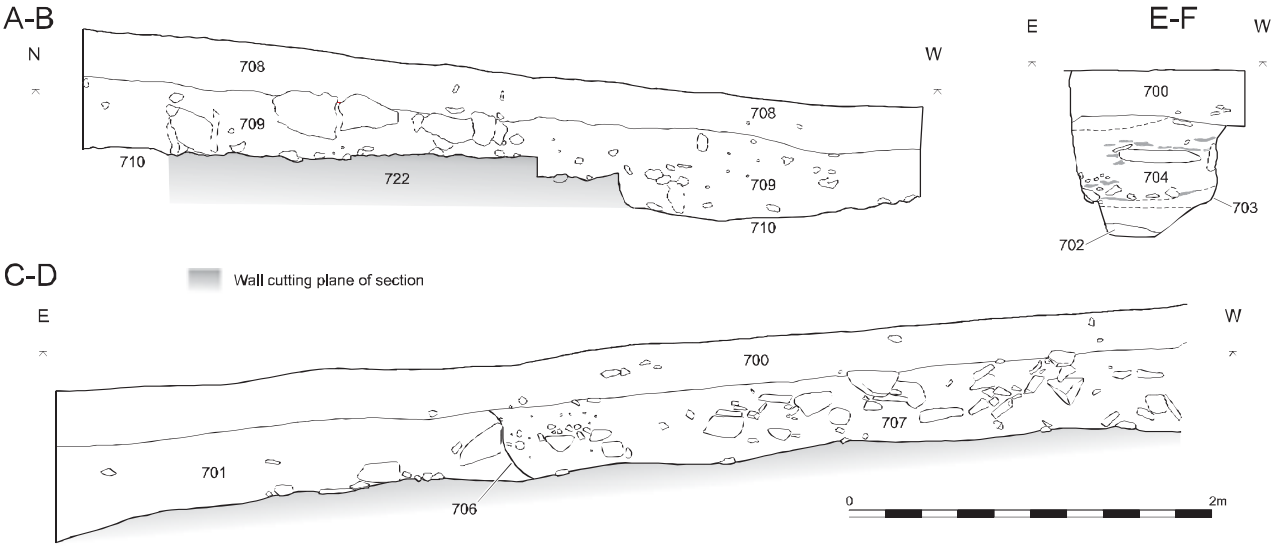


Fig 256
Milecastle 14: sections A–B (a), C–D (b) and E–F (c).

Finds

by P Austen, N Hembrey and J Weinstock

Mc14 yielded few finds (Hembrey 2003): a number of nails of uncertain date, one fragment of animal bone (Weinstock 2001), three pieces of tile and an undiagnostic, but worked, flint flake. The latter is of note, as flint is not naturally occurring in this area. Three sherds of Roman pottery from the plough soil (701, 708) included two undiagnostic body sherds and a rim fragment of a flanged mortarium in oxidised fabric (Austen 2006).

Interpretation

The position of the south wall of the milecastle confirms Stevens' observation that the milecastle was of short-axis type. Unfortunately, extensive robbing makes judgements as to original wall widths difficult, as the robbing was not done in a tidy fashion and the widths of the robber trenches do not exactly preserve the widths of the walls. However, the fact that the robber trenches for the south and west walls were 3.52m broad confirms Stevens' observation that the walls were broad, probably as broad as the broad curtain wall as is the case at Mc9 and Mc10. This is an important observation in the context of recent work by Symonds (2005), as Mc14 joins the small group of milecastles built to Broad Wall standard throughout. Like Symond's groups of such milecastles (p 139), Mc14 stands alone in this respect. The closest milecastles on either side where wall widths are known are Mc13 (Rudchester Burn), where the east and west walls are 2.33m wide, and

Mc17 (Welton), where south, east and west walls measure 2.41m wide. Both are Narrow Gauge milecastles with a broad north wall. This can now be readily explained in terms of Symonds' idea that milecastles were completed to Broad Wall gauge early in the construction process in order to provide garrisons at points of topographic weakness on the line of the Wall, particularly valley crossings. The March Burn, which lies below the site of Mc14 to the immediate west, is set in quite a deep valley, and could afford cover to penetration form the north.

Internally there was at least one building, which lay on the west side of the milecastle. This was up to 4.4m wide (external measurements) with walls up to 1.2m thick. The building lay approximately 1.2m east of the western wall of the milecastle, and its internal surface seems to have comprised crushed rubble and sand. The milecastle has been completely robbed, with all facing stones of the outer walls and internal buildings removed, probably to build the group of buildings to the west around the former 'Iron Sign' public house. The visible platform of the milecastle would doubtless have been a lure to stone-robbers.

The fragment of wall constructed above the robber trench fills demonstrates that the robbing pre-dated the re-use of the milecastle platform for a later building, possibly a post-medieval field barn. This building had probably disappeared by the 19th century, as otherwise one might expect MacLauchlan or Bruce to have mentioned it.

Milecastle 17 (Welton): 1999

The site

The site of the milecastle (NZ 0630 6823) appears as a very clear and distinct terrace platform on the sloping ground 200m west of the crossroads adjacent to Whittledene reservoirs (Fig 257). It was identified on the ground by Horsley (1732, 114) and also by Bruce (1867, 131) and MacLauchlan (1858, 19). The only previous work on the site was supervised by Hepple and reported by Birley *et al* (1932, 256–8). Hepple's work was restricted to the northern part of Mc17, which lies beneath the B6318 Military Road. Up to three courses of the north wall and north gate survived up to 800mm high. The gate was of Type I (Fig 258), having two pairs of gate responds: "The west half of the gateway was comparatively well preserved; the pivot hole on this side still retained its metal lining, which has been removed, and is now deposited in the Black Gate Museum" (ibid, 26).

Published photographs (Fig 259) show a single course of the gate piers and responds, constructed in large masonry with diagonal broaching on the faces of the stones, which had very well marked setting-out lines on their upper surfaces.

It was established that this was a short-axis milecastle, measuring 17.68m east–west by 14.93m north–south internally. The north wall of the milecastle was 3.30m wide, and the side walls 2.41m thick.

The evaluation

Two trenches were excavated. Trench 1 (6m ?◊ 2m) was intended to transect the south wall towards the south-west corner of the milecastle. Trench 2 (8m ?◊ 2m) was to sample the west wall and the western side of the interior. The trenches were excavated to the top of surviving stratigraphy, which was cleaned and recorded. Discrete cut features were sampled by half-sectioning, and two small sondages were excavated within Trench 2 in order to solve a specific stratigraphic question.

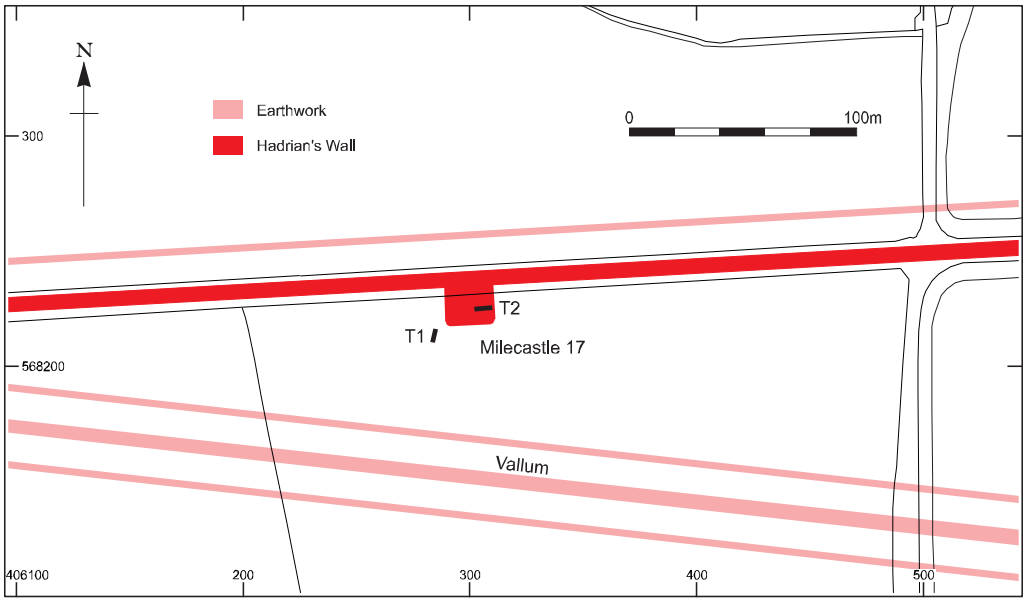


Fig 257
Milecastle 17: Mc17 and excavation trenches shown against modern mapping.

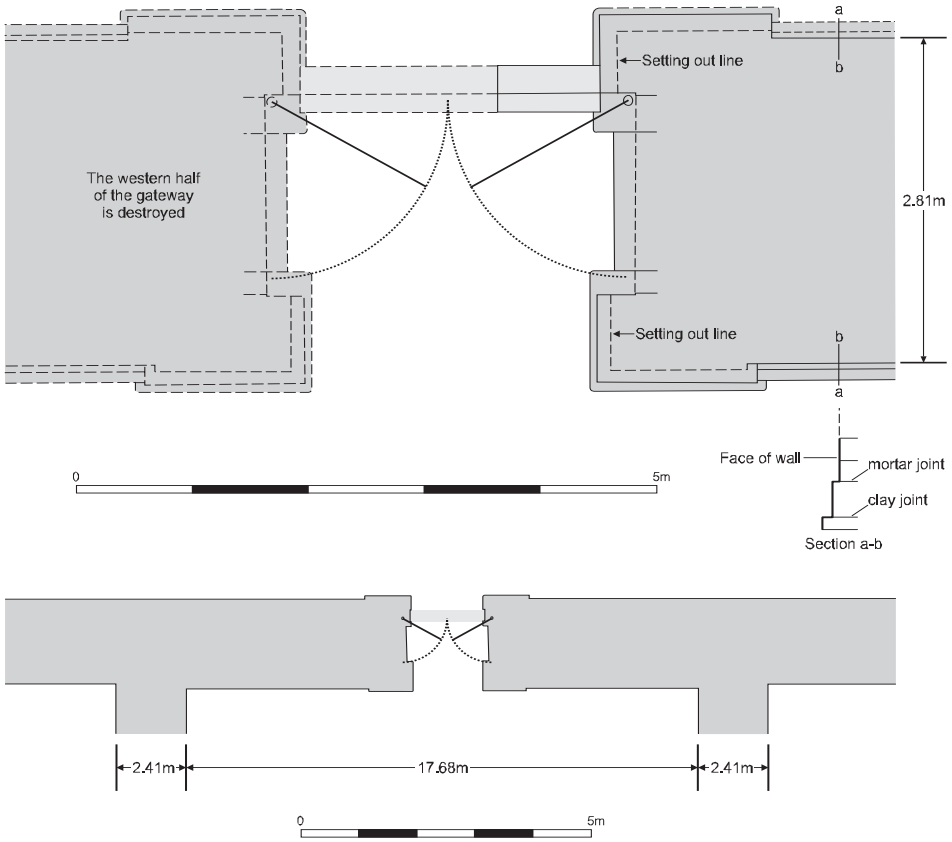


Fig 258
Milecastle 17: plan of north gate excavated in 1931 (Birley et al 1932).

Trench 1 (Fig 260)
The earliest feature in Trench 1 was a linear gully (109; fill 110), U-shaped in section 410mm wide and 520mm deep, running NE–SW. The fill of the gully was cut by a pit (111; fill 112) the full dimensions of which were not defined, but which was 590mm deep. The pit contained a single body sherd of BB1, and was therefore probably Roman in date. Both features were cut into the natural clay. Above them lay a spread of stone (108) comprising 75% glacial dolerite boulders and 25% limestone slabs (113). The limestone slabs may have been worked, but there were no clear traces of this, and it is perhaps more likely that they were split from thinly bedded natural outcrops, though whether by human or natural agency was not apparent. The stones were sealed by a 290mm thick deposit of subsoil (103), and 260mm of plough soil (101), giving a total depth of overburden of 0.55m.

Fig 259
Milecastle 17: photograph of north gate excavated in 1931 (Birley et al 1932).

Trench 2 (Fig 261)
In Trench 2 the plough soil (102) was 160mm in depth. This overlay a spread of angular sandstone rubble (104) which contained Roman pottery, and a damaged jet finger ring. The principal concentration of this material was towards the eastern end of the trench. The rubble spread either incorporated or was overlain by a very fragmentary, unbonded wall 560mm in width constructed of coursed squared rubble (107).

To the west of the trench a small patch of compacted charcoal flecked clay silt (106), 50mm deep overlay a widespread deposit of very dark grey-brown clay silt containing charcoal flecks and stone fragments (105). A sondage across the junction of

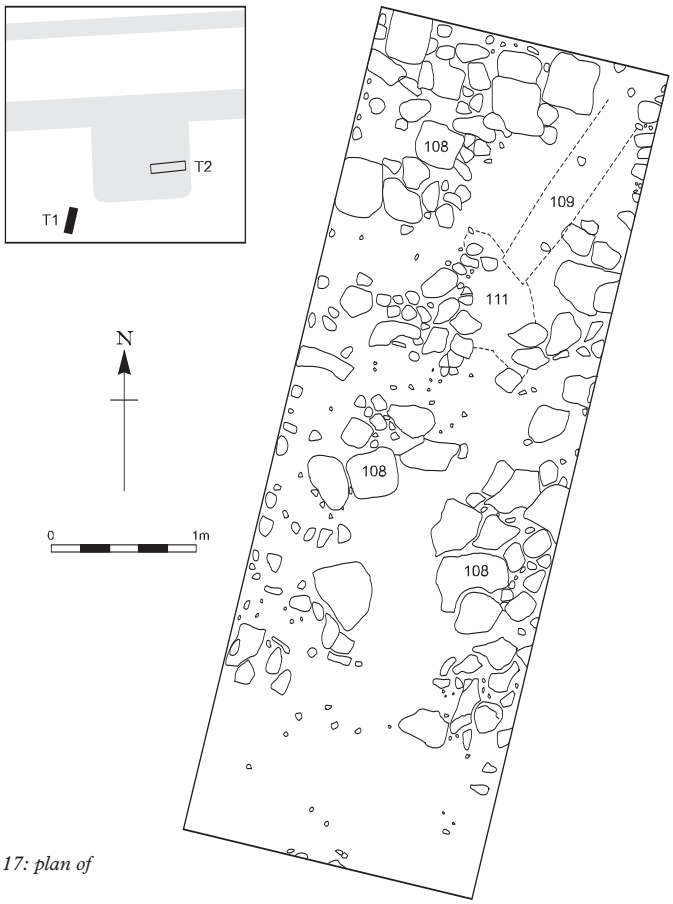


Fig 260
Milecastle 17: plan of Trench 1.

this deposit with the rubble spread (104) demonstrated that (105) underlay (104). The same sondage, together with a second small sondage in the south-west corner of the trench demonstrated that there was a substantial depth of stratigraphy surviving within the trench: (105) was 140mm deep to the east and 98mm deep to the west. It sealed a dark grey-brown silt (114), 180mm deep to the east and 224mm to the west. This material stepped downwards to the east, and itself sealed a deposit of black-brown clay silt (115), at least 130mm deep.

Finds

by P Austen, N Hembrey and J Weinstock

This site yielded a comparatively large assemblage of finds (Hembrey 2003), including coal, slag, tile fragments, and fired clay. There was a small quantity of modern material, principally undiagnostic nails and iron objects, including a horseshoe fragment, clay pipe and glass. Roman small finds were:

1. 9970152, context 102, plough soil (Fig 262)

Large, thick, plain jet finger ring, incomplete. Flat on both sides and square in section, the ring has an integral, rectangular, central bezel. Striations on all surfaces, rather than a highly polished finish, indicate it to be unfinished. External diam *c* 30mm, internal diam *c* 25mm

The ring (cf Allason-Jones 1996, 37, no. 166) is probably fabricated from Whitby jet. It is notable also for being unfinished (Lindsay Allason-Jones, pers comm); most finger rings left their source nearly complete, and were then finished – highly polished with oil mixed with jet dust – at the point of sale. Objects in such condition have been found at York, and at South Shields. As it is very unlikely that Mc17 was part of this industry, the most probable explanation is that this was a 'reject' picked up elsewhere. It is of a fairly common type, dated broadly to the 3rd century, and worn by both men and women.

2. 9970151, context 101, plough soil

Ceramic spindlewhorl, fabricated from a samian vessel, although no glaze survives, circular, and with a central perforation. Complete and fairly regular in shape, both edges and faces are fairly abraded. Max diam 29mm; thickness 6mm

Most of the pottery (Austen 2006) was from plough soil (101, 102). Roman pottery comprised 34 sherds of amphora including one rim sherd, two sherds of mortarium in hard white fabric, probably early Crambeck (late 3rd–4th century AD), a body sherd of Mancetter-Hartshill mortarium, 98 sherds of Roman greyware including copy of BB1 flat-rim

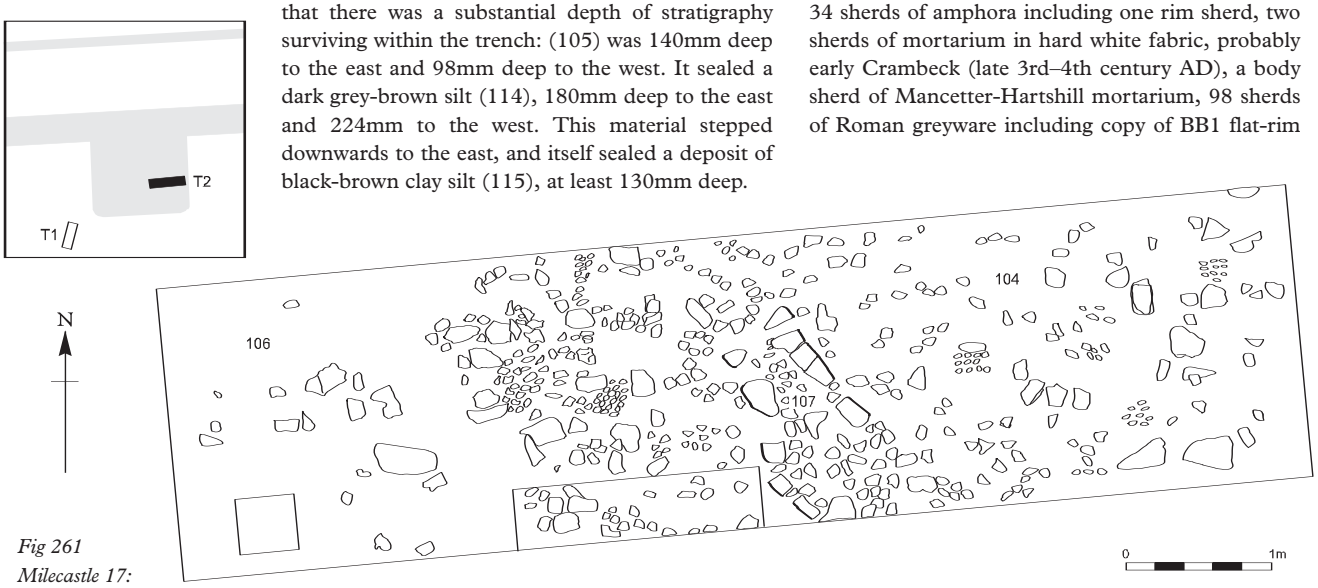


Fig 261
Milecastle 17: plan of Trench 2.

bowl with burnished lattice decoration (2nd century) and a flanged dish or bowl (late 3rd to 4th century), 25 sherds of BB1 including an early 3rd century cooking pot rim fragment with a fairly everted rim, and five very abraded sherds of plain Central Gaulish samian. A single BB1 body sherd came from the early pit in Trench 1 (112), and the rubble spread and underlying soil in Trench 2 (104, 105) produced an amphora body sherd, single rim sherds of BB1 and BB2, two greyware rim sherds and a burnt rim of a Central Gaulish samian bowl.

Eighteen fragments of animal bone were collected. All were cattle bone, although which if any was of Roman date cannot be determined.

Interpretation

It seems clear that Trench 1 lay outside the walls of the milecastle. The presence of a single Roman sherd in one of the cut features suggests that there was some form of contemporary extramural activity. The rubble stones which overlay these features may have been collapsed debris from the milecastle walls.

In Trench 2, the archaeological deposits encountered appeared to be predominantly post-Roman. This was confirmed by the wall footing (107) found overlying the rubble spread, which lay directly beneath the plough soil. The wall was oriented diagonally to the layout of the milecastle and could not, therefore, have been part of a Roman internal building. It is interpreted as a medieval or post-medieval structure built either within or over the top of the milecastle. This building had certainly disappeared by the mid-19th century, or it would have been noted by MacLauchlan or Bruce.

The deposits associated with this late building overlay at least 450mm of stratigraphy. This was clearly deposited from west to east, or downhill, and it is probable that much of it comprises colluviation or hill-wash from up-slope to the west. The platform interpreted as the site of the milecastle is considerably bigger than the attested size of the short-axis milecastle itself, and it is possible that this natural deposition of material over the top and sides of the platform has served to enlarge it over time, at the same time burying the remains of the milecastle more deeply prior to the construction of the later building. The concentration of Roman material within the plough soil on the eastern lip of the platform might indicate that some internal deposits of the milecastle have been disturbed by ploughing at this point in the past.

Milecastle 19 (Matfen Piers): 1999

The site

The low platform that marks the site of Mc19 (NZ 0335 6854), 150m east of Matfen Piers (Figs 251, 263) was noted by both Bruce (1867, 131) and MacLauchlan (1858, 19). The site lies partly under the hedge bank on the south side of the B6318 Military Road where it is indicated by a substantial rise in the hedge, but most of the milecastle lies in the field to the south, which is regularly cultivated for cereal crops. The rise in the hedge bank indicates precisely the position of the milecastle and surviving remains are likely to be well preserved within this narrow strip. Masonry which projects from the south side of the hedge bank was cleaned as part of the present evaluation, and seems to consist of general rubble making up the road. Wall faces are not readily discernible, but may be masked by tumble.

Trenching took place here in 1931 (Birley *et al* 1932), 1932 (Birley *et al* 1933), and 1935 (Simpson *et al* 1936b) The excavations showed that this was a long-axis milecastle measuring 16.25m east–west by 17.2m north–south internally. The north wall of the milecastle had been removed in its entirety before 1932, though a small fragment of footing on either side of the gate passage was found. A small hearth close to the south end of the west side of the passage implied to the excavators that the gate had been partially blocked in the Roman period. The excavators recorded that virtually nothing was left of the side walls or the south gate, though it is clear from a photograph (Simpson *et al* 1936b, fig 1; Fig 264) that the footings and part of the west passage wall survived on the southern edge of the platform upon which the milecastle stood. The pattern of footings suggested that this milecastle had Type III gates (Birley 1961, 99), with an elongated passage and two sets of responds. The south wall measured 2.38m in width, suggesting that this was a Narrow Wall milecastle.

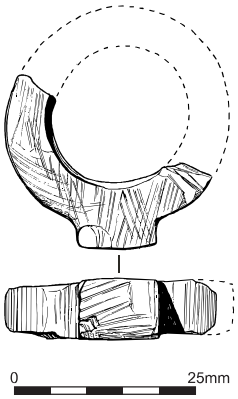


Fig 262
Milecastle 17: shale finger ring.

Fig 263
Milecastle 19: Mc19 and excavation trenches shown against modern mapping.

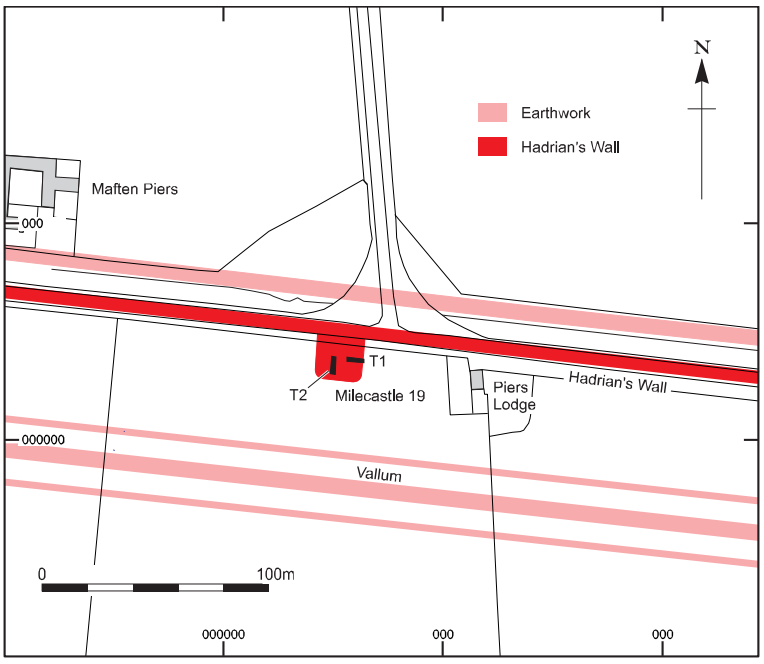


Fig 264
Milecastle 19: photograph of south gate excavated in 1935 (Simpson et al *1936b).*

In 1931 an altar (RIB 1421) was found to the south of the milecastle in the environs of the south gate. The inscription on this altar read: *Matrib(us) templ(um) cum ara vex(illatio) coh(ortis) I Vard(ullorum) instante P(ublio) Dom(itio) V(...) V(otum) s(oluit) l(ibens) m(erito)* (To the mothers, a vexillation of the first cohort of Vardullians under Publius Domitius V(?ictor) has erected a temple with an altar in willing payment of a vow).

Birley (1932) pointed out that this might mean either that a shrine to the *Matres* had been constructed outside the milecastle, or that the milecastle had been converted to this use, in the same way that *Wachtturm* 37B on the Odenwald *Limes* was turned over to religious use. Breeze (2002, 60; 2003) has since shown that the presence of altars, and even tombstones, in the vicinity of milecastles is not uncommon, occurring on at least 13 sites, and suggests that such altars could have been erected by the occupants of milecastles that might, at different times, have included legionaries or auxilliaries. This informs the question of the way in which milecastles were garrisoned. Birley argued that a separate force to the units based in the forts of the Wall provided the garrisons for the interval structures. This argument was based upon the discovery of the altar at Mc19, and has been accepted by some scholars (Daniels 1978, 26), though whether the troops so deployed were auxiliaries or *numeri* (Birley 1961, 270–1) remains uncertain. This issue has recently been revisited by Breeze (2002) in his reconsideration of the tombstone of the Pannonian Dagvala from Mc42 (Cawfields) and more generally (Breeze 2003a).

Nothing has hitherto been recorded of the internal arrangements of the milecastle although records exist to the effect that a wall of an internal building was being revealed by ploughing in the 1980s.

The evaluation

Two trenches were excavated. Trench 1 (8m × 2m) crossed the east wall and the eastern side of the interior. Trench 2 (also 8m × 2m) was designed to transect the south wall of the milecastle west of the centre.

Trench 1 (Fig 265)

The substratum on which the milecastle was constructed comprised material that appeared to be an outcrop of degraded sandstone (206; 214). Whether this was a natural deposit or a built platform was not established. The highly truncated remains of the milecastle lay immediately beneath the plough soil. The most substantial part of this was a fragmentary north–south stone wall (207),

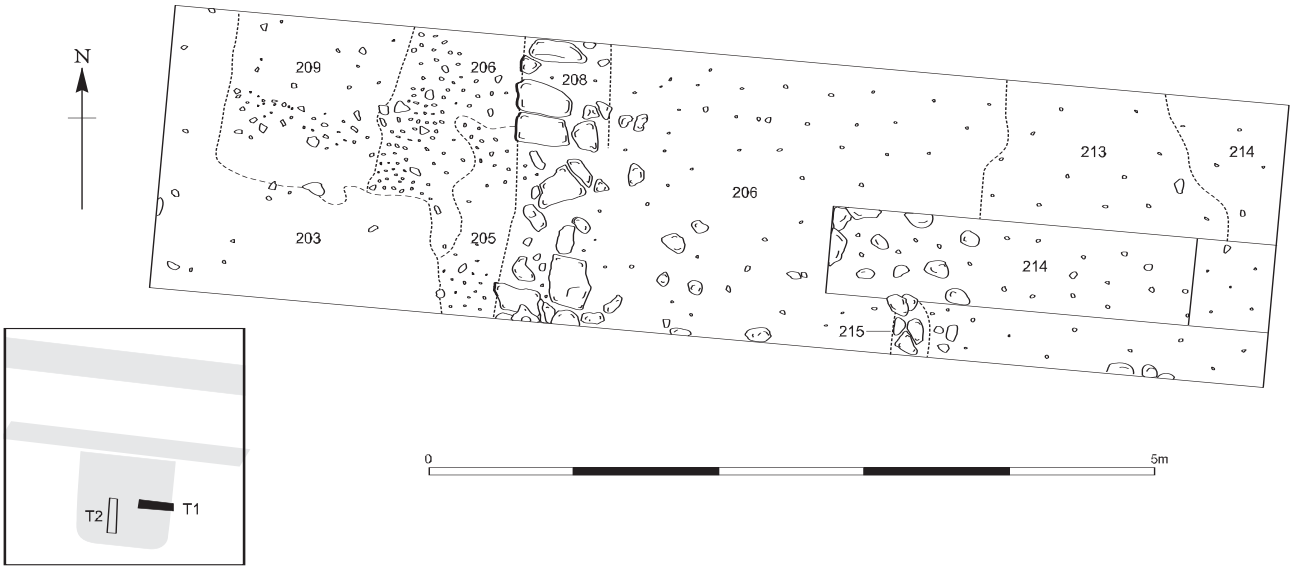


Fig 265
Milecastle 19: plan of Trench 1.

Fig 266
Milecastle 19: Trench 1 from south showing floor surfaces and wall of internal building.

560mm in width, built of sandstone coursed rubble within a construction cut of a similar width to the wall itself (208). The wall had two faces, and was packed with rubble. The vestiges of clay bonding survived, most visibly in an orange sandy clay layer (205) that lay to the immediate west of the wall, and that appeared to comprise a spread of bonding material resulting either from trampling during robbing or from ploughing. On the western side of the wall lay a sandy clay deposit (209) that appeared to be either an early floor or a levelling deposit for a level, compact, purple-grey sandy clay layer (203), which was certainly an interior earthen floor that respected the wall (Fig 266). 1.68m to the east of the wall was the very last vestige of the eastern milecastle wall, which was 2.4m wide. All that survived was the base of a foundation trench cut into the underlying sandstone. At the eastern and western sides the trench was deeper (216; 217), although it was only 180mm at the deepest point. These deeper strips represented the original lines of the facing stones of the exterior wall. No facing stones survived, indicating that the wall had been totally robbed. The fill (213) of this feature must therefore represent the ploughed out, vestigial fill of a robber trench.

The ploughsoil (201) was 250mm deep, and contained 20% medium-to-large and 10% small angular sandstone pieces derived from the buried milecastle.

Trench 2 (Fig 267)
The plough soil in Trench 2 was 200mm deep, and directly overlay a deposit of small, undressed, sandstone fragments, which was surfaced with smaller material to the south side of the trench (212) (Fig 268). This surface merged into larger stones at the north end of the trench. At the north edge a shallow cut was noted (218), filled with material (219) similar to the topsoil.

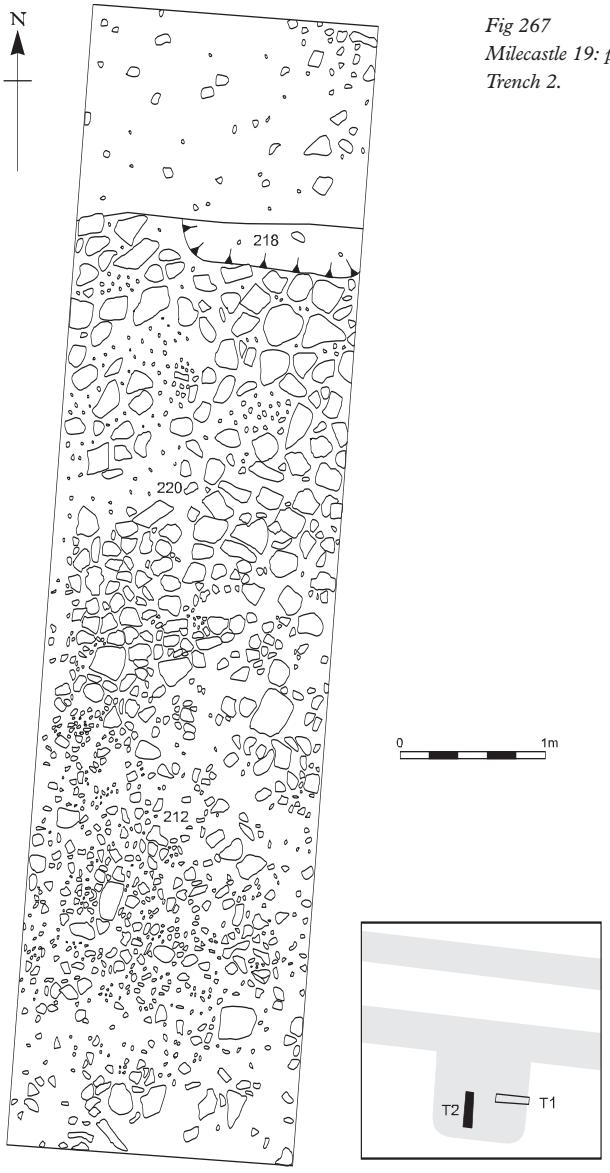


Fig 267
Milecastle 19: plan of Trench 2.

Fig 268
Milecastle 19: rubble surface in Trench 2.

Finds

by P Austen, N Hembrey, and D Shotter

Mc19 yielded a small assemblage of ironwork, mostly from the plough soil, and of uncertain date. All glass was modern and there was a single fragment of animal bone (Hembrey 2003). The only noteworthy Roman find was a single coin.

1. SF 9970 260, context 212

Coin: *AE Sestertius*, Hadrian, AD 125–38; diam 26mm, thickness 4mm (RIC 970)

All of the pottery (Austen 2006) was from the plough soil. Although there was some post-Roman material, most of the pottery was Roman material deriving from the ploughed deposits of the milecastle. The pottery was basically 2nd–3rd century in date, and it is possible that this is because later material has already been ploughed out and lost. Roman pottery comprised: eight abraded sherds of Central Gaulish samian, 14 sherds of BB2 including rims of a rounded rim bowl or dish (late 2nd–early 3rd century), and abraded mortarium flange fragment and a single fragment of BB1, eight amphora sherds, 46 of undiagnostic greyware and 16 of undiagnostic oxidized wares.

Interpretation

The eastern wall of the milecastle conformed very closely to the previously measured width of the south wall, and confirms the identification of Mc19 as a Narrow Wall milecastle (Symonds 2005). The smaller, internal wall (207) was clearly the eastern wall of a building in the eastern half of the milecastle with internal floor surfacing on its western side. The surfaces in Trench 2 are less readily interpreted, but are possibly best regarded as comprising hard surfacing in a western half of the milecastle, which was devoid of structures. During the excavation it was thought to be the central road of the milecastle, but this cannot be the case if the 1930s record of the dimensions and orientation of the milecastle are correct.

Milecastle 62 (Walby East): 1999

The site

The area between Walby and Brunstock Park, broadly conforming to Wall Miles 62 and 63 (Figs 269–70, 274) have been the subject of a small number of archaeological interventions over the last 100 years. Antiquarian reference to this somewhat featureless part of the line (which even the enthusiastic James Coates did not illustrate) is limited to the survey by MacLauchlan (1858, 72). It was MacLauchlan who first suggested the location of Mc62 at the point where the east–west road known as Birky Lane describes a dog-leg, bending sharply northwards, and almost immediately westwards again (NY 4429 6051) around a field 300m east of Walby Grange. He argued this as follows: "almost 600 yds before we reach Walby there are very faint traces of a Mile Castle, being 7 furlongs from the last; they are where the road turns sharply to the north. Mr Bell concurs, but the traces are by no means conclusive".

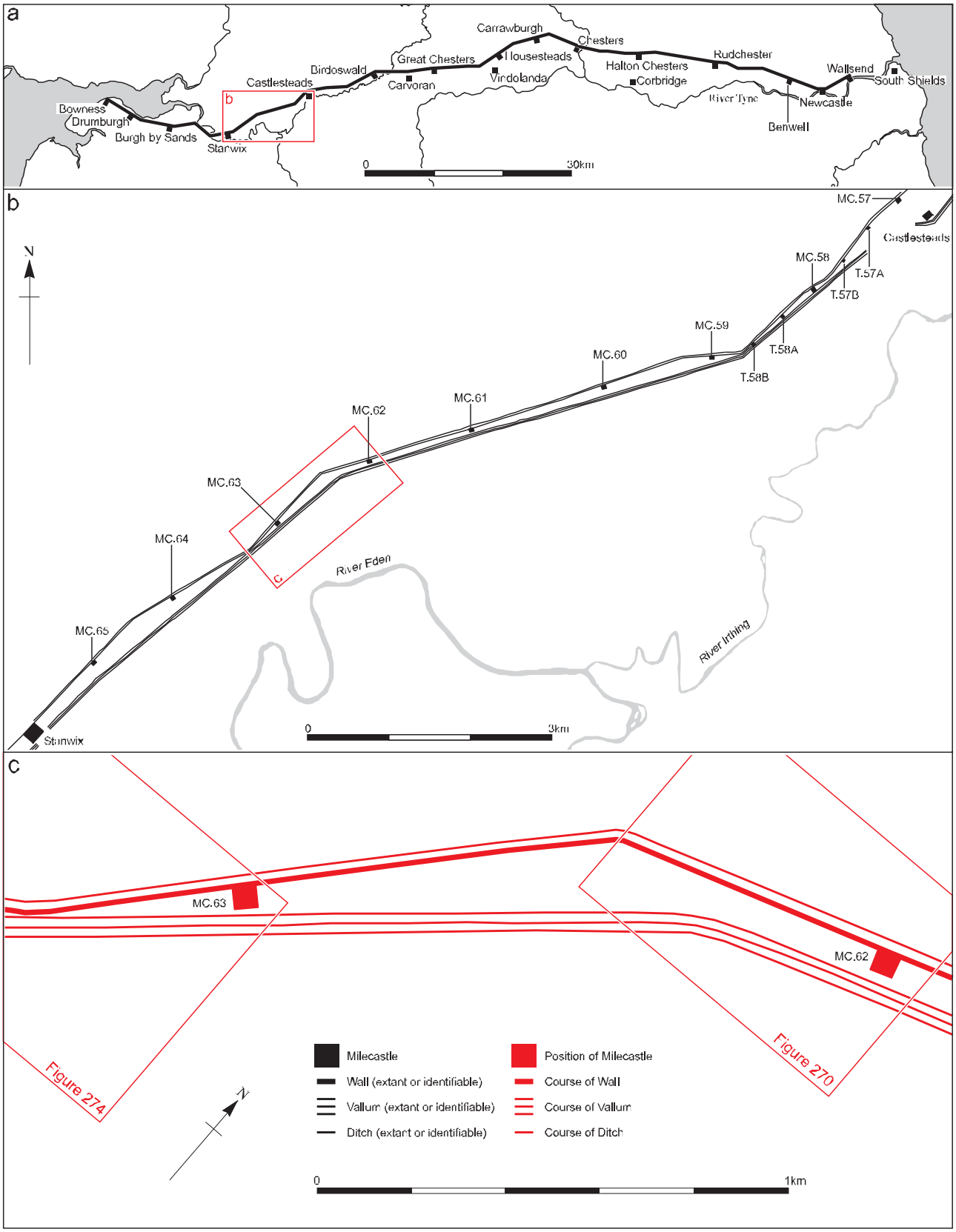
So inconclusive were they that MacLauchlan did not mark the position of the postulated milecastle on his survey plan. In 1899 the bend in Birky Lane at MacLauchlan's projected milecastle site caused speculation as to whether the line of the road skirted the north-east angle of a projecting fort here. This was tested by Haverfield (1900, 97), who trenched the field to the south of the lane, found the Wall and ditch running straight across it, but encountered no sign of a fort or of the milecastle.

The field is currently under pasture but is ploughed in rotation for pasture renewal at regular intervals, and this ploughing was the reason for the inclusion of the site in the Milecastles Project. In 1981 geophysical survey was carried out by John Gater (1981). Ten traverses confirmed the line of the Wall and ditch, although the weakness of the response suggested that the Wall had been badly robbed towards the west side of the field. It was concluded that a strong linear anomaly parallel to and behind the Wall at the expected position for the milecastle might represent its south wall. The line of the Wall ditch survives as a clearly visible, and very wet, indentation in the north-east corner of the field.

The evaluation

The location of the excavation trenches was guided by the geophysical survey. In the absence of clear targets to explore, initially a pattern of four 1m square test pits were excavated in an attempt to locate the milecastle. These demonstrated that there were surviving structural features, and a further six test pits were dug to confirm aspects of plan and

Fig 269 (opposite)
Milecastle 62: location of Wall miles 62 and 63 on Hadrian's Wall, and of Figs 270 and 274.


a
Carrawburgh
Chesters
Housesteads
Great Chesters
Birdoswald
Castlesteads
Carvoran
Virdolanda
Halton Chesters
Corbridge
Rudchester
Wallsend
South Shields
River Tyne
Newcastle
Benwell
Bowness
Drumburgh
Burgh by Sands
Stanwix
b
0
30km
b
N
MC.57
Castlesteads
MC.58
T.57A
T.57B
MC.59
T.58A
T.58B
MC.60
MC.61
MC.62
MC.63
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MC.65
c
River Eden
River Irthing
Stanwix
0
3km
c
MC.63
MC.62
Figure 274
Figure 270
N
Milecastle
Wall (extant or identifiable)
Vallum (extant or identifiable)
Ditch (extant or identifiable)
Position of Milecastle
Course of Wall
Course of Vallum
Course of Ditch
0
1km

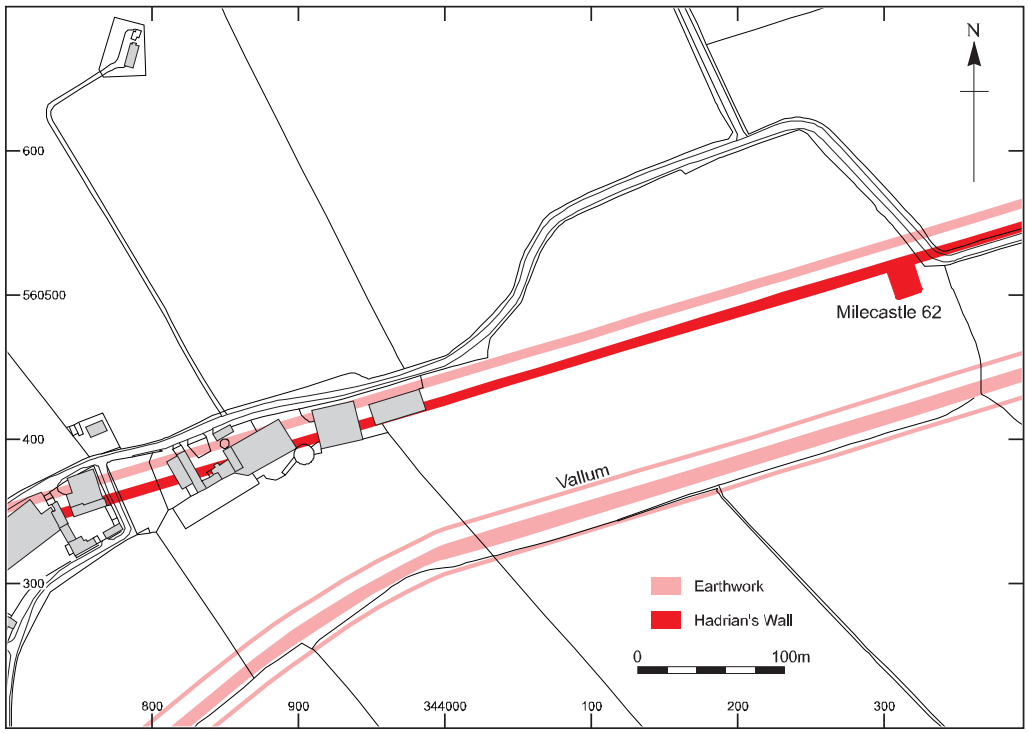


Fig 270
Milecastle 62: Mc62 site and test pits against modern mapping.

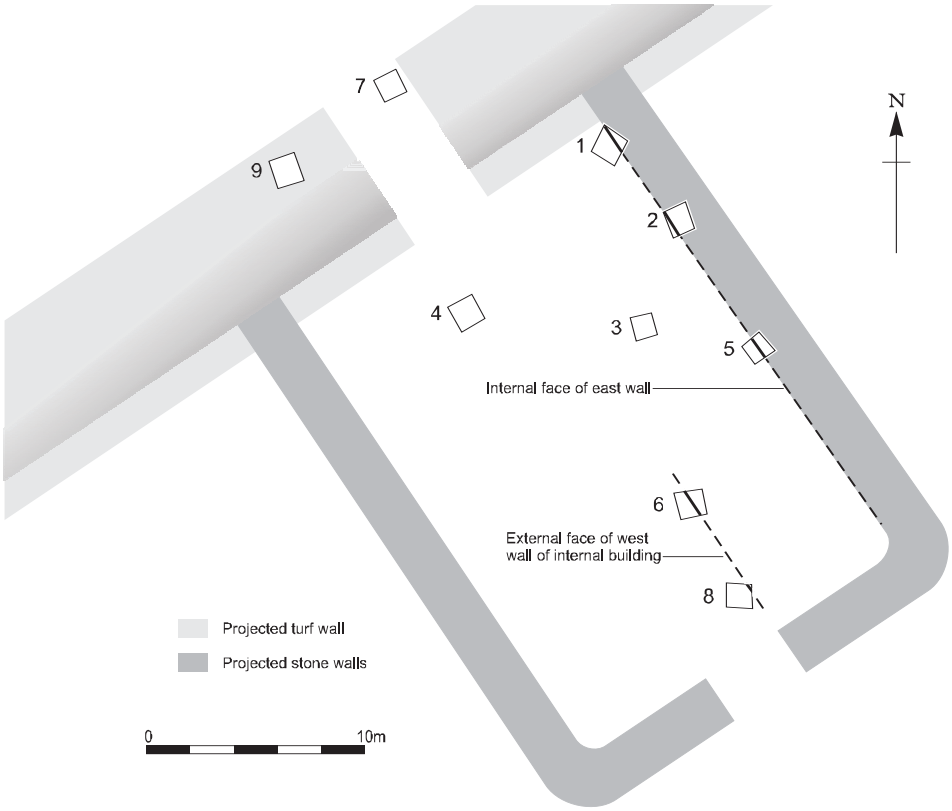


Fig 271
Milecastle 62: test pit locations and tentative interpretation.

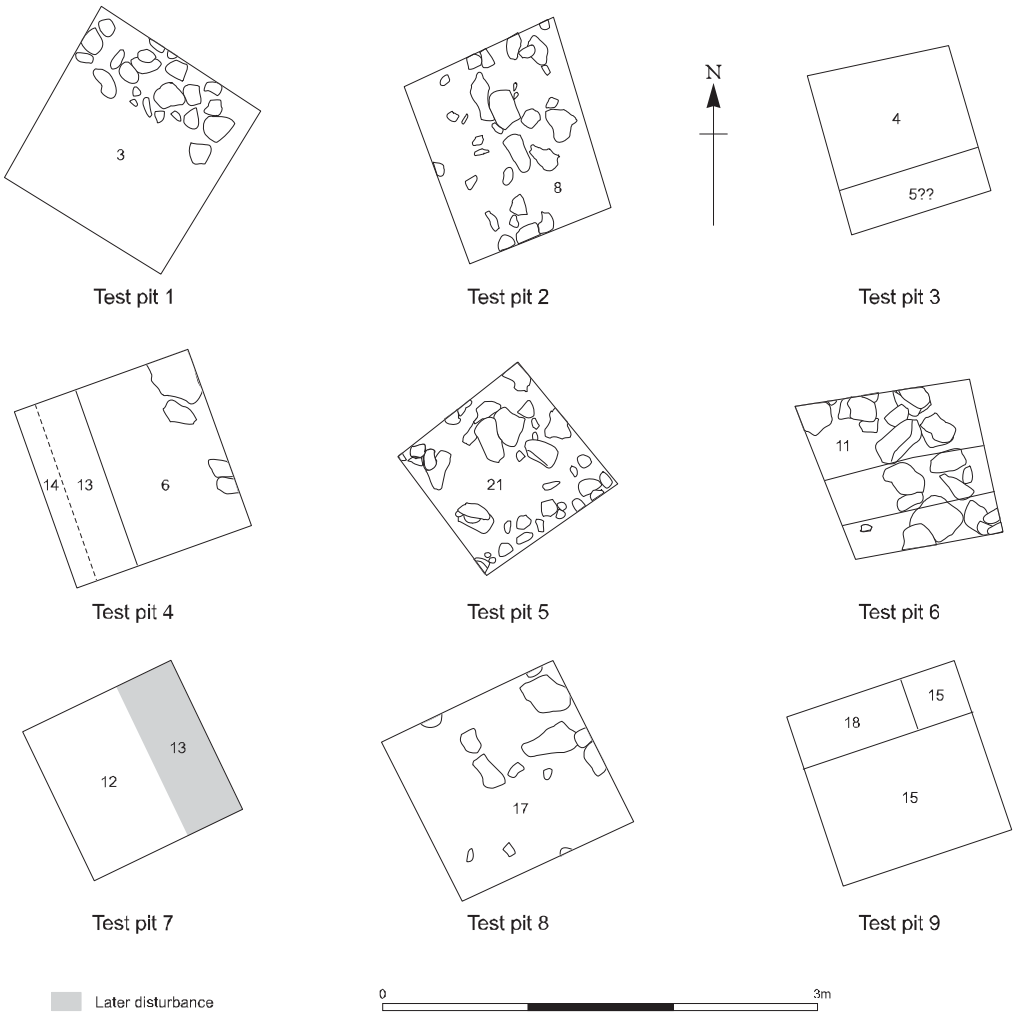


Fig 272
Milecastle 62: test pit plans.

layout (Fig 271). In all test pits the plough soil (001) varied in depth from 250mm to 350mm.

Test pits 1, 2, and 5 (Fig 272) lay in a north–south line along a line that appeared as a rather insubstantial anomaly in the geophysics. All three pits produced similar stratigraphy. Test Pit 1 showed the western edge of a feature (002) comprising sub-angular broken sandstone fragments and rounded pebbles. This overlay a deposit of mottled mid brown-black sandy silt (003). In Test Pit 2 a similar deposit of stone (007) lay over a deposit of orange-grey mottled sandy silt (008), and in Test Pit 5 again a stone layer (009) lay over a deposit of light grey-brown sandy silt (021).

Test Pits 9 and 7 (Fig 272) were positioned on the presumed line of the Wall, located with reference to the site of the Wall ditch. Beneath the plough soil in Test Pit 9 was a deposit 50mm deep of grey-black humic clay-silt (017), which overlay a yellow-white silty sand (018) 150mm deep. This lay directly on the solid, natural yellow-orange silty clay substrate (019). In Test Pit 7 the natural clay (020) was overlain by a hard, compacted surface of small stone and pebbles 120mm deep (012), which was cut by a post-medieval field drain (013).

In Test Pit 6, a narrow wall foundation (010) running north–south was identified (Fig 273). This survived to a depth of 124mm and was 420mm wide, constructed with cobbles and some angular stones. The foundation was cut into a deposit of grey-brown silty clay with charcoal flecks (011).

Fig 273
Milecastle 62: wall footing in test pit 1.

The foundation was parallel in alignment with the edge of the stone spread noted in Test Pit 1. To the south of Test Pit 6, Test Pit 8 showed a diffuse cobble spread, interrupted by plough marks (016) over a deposit very similar to 011 (017).

Test Pit 4 was unproductive, showing a deposit of mid-brown sandy clay (006) 280mm overlying natural clay (014). This was cut by a post-medieval field drain (013).

Test Pit 3 revealed a dark grey-brown sandy silt 180mm deep (004) over the natural clay (005).

Finds

by P Austen and N Hembrey

All non-pottery finds were modern in date (Hembrey 2003), and only three undiagnostic Roman sherds were recovered (Austen 2006).

Interpretation

These nine test pits are the only interventions ever to have been undertaken on Mc62. The results may cautiously and tentatively be interpreted in terms of other Turf Wall milecastle plans and structural methods. Test Pit 9 was cut in order to explore the line of Hadrian's Wall. It is possible that the deposits above the natural subsoil represent the laid turf of the Turf Wall. If so, it is clear that the Wall in this area does not have the kind of cobble footings excavated at Burgh-by-Sands and at Mc72 (Fauld Farm) (Austen 1994), but more importantly, it would suggest that the Turf Wall was built on a cleared ground surface, when the normal pattern would be the laying of turf on top of growing vegetation. This has been found to be the case wherever the Turf Wall has been sectioned, including the excavation at Crosby on Eden, only 250m to the east of the milecastle site (p 124) and at Appletree (p 110). It is perhaps more likely that the material above the natural clay comprises an *in situ* ancient subsoil, and that the turf line above it is the natural pre-Turf Wall turf line, possibly combined with an element of the bottom inverted turf of the structure. The pebble surface in Test Pit 7 lay directly over the natural clay, implying that the original ground surface and turf had been cleared at this point. As this trench is on the line of the Wall, this may represent a break in the Wall which could then only be the north gate of the milecastle. It seems likely that this material represents surfacing within the gate, possibly relating to the Turf Wall period.

The cobble and stone spreads in Test Pits 1, 2 and 5 may be interpreted as the foundations of the east wall of the stone phase of the milecastle. If so they are not primary, as there are substantial deposits of sandy silt beneath them. These deposits were of a variety of colours, mottled and somewhat disturbed. It seems reasonable tentatively to conclude that these sandy silt deposits might represent the disturbed remnants of the walls of the primary turf and timber milecastle. The interpretation of the stone spreads in Test Pits 1, 2 and 5 as footings for the exterior walls of the stone phase milecastle is strengthened by the fact that the only definite stone foundation to be found during the evaluation lay parallel to the edge of these spreads as defined in Test Pit 1. This was the foundation in Test Pit 6. The foundation lay 5.25m to the west of the supposed inner edge of the wall of the stone phase milecastle, and this may suggest that this was the western wall of a building that occupied the east side of the milecastle. Test Pits 3 and 4 were inside the milecastle, contained surfaces, but were otherwise undiagnostic. It is at least possible that the cobble spread in Test Pit 8, which resembled those in Pits 1, 2 and 5, might have been the foundation of the south wall, and the soil deposits recorded beneath structures in both Pits 6 and 8 may represent the demolition of the Turf Wall milecastle.

The evaluative nature of the excavation makes it impossible to extrapolate the plan and dimensions of the milecastle from the evidence recovered with any level of certainty. The only available evidence is the apparent position of the north gate, east stone wall, and internal building wall.

It is possible to reach some estimate of the internal width of the structure, however. In order to do this it is necessary to assume that the inner edge of the eastern exterior wall foundation coincided with the inner edge of the wall itself, and that the internal building wall represents the western wall of a structure. This gives a breadth from the interior wall face to the west frontage of the building of 5.6m. In most milecastles where buildings have been excavated, these buildings are not aligned on the gate portals, but set back somewhat to the line of the rear of the imposts. The overall width of a typical milecastle gate over the imposts is 5.26m. Assuming symmetry of layout, the internal width east–west of the milecastle would be in the region of 16.55m, and given walls of around 2.42m in width, the external width would be 21.39m. It is not possible to calculate the length north–south, although it is probably in the region of 23–26m, and the milecastle would thus be of long-axis type. This is comparable with other milecastles in the Turf Wall sector; the external measurement for Mc64 was 17.94m north–south and 21.42m east–west for a short axis milecastle. Mc72 in its stone phase measured 24.3m east–west externally, and Mc79 was 24.14m square externally. Mc78 measures some 20m east–west and 24m north–south.

Milecastle 63 (Walby West): 2000

The site

After describing the bend in the Wall as it passes through Walby at his projected location for Mc62, MacLauchlan (1858, 72) is silent on the possible location of Mc63 until the next major bend is

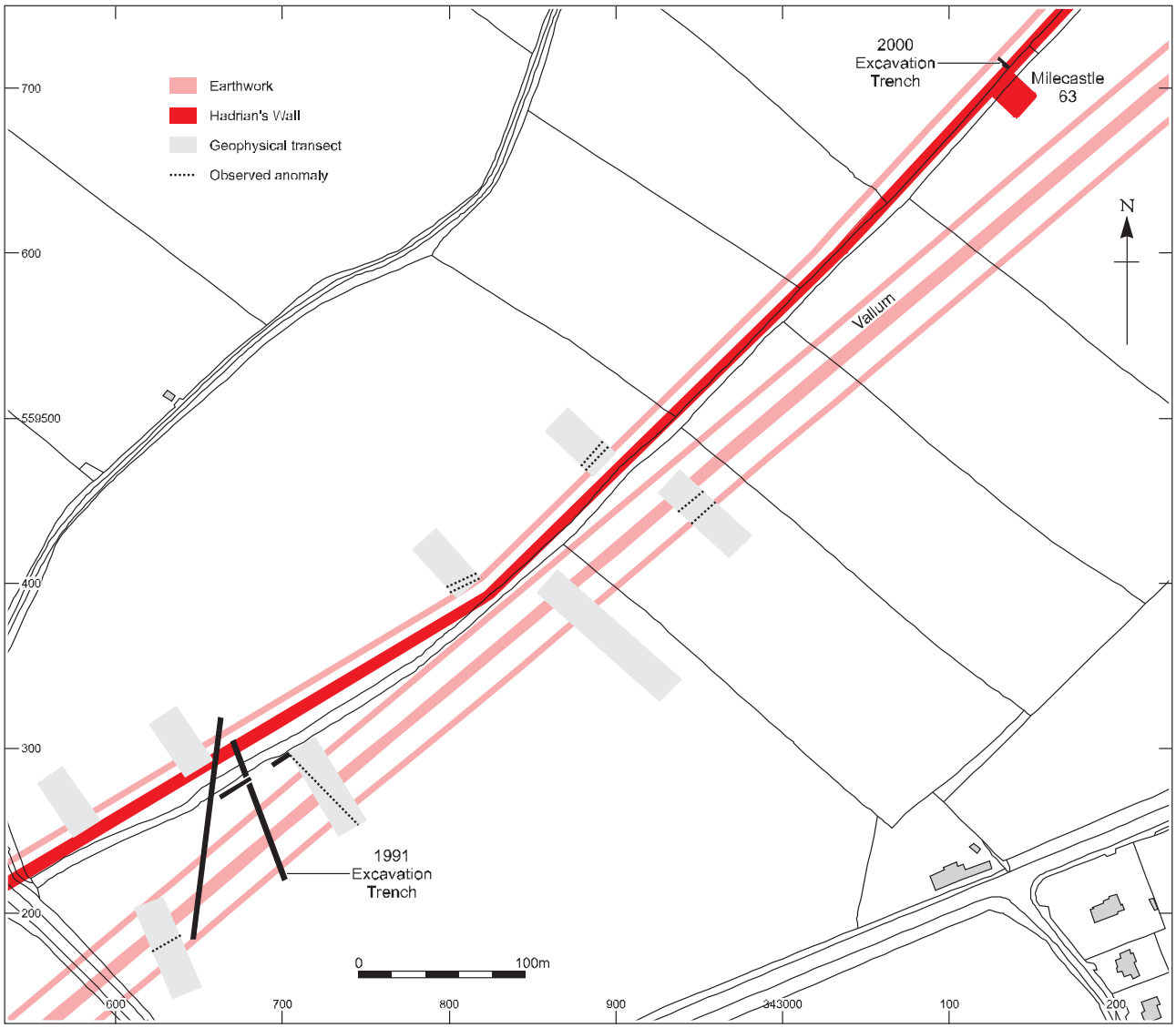


Fig 274
Recent archaeological interventions in Wall Mile 63.

reached slightly west of Wallfoot. He suggested a milecastle here on the grounds of the existence of the bend alone: "Immediately on the north of the farm called Wall Foot another bend takes place, and at this bend we fancy traces may be discovered of a milecastle bearing north-west by west from the farmhouse."

Haverfield (1895, 457) also examined the Wall and Vallum in Brunstock Park, between Mc63 and Mc64, and Mc64 (Drawdykes) itself was identified and excavated in 1962 (Caruana and Fane Gladwyn 1980). 1990 saw the examination of the area to the east of Brunstock Park by geophysical survey and small scale excavation as part of an evaluation to find the least archaeologically destructive route across the Roman frontier works for the line of the North-West Ethylene Pipeline. This was followed by an excavation on the route of the pipeline itself in 1991 (Lambert 1996, 79–86). Geophysical survey successfully located the Wall and Vallum ditches (Fig 274). The pipeline passed through part of the line where the Wall had been eradicated by quarrying on either side of a hollow way which ran to the south of the Wall. The Vallum ditch survived to a depth of some 2.3m.

The measured site of Mc63 lies at or near NY 4315 5974 (Fig 274). The field boundaries shown on OS mapping have altered in recent years. The milecastle was thought to be bisected by a track which runs along the south boundary of a field which is in rotational cultivation for maize. The site was tested by geophysical survey in 1980 (Gater 1981), work which tentatively identified elements of the milecastle within the northern field, somewhat to the east of the measured position of the milecastle, and guided the 2000 evaluation.

The evaluation

Although no visible remains of either the milecastle or the Wall can usually be seen on the ground, the Wall ditch was clearly observed as a linear indentation centred some 15m north of the southern edge of the field to the north of the track. The ditch was very clearly visible as a result of the deep rutting, which had been caused by the passage of farm machinery while harvesting a maize crop in the waterlogged conditions of the abnormally wet autumn of 2000. This observation caused the results of the geophysical survey to be regarded with some circumspection, as it seemed possible that the milecastle did not extend into this field at all. It was therefore decided to cut a single trench measuring 2m × 8m, oriented north–south, with its southern edge as close as possible to the field boundary. The intention was to locate the line of the Wall itself, as this would inform the positioning of any trenches to the south of the Wall that might have picked up the east and west walls of the milecastle. The result from this trench clearly demonstrated the futility of further evaluation trenches within the area of potential threat to the north of the track.

Trench 1 (Figs 275–6)

The topsoil in the trench (1600) ranged from 250–500mm in depth, and consisted of a friable dark red-brown sandy loam. To the north of the trench this sealed a small area of sparse grey sandstone rubble 120mm deep (1601), comprising flat squared or irregular pieces. This is interpreted as collapse or robbing debris from the curtain wall of Hadrian's Wall, the foundations of which (1600) lay 3m to the south of the rubble. These foundations were 2.60m broad within the field, but only the north face was present; the south face seems to lie beneath the field boundary hedge, although the tails of the facing slabs were found in the south edge of the trench. The face comprised a single line of 140mm thick flagstones, tapered back into the wall core from faces ranging from 400–600mm broad. All of the facing stones revealed (a total of five) displayed an east–west linear crack some 240mm from the face. This represents the pressure point where the face of the curtain wall stood on the flag foundation, which was offset to the north. The weight of the Wall above, now completely robbed, had caused the flagstone course to crack along the line of the offset. All that remained of the core was a thick scatter of irregular grey sandstone pieces, up to 170mm wide. This was completely robbed in the south-east corner of the trench in a very square area, a fact which at first suggested that two walls at right angles were actually present. The wall sat upon a widespread subsoil deposit of very compact reddish-brown sandy silt (1603). A single undiagnostic Roman potsherd (Austen 2006) lay in the surface of this material immediately north of the Wall.

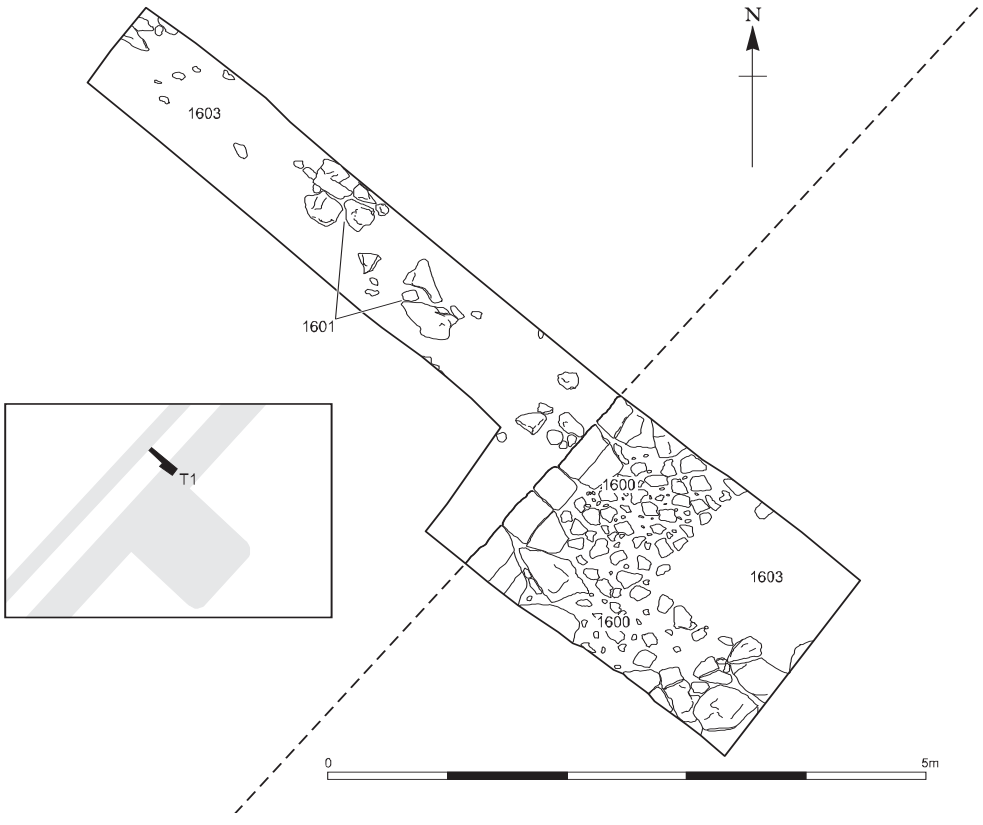


Fig 275
Milecastle 63: plan of trench.

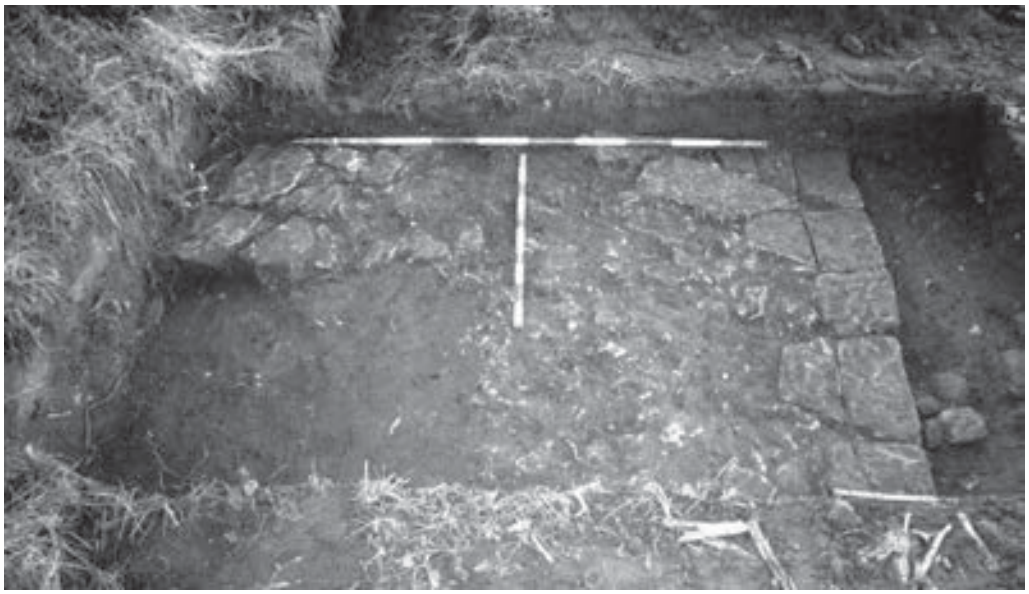


Fig 276
Milecastle 63: flagstone foundation course of Hadrian's Wall in trench. Note the linear crack marking the offset of the north wall face with the flag foundation course.

Interpretation

It is clear that the broad east–west wall found in the trench was Hadrian's Wall. This is apparent from the structure and dimensions, and also from the crack along the foundation course, which is a virtual signature feature of the Stone Wall in the former Turf Wall sector (Caruana and Fane-Gladwyn 1980, 21; Hodgson and McKelvey 2006). It was surprising that no sign of the Turf Wall survived at all, as in Wall mile 61 considerable traces of turf work were present (Bennett this volume, p 124), and elements of turf work were also found on the site of Mc62 as reported above. The Wall exactly defines the south edge of the field, to such an extent that it seems likely that the track to the south is of considerable antiquity, and probably originated when the Wall was standing to some height.

The excavation firmly denied the results of the geophysical survey, and this requires explanation. The principal evidence for the side walls of the milecastle was the appearance of a pair of anomalies some 18–20m apart running southwards from the presumed wall line. Comparison with the excavated trench suggests that these anomalies simply represented parts of Hadrian's Wall which were unrobbed between areas of total robbing like that defined in the excavation trench. Mc63 clearly does not lie in the field which was evaluated, but under the track and the field immediately to the south.

Milecastle 69 (Sourmilk Bridge): 2000

The site

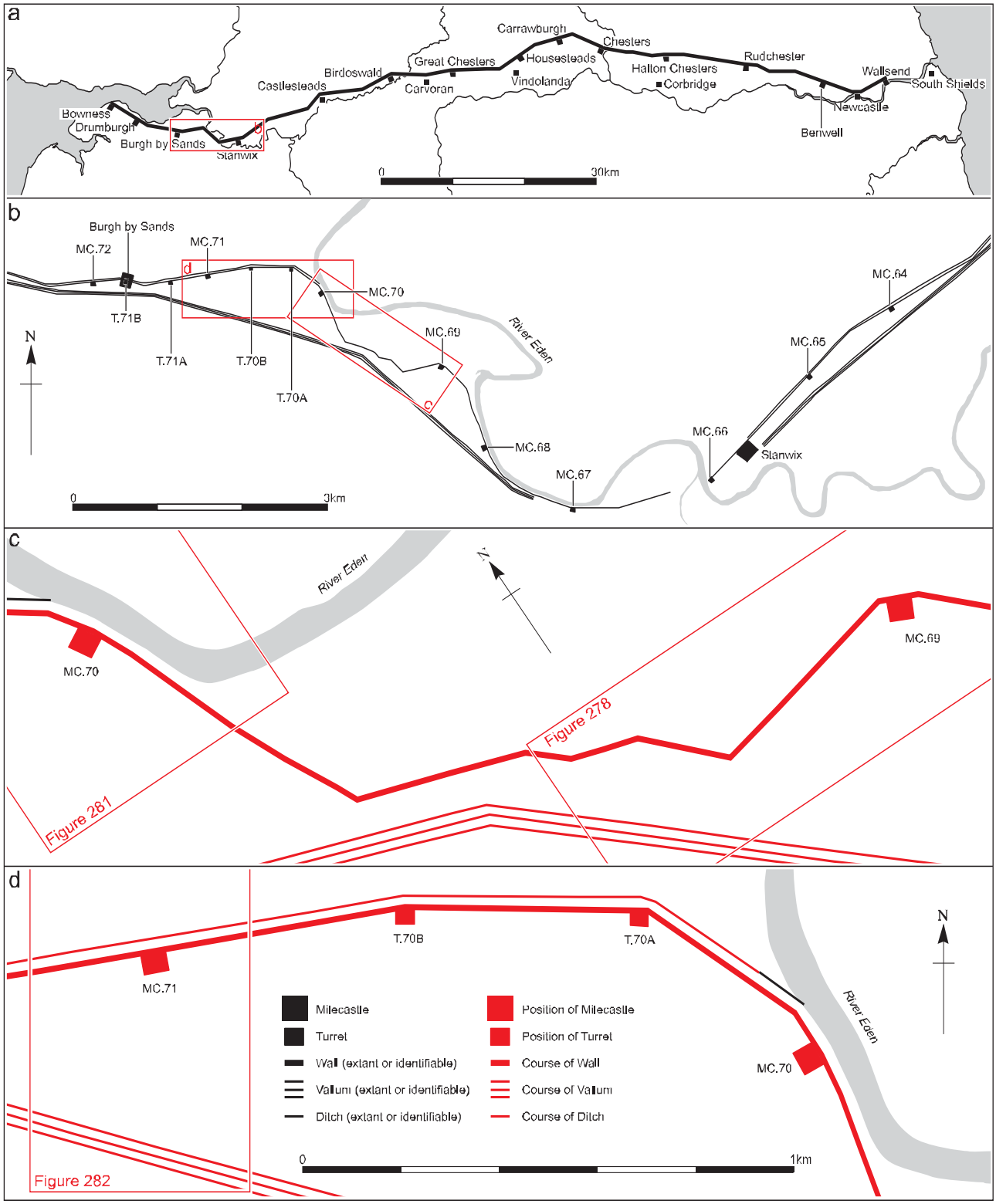
Wall miles 69–71 (Fig 271) lie in one of the least explored and most poorly preserved stretches of the frontier, and have tended to be somewhat glossed over by antiquarian observers. The best description is provided by Horsley (1733, 155–6), who found the works obscure all the way from Newtown to Burgh-by-Sands (Wall miles 67–71):

> "On the west side of the *Eden* the Walls are mostly obscure. At a part between *Grinsdale* on one side and *Newton* on the other, *Severus'* wall is very visible, and *Hadrian's* may be discovered about a furlong to the south of it. And a little to the east of *Kirkanders* the vestiges are clear. Between *Wormanby* and *Brugh* the track of the walls is also visible, and they come within a chain of each other. But excepting the ditch at the west end of *Brugh*, *Hadrian's vallum* appears no more after this with plainness and certainty. And *Severus'* wall in the general is for several miles very obscure, and much levelled. The people hereabouts have no stone quarries for building, so that they spare no pains in digging for stones, wherever they have any prospect of finding them, upon which account the wall and stations have been sufficiently plundered. The ditches are the most visible part of the works, and are very discernible in going up to *Beaumont*."

It is clear that even by Horsley's time most of the remains had been denuded by comprehensive stone robbing. MacLauchlan (1858, 80) described the course of the Wall running west from Grinsdale thus:

> "The Wall crowned a height 350yds [320m] west of [Mr Sibson's] house and curved back to the southward so as to run

within a furlong of the Mill, where it crossed the stream dividing Grinsdale from Kirkandrews. At this bend a greater quantity of foundation stones were seen than usual, and it was conjectured there might have been a milecastle at that spot."



Much of this, as MacLauchlan admits, derived from hearsay provided by the elderly Mr Sibson; the Wall itself had completely disappeared by MacLauchlan's time. From Kirkandrews the line of the Wall runs northwards along the bluffs on the west edge of the River Eden, until traces of the ditch can be seen below Beaumont:

> "continuing our course along the top of the cliff, we find traces of the foundations of the Wall and the commencement of its ditch may be observed at a small stream about 300yds before we reach Beaumont, and up the hill both Wall and ditch are plainly visible."

As to the Vallum (ibid, 81):

> "the Vallum makes an angle at Kirkandrews when about 180yds [164.6m] east of the brook in the village and ... runs straight to Burgh. It is visible on the south side of the road at Monkhall, on the north of it at the watermill, where the south agger remains in part, and its ditch occupies the road at Wormanby."

There is no known antiquarian illustration of this stretch except for a series of drawings by James Coates. Most of these show views of the course of the Wall as determined by MacLauchlan, with no visible fabric (Figs 145–7). However, his sketches of the Vallum in the Kirkandrews area are extremely valuable (Figs 152–3), particularly the image (Fig 152), which shows the Vallum near Monkhill Mill. This is now levelled, but Coates goes to the trouble of providing a profile, which clearly shows that the marginal mound was part of the works here. His view of the Wall ditch south of Beaumont (Fig 150) shows a feature that is still visible, although now almost completely overgrown by woodland.

Small evaluations have had varied success in the area. In 1996 an evaluation in Grinsdale village at NY337 558 failed to locate the Wall (Burnham *et al* 1997, 415), although a linear feature here appeared to be the Wall ditch. Mc69 and Mc70 have not been positively located; however, after his location of Mc71 and Mc72, Bartle (1961) considered the chances of finding other installations between here and Carlisle: "Little hope can be raised for the stretch along the bluffs along the Eden, but there seems good reason to hope that it will be possible to establish the position of Milecastle 69." (ibid, 40).

MacLaughlan's mention of large quantities of stone at Sourmilk Bridge on the Doudle Beck in the eastern part the field north of Millbeck Farm (quoted above) was formerly used as the basis of scheduling for the site of Mc69, although the measured position of this milecastle as shown on the 1972 edition of the *Ordnance Survey Map of Hadrian's Wall* is on a high point immediately west of Grinsdale village; the very height that MacLauchlan locates 350yds [320m] west of Mr Sibson's house. The attempt to locate and evaluate Mc69 described below was made because some of the fields in this area are under occasional ploughing regimes. As noted above, two possible locations for the milecastle were proposed, one based on MacLauchlan's observation of stonework at Doudle Beck, the other west of Grinsdale at NY 3655 5810. These two locations are nearly 500m apart (Fig 277).

Fig 277 (opposite) Milecastle 69: location of Wall Miles 69–71 on Hadrian's Wall, and of Figs 278, 281 and 283.

Geophysics

In 1998 the Doudle Beck site was explored by the geophysics firm Stratascan, using both resistivity and magnetometry techniques (Mercer 1999). The survey was inconclusive, producing some evidence of the Wall ditch on the projected alignment, but no sign of the milecastle. In August 2000 the site above Grinsdale was surveyed by Timescape Archaeological Surveys, and again both magnetometry and resistivity surveys were carried out (Robinson and Biggins 2000a). The site of the survey covers a small hill and the downward slope from the hilltop to the north. A modern track runs along the face of the slope, and north of the track there is a steep scarp, which forms the edge of the Eden flood plain, and may once have been a riverbank.

The top of this scarp is marked by a definite geophysical anomaly, which was interpreted by the surveyors as possibly comprising the Turf Wall. Another anomaly, which ran along the crest of the hill to the north of the track, was tentatively interpreted as the Military Way. Although the responses in much of the area were masked by the presence of clear ridge-and-furrow, the present writer thought he could detect the shape of a milecastle lying between these two linear anomalies in the magnetometry plot.

The evaluation

Two trenches were cut on the Grinsdale site (Fig 278). Trench 1 tested whether the milecastle was represented by the apparent anomaly between the linear features, and Trench 2 was sited to examine the southern linear anomaly on the hilltop. In Trench 1 (8m × 2m) it soon became clear that the area was archaeologically sterile, with 250mm of topsoil overlying undisturbed, pinkish-white natural boulder clay.

In Trench 2 (also 8m × 2m) the topsoil (1500) was 270mm deep, and overlay a thick, homogeneous soil deposit (1501) comprising a mid-orange-brown clay-sandy silt 510mm deep. This deposit was undifferentiated and well sorted, and appears to have been an old plough soil. It contained, at 320mm depth, a spread of rubble

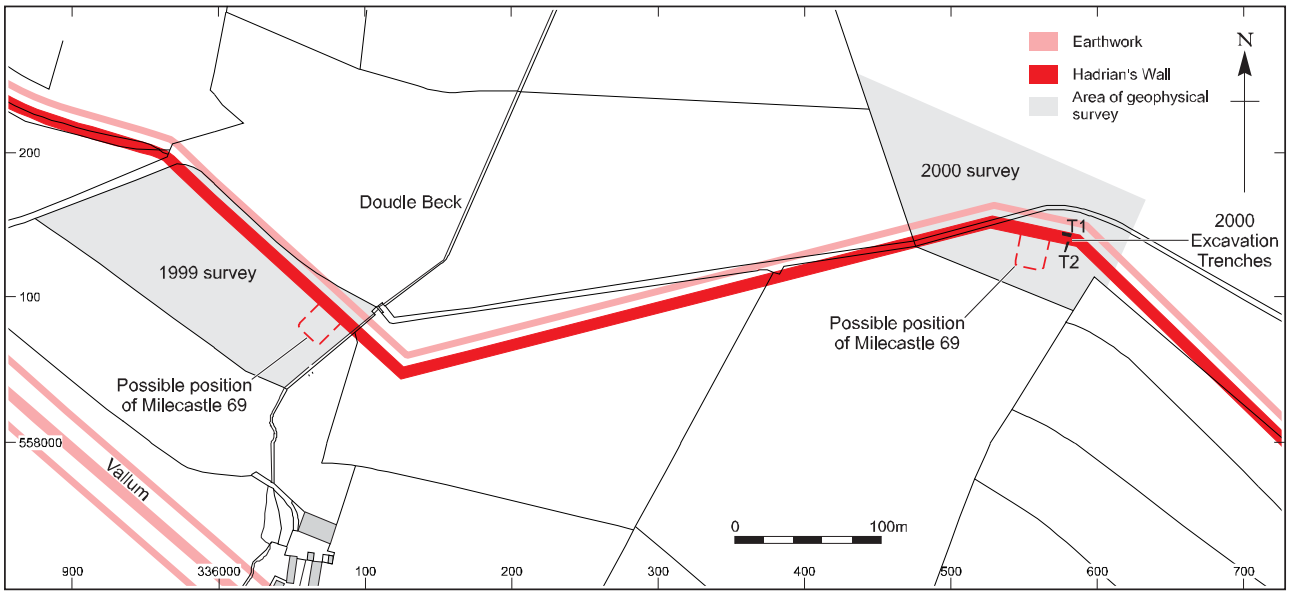


Fig 278 (above) Milecastle 69: alternative sites for Mc69, showing the extent of geophysical survey and the location of evaluation trenches.

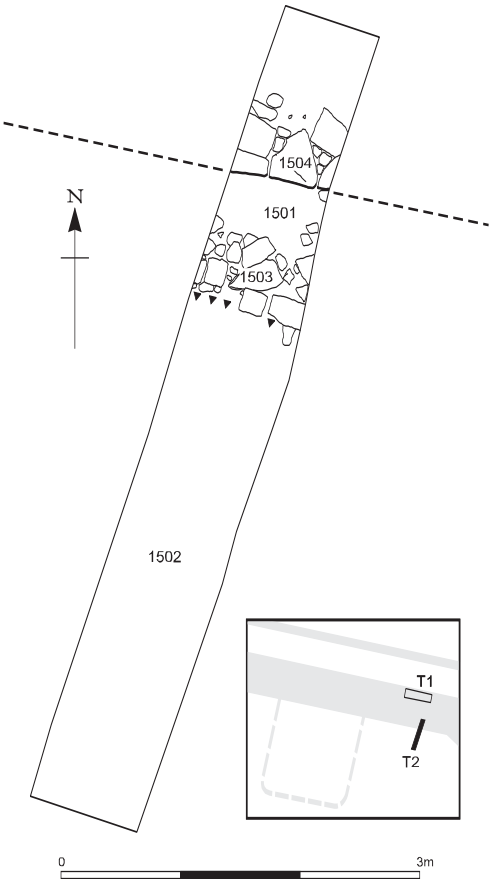


Fig 279 (right) Milecastle 69: plan of Trench 2.

Fig 280 (far right) Milecastle 69: the foundation of Hadrian's Wall in Trench 2.

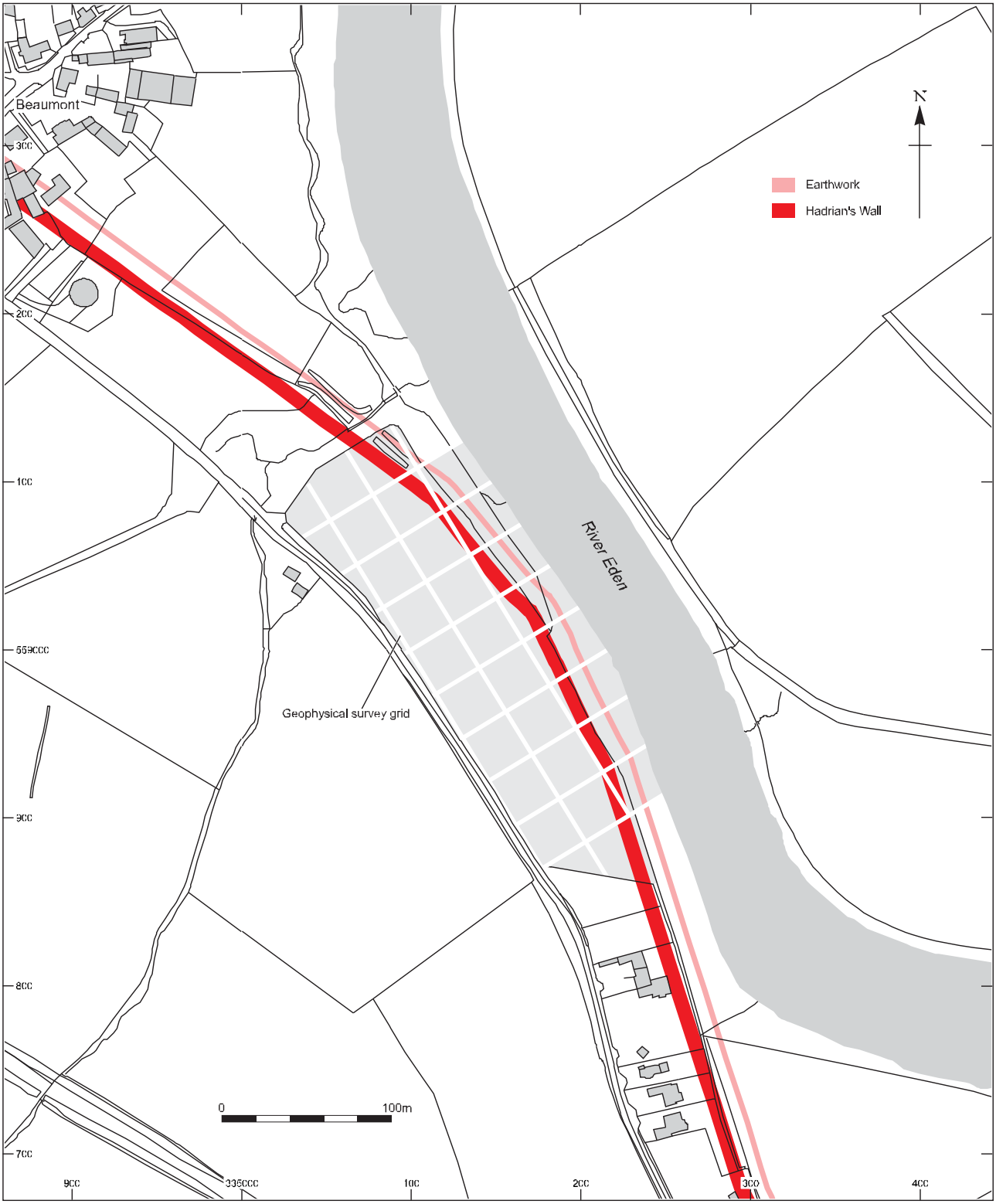
Fig 281 (opposite page) Milecastle 70: postulated site of Mc70 showing the extent of the geophysical survey.

(1503), including dressed stone, but generally comprising small, angular, grey sandstone pieces. Adjacent to this was a single course of faced sandstone flags, which appeared to be *in situ* (1504). These formed the south face of a flag foundation course of a wall, with a crack where the weight of the wall above had borne down on the offset below (Figs 279–80).

Finds

by N Hembrey

These small trenches produced a few modern finds and a single worked flint of late Neolithic or early Bronze Age date (Wilmott 2002, 37).


Beaumont
N
Earthwork
Hadrian's Wall
River Eden
Geophysical survey grid
0
100m
3CC
2CC
1CC
9CC
8CC
7CC
9CC
10C
2CC
3CC
4CC

Interpretation

The character of the stonework and the crack along the flag course suggests that this is a surviving scrap of Hadrian's Wall in the location pointed out to MacLauchlan by Mr Sibson. The depth of soil cover on the hilltop is rather more difficult to explain. The existence of ridge-and-furrow to the south of the Wall may offer an explanation. If the Wall stood fairly high at the time that the land was under cultivation there would have been a tendency for soil to build up against it as a headland developed. If the Wall was subsequently totally robbed, it would no longer retain the headland, which would tend to slump downhill over the robbed footings.

Milecastle 70 (Braelees): 2000

Like Mc69, this site has not been precisely located, although it is thought to lie in a ploughed field on the bluffs above the River Eden south of Beaumont. The Wall, in a heavily robbed state with only a few of the bottom course stones in position, was found immediately NNW of the measured site of Mc70 in 1977 (Goodburn 1978, 423). The measured site itself lies near NY 351 590 within OS parcel 1400, approximately 300m south of Beaumont Farm. The owner thinks that he has encountered the milecastle when ploughing in this field on the south side of Monkhill Beck. There are no visible indications of the milecastle on the surface.

The field (Fig 281) was surveyed using magnetometry and resistivity in 2000 by Timescape Archaeological Surveys (Robinson and Biggins 2000b). Like the Mc69 surveys the results were disappointing, showing no evidence for the location of the milecastle, although there were some ephemeral linear features of low resistivity in the expected place. It is possible that the course of the Wall was clipped at the extreme north-east corner of the survey, and it is thus probable that the Wall lies on the eastern edge of the field, where survey was impeded by dense marginal vegetation. The apparent Wall line is consistent with the visible position of the ditch on the north side of Monkhill Beck below Beaumont where it was sketched by Coates.

Milecastle 71 (Wormanby): 2000

The site

Bartle (1961) located Mc71 in 1960 (NY 3381 5921) (Fig 282). He had first located Mc72 (Fauld Farm), and identified the site of Mc71 by measurement eastwards of 1621yd or one Roman mile. This proved valid despite the fact that there were no surface indications of the site. Further excavations took place at Mc72 (Fauld Farm) in 1989 (Austen 1994), demonstrating both that this milecastle survived well and that Bartle's conclusions concerning the orientation of the milecastle were inaccurate.

The lack of any visible trace of Mc71was true in MacLauchlan's time as well, although he recorded the possible site of a milecastle between Beaumont and Burgh-by-Sands (MacLauchlan 1858, 80). This site, which can still be traced on the ground, seems in fact to be that of Turret 70b and lies, as Bartle pointed out, one third of a Roman mile east of Mc71. The site of Mc71 lies to the south of Milldikes Lane, some 600m east of Greathill Beck, on the top of the ridge or spur that dominates the broad, shallow valley of the beck. It was designed to command a good view to the site of Mc72, although this was subsequently obscured by the construction of the fort at Burgh-by-Sands. Bartle excavated "successive trial trenches ... [revealing] remains of the axial road where it runs through the Wall, and also the milecastle west and south walls; the east wall lies beneath a field boundary, and could therefore not be located."

Two worked flints and two Roman sherds were recovered (Bartle 1961, 39–40). No location plan of the trenches was drawn, and there is no record of their number. No site plan exists either. His report does not say in what condition the milecastle was, except that it was cut by field drains, and was in worse condition than Mc72 "in spite of the relative isolation of the site which might have been expected to give it greater protection from stone robbers" (ibid). Bartle's large-scale location plan of the various milecastles and turrets in the area seems to indicate that his work was located in OS Parcel 7700, and that he believed the east wall to lie beneath or to the east of the field boundary on the east side of this parcel, dividing it from Parcel 9100.

The evaluation

In the absence of either surface traces or of any data from remote sensing, the site methodology developed as the work continued. Trench 1 (8m × 2m) was excavated across the supposed line of Hadrian's Wall, and its site was determined by the barely perceptible crest of a low ridge. Having established the line of the Wall, a further four trial trenches were excavated in an attempt to find the eastern milecastle wall. Trenches 2–4 were each 5m × 1m, and Trench 5 measured 6.5m × 2m (Fig 282).

Trench 1 (Figs 283–4)

The plough soil (909) was 280mm deep. It sealed the fill of a field drain (906) containing a square-sectioned ceramic drain, which cut a plough furrow (903) interpreted as the levelled remnant of ridge-and-furrow. Beneath this was an irregular pit (922) filled with soil and a moderate amount of sandstone rubble (901) with an upper fill of sandy silt. This may have been an early robbing cut for Hadrian's Wall, the remains of which lay directly beneath this fill. The southern edge of the pit was cut into a grey-brown sandy and silty clay subsoil (902).

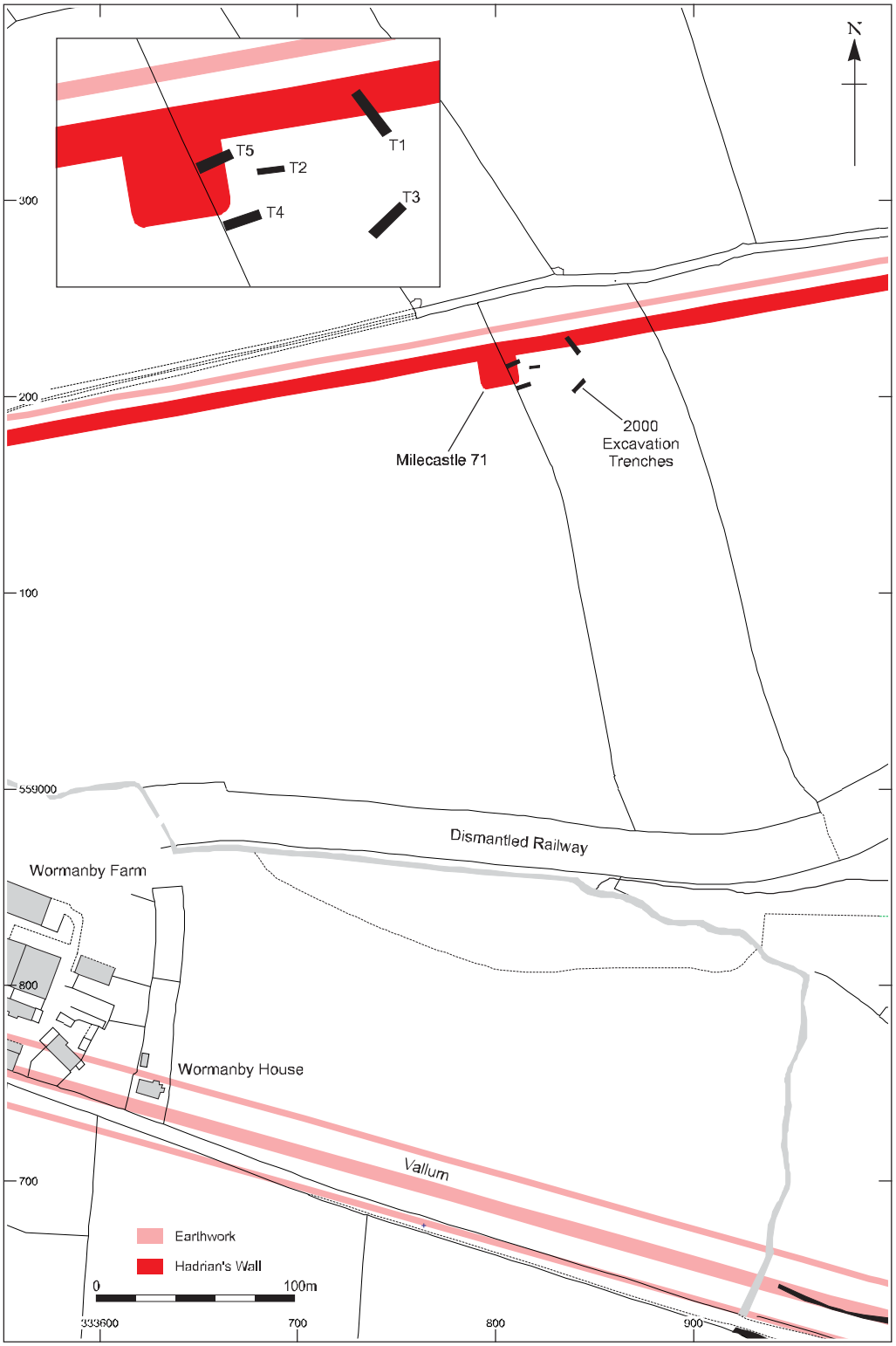


Fig 282
Milecastle 71: site of Mc71 and location of evaluation trenches.

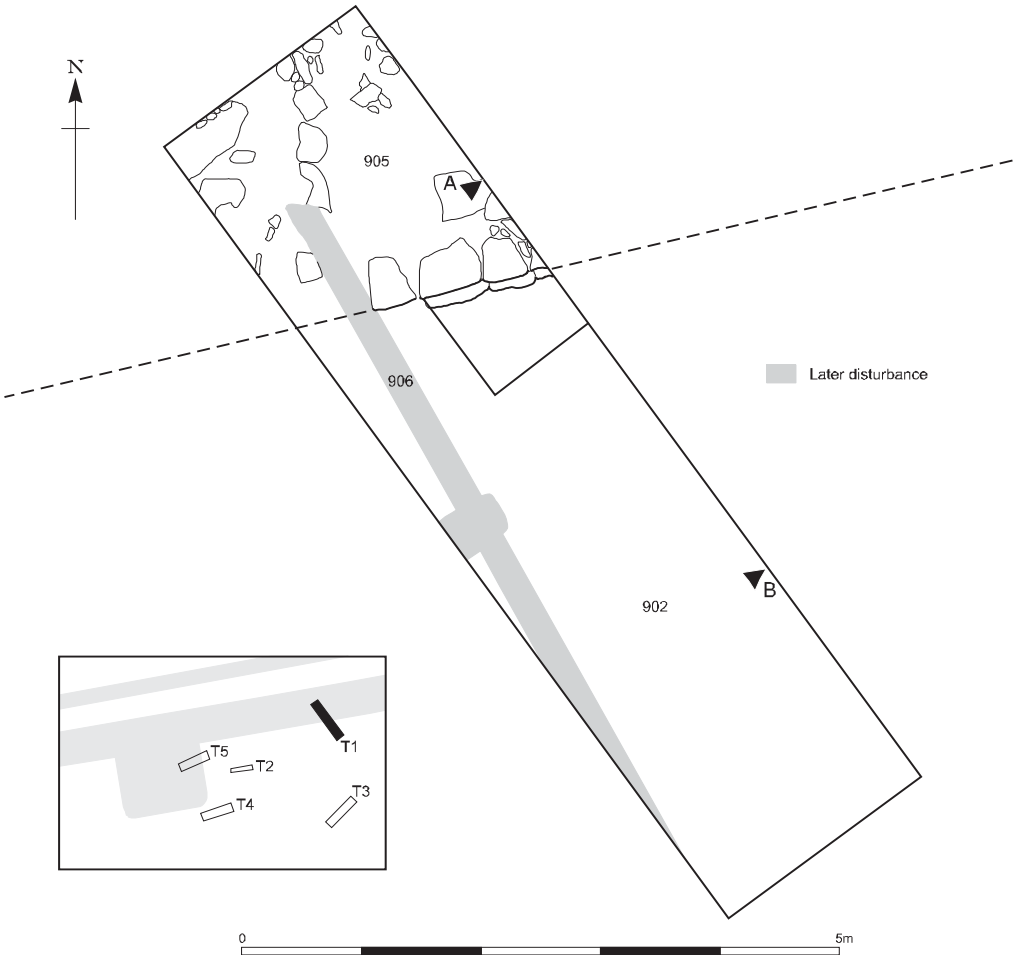


Fig 283
Milecastle 71: plan of Trench 1.

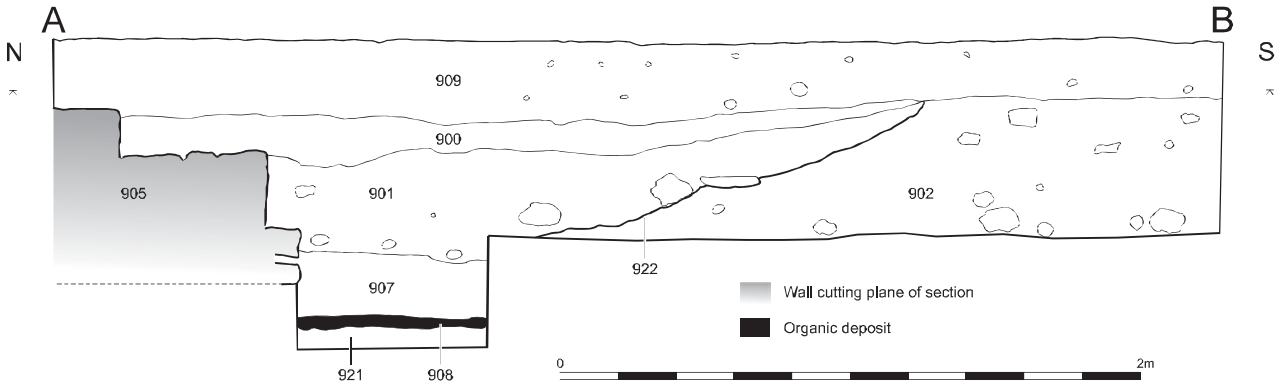


Fig 284
Milecastle 71: west-facing section, Trench 1.

The stone Wall (905) survived as a partial single course of facing stones over a flat, flagstone base (Fig 285). The facing stones were of hard grey sandstone, and the foundation course combined this material with softer red sandstone. The core was of compacted and crushed red and yellow sandstone rubble. Neither the facing stones nor the core showed any signs of bonding in either mortar or clay. The flagstone foundation course was 120mm thick, the facing stones were 260mm high, up to 390mm deep, and averaged 380–400mm in width. Beneath the stone Wall and above the natural grey clay (921) were two thin layers. The lower deposit was a dark brown organic silty clay (908), and above this was grey soil, slightly sandy, but otherwise identical to the natural clay (907). Column samples of this material were taken, but the preliminary interpretation is that these deposits represent the bottom layer of inverted turfs of the Turf Wall.

Fig 285
Milecastle 71: Hadrian's Wall in Trench 1.

Trenches 2–4
All three of these trenches showed the natural clay (921) beneath a layer of subsoil (902) with plough soil above (909). The concentration of stone in the upper layers was significantly less than in Trenches 1 and 5, and there was no sign of the turf layers at the base of the sequence. These were deliberately sought by re-opening part of Trench 2, in order to establish whether they were uniform across the site, or restricted to areas where stone structures overlay them.

Trench 5 (Figs 286–8)
As in other trenches, the plough soil (909) was 280mm deep. The subsoil beneath this (910) was the same grey-brown sandy and silty clay defined in Trench 1. Beneath this material lay the remains of the east wall of the milecastle, and possibly the east wall of an interior building as well. It should be noted that the remains of the milecastle were extraordinarily slight, having been virtually obliterated by robbing and past ploughing.

The most obvious features on removal of the sub-plough soil deposit (910) was an interrupted line of fragmentary and degraded sandstone blocks (911), and, 2.98m west of this, a single such block (912). These were on the same north–south orientation, with the flat faces presented to east and west respectively. Between these stones was a mottled sandy layer containing a high proportion of small sandstone pieces (913). The sandy part of this deposit was clearly decayed red, yellow, and grey sandstone. The entire feature represents the very bottom of the eastern outer wall of the stone milecastle. The sections of the trench showed a possible feature cutting through the sub-plough soil deposit. This was defined only by slight texture differentiation and by a concentration of sand and sandstone (917) (Fig 287). Interpreted, it appears to have been a 470mm wide, straight-sided, flat-bottomed feature running parallel to the milecastle wall, which lay 1.04m to the east. It is possible that this represents the shadow of the east wall of an internal building.

These residual stone structures sat on a light-grey silty sand deposit (914=915=919) containing sandy patches (920), beneath which was a partial black organic deposit (916). This profile is identical to that under the stone Wall in Trench 1, and is similarly interpreted – as the base of the demolished wall of the primary Turf Wall milecastle. This material lay directly on top of the natural clay (921).

Finds

by P Austen and N Hembrey

The site produced a few undiagnostic objects, including ironwork of probable modern date (Hembrey 2003). All pottery recovered was post-medieval in date (Austen 2006).

Interpretation

The archaeological remains recovered, although slight, are of great importance given the lack of basic knowledge regarding the Wall and associated structures in this area. Bartle's discovery of the milecastle is confirmed, as is its almost totally robbed

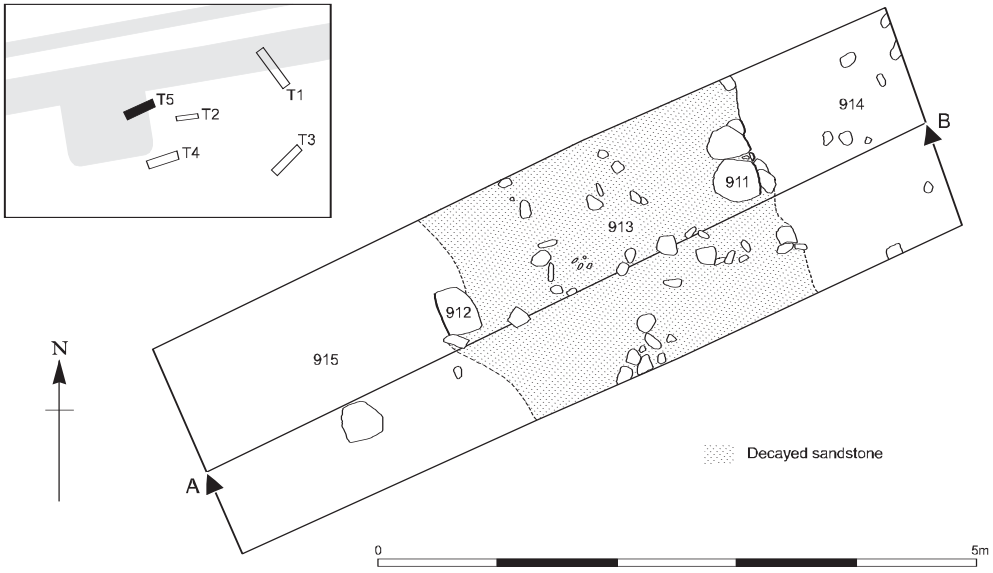


Fig 286
Milecastle 71: plan of Trench 5.

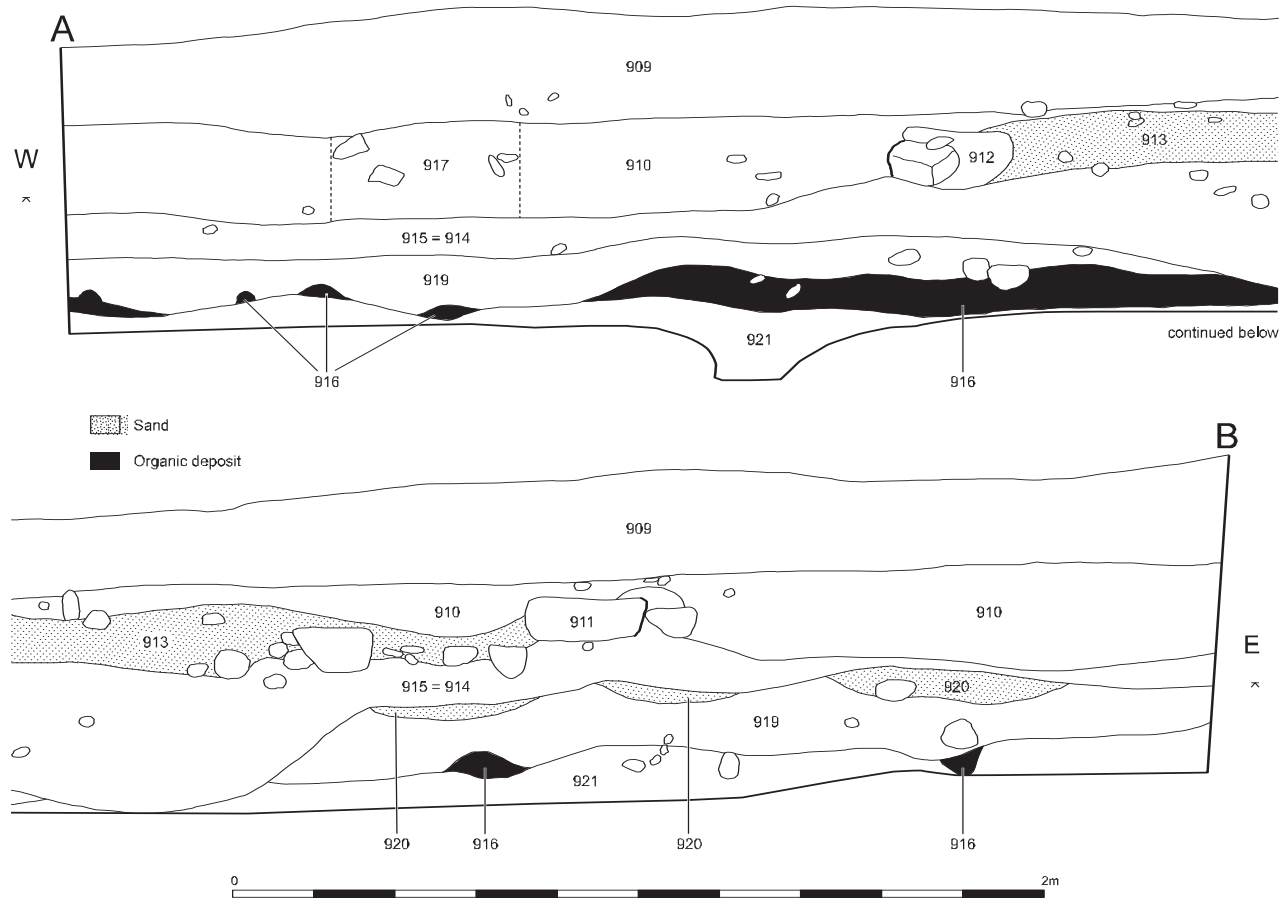


Fig 287 (top) Milecastle 71: south-facing section of Trench 5.

Fig 288 (above) Milecastle 71: surviving fragment of the west wall of the milecastle in Trench 5.

condition. The east wall of the milecastle actually lies to the east of the boundary between OS Parcels 7700 and 9100, and not upon it as postulated by Bartle. It is clear that two archaeological phases of the milecastle survive. The Turf Wall and the walls of the Turf Wall milecastle survive to a single turf course, and the Stone Wall and milecastle occupy the identical site following a thorough demolition; a pattern found at Turf Wall milecastles from the easternmost (Mc49 (Harrows Scar); Richmond 1956) to the westernmost (Mc79 (Solway House); Richmond and Gillam 1952; and 193–8).

The presence of turf work lying directly upon the natural clay beneath shows conclusively that the cobble raft footings found beneath the Turf Wall at Burgh-by-Sands and at Mc72 (Austen 1994) were not present at Mc71. This useful observation narrows down the area where this exceptional form of construction was employed. The interpretation of a nebulous feature in Trench 5 as the wall of an interior building is strengthened by the fact that it is in exactly the right place for such a feature, and is of the right width. It was 470mm wide and 1.04m to the east of the milecastle wall. Extremely similar measurements have been recovered for the location of such walls at many sites, including those excavated during the present project. At Mc9 for example the equivalent measurements are 540mm and 1.02m. The east wall of the milecastle was totally robbed such that only a few degraded pieces of sandstone remained. The failure to find Mc69 and Mc70 in geophysical survey may well be attributable to similar total robbing of the stones at these sites.

Milecastle 78 (Kirkland): 2000

The site

Mc78 and Mc79 lie at the ends of the penultimate mile of Hadrian's Wall as it passes along the southern edge of the Solway (Fig 289). This stretch has seen rather more archaeological observation and research than much of the frontier line west of Carlisle, as it has been necessary to explore the western end of the Turf Wall to compare it with the eastern end of this feature in the Birdoswald area. Comparisons between the archaeology of Wall mile 50 and Wall miles 78–79 were sought in the 1930s and 1940s in order to answer some of the larger outstanding questions of frontier morphology and chronology. The earliest reference to the site of Mc78 was provided by Horsley (1728, 157), who recognised that spacing between this milecastle and Bowness required that another milecastle should exist between them:

> "This *castellum* [78] is fourteen furlongs from *Boulness*; so that there has been another [79] between this and the station, which has supplied the place of the last [80]. If the wall was begun at *Boulness*, then the *castellum* has been built just at a proper distance."

Simpson *et al* (1935a, 214) recorded that a prominent platform still existed during their time.

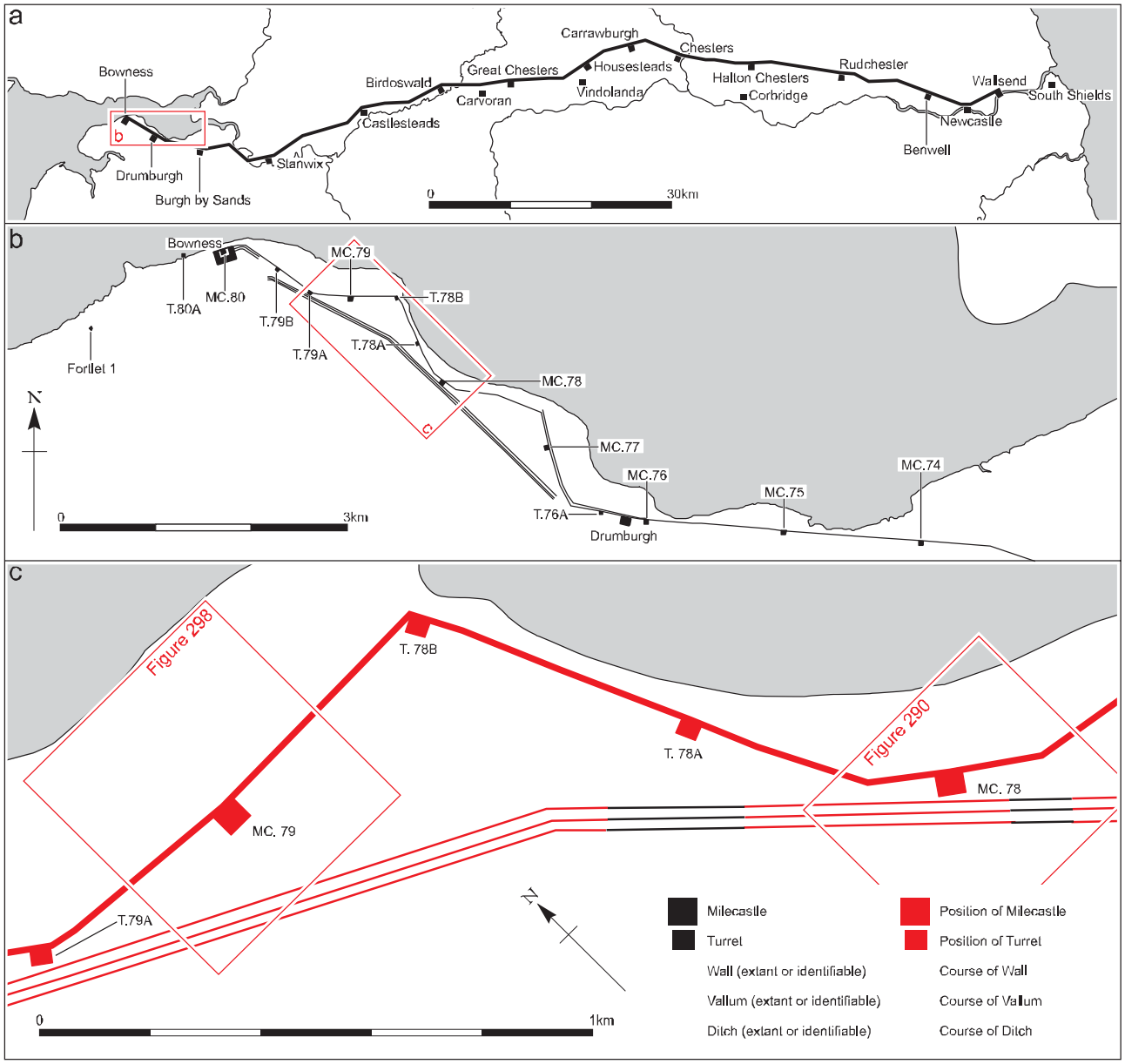


Fig 289
Milecastle 78: location of Mcs 78 and 79 on Hadrian's Wall, and Figs 290 and 298.

This, although still clearly discernible, seems to have been eroded somewhat since by ploughing. The farmer, Mr Hogg, has often ploughed up pieces of sandstone, the larger of which he pitches into the hedge bank.

The only exploration of the milecastle to have taken place until now was carried out in 1934 as part of the long-running research campaign of the 1930s to establish whether the Turf Wall actually extended as far as the western end of Hadrian's Wall. Following the discovery of the Turf Wall in the Birdoswald-High House area, this question became important in the final unravelling of the history of the linear components of the frontier and their relationships one to another (p 141). The report on its discovery is laconic, and no plans, photographs or detailed locational data were provided. Simpson *et al* (1935a, 217) wrote simply that "the west wall was found, measuring 9ft 2in [2.8m] across the foundations. One course of masonry stood upon the inner face above a five inch offset: the outer face had been robbed."

No observation was made on the survival or otherwise of remains of the Turf Wall structure.

The Vallum behind the site of Mc78 is clearly visible as an earthwork, as it is slightly further west behind Kirkland House, although it had not been noticed by Horsely, MacLauchlan or any other observer. Surprised by its appearance, Simpson trenched it in 1934 (Simpson *et al* 1935a, 214–5). The ditch was 1.95m deep and 6.9m wide with steeply sloping sides and a flat bottom. The south mound, which was revetted at the sides with turf cheeks, had its centre line 15m from the centre line of the ditch. The north mound, which was not examined, seemed to be the same distance away, but no mention is made of the marginal mound. This evaluation provided the first certain evidence that the Vallum extended westwards of Burgh Marsh. In 1948, Simpson located T78a, although no plans or detail of it were published (Simpson *et al* 1952, 14). This turret also appears on Horsley's map.

Mc78 is situated at NY 2455 6134 (Fig 290), some 100m south of the road to Bowness-on-Solway, and to the west of the access road to the Glendale Caravan Park. It is bisected by a field boundary, the north side lying in OS parcel 5737 through which the line of the Wall passes, and the south in OS parcel 5830. The north field is under permanent pasture, but the larger south field is cultivated intermittently in rotation, and it was last ploughed and sown for pasture in

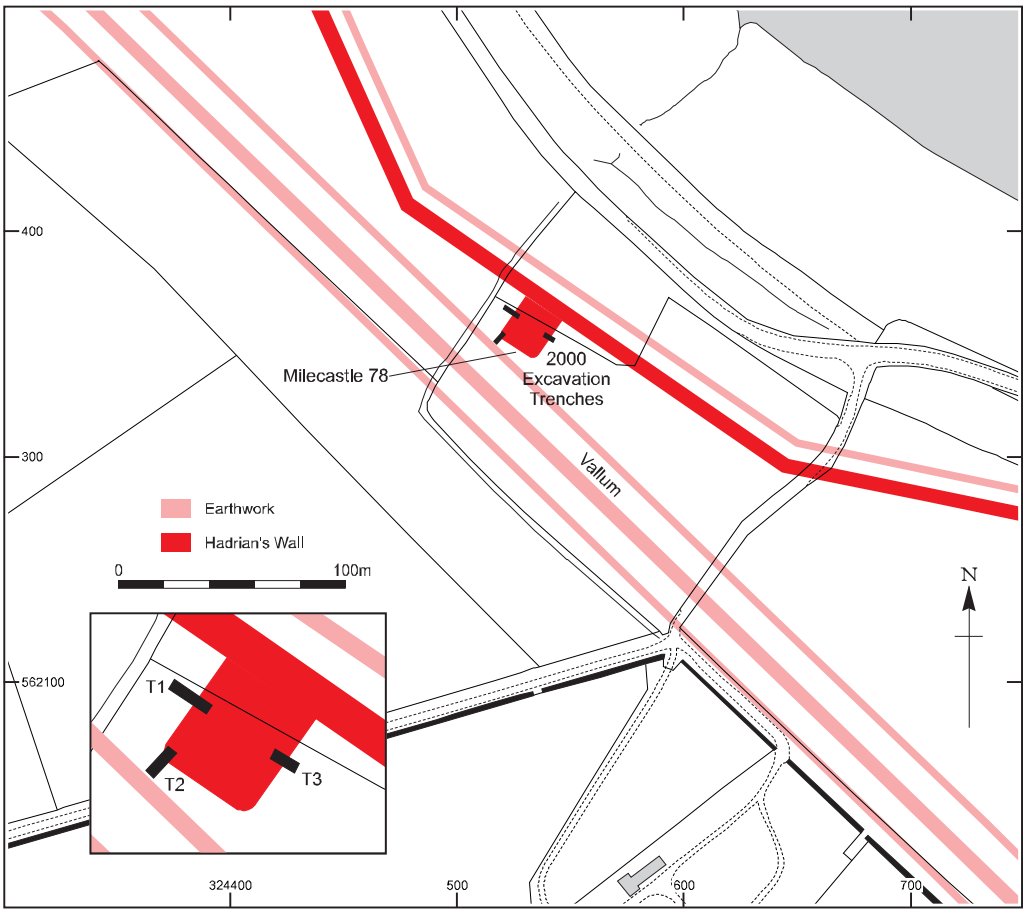


Fig 290
Milecastle 78: location of Mc78 and excavation trenches of 2000.

autumn 1999. The site was included in the milecastle project in order to assess the impact of this activity on the surviving archaeology.

The evaluation

by Helen Moore

Three trenches were excavated (Fig 291), their location guided by the topography of the slight milecastle platform, and by information from Mr Hogg concerning the location of parchmarks in drought conditions, and places where stones have been encountered in ploughing. Trench 1 (8m × 2m) was designed to traverse the west wall and to examine some of the interior, Trench 2 (6m × 2m) was intended to cross the south wall and Trench 3 (5m × 2m) the east wall.

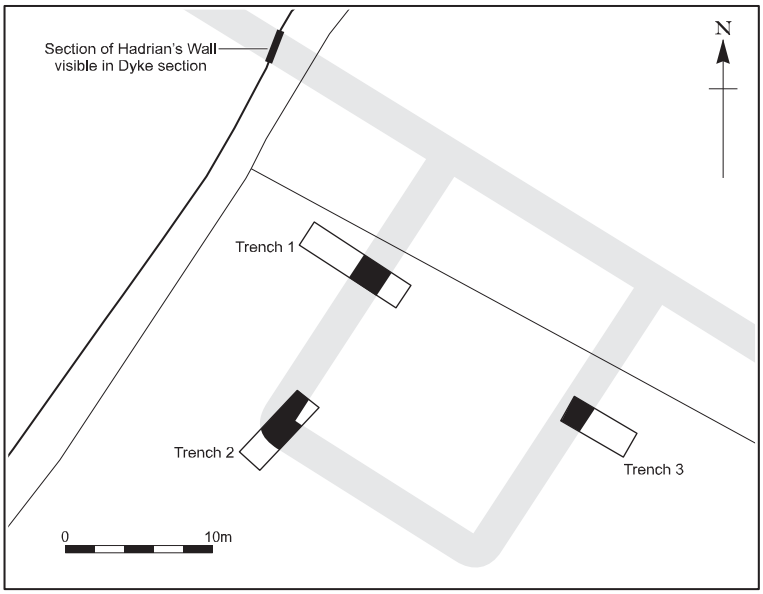


Fig 291
Milecastle 78: plan of trenches and reconstruction of the outline of the milecastle.

Trench 1 (Fig 292–3)

The plough soil (1400) covering Trench 1 was 0.25m thick and contained very little stony material. Beneath it was a recent, but now inactive plough soil horizon (1401) 190mm thick, containing abraded sandstone rubble probably derived from ploughing above the milecastle. On removal of this material, an area of disturbance was defined running north–south across the trench. When excavated, this proved to be a shallow, roughly linear cut (1430) with gradually sloping concave sides. It contained two fills, the lower of which was very similar to the natural subsoil, a blue-grey silty clay (1432), *c* 60mm thick. This was only observed on the western side of the cut, and probably represents the rapid backfilling of the trench with the material excavated from it. The upper fill (1432), a grey-brown silty sand was 350mm thick, and contained many abraded red sandstone pieces. It is probable that this cut, which is late in the stratigraphic sequence, represents one of Simpson's 1934 exploratory trenches. The excavation trench (1430) cut the western edge of a linear, north–south trench

Fig 292
Milecastle 78: plan of Trench 1.

Fig 293
Milecastle 78: milecastle wall and interior surface in Trench 1.

(1402) with vertical sides and flat bottom, 360mm deep, and filled with brown-red silty sand (1403) containing a large amount of red sandstone rubble, which was probably derived from the rubble core of the milecastle wall. It was 0.36m deep, and was approximately 3.3m wide, although this is uncertain due to the truncation on its west side. This was clearly the robber trench for the western wall of the milecastle, as the remains of the wall survived beneath the rubble fill.

The bottom course of the foundations survived in part (1426); the western face had been robbed in its entireity, as noted by Simpson. The eastern face consisted of a course of large flagstones 800–900mm thick and up to 0.56m × 0.32m in plan (Fig 293) The wall core was composed of red sandstone rubble bonded together with a pale blue-grey clay, which appears to have been derived from the natural subsoil in this area. The eastern edge of the robber trench (1402) was suspiciously neat and vertical. This led to the conclusion that this was no later cut, but that the facing stones above the flagstone course had been removed from the west side, leaving the earth face that they had retained. The material retained by the milecastle wall was a thick, compact deposit of grey sandy, silty clay (1423) 230mm in depth, which had a heavy admixture of pea gravel towards the top, possibly comprising a remnant of surfacing in the milecastle interior. The vertical face presented by the western edge of this material in the robber trench did not coincide with the face of the flagstone foundation course, which it overlapped by some 80mm.At the western end of the trench natural subsoil (1429) was encountered, comprising a blue-grey silty clay with orange flecks.

Fig 294
Milecastle 78: plan of Trench 2.

Trench 2 (Fig 294–5)
Topsoil (1407) in Trench 2 was very shallow at 0.17m thick, and directly below this archaeological deposits were observed. The trench was fortuitously located on the south-west corner of the milecastle, so two robber trenches following the alignments of the western and southern walls were visible, reflecting the curving outer face of the corner of the milecastle. A modern field drain (1419) filled with yellow clay cut across these trenches, but did not compromise the legibility of the archaeology.

The robber trench (1408) following the west wall had vertical sides, and followed exactly the line of the original wall. Only the west end of the southern robber trench (1410) was defined, but it was clearly continuous, both walls being robbed as part of the same operation. The fill (1409) was identical to that of the Trench 1 robber trench: a mid-reddish brown sandy silt with frequent angular sandstone pieces derived from the rubble core of the wall as it was being robbed and demolished. The depth of the western robber trench was approximately 0.40m and the southern trench was 0.25m deep. Both edges of the southern robber trench were defined, giving a width of 2.35m.

Beneath the fills of the robber trenches lay the bottom course of the foundations of the south-west corner of the milecastle (Fig 295). This was 2.51m wide and of identical construction to the wall in Trench 1, except for the fact that dressed, flagstone foundation stones occurred on both faces of the corner. This revealed that the inner and outer corners were treated differently. The outer face was curved in the standard playing card shaped corner, but the inner corner was angled. This was clearly intended to be a right angle, but was in fact somewhat obtuse, at 95°. The interior of the milecastle was treated in the same way as noted in Trench 1. Again, the inner face of the wall seems to have been robbed from the outside, leaving the vertical earth face that it revetted, which consisted of grey silty clay surface (1412) overlaying the inner face of the flagstone course by 80mm. Pottery was recovered from this surface, and a patch of burnt clay and charcoal on top of it may have been a ploughed-out remnant of a corner oven or hearth.

On the south edge of the trench, immediately behind the south wall of the milecastle, a pale blue-grey clay deposit (1427) was banked up over the outer 80mm of the south facing stones of the wall. It was thickest closest to the wall at 180mm, tapering to 50mm to the south. Immediately above this layer was a thin deposit of small whitish-grey pebbles and silty sand (1424), 1.40m wide and 160mm thick. This deposit may have been laid above the clay so that there would have been a dry, firm surface upon which to work to construct the superstructure of the wall. This interpretation is supported by the fact that a shallow post hole (1405) was excavated through this surface. It was half-moon shaped in plan, very shallow at 50mm deep, and may have been a post hole for scaffolding to construct the wall.

Fig 295
Milecastle 78: angle of south-west corner of milecastle in Trench 2.

Trench 3 (Fig 296)
The topsoil in Trench 3 was 250mm thick and directly below this archaeology was encountered. On the east side of the trench there was a substantial robber trench (1421), identical to those in the other two trenches, which marked the line of the east wall of the milecastle. The east edge lay beyond the limits of the trench. This robber trench was cut through a layer of mid grey-brown clayey silt (1418), which contained some large pieces of sandstone rubble. These were randomly spaced and are likely to have been disturbed by ploughing. This is probably an early plough soil layer.

A number of finds were recovered during cleaning of this layer, including a brooch and a coin. This layer was not excavated, except in a very small slot, which revealed a grey clay surface beneath it that may be similar to the surfaces (1423) in Trench 1 and (1412) Trench 2. Trench 3 was not excavated fully, but the discovery of the robber trench for the east wall fulfilled the aim of establishing the overall dimensions of the milecastle.

The Wall westwards
Immediately to the west of the site of Mc78 is a small, deep north–south drainage dyke, which has been canalised and seems formerly to have been stone lined. It is probable that robbed Roman stone has been used for this as many sandstone blocks within the bed, both up- and down stream of the milecastle have a distinctly Roman appearance. Given that this dyke transected the line of the Wall, it was decided to attempt to locate

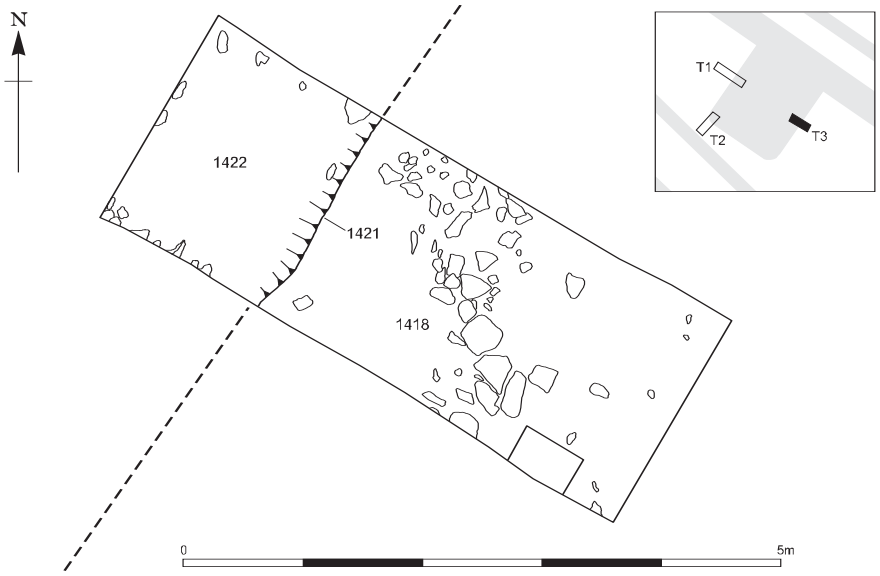


Fig 296
Milecastle 78: plan of Trench 3.

it in section. Undergrowth was cleared, and part of the eastern edge was cleaned back slightly. This revealed the foundations of the stone Wall, comprising two large flagstones, of which the north facing stone was 90mm thick and 710mm deep. Above this was a mass of beach cobbles and sandstone pieces, which clearly comprised intact core work, robber trench filling or a combination of both. The importance of this observation was that it enabled the true line of the Wall, and thus the north wall of the milecastle, to be approximately established.

Finds

by P Austen, N Hembrey and D Shotter

Mc78 yielded a small assemblage of modern finds, but also fired clay fragments marked with grooves, which may have been loomweights (Hembrey 2003). Two Roman small finds were recovered:

1. 1461, context 1418, lower plough soil

Small copper alloy bow brooch of Headstud type. The pin is missing, the catchplate is broken, and the headstud is broken off. The rectangular-sectioned upper bow is bent sharply to form the hinge casing, and bears two horizontal grooves half-way down its length, within which may have been blue enamelled decoration in several rectangular panels. The D-sectioned lower bow bears two projections, and tapers to the catchplate. Length 39mm (Fig 297)

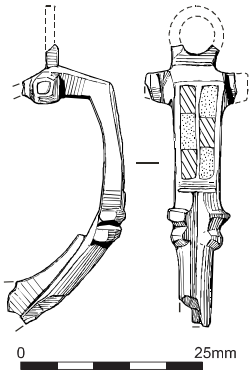


Fig 297
Milecastle 78: copper alloy brooch.

Derived from the Colchester brooches, but found from Southern England up to Southern Scotland, from the mid-1st to late 2nd centuries AD, these brooches are regarded as high status and high quality, used by 'a small section of the community' (Hattat 1982, 100).

2. 1462, context 1418, lower plough soil

Coin, damaged and moderately worn: *AE As*, Hadrian AD 119–38. Diam 22mm

A small quantity of Roman pottery was recovered (Austen 2006), principally from topsoil (1417, 1418) and robber trench fills (1404), including ten BB1 sherds: two are very everted cooking pot rims of the very late 3rd to early 4th centuries; and six are sherds (approx 20%) of the rim of a flanged mortarium in fairly hard creamy fabric with upright bead – close to Gillam 275, and probably late 3rd to early 4th century in date; and three sherds of greyware. The internal surface of the milecastle (1412) produced four sherds in a gritted fabric, probably 3rd century Roman.

Interpretation

No evidence for the Turf Wall milecastle was recovered. The stone Mc78 measured approximately 19.2m east–west and 20.74m north–south externally. The foundations of the walls were 2.51m wide consisting of large, 80mm thick flagstones with a core of sandstone rubble in clay. The pattern of robbing, whereby the vertical robber trench edges were cut 80mm short of the width of

the foundations on both faces, suggests that the wall face above the flagstone course was set back from the edge of the flags by an 80mm offset, both inside and outside. The curtain wall around the milecastle would thus be 2.35m in width. The southern exterior corners were curved, giving the standard playing card shape, but the internal corners were square. This treatment is common to many other milecastles, such as Mc37 (Housesteads), Mc39 (Castle Nick), Mc42 (Cawfields) and Mc79 (Solway House).

There is evidence for artificial surfacing both inside and outside the milecastle. This was put in place after the walls were built, but probably as part of the building process. The internal surfacing, of grey clay 250–300mm thick, capped with gravel was dumped up against the milecastle walls and levelled, and it seems possible that it was laid to prevent waterlogging. In the south-west corner was a truncated burnt feature, which may have been a hearth or oven, and is strongly reminiscent of the similar burnt feature in the south-east corner of Mc10 (Walbottle Dene) (p 188).

Milecastle 79 (Solway House): 1999

The site

The milecastle occupies the north-west corner of OS field 6320, immediately east of the agricultural storage barn (Fig 298). The MPP revision of the scheduling has renumbered this part of the monument as SM28476. It is at present under pasture, and is ploughed at intervals for pasture renewal, which is the reason for its inclusion in the Milecastles Project.

References to this end of the Wall in antiquarian literature are comparatively few, and illustrations very much more scarce. James Irwin Coates' evocative painting of 1881 captioned "Core of Wall,

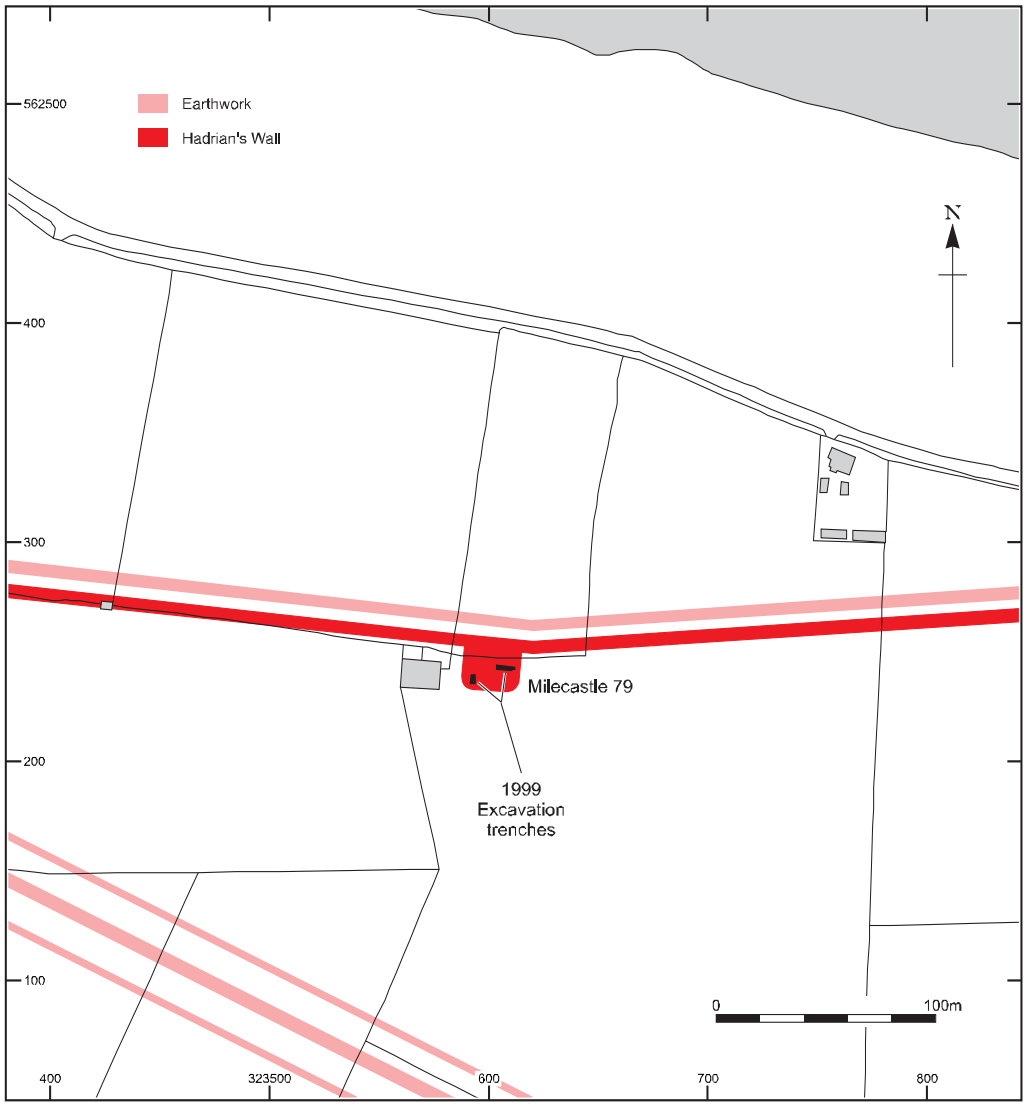
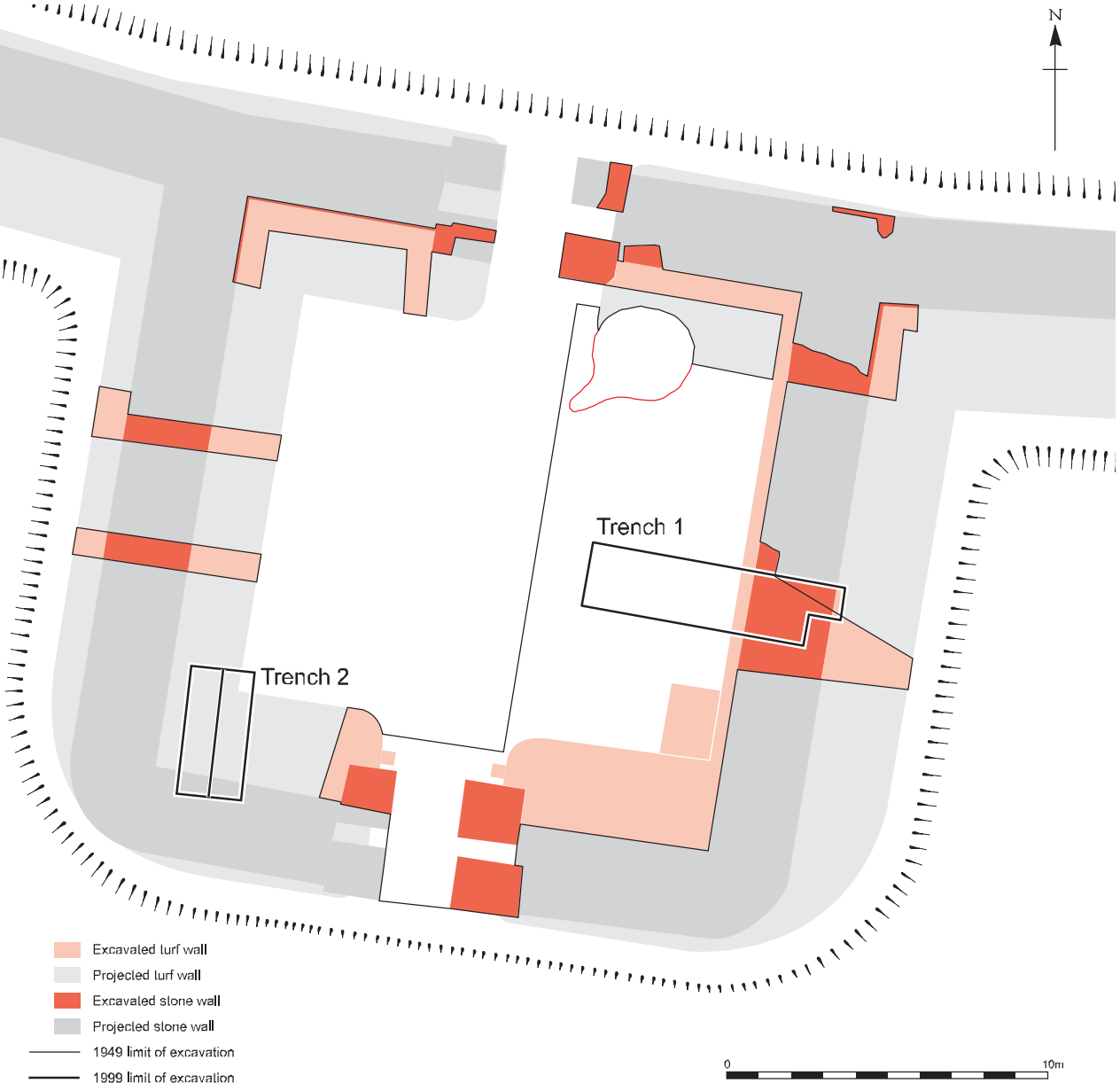


Fig 298
Milecastle 79: location of the milecastle and trench locations.

¼ mile W of Port Carlisle" (Fig 171) shows the stretch of core that still survives in the hedge banks immediately west of Mc79, and is painted looking north-east from the south side of the Wall. Despite the survival of this stretch of core, there are no earthworks to indicate the milecastle's position and no platform is shown in the Coates' painting either.

The site of Mc79 was initially recognised by Simpson in 1948, and its location at NY 2369 6224, 300m west of Port Carlisle was confirmed when it was partially excavated in 1949 by Richmond and Gillam (1952), using a labour force of Ukrainians (ibid, 40), apparently from PoW Camp 68, Lockerbie. This excavation was prompted by wider questions about the frontier at large (Richmond and Gillam 1952, 17). It had been found to survive in good condition during Simpson's trial trenching in 1948, and was considered to be the most suitable site to answer a specific question. The excavation of Mc50 (High House) in 1934 (Simpson *et al* 1935b) had shown that its occupation had been short, and that the Turf Wall and milecastle was soon superseded in the Birdoswald sector by the Stone Wall and milecastle. The stone Mc50, however, occupied a different site to its predecessor. It was decided to examine the stratified material from a milecastle where the stone phase survived above the turf phase in order to establish the duration of occupation of the turf installation before its replacement. Furthermore, the selection of a site as

Fig 299
Milecastle 79: plan of 1949 excavations with 1999 trench plan superimposed.



far west as possible would provide a date that would reflect the end of the period during which the replacement in stone took place.

The 1949 excavation investigated the eastern half of the milecastle (Fig 299), with trenches also cut across the side walls and in the gates. The milecastle, together with the Wall on each side of it, was built upon an artificial platform or embankment 1.49m high, built up of alternating turf and gravel layers (ibid, 27). This was clearly intended to preserve the Turf Wall from undermining by the flooding, which is still a common occurrence between Port Carlisle and Bowness.

The turf walls of the first phase of the milecastle survived sufficiently well to show that they were 5.7m thick, and the milecastle measured 14.47m east–west and 12.13m north–south, making it the first Turf Wall milecastle that could be described as short-axis in plan, and the first where any distinction of axis type could be made (Fig 300). The flanking posts for the south gate were found, the gate being offset some 900mm west of a central position. The gate passage itself was 3m wide, and timbering did not revet the full width of the passage, as at Mc50TW. The excavators (ibid, 25) suggest that the gate did not support a tower. A turf base for a stair or ramp to the rampart was identified in the south-east corner of the milecastle.

No traces of a building were found in the eastern half of the milecastle in this period, although a number of ovens or hearths occupied the space. One of these (H1) comprised a re-used amphora base, the second (H2) was slightly raised, edged with upright stones, and paved with flat slabs. It was replaced and overlain by H4, of which flat slabs in a rectangular form survived (ibid, pl vii, I; Fig 301). H3 was a well built rectangular hearth with a fireback. In addition to these hearths there was a low table or stand made of three slabs placed upright on edge, supporting two flat flags. A sinuous, shallow disturbance filled with cobbles was probably intended to backfill subsidence in the top of the sea bank.

The pottery recovered from the Turf Wall phase deposits was compared with that from Mc50TW. It was suggested that the original construction ofMc 79 came somewhat after that of Mc50, and that occupation at the former site continued longer within the reign of Hadrian than at Mc50TW, where the later Hadrianic material was found in Mc50SW. The absence of Antonine material suggested to the excavators that this end of the Turf Wall was replaced in stone after, rather than prior to, the Antonine occupation of Scotland (ibid, 30–1).

The stone replacement of the milecastle followed a fairly thorough demolition of its predecessor (Fig 302). The interior of the milecastle was built up by the addition of a deposit of gravel

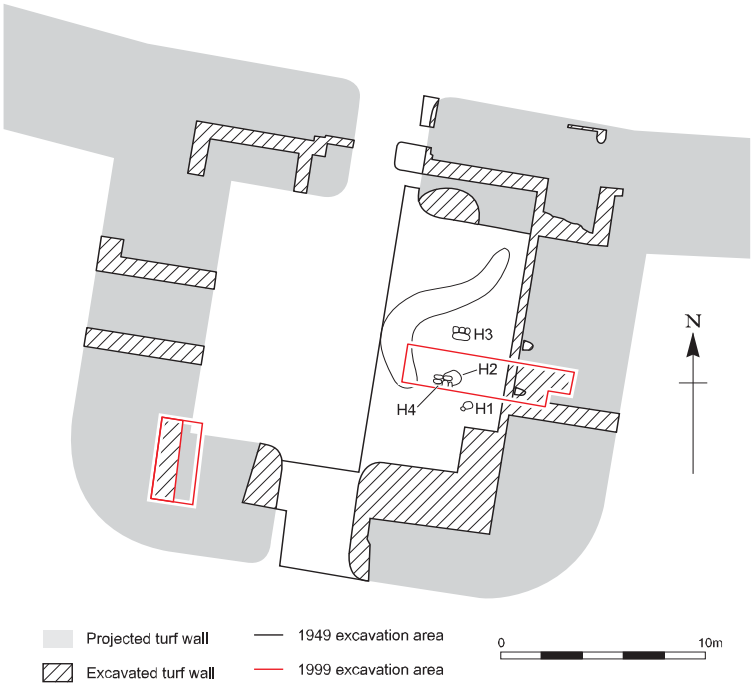


Fig 300
Milecastle 79: plan of Turf Wall phase of Mc79 derived from 1949 information.

some 430mm thick, which sealed the occupation horizon of the Turf Wall milecastle. The stone side walls were 2.42m wide at the foundation, while the north wall, and therefore the Stone Wall measured 2.83m over the foundations, with the first course 2.64m wide after offsets had been taken into consideration. The thickness was further reduced by two offsets on the south face. The walls were all founded on a single course of thin stone flags without any packing beneath, and these flags had consistently cracked along the line of the offset under the weight of the mass of masonry above in the manner typical of the stone replacement to the Turf Wall.

The southern corners of the milecastle were squared on the inside, and curved around the outside. The gates were not well preserved, although four square pier foundations were found,

Fig 301
Milecastle 79: hearths H2 and H4 excavated in 1949.

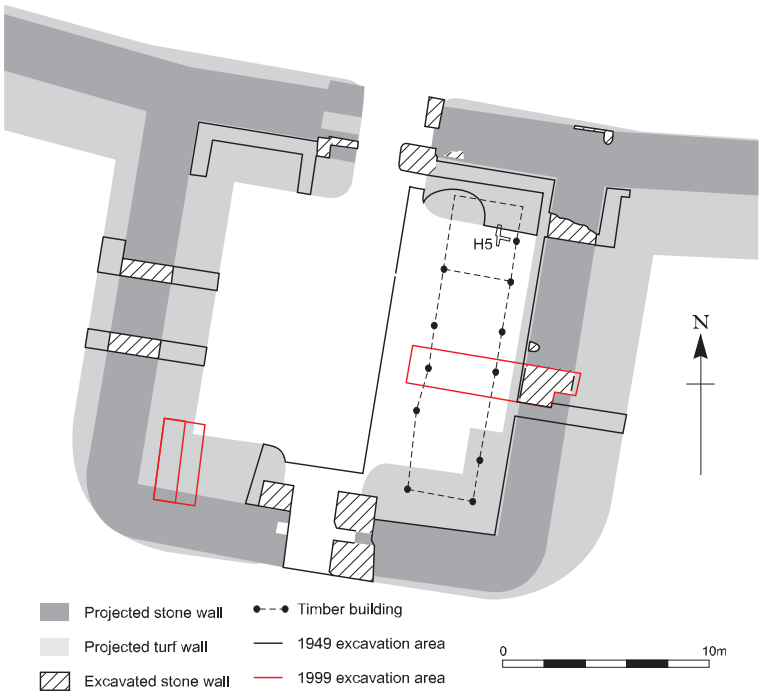


Fig 302
Milecastle 79: plan of Stone Wall phase of Mc79 derived from 1949 information.

Fig 303
Milecastle 79: post-excavation photograph of 1949 work. Note the upstanding 'islands' of stratigraphy on which the stone-lined post holes of the stone phase building were retained.

comprising packed clay and cobbles in foundation pits. In the stone phase there had clearly been a timber-framed building in the east half of the milecastle. This was represented by a series of paired post holes, of which only the stone-lined bases remained. The building was rectangular, and measured *c* 12.6m × 3.3m. A hearth, partly made with a re-used gaming board, existed near the north wall. The building might not have lasted long, as its north-west corner post hole was destroyed by the excavation of a substantial pit containing facing stones, footing flags, chamfered plinth stones and gate jamb stones. The excavators associated this activity with an early 3rd-century remodelling of the gate. It certainly did not mark the end of the occupation of the milecastle, as the pit was overlain by a renewed road surface, and a Constantian coin and some early 4th-century pottery was found.

The post-excavation photograph (ibid, pl vi: Fig 303) shows what was excavated and what left behind, and presents a rather odd picture to modern eyes. Over most of the area, the whole site was stripped down to the level of the earliest Roman surface of the turf milecastle phase. The ovens were left *in situ*. The structural features of the stone phase were also left, however, and two lines of upstanding square blocks can be seen where the stone packing at the bottom of the post holes for the stone phase building remained on 'islands'. Comparison between the height of these islands and the unexcavated ground suggests that the stone-packed post holes were not far beneath the plough zone, and it seems apparent that anything above this would have been totally removed by stone robbing and ploughing. In the distance on this photograph the base of the turf walls can be seen under the gravel make-up for the stone phase. The relative height of the bottom flag course of the wall suggests that the stone wall was cut into this gravel deposit, or alternatively that this deposit was laid down as surfacing within the walls of the stone milecastle after these had been built.

The evaluation

Two trenches were excavated. Trench 1 (8m × 2m) sampled the inner face of the east wall and part of the interior, while Trench 2 (4m × 2m) examined the milecastle towards the south-west corner.

Trench 1 (Fig 304)

This trench lay entirely within the area excavated in 1949, and could be precisely located with relation to the published plan (Richmond and Gillam 1952, fig 3). There had clearly been episodes of ploughing following the backfilling of the excavation, and the plough soil was on average some 320mm deep. Beneath this, in the north-east corner of the trench there was a small area of surviving stratigraphy that was higher than that in the rest of the trench. Comparison with other features soon showed that this was one of the islands upon which a stone-phase post-pad had been preserved. It was also apparent that the stones of the pad had disappeared; presumably displaced by the plough since 1949. The depth of the make-up for the stone phase could be established at this point as 430mm. It mostly comprised greyish gravelly soil, although there was some turf mingled with this towards the base. Over the remainder of the trench it was necessary to remove some 430–50mm of the very mixed backfill (302) of the earlier trench, down to the level at which excavation ceased in 1949.

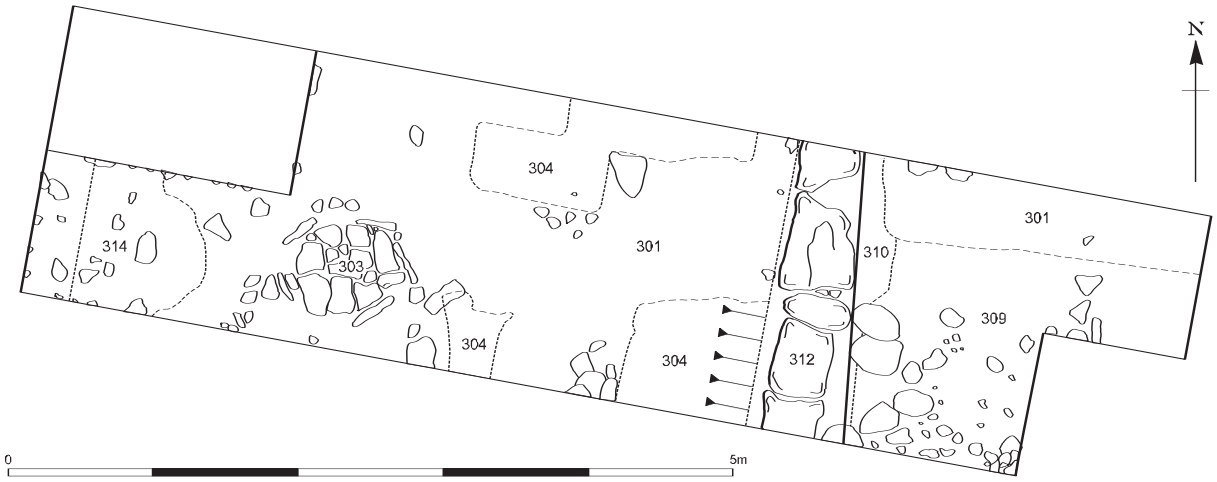


Fig 304
Milecastle 79: plan of Trench 2.

Apart from the 'island', the only other element of the stone phase to survive was part of the inner face of the east wall. During 1949, only the inner face of the wall was exposed when located. Only the bottom, thin flag foundation survived, and it was clear both that this wall had been robbed prior to the 1949 excavation, and that Richmond and Gillam had missed the robber trench (310; fill, 309).

Turf-phase features survived well. At the west end of the trench, a shallow area of disturbance (314) appears to have comprised the excavated butt end of the sinuous cobble-filled subsidence void. Immediately east of this was a sub-circular hearth (303), 800mm in diameter, comprising a floor of small sandstone slabs and several vertical edging stones. The hearth stones were scorched through use. Comparison with the plans and photographs of 1949 demonstrates that this was the hearth previously designated H2 (Fig 305, *compare* Fig 301). When first excavated this had lain beneath a later hearth (H4), which was clearly removed in 1949.

Finally, a pair of flagstones (313), one placed on edge, appears to have been all that survived of the flagstone stand or table. Beneath these features there was a layer of turf material (304), which can be identified as part of the turf and gravel platform upon which the milecastle was constructed.

Fig 305
Milecastle 79: photo of Trench 2 showing hearth 303, which is the same as the 1949 hearth H2 (compare Fig 301).

Trench 2

Trench 2 was cut into the largely undisturbed western side of the milecastle. The plough soil was 300mm deep. The trench clearly confirmed the dimensions of the milecastle as established in 1949. The main feature in the trench was the turf construction of the south wall of the turf milecastle (304). This was cut to the south by an apparent robber trench for the later stone wall (307), the fill of which contained sandstone rubble (308). At the north end of the trench there was the cut of an archaeological trench (306), presumably from the 1949 excavation, although this was not recorded on the site plan.

Finds

by P Austen and N Hembrey

No further Roman finds were recovered from this site, although 13 sherds of Roman pottery were recovered from the 1949 excavation backfill (Austen 2006).

Interpretation

The evaluation was successful in showing the accuracy of the previous results, and that the milecastle had not been extensively damaged by ploughing since the 1949 excavation. No further interpretation was possible.

Discussion

It is many years since a project of the multi-site scope of the Milecastles Project has been undertaken on the Wall. The practical work in looking at a series of different locations along the Wall was reminiscent of the tradition followed by Haverfield in the 1890s and Simpson in the 1930s, or by Birley in his work in association with the improvement of the Military Road in the same decade; the difference was in the aims. Previous scholars were choosing sites in an attempt to answer specific academic questions of the installations of the Wall, while the Milecastles Project was aimed at establishing preservation in order to facilitate the management of the World Heritage Site. However, the experience of working on the same question along the whole length of the monument helped those working on the Project to appreciate the scale of the Wall and forced them to think in terms of the whole monument rather than of individual, discrete locations. The Project provided the invaluable opportunity to compare and contrast similar installations on the ground in different places, despite the fact that a minimum of *in situ* stratigraphy was excavated. The Project enabled a more detailed range of points of discussion to emerge, as it forced the consideration of the observed similarities and differences between milecastles.

Milecastle locations

Apart from the milecastles in the urban area of Newcastle, the location of those east of the Irthing are well known. The same is certainly not true of those from Irthing to Solway, where the sites of Mcs66–70 are not the only uncertainly located sites. The projects reported in this volume show that the location of such sites by geophysical means needs to be tested and confirmed by excavation. Mc65 was located through geophysical survey (Bartlett 1976) and the identification was confirmed by trenching (Smith 1978, 35–6), but the attempts to locate Mc69 and Mc70 by these means failed. The geophysical locations of Mc58 and Mc59 in 1981 (Gater 1981) were confidently interpreted, although they remain untested (but for Mc59, see *Proc Soc Antiqs Newcastle* 1897, 220, where foundations were reported east of Old Wall), while the third confident location, of Mc62, has been confirmed by excavation. The tentative identifications of Mc61 and Mc63 must be regarded with circumspection, as the latter proved erroneous when tested. It seems probable that the reason for the failure to locate milecastles by geophysical means is the result of their being totally, or almost totally robed in antiquity. It is very unlikely that the incredibly sparse remnant of the robbed Mc71 would have shown in geophysical survey.

Order of construction

The issues of construction order recently raised by Symonds (2005) are relevant to Mc14. His contention that Broad Wall milecastles were completed early in the building of Hadrian's Wall at places of topographical weakness seems to be borne out. Mc14 is located adjacent to the valley of the March Burn, which could certainly be regarded as a possible point of concealed penetration, and the milecastle has broad walls on at least three sides. The nearest neighbours to east and west for which data is available, Mc13 and Mc17 respectively, had three narrow walls. It therefore seems likely, and is consistent with Symonds' thesis, that Mc14 was one of the early group of Broad Wall milecastles whose construction was strategically prioritised. Mc14 is the first short-axis milecastle to be identified with full broad perimeter walls, and this could be taken as further confirmatory evidence that all the building gangs started out building broad perimeter walls to milecastles, and that the appearance of narrow side walls can be linked to the reduction to the narrow gauge curtain (M Symonds pers comm).

These observations are important, as it is now possible that further examples of Broad Wall milecastles at such crossing points will be found. It is possible that the emphasis in the early construction of Mc47 and Mc48 (Symonds 2005; *above* p 139) was not so much to control the area between the Tipalt Burn and the Irthing, but to guard the potential crossing points afforded by the Tipalt (in the case of Mc47), and the deep defile of the Poltross Burn (in the case of Mc48). The Irthing gap would be adequately covered by the first milecastle of the Turf Wall sector, Mc49 (Harrows Scar).

Structural aspects

Recently, the evidence of the stonemasonry on the Wall has become prominent in the interpretation of aspects of the building of

the frontier (Hill 1991) in the Stone Wall sector. In particular, evidence for a change in standard in the masonry at Mc37 (Hill 1989; 1991) has prompted the acceptance that the same legion that finished a milecastle and that was therefore named on inscriptions, did not necessarily start the work (Breeze and Dobson 2000, 68). The evidence for a difference in stone-masonry quality in the north gate of Mc10 is tenuous, but may well be further evidence for the dislocation seen in other milecastles, as well as at Housesteads fort. This has been interpreted as representing a general pause in the construction of the forts and interval structures, possibly as a result of warfare (Breeze 2003b 14; Wilmott 2006c.

In the Turf Wall sector, two milecastles, Mc62 and Mc78, were excavated sufficiently for their dimensions to be estimated for the first time, although only in their stone-built incarnation. The external east–west measurement of Mc62 was estimated at 21.36m, while the length north–south would have been in the range 23–6m. Similarly Mc78 was approximately 19.2m east–west and 20.74m north–south externally. On these dimensions, both milecastles would have classed as long-axis. These measurements compare well with those of other Turf Wall milecastles (Table 3). In three cases (Mcs62, 71 and 79) it was demonstrated that the ramparts of the stone milecastle were built on the same lines of those of their turf-built predecessors, confirming the situation observed previously at Mc49 (Richmond 1956), Mc72 (Austen 1994) and, of course, Mc79 (Richmond and Gillam 1950). The southern corners of the stone Mc78 were rounded on the outside, but square on the inside. This pattern occurs relatively frequently, being recorded at Mc4? (Westgate Road), Mc35 (Sewingshields), Mc37 (Housesteads), Mc39 (Castle Nick), Mc42 (Cawfields) and Mc79 (Solway House), as well as Mc50TW (High House). The alternative treatment is to have rounded corners inside and outside as at Mc9 (Chapel House) and Mc10 (Walbottle Dene). There is no evidence that corner treatment is a factor in milecastle typologies as both types seem to occur with all combinations of axis and gate type.

Some evidence was gathered about the internal arrangements of milecastles. In Mc10 and Mc78 there were apparently ovens constructed in the south-east and south-west corners, respectively. Ovens in analogous positions occur in the south-east corner of Mc39 (Castle Nick) (Frere 1987, 316), the north-west corner of Mc47 (Chapel House) (Simpson *et al* 1936b, 270–2), and in multiple phases in the north-west corners of Mc48 (Poltross Burn) (Gibson and Simpson 1911, 429–33) and Mc50 (High House) (Simpson 1913, 332). At Mc35 (Sewingshields) (Haigh and Savage 1984) ovens or industrial activity of various periods has been found in the north-west, south-west and south-east corners, but not in the north-east corner; an oven was found and excavation outside the milecastle to the north-east. A similar external oven, in the same position, has been found at Mc40 (Winshields) (Simpson 1976, 93).

Table 3 Dimensions of milecastles in the Turf Wall sector for comparison with Mcs 62 and 78.

milecastle	*internal dimension E–W (m)*	*internal dimension N–S (m)*	*internal area (sq m)*
Mc49 (Harrows Scar) turf	18.29	16.45	300.87
Mc49 (Harrows Scar) stone	19.81	22.86	452.86
Mc50 TW (High House) turf	16.76	20.12	337.21
Mc50 (High House) stone	18.28	23.17	423.55
Mc52 (Bankshead) stone	27.50	23.39	643.22
Mc53 (Banks Burn) stone	21.94	23.39	513.18
Mc54 (Randylands) stone	19.58	23.62	462.48
Mc62 (Walby East) stone	16.55	?23.00–24.00	?388.93
Mc64 (Drawdikes) stone	17.83	14.78	263.53
Mc72 (Fauld Farm) stone	24.30	?	?
Mc73 (Dykesfield) stone	18.49	19.05	352.23
Mc78 (Kirkland) stone	14.60	18.20	265.72
Mc79 (Solway House) turf	14.71	12.34	181.52
Mc79 (Solway House) stone	17.52	17.52	306.95

Fragments of internal buildings were recorded in Mcs9, 14, 19, 62, 71 and 79. The widths of buildings, and their distance from the milecastle walls seem to vary very little as far as can be judged. The building in Mc14 was *c* 4.4m wide (externally), and *c* 1.2m from the milecastle wall. The foundations of the building were 760mm wide. This was comparable with Mc9, where the equivalent dimensions were a building 4.5m wide, with a gap between the building and milecastle wall of 1.02m and a superstructure width for the building wall of 540mm. The most likely reconstruction of the evidence for Mc62 would be a building 4.4m wide and a gap between building and milecastle wall of 1.2m; exactly the same as Mc14.

In Mc79 the timber building of the stone phase was 3.3m wide and 1.6m from the milecastle wall. No other set of measurements were recovered during the Project, although Mc19 had a building wall width of 560mm wide located 1.68m from the milecastle wall, and Mc71 had a wall width of 470mm located 1.04m from the milecastle wall. These dimensions are consistent with those known at other milecastles (Table 4).

In all cases examined, except Mc14, buildings were on the eastern side of the central road. In Mc19 the west side of the milecastle was cobbled, and it seems certain that there was no building here. Few milecastles have been sufficiently explored to establish whether they had single buildings or pairs. The only two known with stone buildings to east and west of the central roadway, apparently from the beginning, are Mc47 (Chapel House) (Simpson *et al* 1936b) and Mc48 (Poltross Burn) (Gibson and Simpson 1911), probably because these were built early for strategic reasons (Symonds 2005). Single buildings to the east of the roadway are attested for the primary Hadrianic period at Mc9 (Chapel House) (Birley 1930), Mc35 (Sewingshields) (Haigh and Savage 1984), and Mc50TW (High House) (Simpson 1913), although later alterations at Sewingshields involved building on both sides of the road. To this list of primary plans with eastern buildings can now be added Mc19 (Matfen Piers), which was truncated down to primary levels, and where both sides of the central road were sampled. At Mc37 (Housesteads) also, there was a stone-built structure on the east side with a timber 'shed' on the west (Daniels 1979, 165). At Mc39 (Castle Nick) the single primary barrack lay on the west side (Frere 1987, 316), and the same was true of Mc54 (Randylands) (Simpson and Richmond 1935a, 238–41).

There is clearly no consistency in layout, and the sizes of buildings also vary (Hill and Dobson 1992, 49), but the evidence would seem to indicate a slight preference for primary buildings to be erected on the east sides of the milecastles. There is no meaningful correspondence whatever between the position of primary buildings and the gate or axis type.

Exterior areas of milecastles

Two sites have confirmed the existence of activity outside the walls of milecastles. At Mc9 an area of stone paving was provided outside the walls of the milecastle to the south-east, and a ditch to the east was certainly excavated at the same time as the building of the milecastle. The ditch does not seem to have encircled the installation and its purpose remains to be established. At Mc17, a number of cut features containing Roman pottery were identified outside the milecastle.

Excavations in the areas around milecastles have been rare, and the only other Roman structures known in such locations are the ovens found outside the north-east corners of Mc35 (Sewingshields) (Haigh and Savage 1984) and Mc40 (Winshields) (Simpson 1976, 86–95). The existence of the inscription

Table 4 Dimensions and locations of primary buildings within milecastles (excluding Mcs 47 and 48, each of which has two internal buildings).

milecastle	*9*	*14*	*19*	*35*	*37*	*39*	*50TW*	*54*	*62*	*71*	*79*
external length (m)	–	–	–	–	–	–	–	–	–	–	–
external width (m)	4.5	4.4	–	4.8	–	–	4.57	4.41	4.4?	–	3.3
distance from MC E or W wall (m)	1.02	1.22	1.68	1.18	–	–	0.82	2.19	1.2?	1.04	1.6
wall width (mm)	540	760	560	–	–	–	timber	–	–	470	timber
east or west side of road	E		W	E	E	E	W	E	E	E	E

at Mc19 prompted Birley (1932) to suggest either that the milecastle was turned over to religious use, or that there was a shrine outside. Other milecastles at which altars have been found have been listed by Breeze (2002, 60): Mc37 (Housesteads), Mc52 (Bankhead), Mc55 (Low Wall), Mc59 (Old Wall), Mc60 (High Strand) and Mc65 (Tarraby).

There is some evidence for the existence of cemeteries at milecastles. Previous work at Mc9 (Birley 1930a) produced the inhumation burial of a male youth close to the south wall of the milecastle and parts of two further bodies near the south-east corner. This was thought Roman by the excavator, although the possibility also exists that the burial was early post-Roman and therefore more akin to the long cists found alongside the Wall at Sewingshields (Crow and Jackson 1997) and Birdoswald (Wilmott 2000b, 15). Breeze (2002, 61), however, points out that there is no reason why a soldier could not die and be buried at a milecastle, invoking the tombstones found re-used in Mc38 (Hotbank), Mc42 (Cawfields) and Mc49 (Harrows Scar). The last mentioned (that of a child) may have been re-used from a cemetery of the nearby fort of Birdoswald, although it should be noted that the known cemetery is beyond the fort and civil settlement at a considerable distance to the west of the fort, while the milecastle is located to the east (Wilmott 1994, 84). One might assume that other sources of re-usable stone might have existed closer to the milecastle than the known cemetery. There is therefore a possibility either that Birdoswald was provided with an eastern as well as a western cemetery, or (and probably less likely given that this was the burial of a child) that the stone was evidence of burial related to the occupation of the milecastle.

Only at Mc62 was it possible to tentatively examine the question of access and egress northwards across the Wall ditch. Here, metalling was observed on the line of the projected site of the north gate. Similar metalling has been observed at Mc64 (Drawdykes), and classically at Mc54 (Randylands), where metalling ran northwards from the gate towards a probable ditch crossing, which was represented by the base of a culvert in the bottom of the ditch (Simpson and Richmond 1935, 236–44; Welfare 2000, 24). At Mc62 the metalling was relatively deep, and was hard and compact. It suggests a track running north, and should imply a ditch crossing. Interestingly Mc62 is one of the sites that Welfare (2000, 24), on earthwork and geophysical evidence, has recently proposed as having a primary causeway.

Post-Roman histories

Mc14 and Mc17 contained post-medieval buildings, probably field barns or similar structures. These join a substantial number of milecastles that accommodated later buildings. The best set of medieval buildings within a milecastle were found at Mc35 (Sewingshields) (Haigh and Savage 1984), while at Mc39 (Castle Nick) a building on the western side turned out to be a medieval milking house (Frere 1986, 378). At Mc49 (Harrow's Scar) a stonehouse is attested in the 1603 Survey of the Barony of Gilsland as the tenement of Henry Tweddle (Wilmott 1997a, 390); this was partially excavated and remains *in situ* (Richmond 1956). Excavations at Mc50SW (High House) recovered 17th- and 18th-century material (Simpson 1913, 312). Post-medieval houses are located in Mc52 (Bankshead) (Simpson and Richmond 1935c) and in Mc53 (Banks Burn) (Simpson and MacIntyre 1933a), and this may be the origin of the farm that occupies the site of Mc57 (Cambeckhill) (Daniels 1978; Whitworth 2000, 66–7).

In addition to these cases, Whitworth (2000, 66–7) lists, from cartographic and literary sources, cases where buildings have previously existed on such sites (Mc16 (Harlow Hill), Mc31 (Carrawburgh), Mc41 (Shield-on-the-Wall) and Mc51 (Wall Bowers), and we can add to this Mc47 (Chapel House) (Wilmott 2006b). It is clear from this that milecastles have been seen as enclosures within the post-Roman landscape that have afforded both shelter and materials for building in the form of re-usable stone, but that we know little of the nature of such re-use. Future work on milecastles will need to closely examine the upper deposits within these structures in order to secure full sequences of re-use, which might have been long and varied, as they were at Mc35 (Sewingshields) (Haigh and Savage 1984).

Preservation

The primary management aim of the Project was to demonstrate the state of preservation of, and the threat to

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

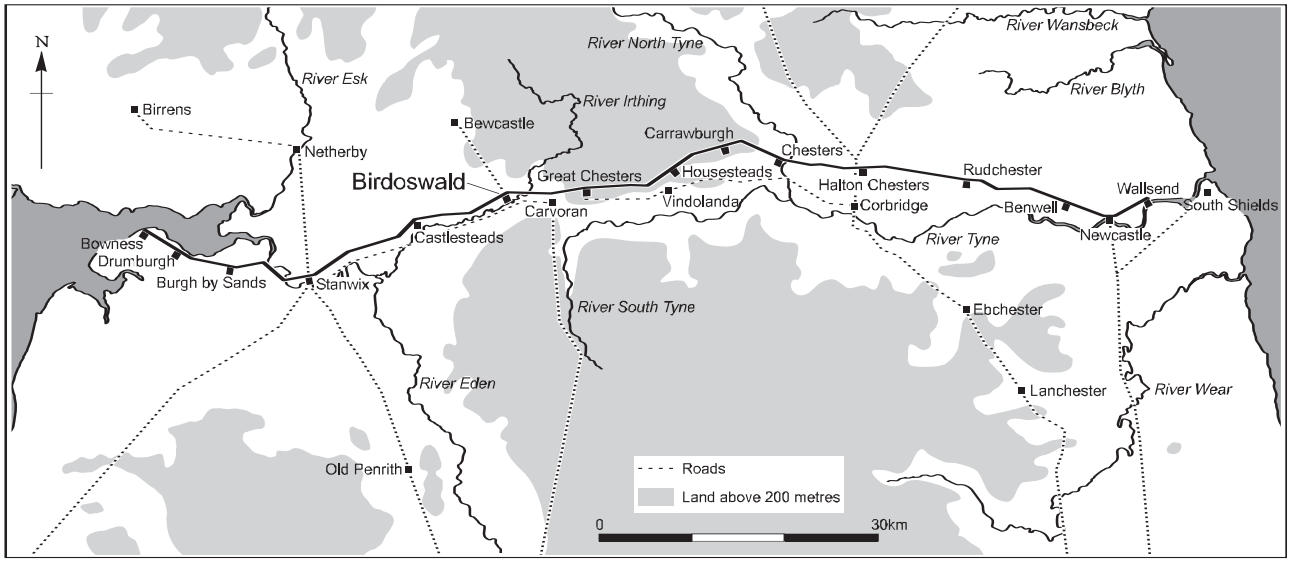


Fig 306
Birdoswald: location of Birdoswald on Hadrian's Wall.

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

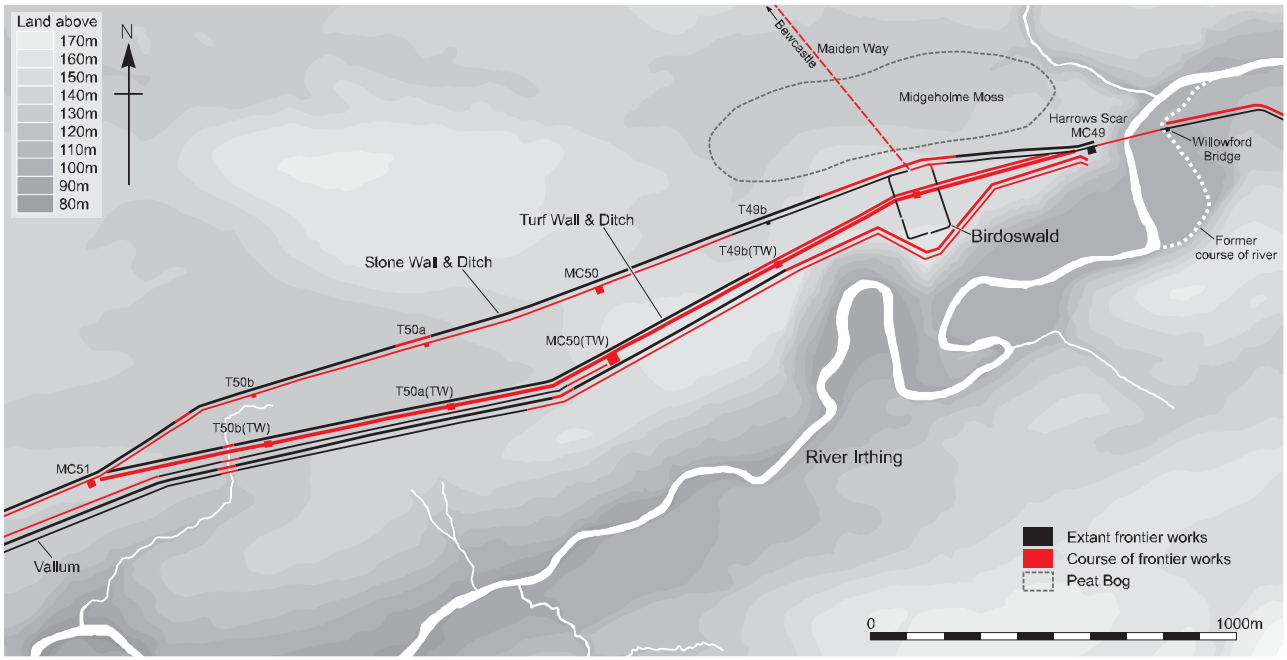


Fig 307
Birdoswald: the Birdoswald sector of Hadrian's Wall.

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

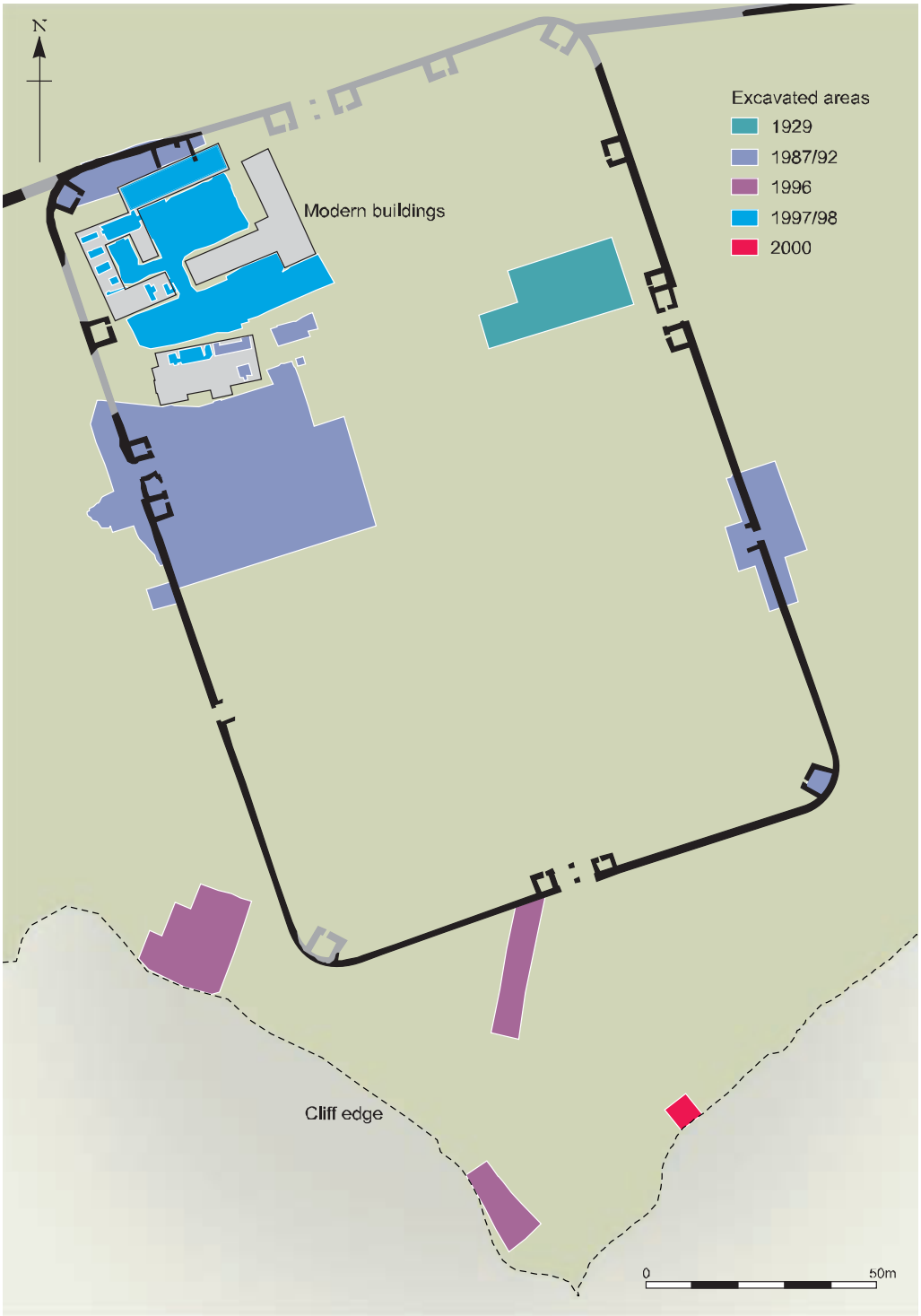


Fig308
Birdoswald: plan of Birdoswald fort showing all areas excavated between 1987 and 2000, and the area of the 1929 excavation.

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

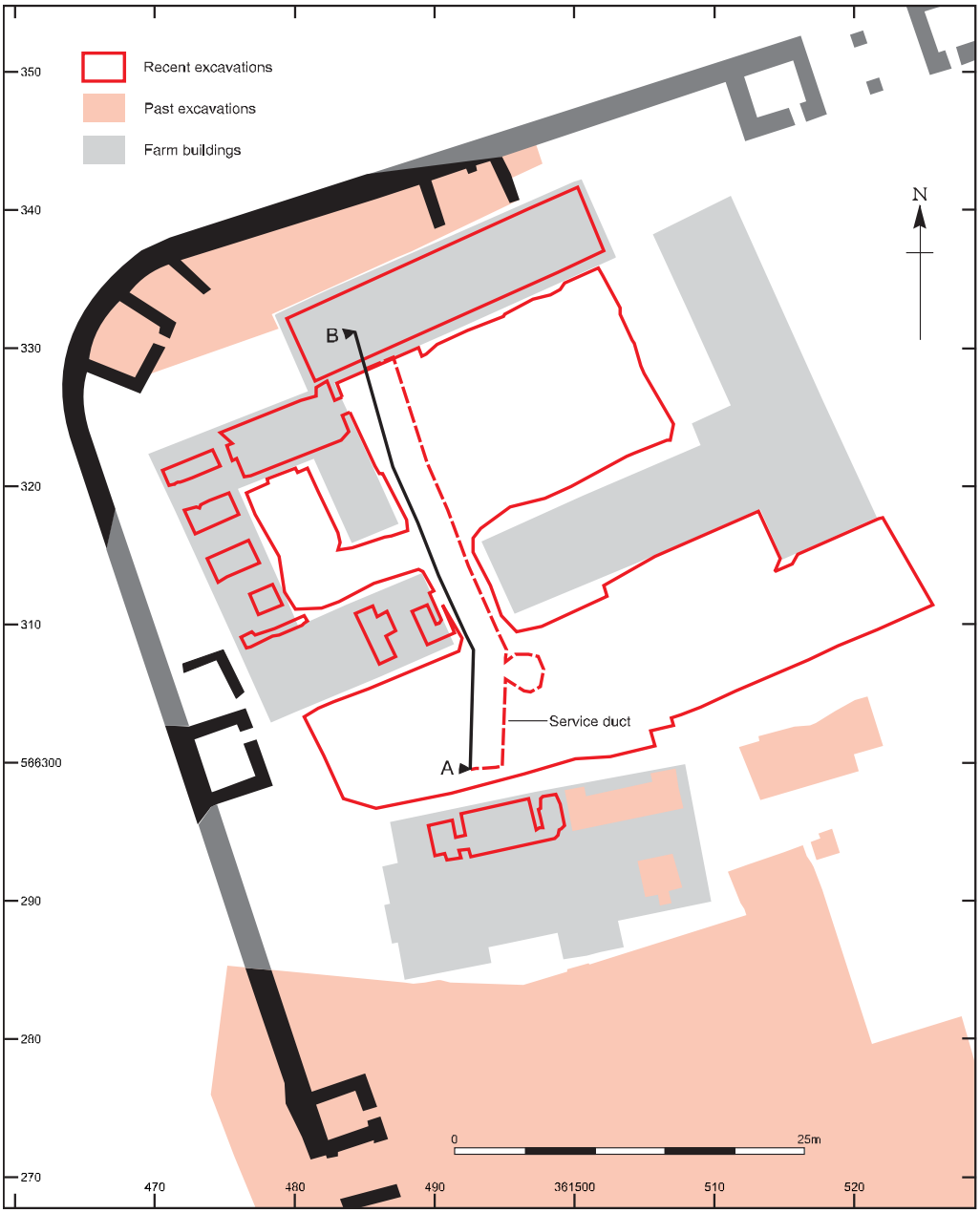


Fig 309
Birdoswald: plan of the north west praetentura *area, showing areas previously excavated and the limit of the 1997–8 excavations with relation to the modern building plan.*

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)

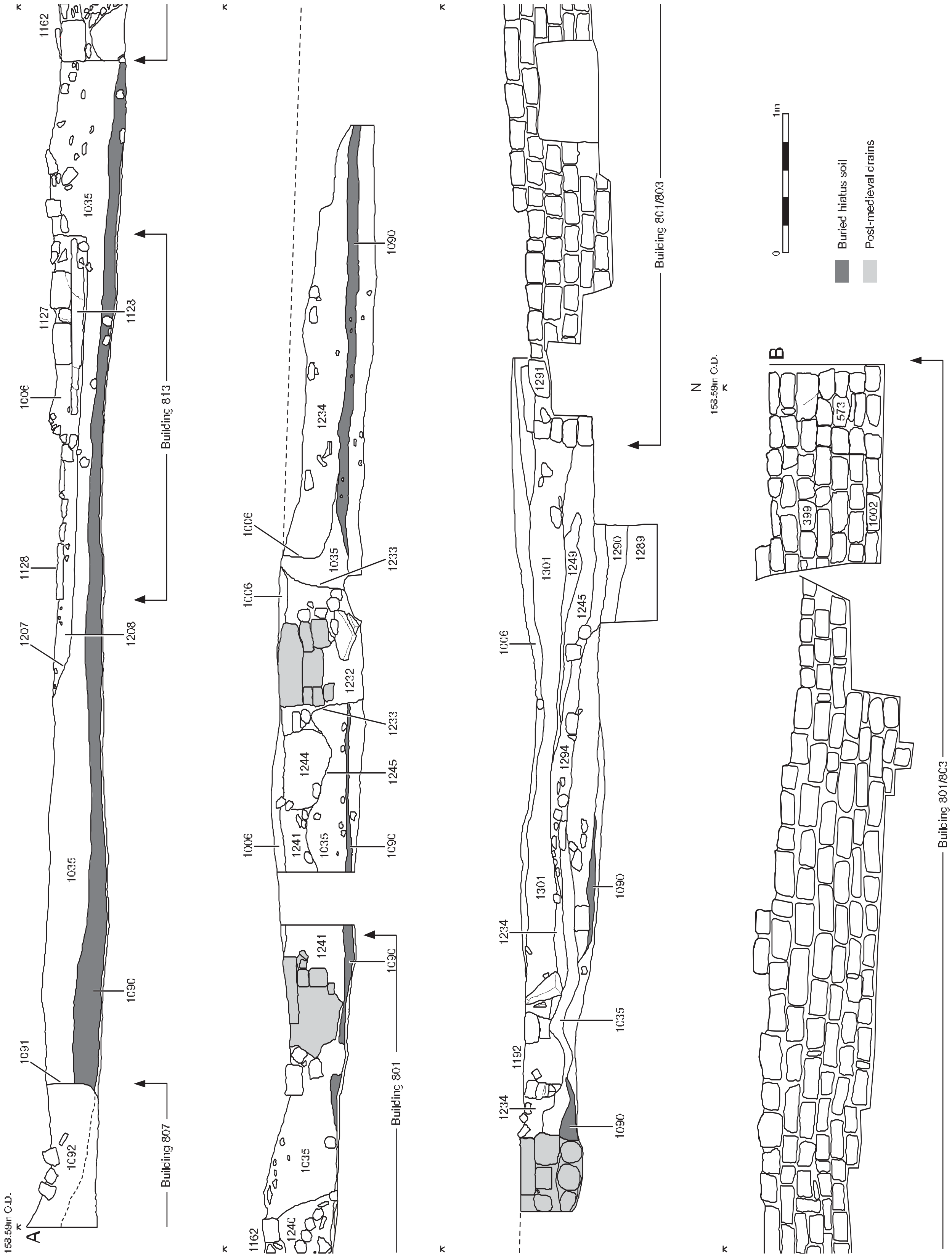
Site Phase 1: early pits (= Wilmott 1997a, Site Phase 2: Period 1)

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


S
153.59m O.D.
A
N
153.59m O.D.
B
Building 807
Building 813
Building 801
Building 801/803
0
1m
Buried hiatus soil
Post-medieval drains
1162
1035
1127
1123
1006
1128
1207
1208
1090
1091
1092
1234
1233
1232
1244
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1294
1192
573
399
1002

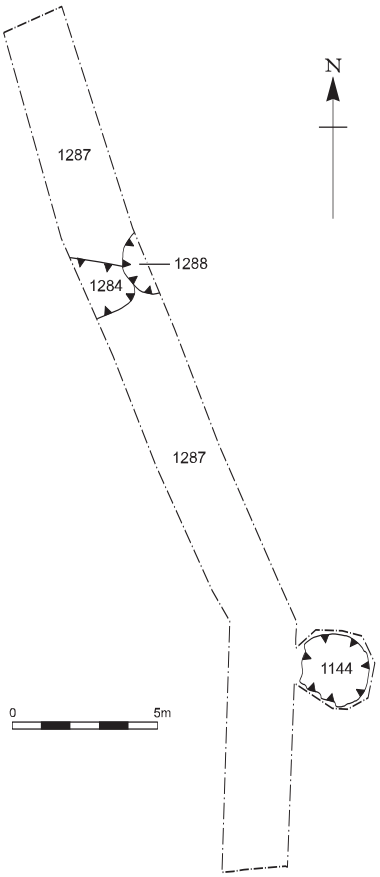


Fig 310 (opposite page) Birdoswald: major north-south site section A–B. see location on Fig 309.

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.

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

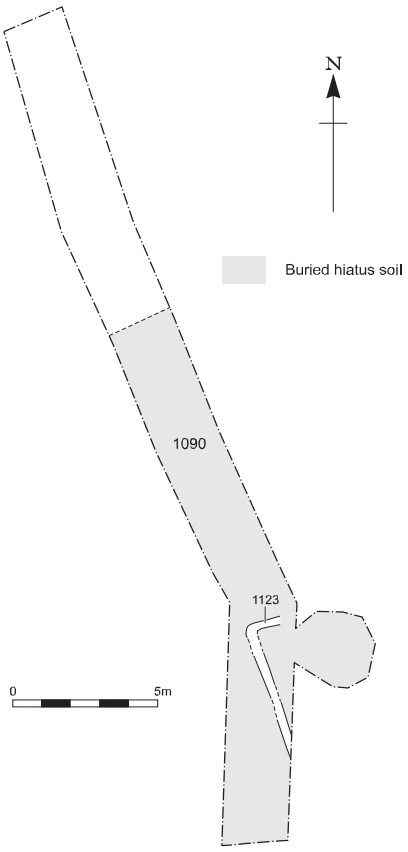


Fig 312
Birdoswald: Site Phases 2–3. Extent of black 'hiatus' soil within the service-duct trench, and Site Phase 3 beam slots.

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)

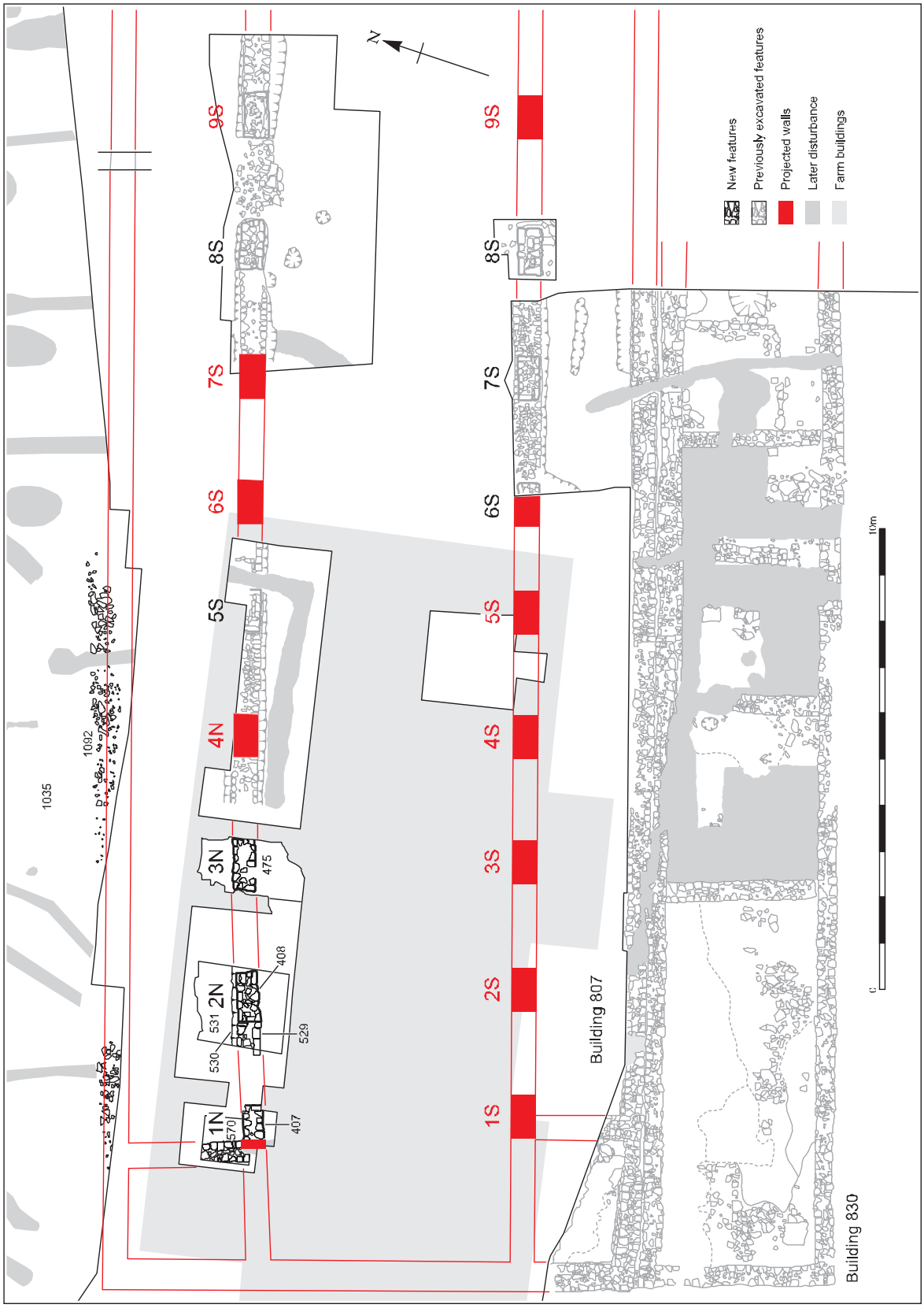
This was a major basilican building (Fig 309), anomalous in auxiliary fort planning, and has been fully described and discussed elsewhere (Wilmott 1997a, 75–82, 95–7; Wilmott 1997b). It lay adjacent to Building 830 to the north, separated by a gap of only 200mm.

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.


N
New features
Previously excavated features
Projected walls
Later disturbance
Farm buildings
10m
0
9S
8S
7S
6S
5S
4S
3S
2S
1S
4N
3N
2N
1N
1035
1092
475
408
531
530
529
579
407
Building 807
Building 830

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 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.

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

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

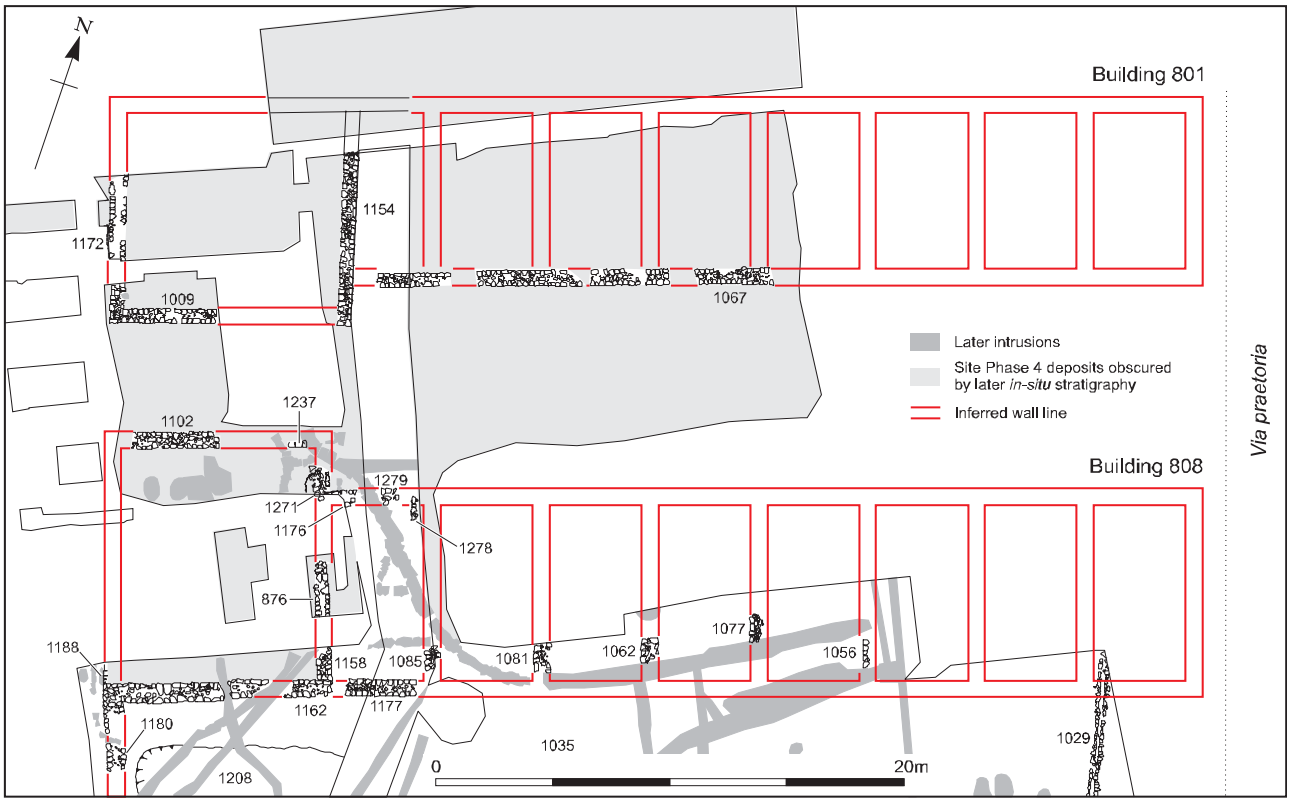


Fig 317
Birdoswald: barrack Buildings 801 and 808. Detail plan of excavated wall fragments with building interpretation in red.

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).

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.

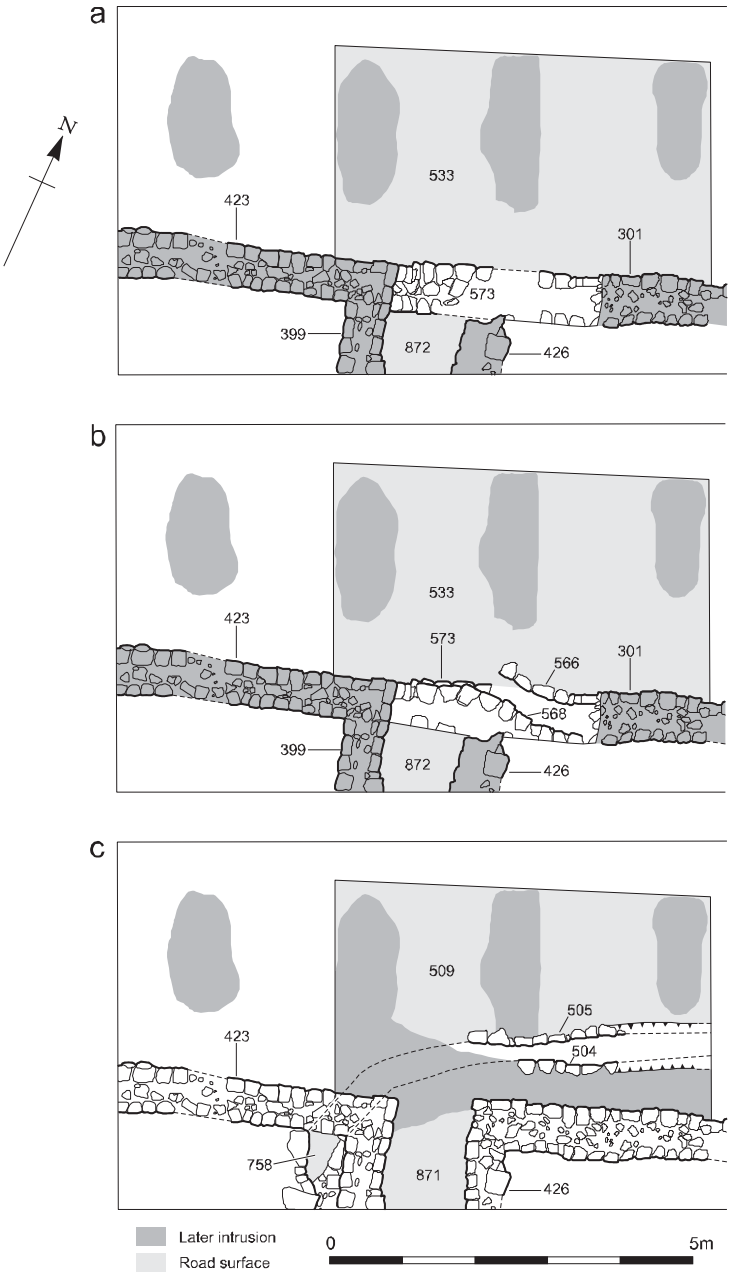


Fig 320
Birdoswald: phase plan of area between N corners of Buildings 802 and 803 to show (a) Wall of Site Phase 4 Building 801 (573), (b) conversion of above to drain (566, 568), (c) Site Phase 5 Buildings 802 and 803 with drain and surfaces.

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

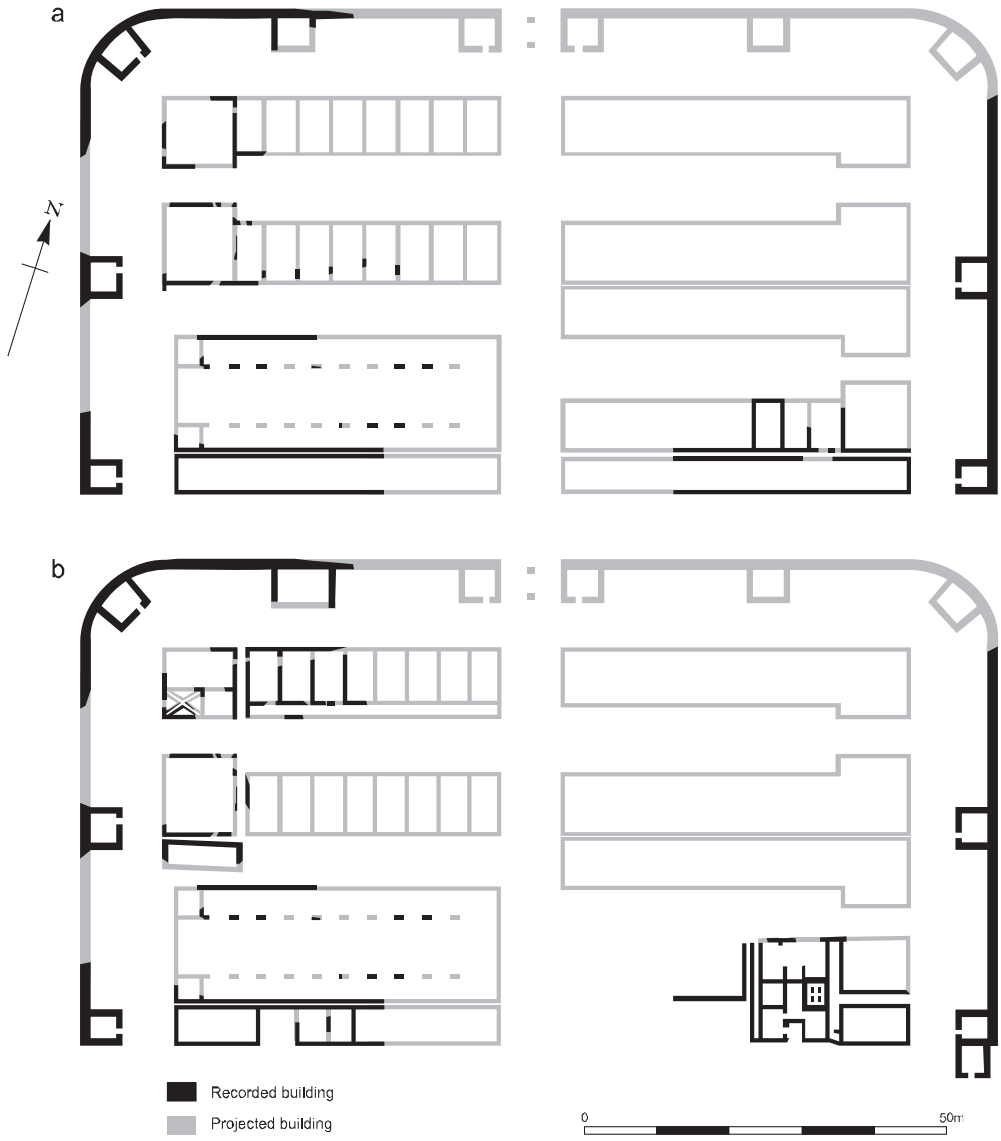


Fig 321
Birdoswald: phase plans of praetentura *as originally built (a), and as altered in Period 3 (b).*

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.

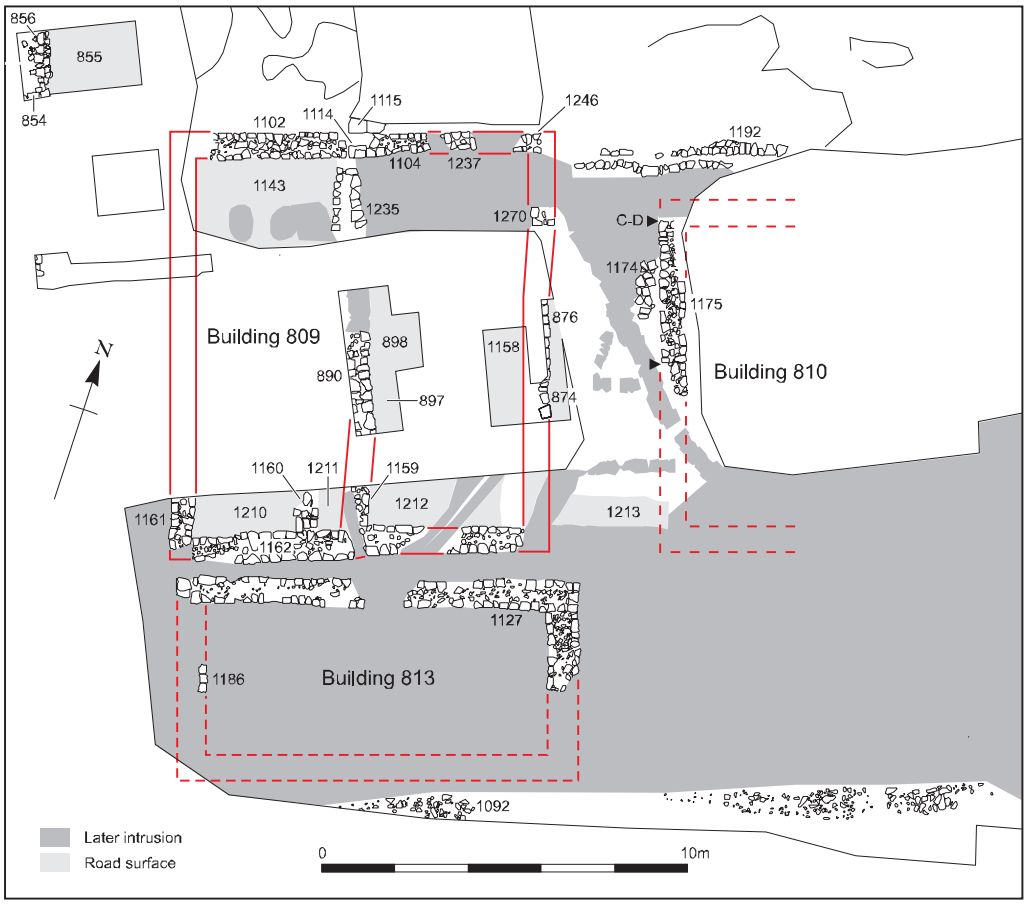


Fig 323
Birdoswald: detail plan of Buildings 809, 810 and 813.

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

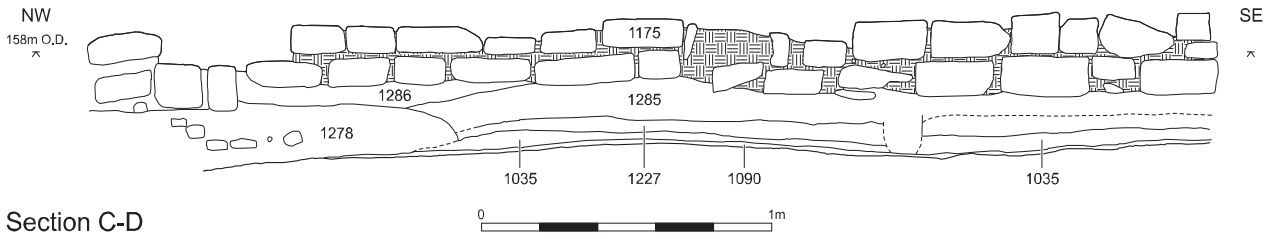


Fig 325
Birdoswald: east section in Buildings 808/ 810, C–D (location see Fig 323).

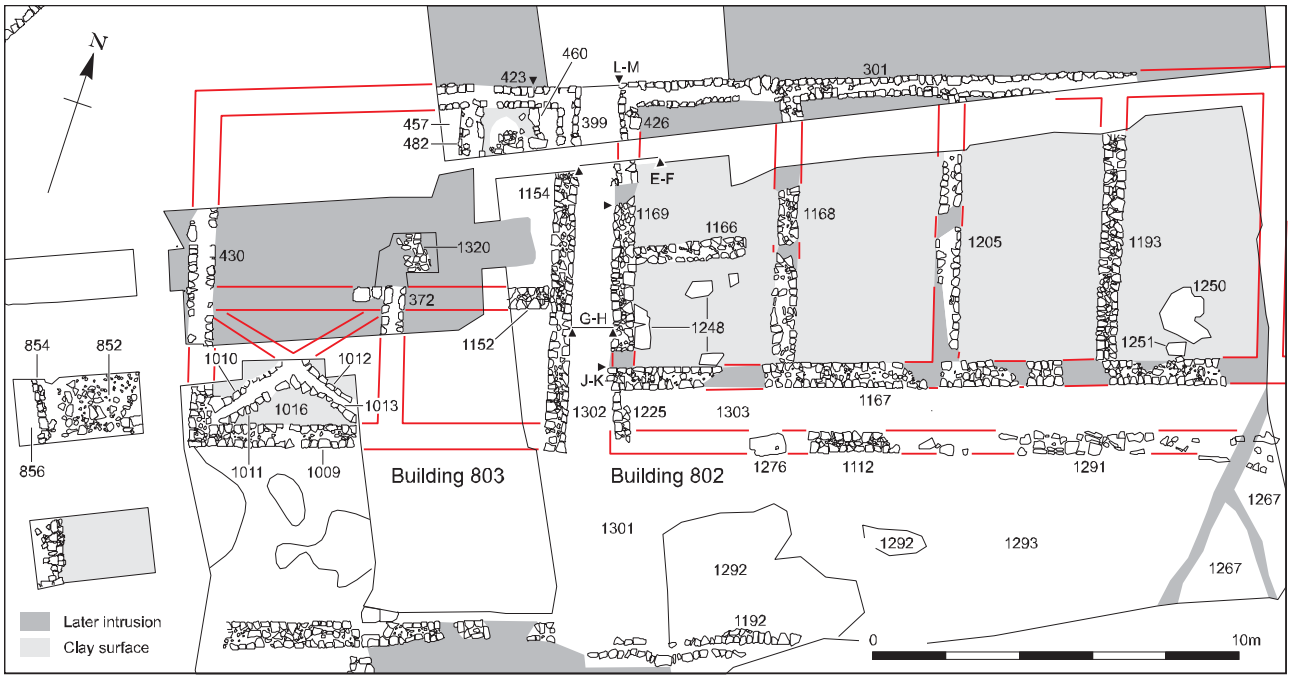


Fig 326
Birdoswald: detail plan of Buildings 802 and 803.

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

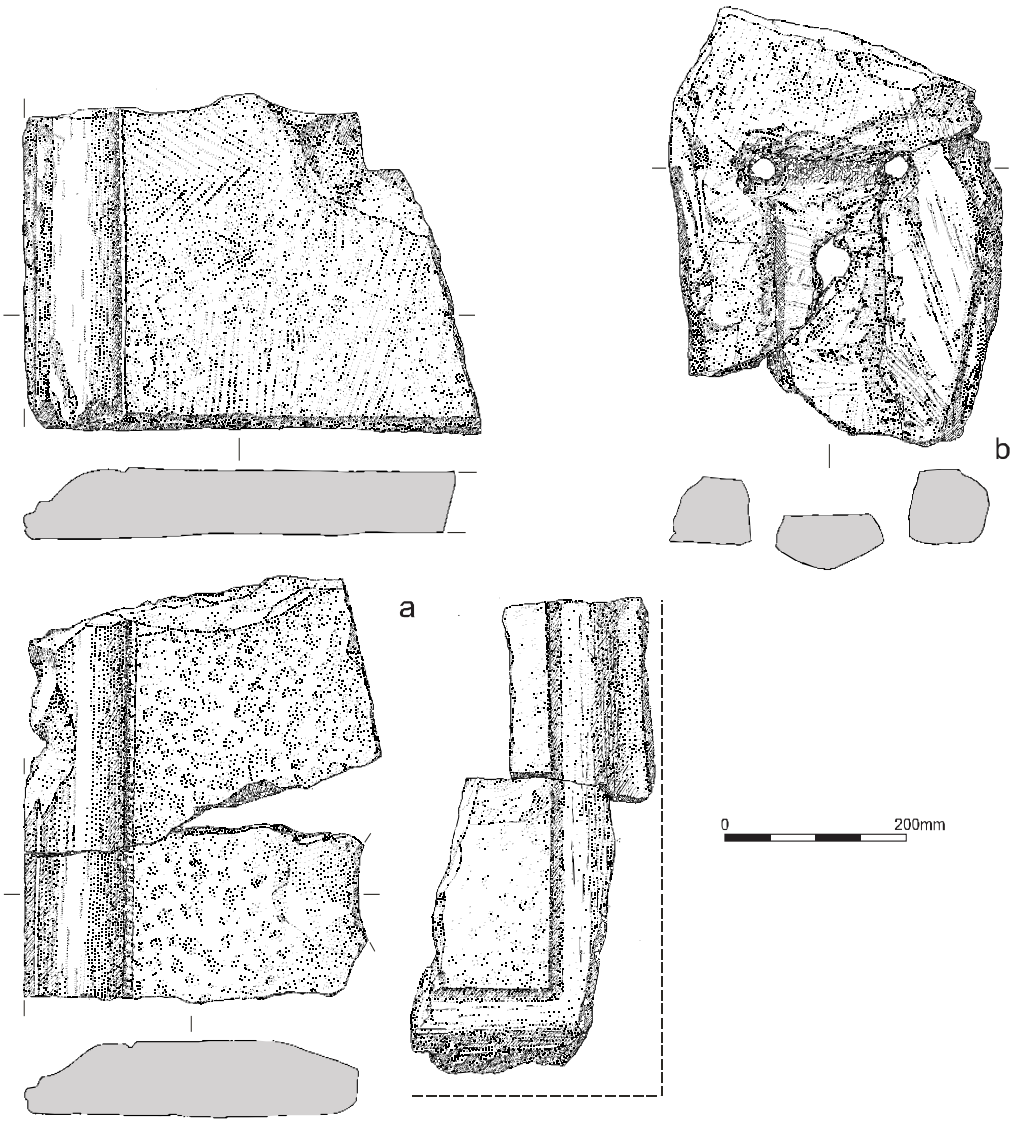


Fig 327
Birdoswald: (a) re-used decorative stone panel (b) perforated stone drain cover.

Fig 328
Birdoswald: channel hypocaust in Building 803.

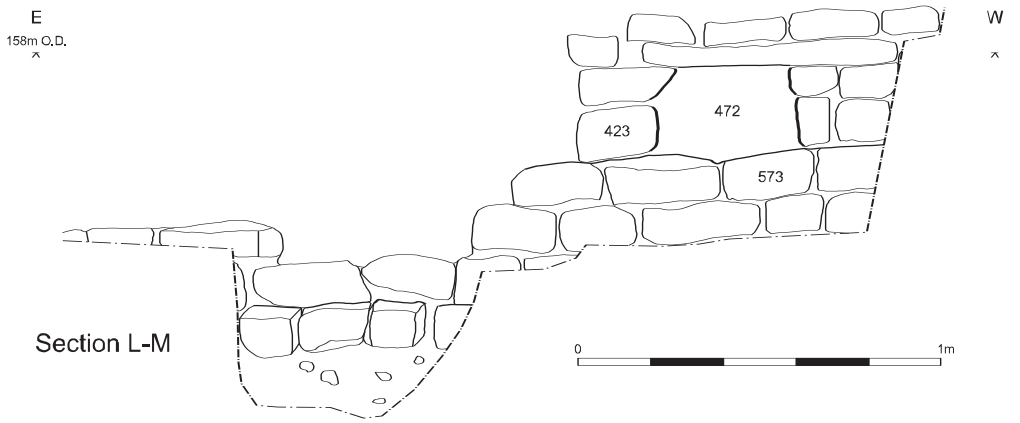


Fig 329
Birdoswald: elevation L-M, outlet to privy in Building 803 (location see Fig 326).

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

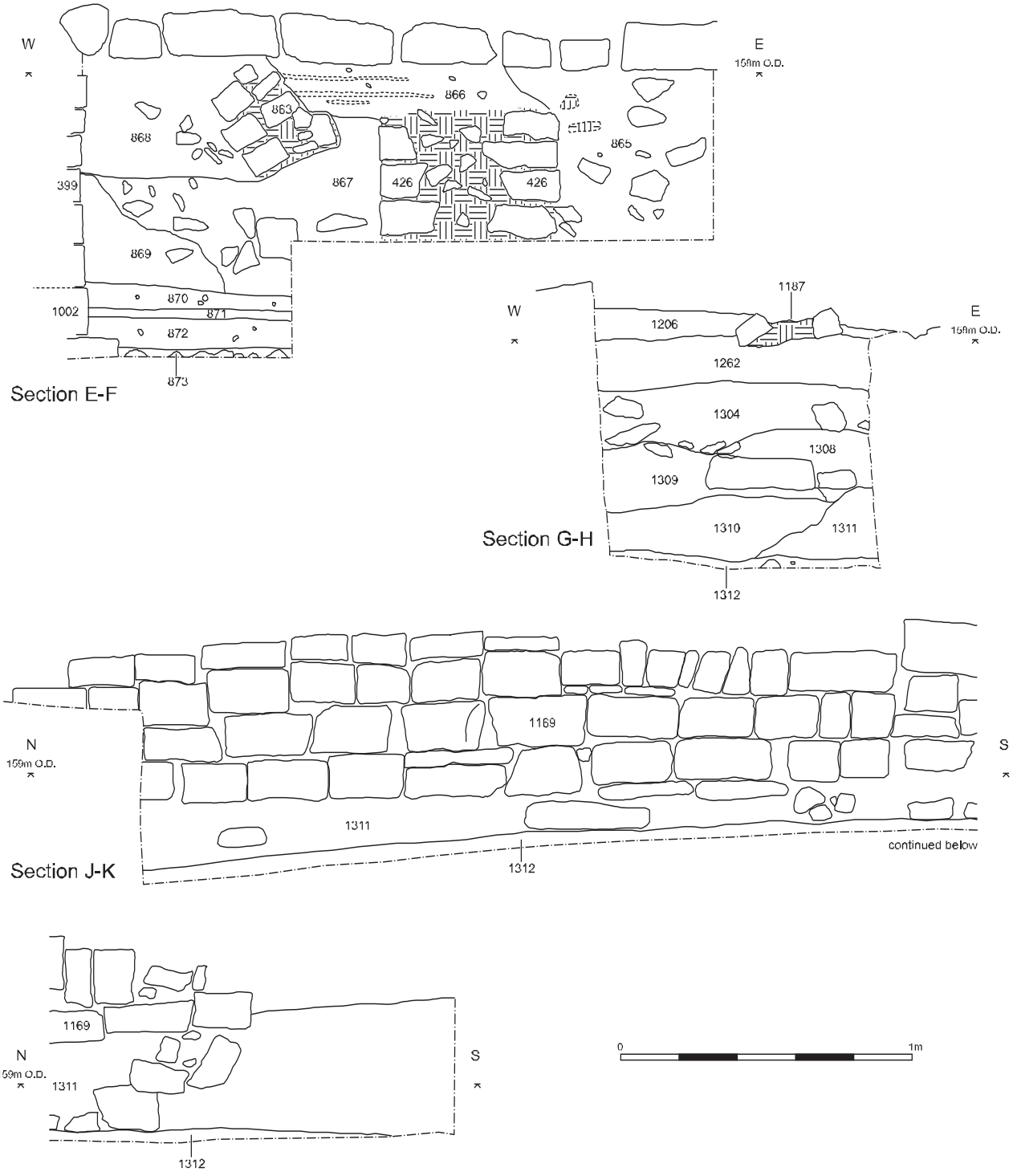


Fig 330
Birdoswald: sections E–F, G–H and J–K in alley between Buildings 802 and 803 (location see Fig 326).

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).

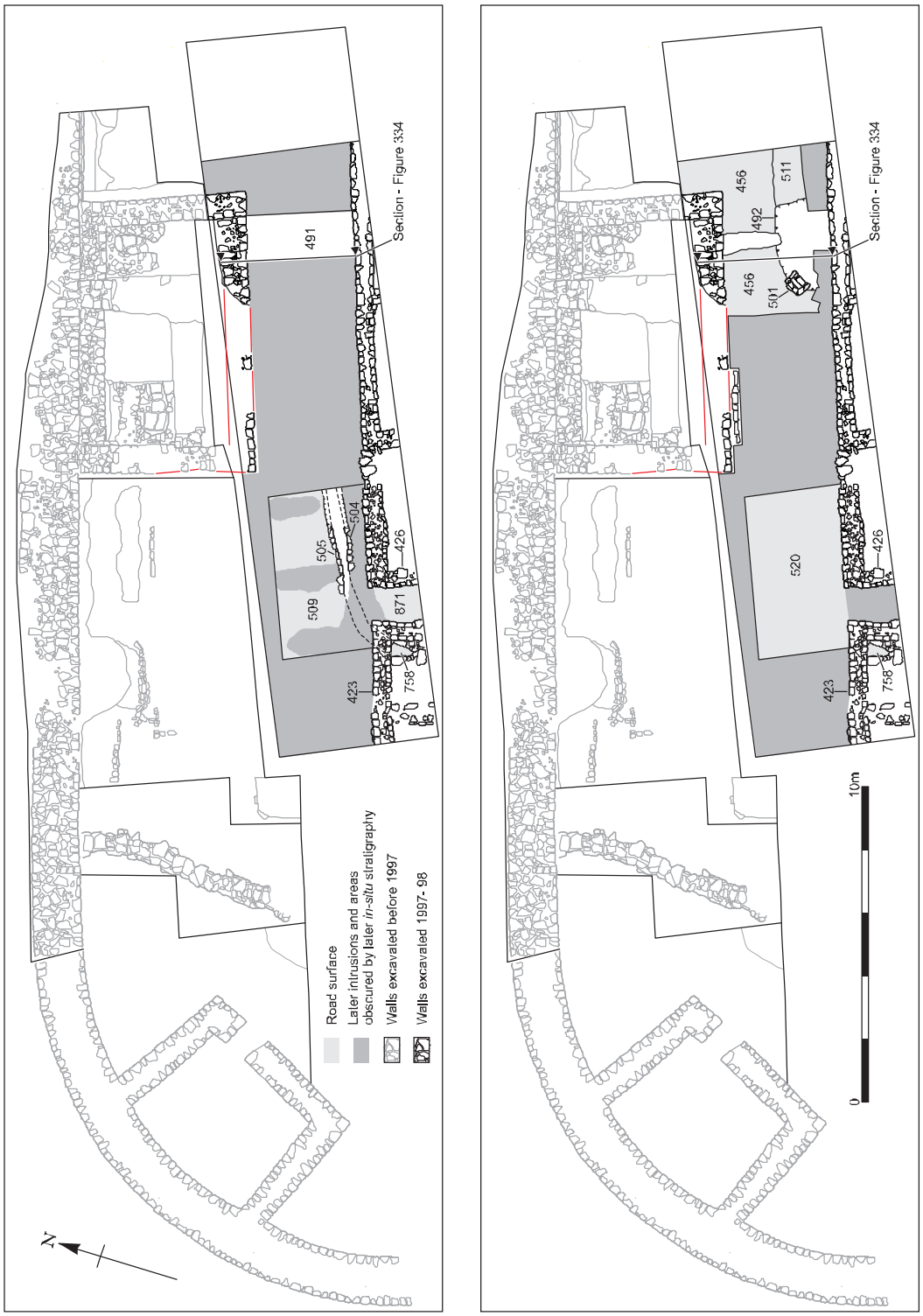


Fig 333
Birdoswald: detailed sub-phase plans of north intervallum and Building 804.

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

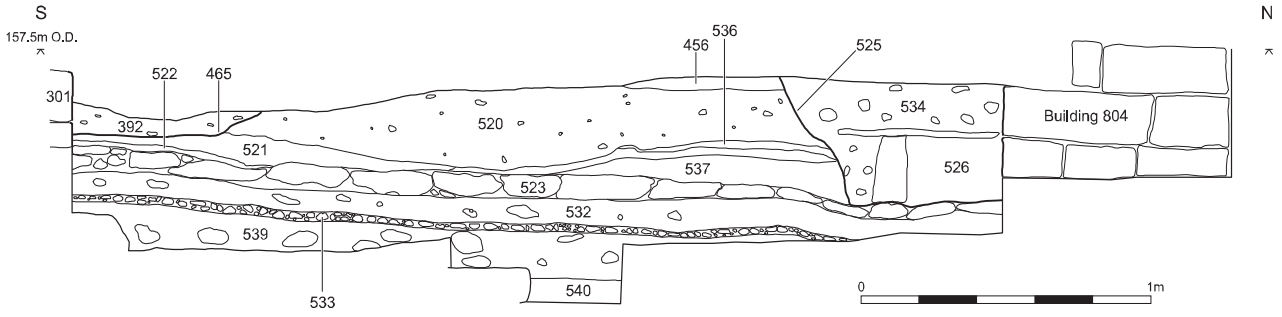


Fig 334
Birdoswald: section south of Building 804 (for location, see Fig 333).

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

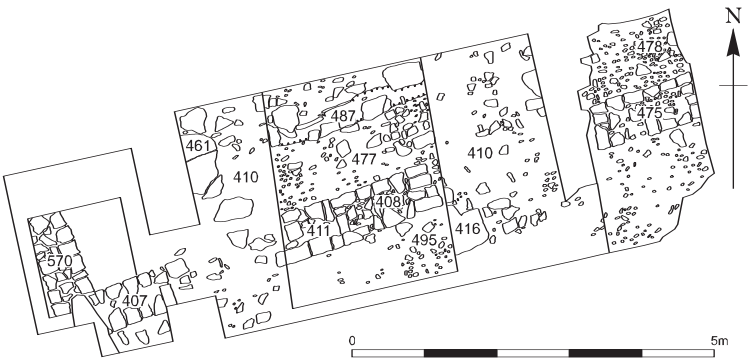


Fig 336
Birdoswald: plan showing deposits of late phases in Building 807.

(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

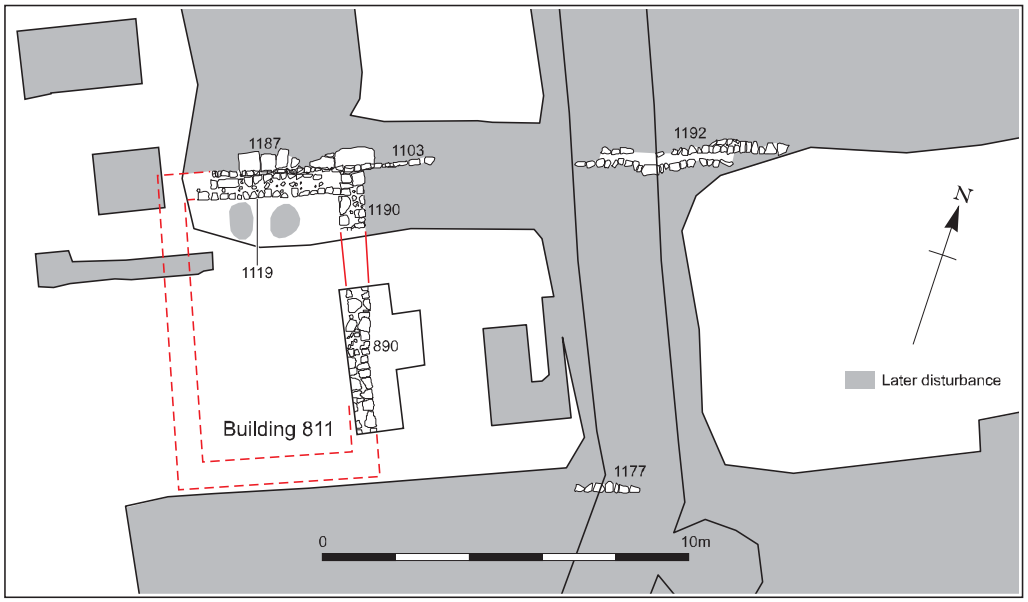


Fig 337
Birdoswald: detailed plan of Building 811, Site Phase 6a.

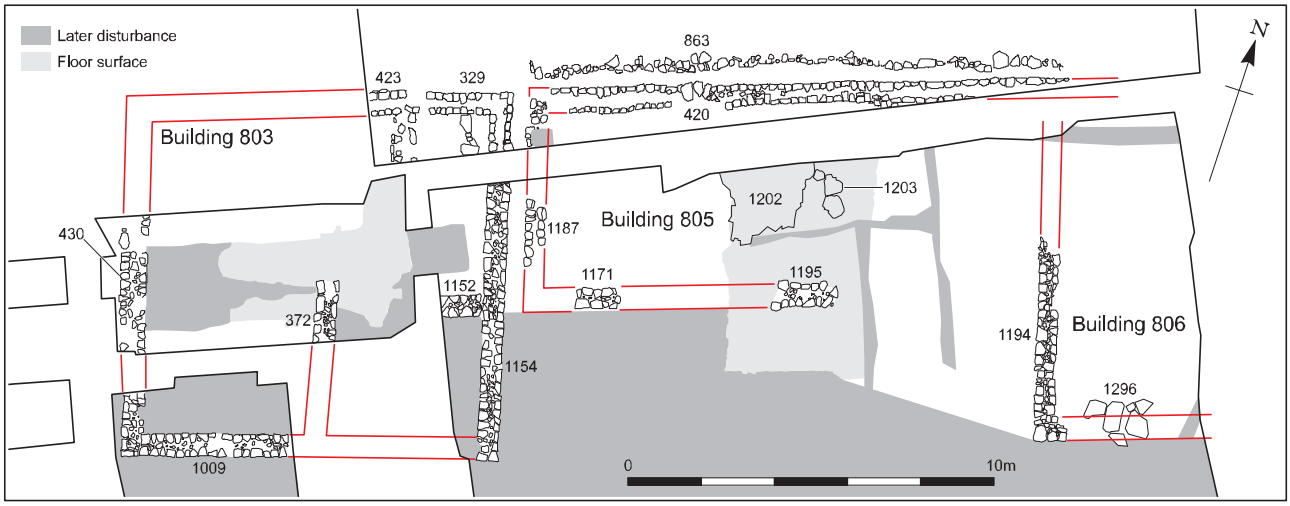


Fig 338
Birdoswald: detailed plan of Buildings 805, 806 and 803, Site Phase 6a.

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*.

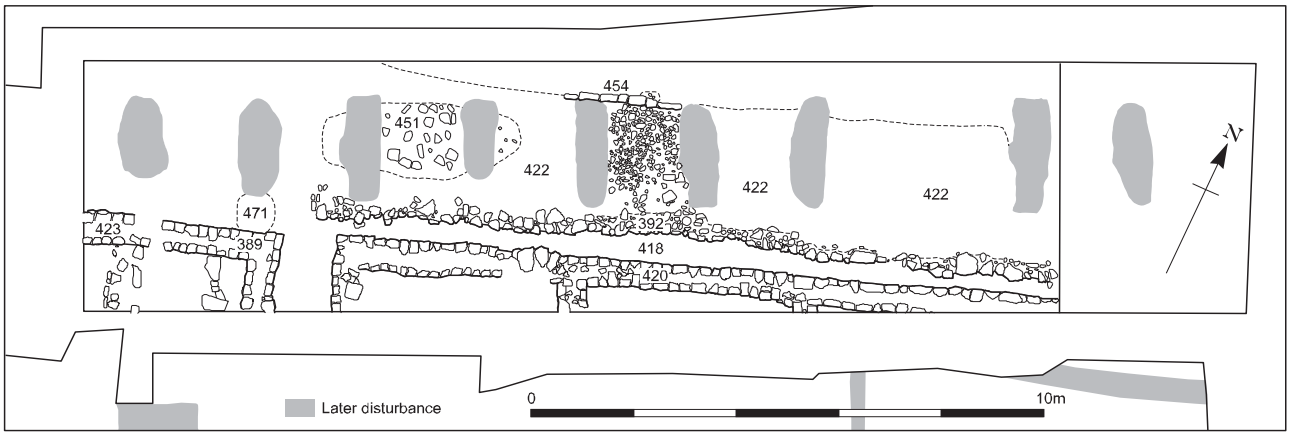
Building 806: barrack?

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.*

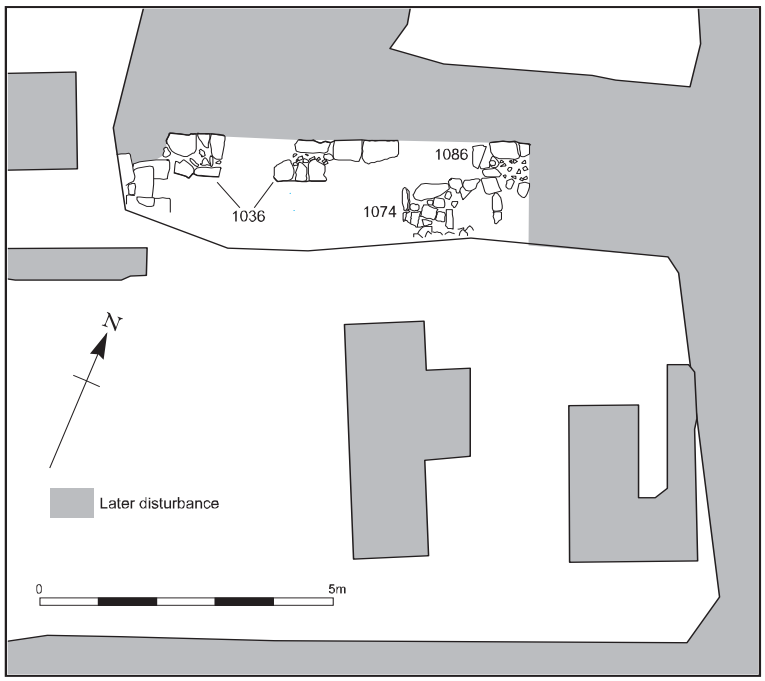


Fig 342
Birdoswald: detailed plan of Building 812.

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)

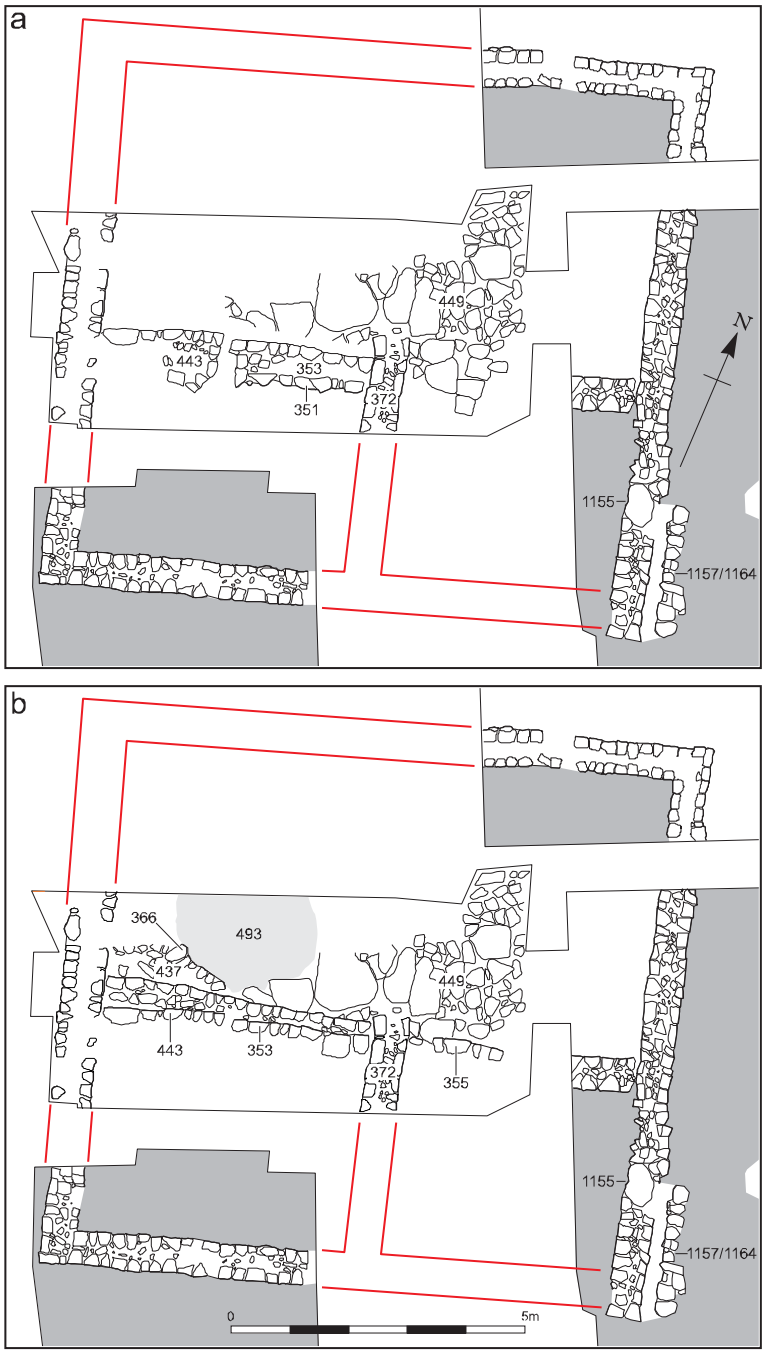


Fig 343
Birdoswald: detailed sub-phase plans of Building 803. (a) Site Phase 6b, (b), Site Phase 7.

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 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

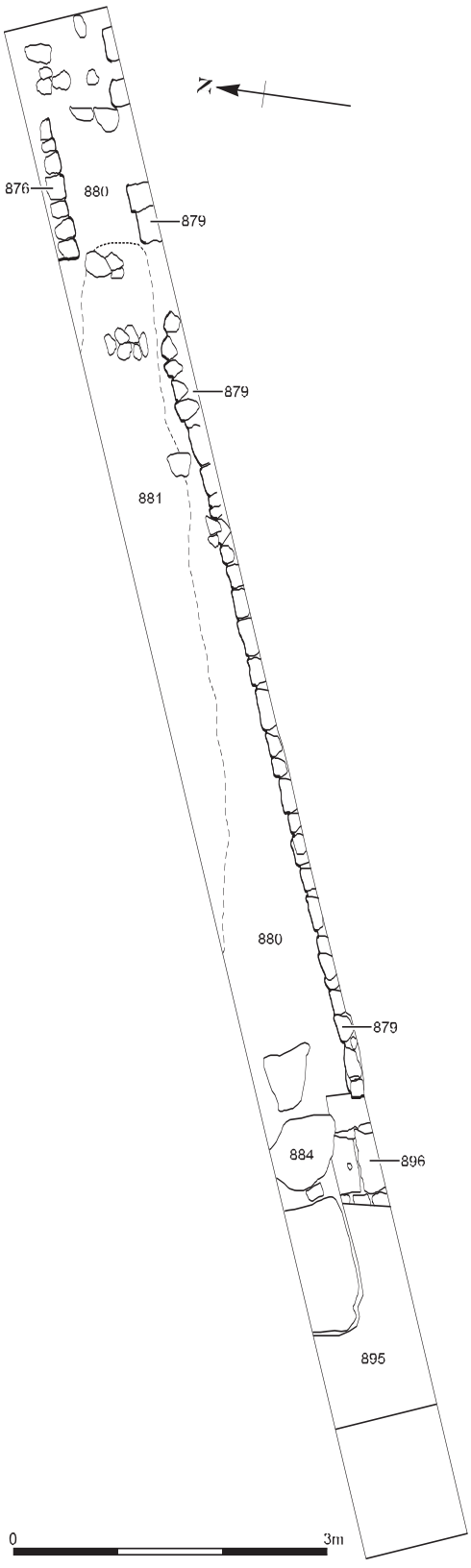


Fig 345
Birdoswald: plan of trench along north edge of north east praetentura.

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

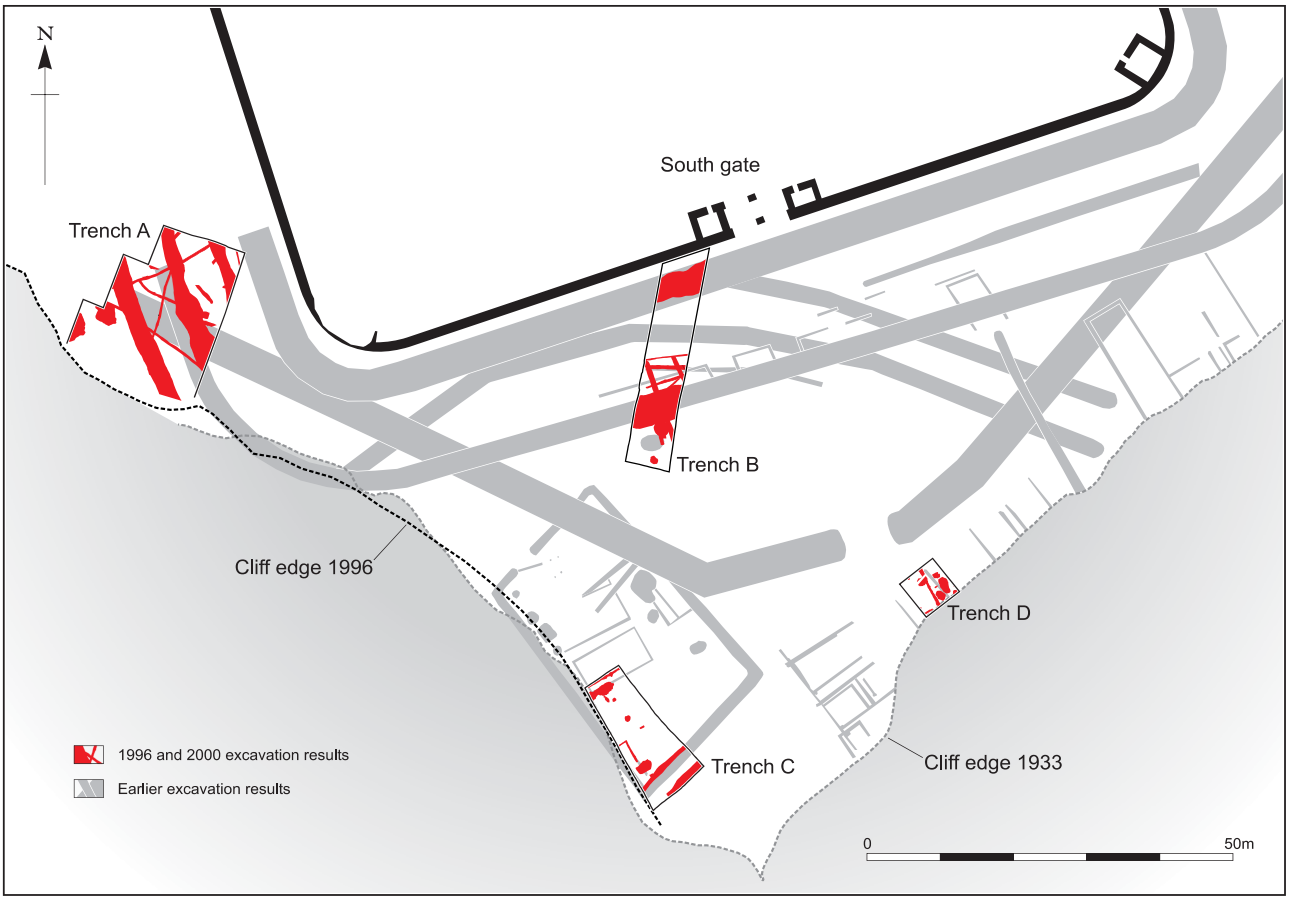


Fig 346
Birdoswald: locations of 1996 and 2000 trenches on the spur at Birdoswald set against the 1930s excavation plan.

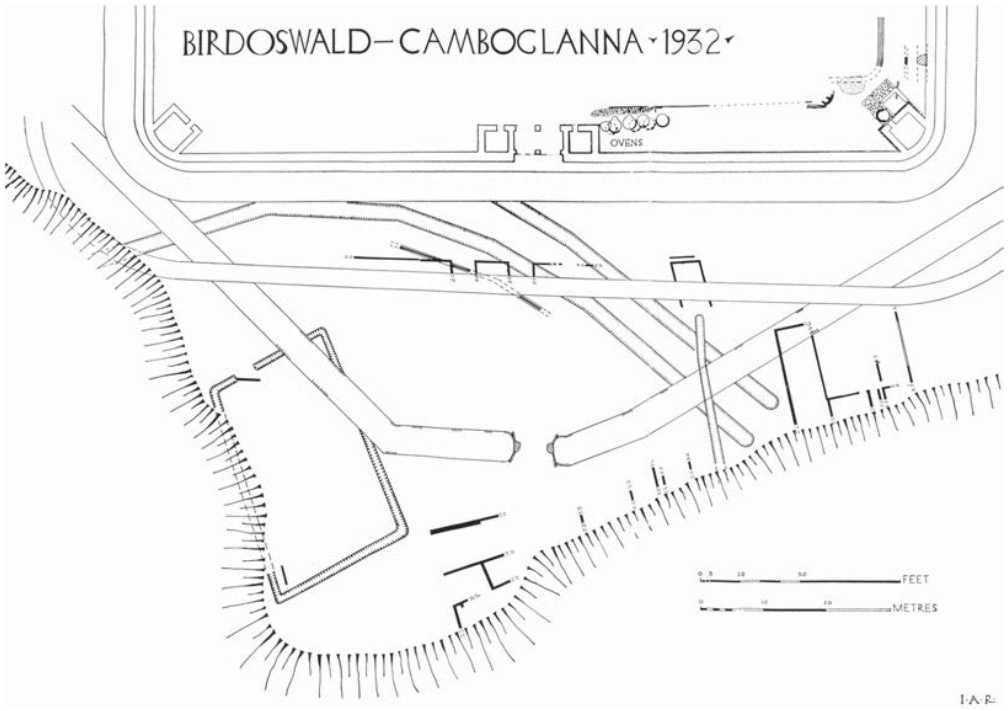


Fig 347
Birdoswald: partial plan of the features excavated in 1933. The hachures visible on the edges of cut features seem to indicate actual trench locations.

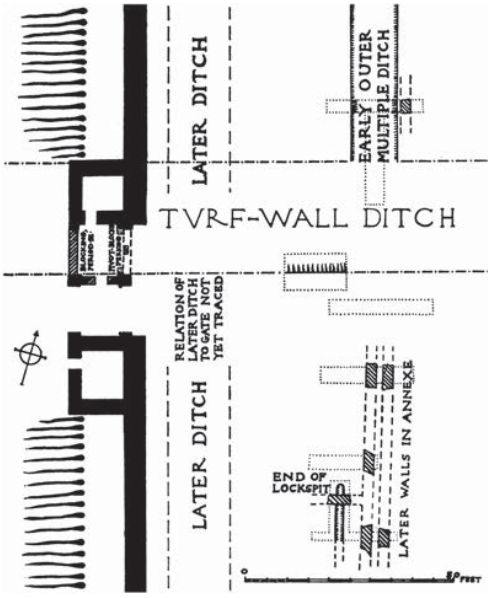


Fig 348
Birdoswald: plan showing the locations of the trenches exploring ditches near the east gate in 1933. Note that the trench exploring the relationship between the outer fort ditch and the Turf Wall ditch is cut in the centre of the fort ditch. If the fort ditch cut the Turf Wall ditch fill then 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).

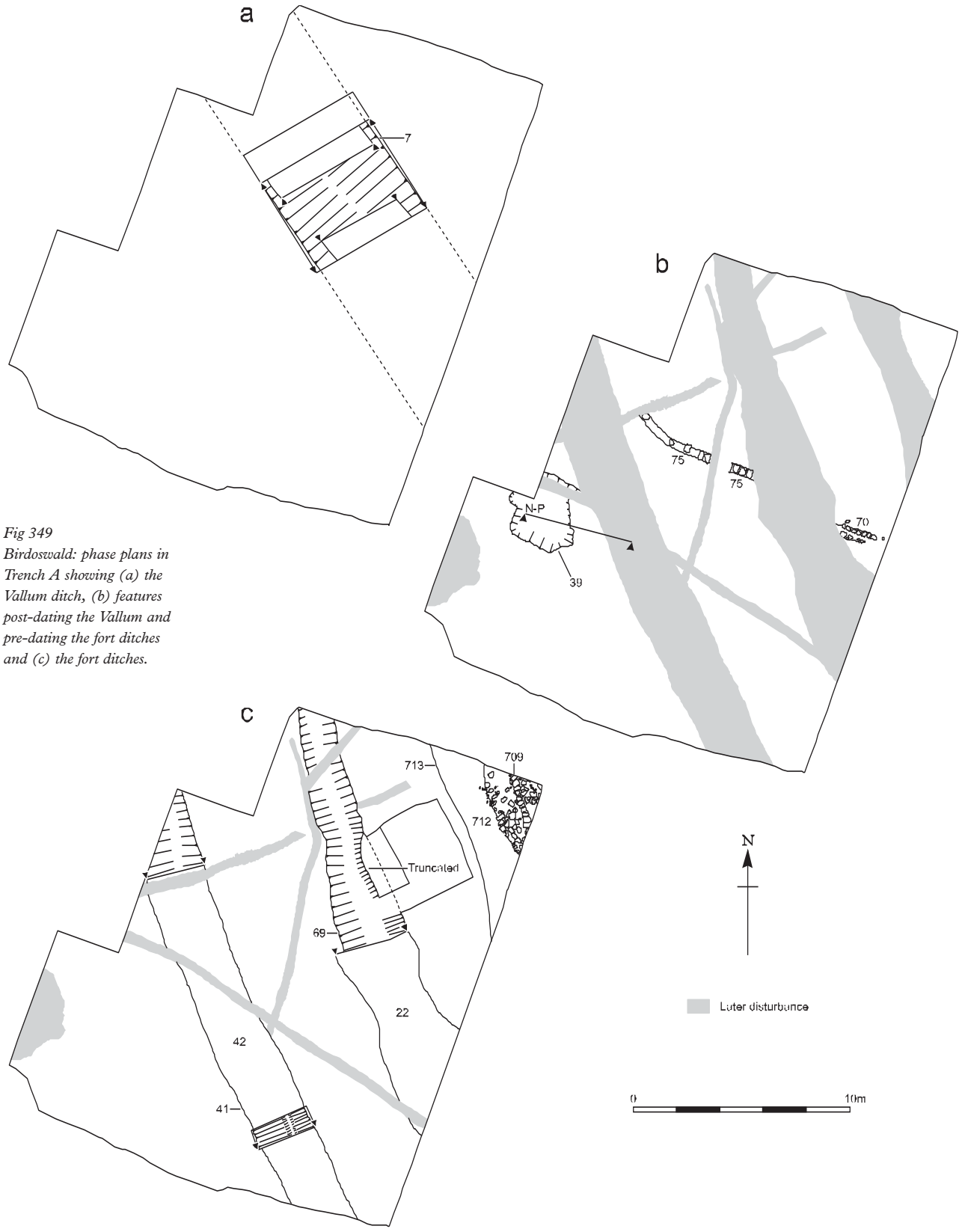


Fig 349
Birdoswald: phase plans in Trench A showing (a) the Vallum ditch, (b) features post-dating the Vallum and pre-dating the fort ditches and (c) the fort ditches.

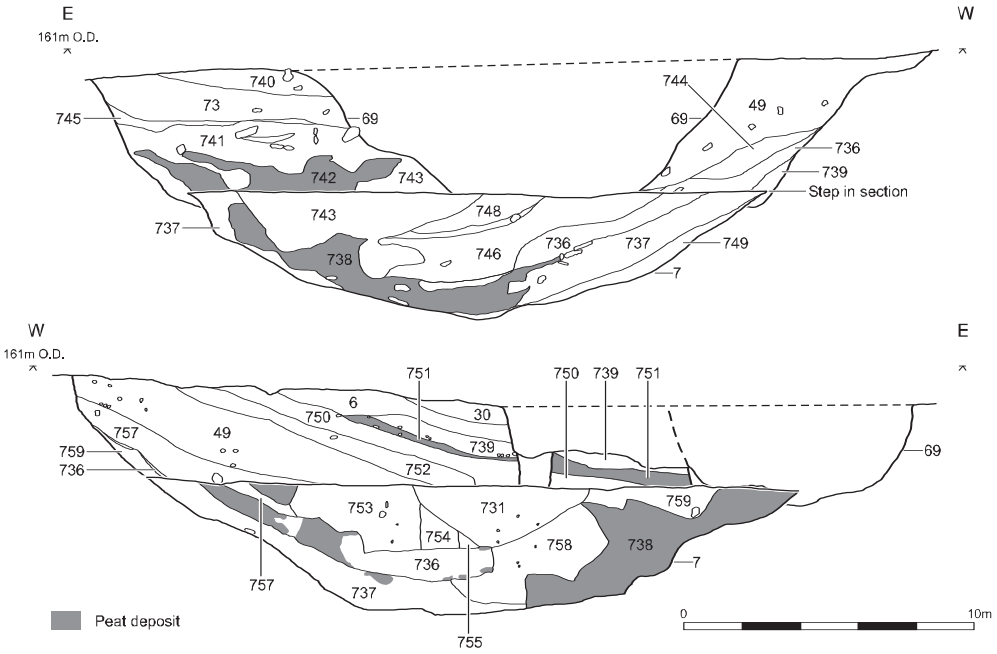


Fig 350
Birdoswald: Vallum ditch sections in Trench A.

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.

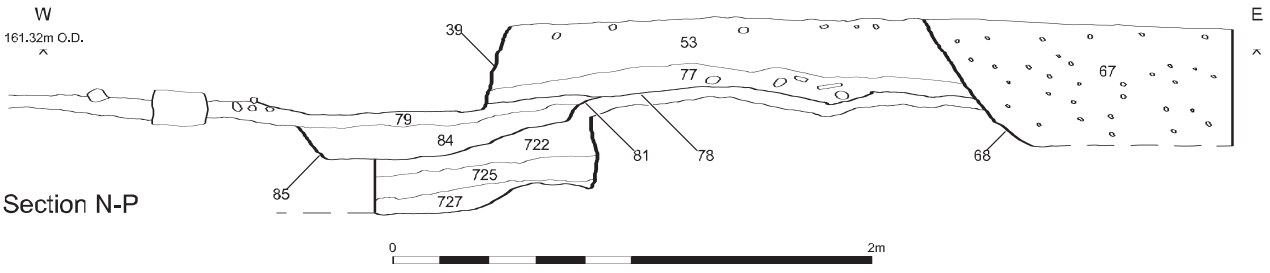


Fig 353
Birdoswald: section showing pit group cut by one of the primary fort ditches.

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.

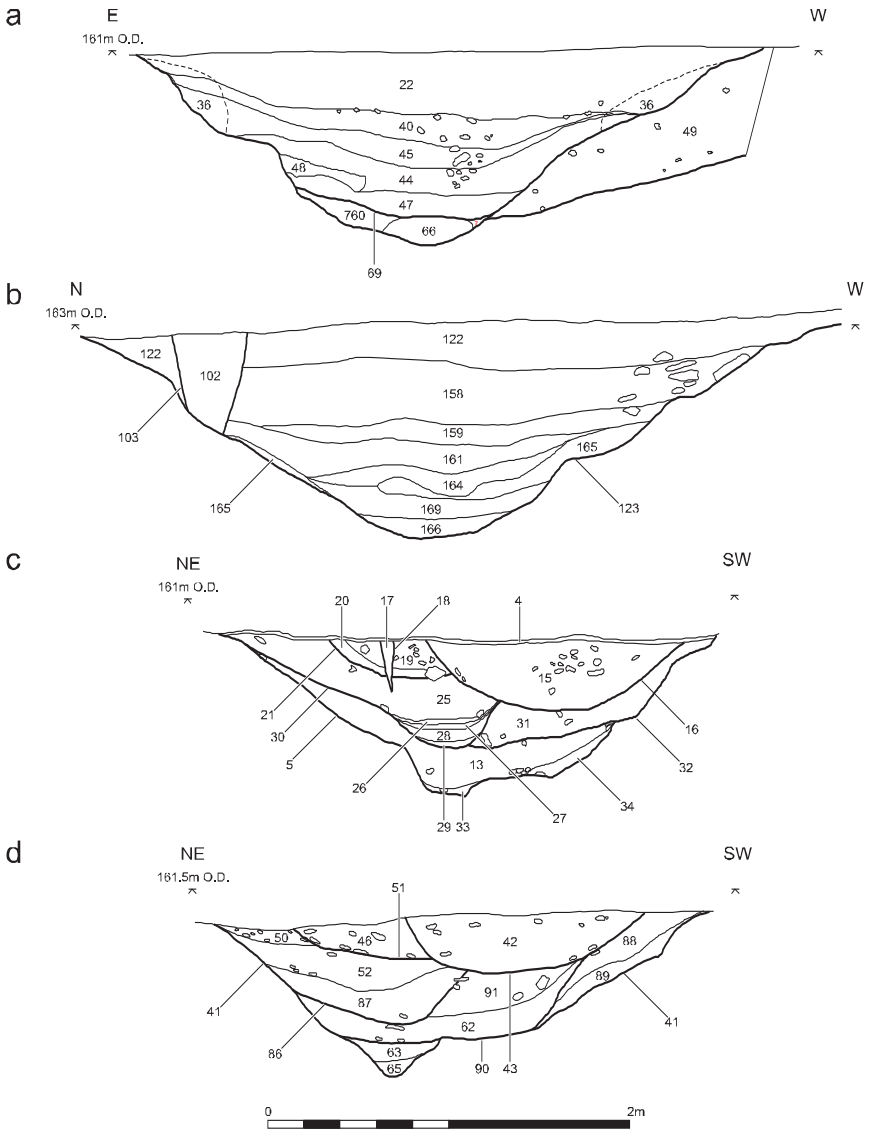


Fig 355
Birdoswald: sections through fort ditches (a) middle ditch, Trench A, (b) middle ditch, Trench B, (c), (d) outer ditch, Trench A.

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.

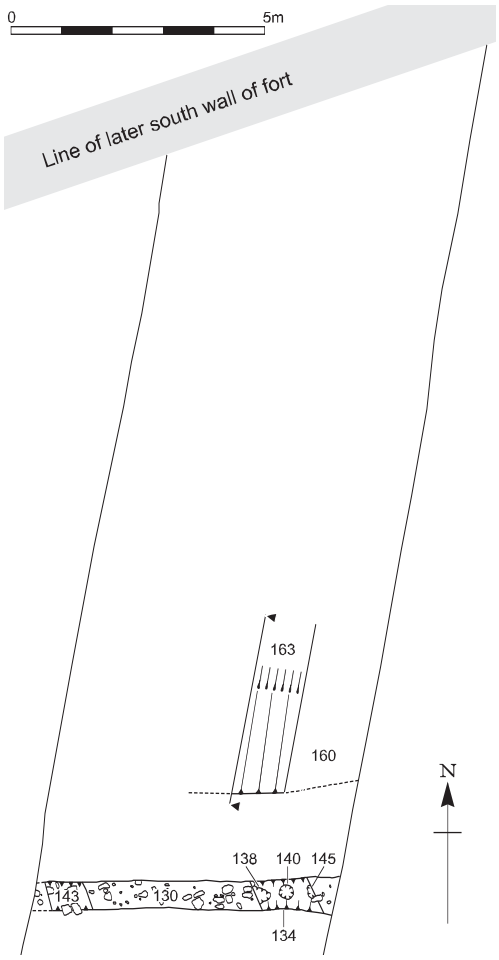


Fig 357
Birdoswald: plan of Phase B1 early palisade and ditch in Trench B.

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).

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.

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)

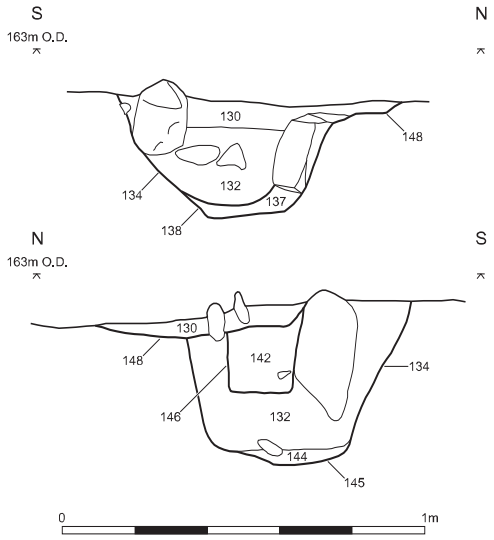
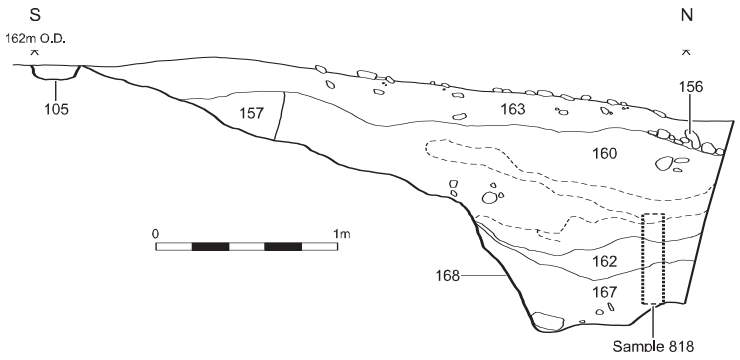
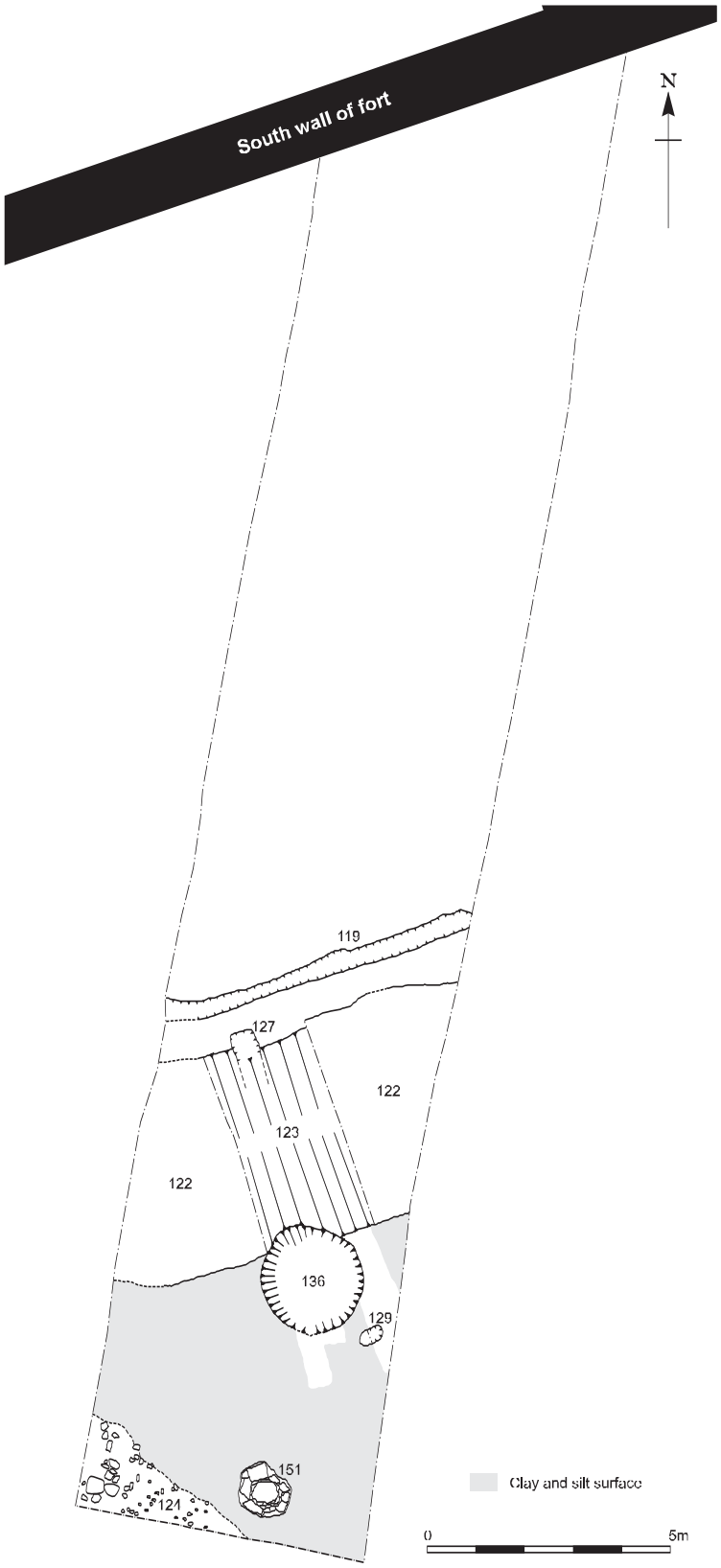


Fig 360
Birdoswald: section through palisade trench and associated posthole, Phase B1.

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

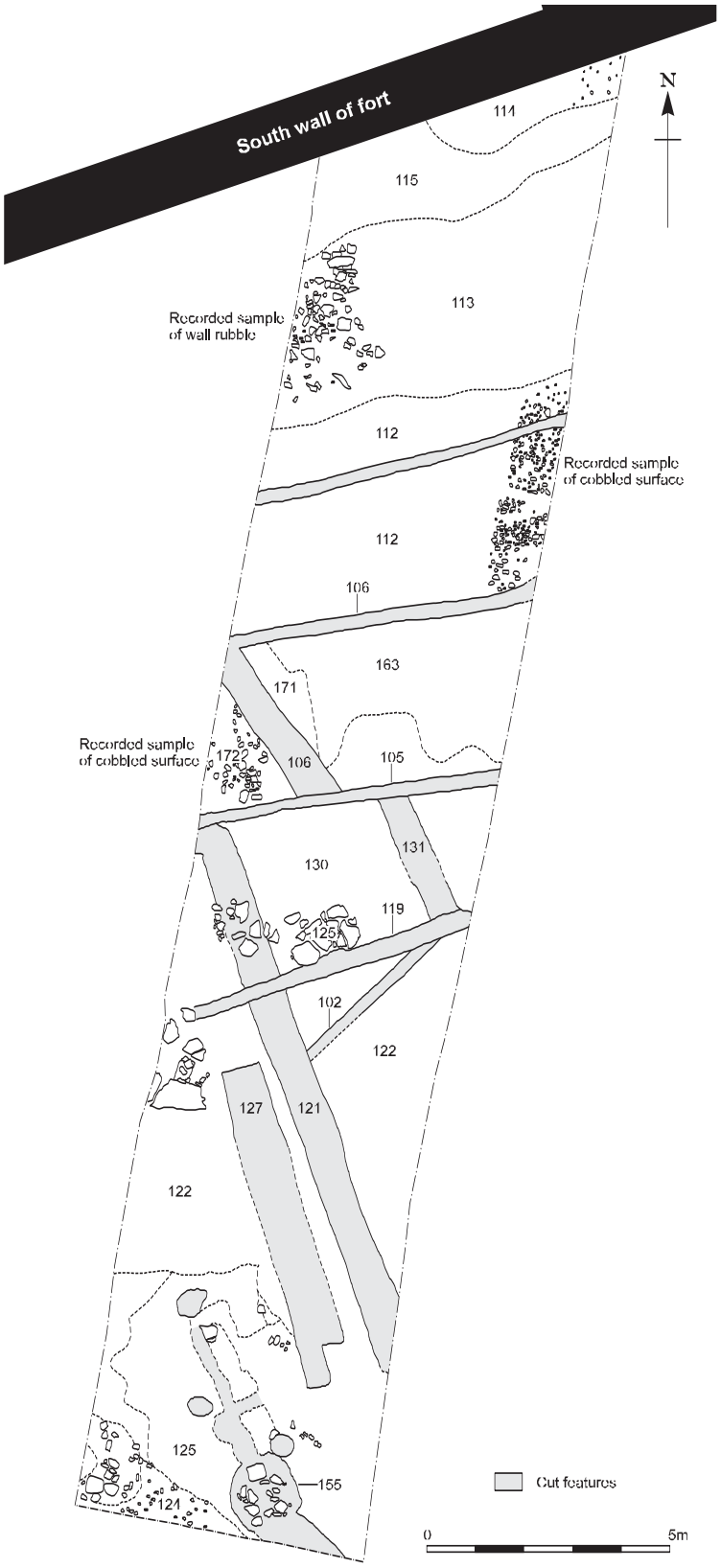
Over the inner ditch of the fort a linear area of cobbling (172; 163; 111; 156; 171; 111) running east–west along the face of the fort wall appears to be a post-Roman track (Fig 365). This appears to lead into a hollowed area to the west of Trench B, and may relate to the medieval building thought to 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.

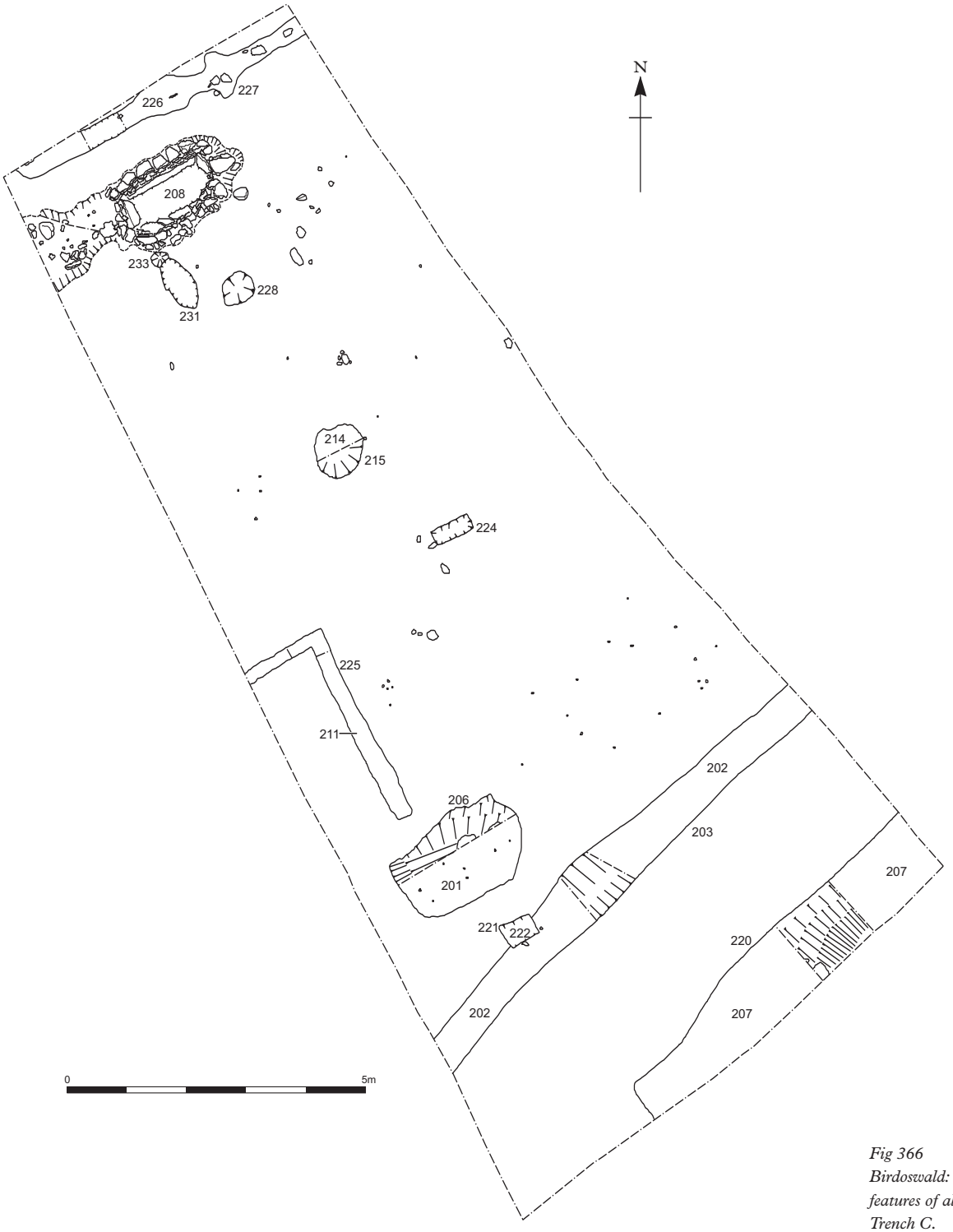


Fig 366 Birdoswald: plan of features of all phases in Trench C.

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

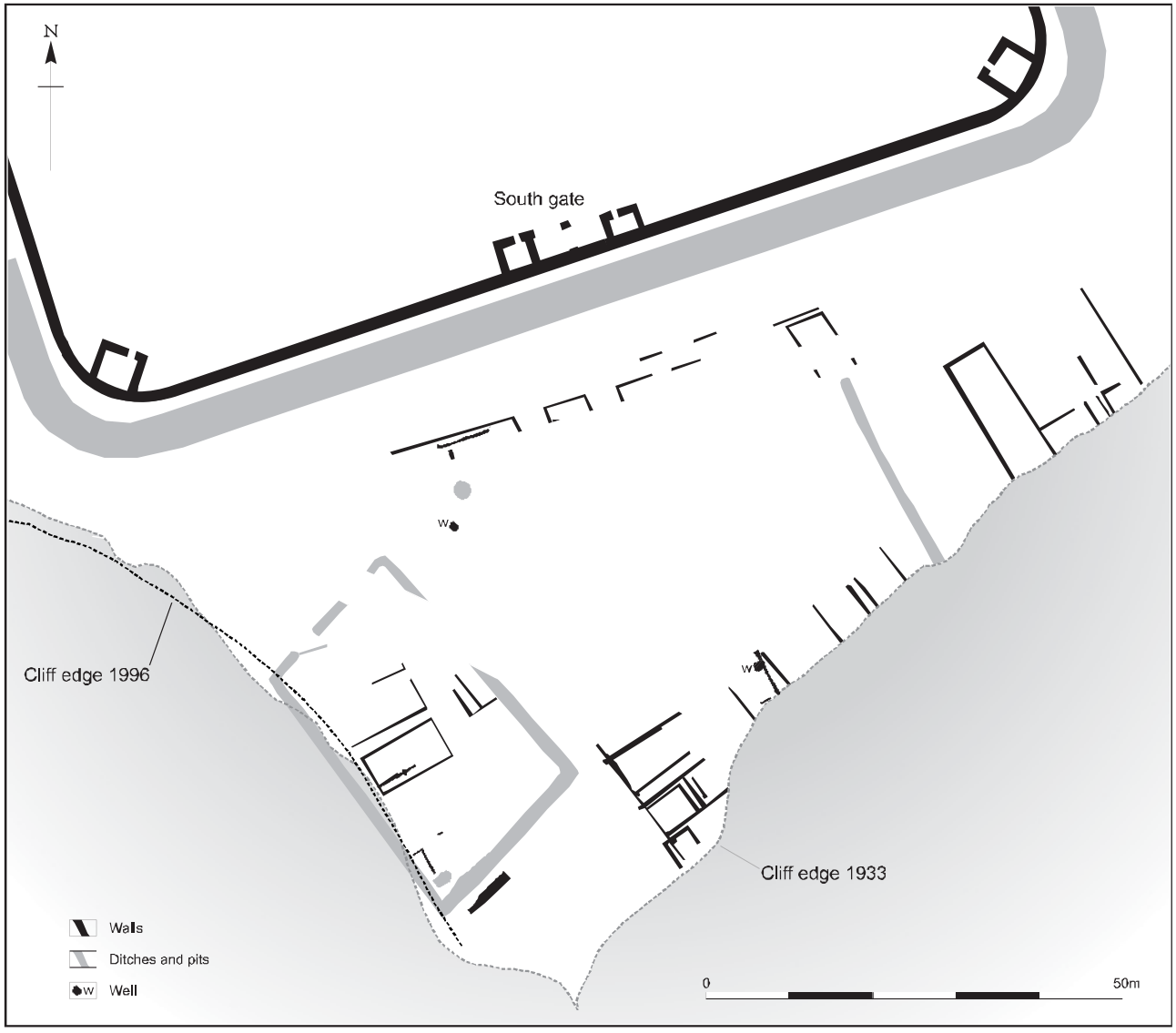


Fig 371
Birdoswald: Possible numerus fort.

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).

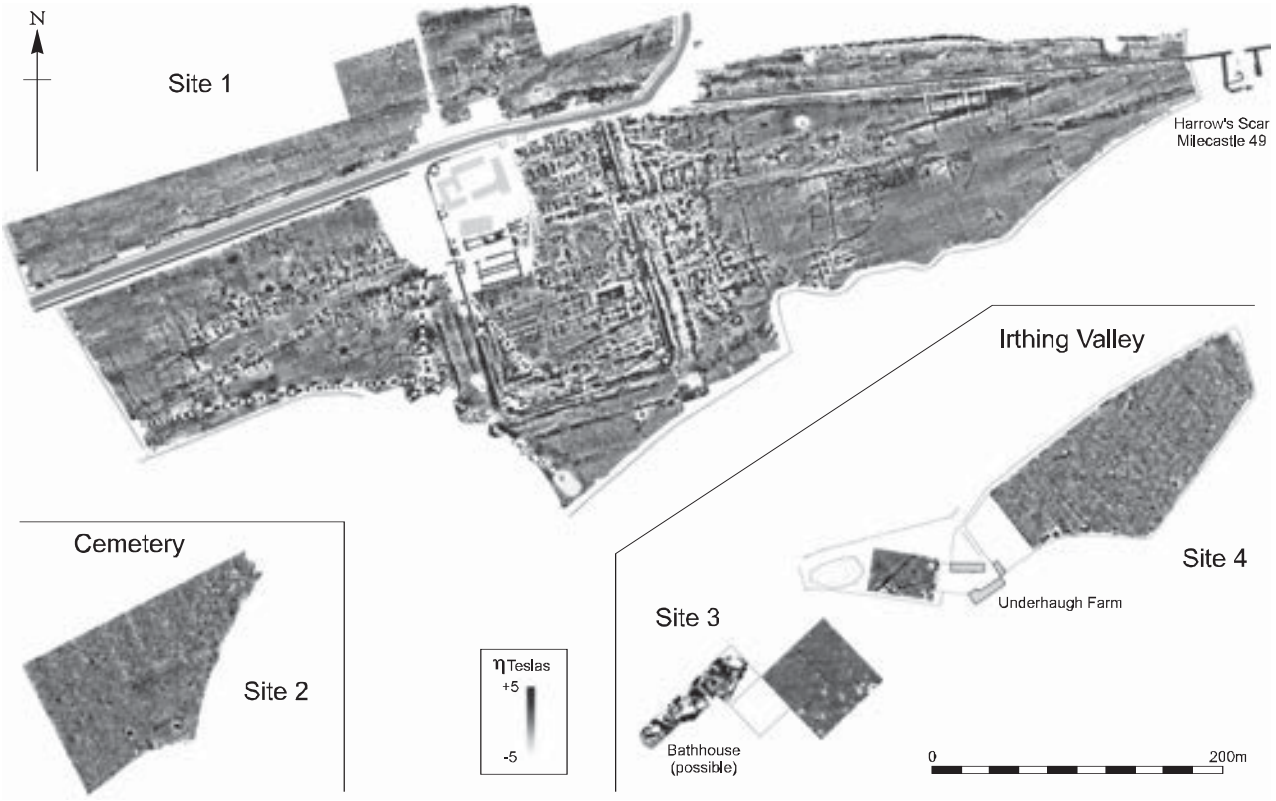
The construction of a new timber extra-mural settlement is so far unique in the frontier zone. However, it has long been recognised that Housesteads ware is generally found outside the walls of the fort sites at which it appears (Jobey 1979; Crow 1995, 72). The evidence is not so definite as at Birdoswald, 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


N
Site 1
Harrow's Scar
Milecastle 49
Irthing Valley
Site 4
Underhaugh Farm
Site 3
Cemetery
Site 2
ηTeslas
+5
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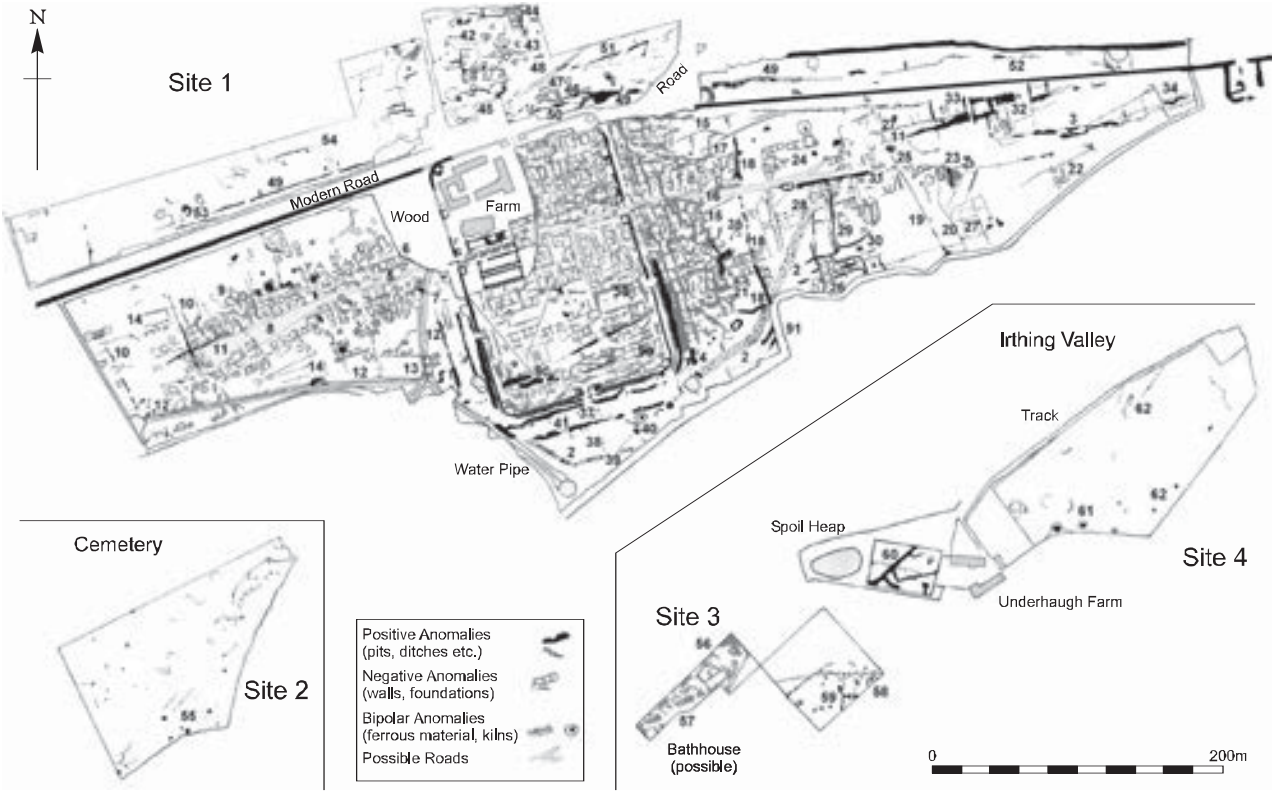
Bathhouse
(possible)
0
200m


N
Site 1
Road
Modern Road
Wood
Farm
Water Pipe
Irthing Valley
Track
Spoil Heap
Site 4
Underhaugh Farm
Site 3
Cemetery
Site 2
Positive Anomalies
(pits, ditches etc.)
Negative Anomalies
(walls, foundations)
Bipolar Anomalies
(ferrous material, kilns)
Possible Roads
Bathhouse
(possible)
0
200m

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.

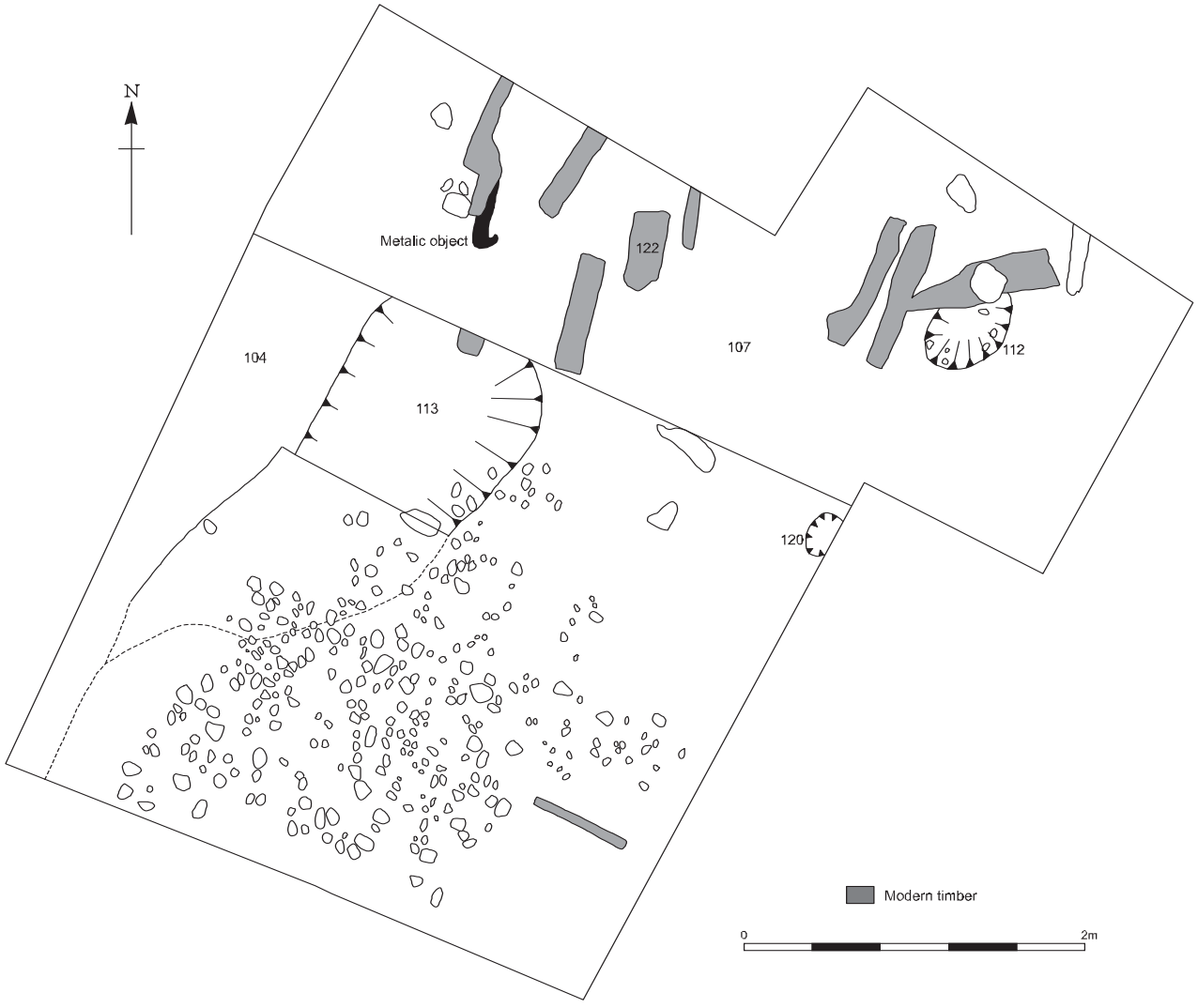


Fig 375
Birdoswald: plan of Time Team Trench 1.

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.

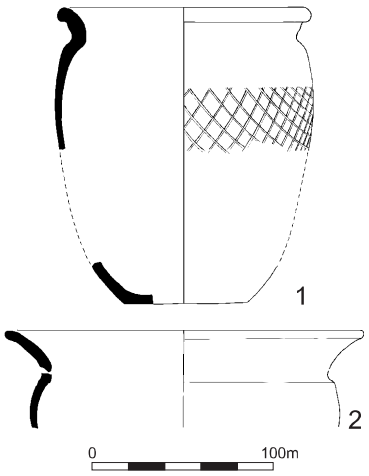


Fig 376
Birdoswald: pottery from Cremation 1 (Time Team Trench 1).

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

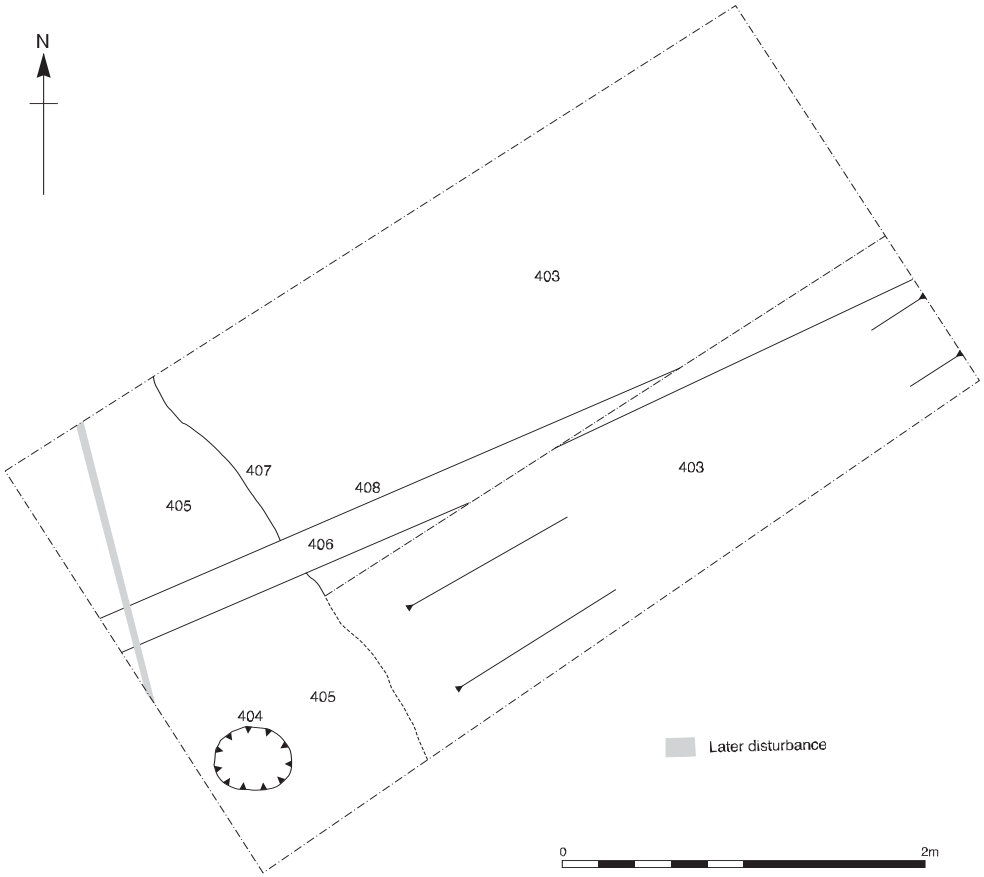


Fig 377
Birdoswald: plan of Time Team Trench 4.

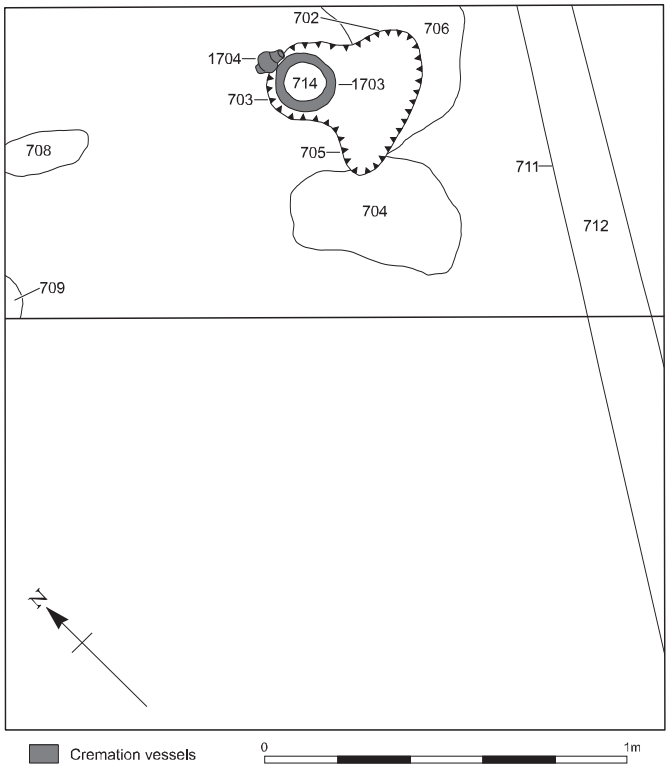


Fig 378 (below)
Birdoswald: plan of Time Team Trench 7.

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.

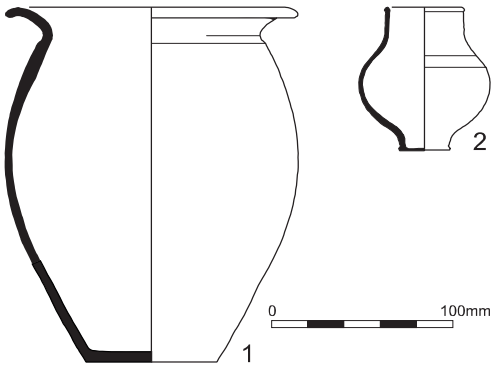


Fig 380 (left) Birdoswald: pottery from Cremation 3, Time Team Trench 7.

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

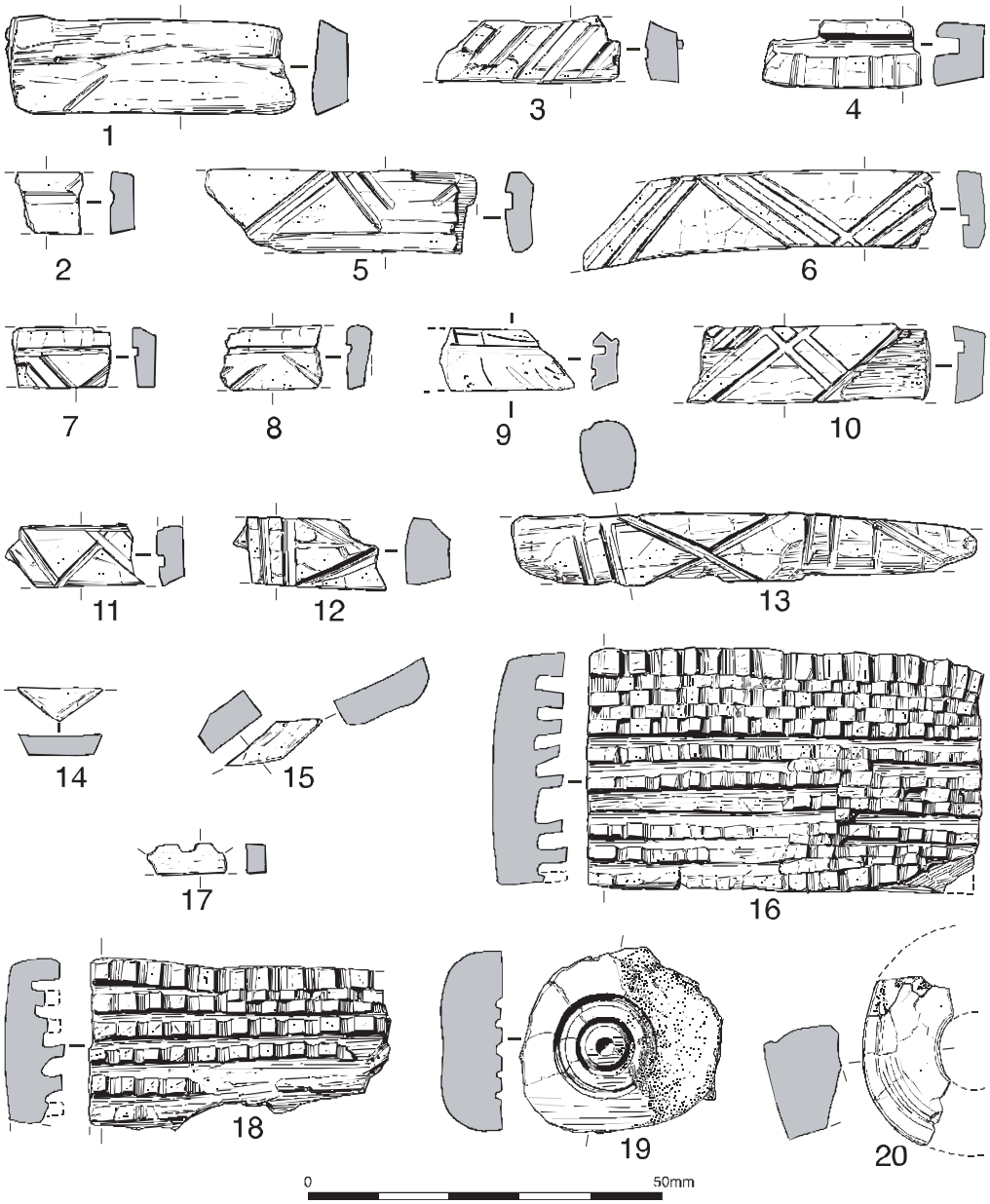


Fig 381
Birdoswald: bone veneers from Cremation 3, Time Team Trench 7.

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 (mm²)*	*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	–
A5.3|4	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 2,200mm^2. If the 10% or less collection figure is correct then the total area would have been more than 22,000mm^2. 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.

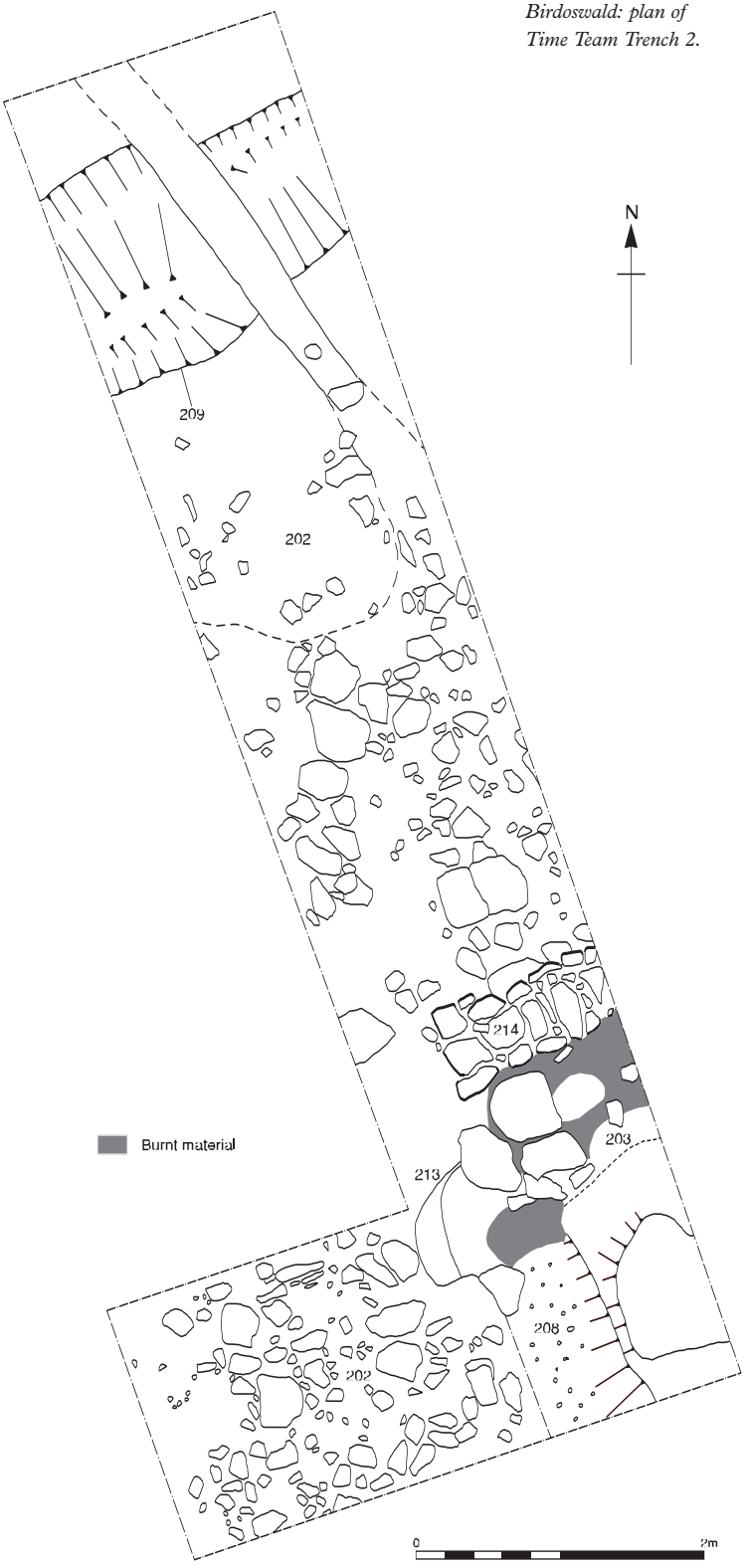


Fig 382
Birdoswald: plan of Time Team Trench 2.

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

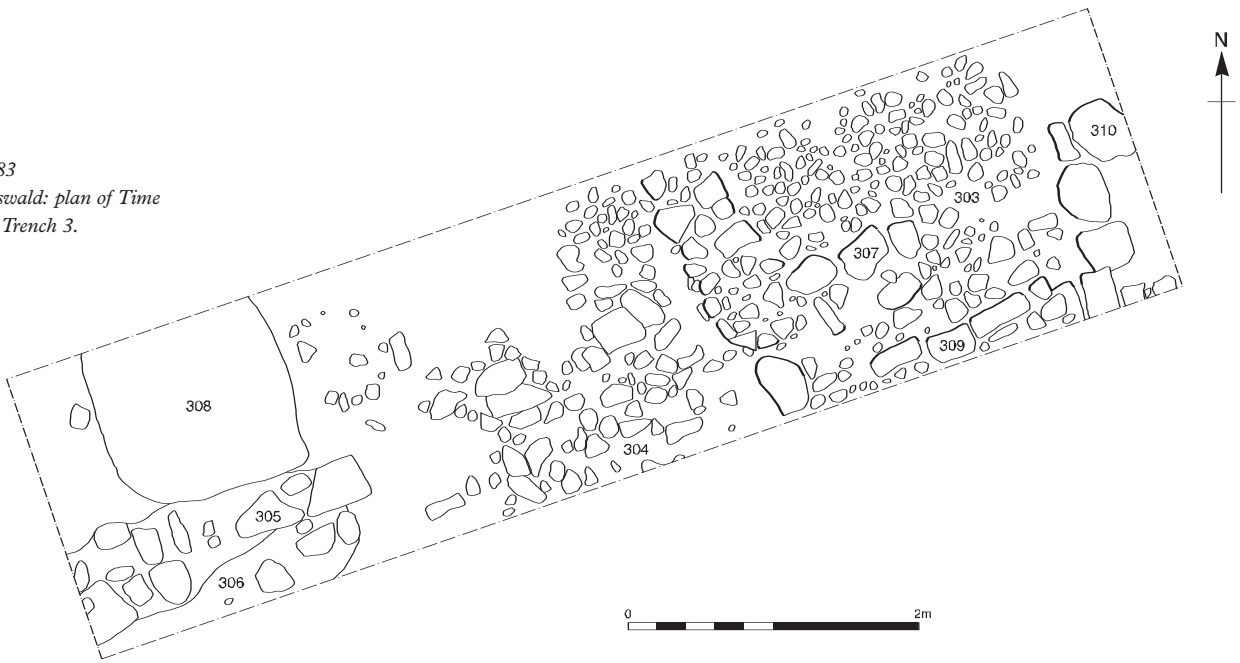


Fig 383
Birdoswald: plan of Time Team Trench 3.

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

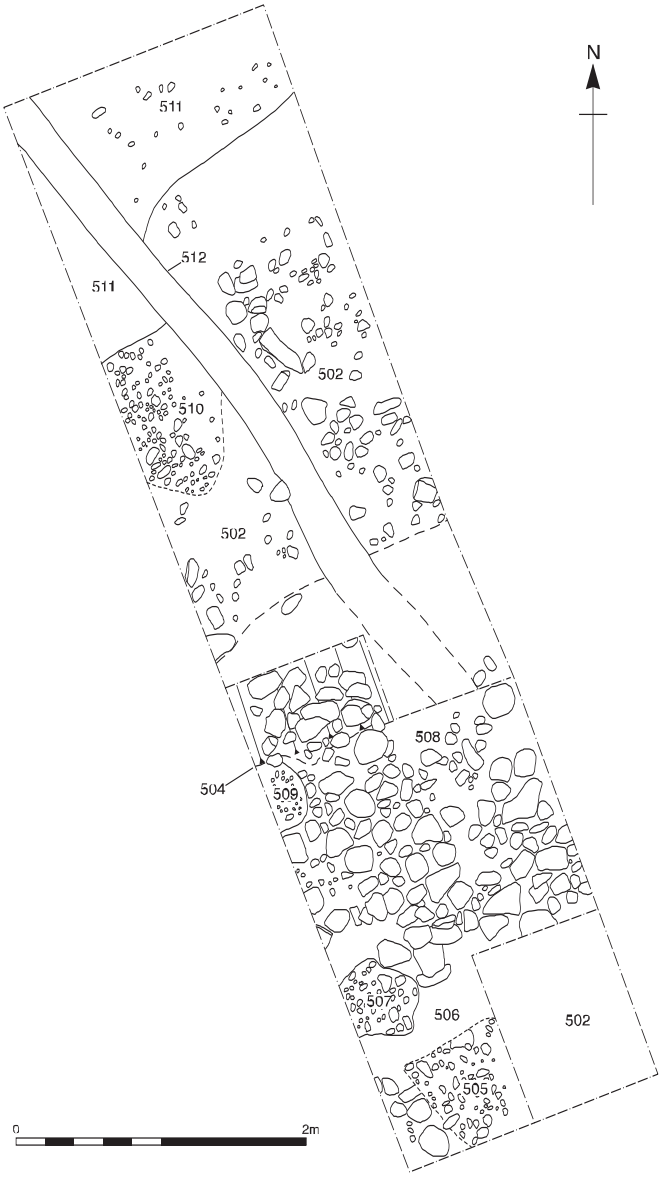


Fig 384
Birdoswald: plan of Time Team Trench 5.

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

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%

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

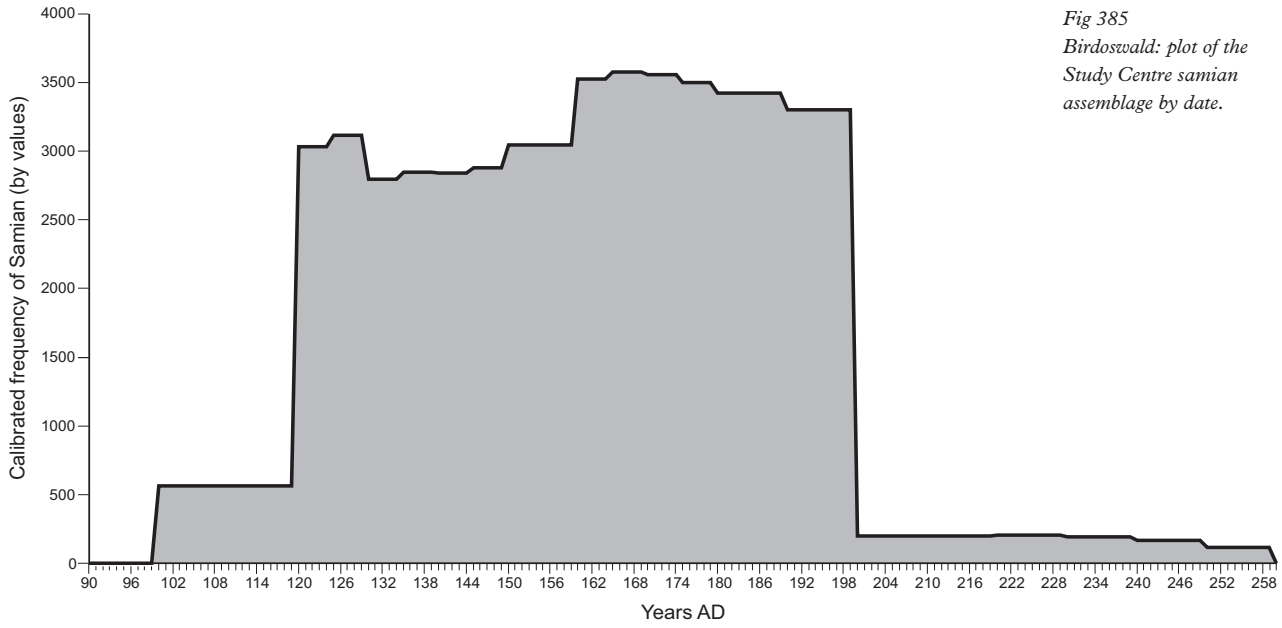


Fig 385
Birdoswald: plot of the Study Centre samian assemblage by date.

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)

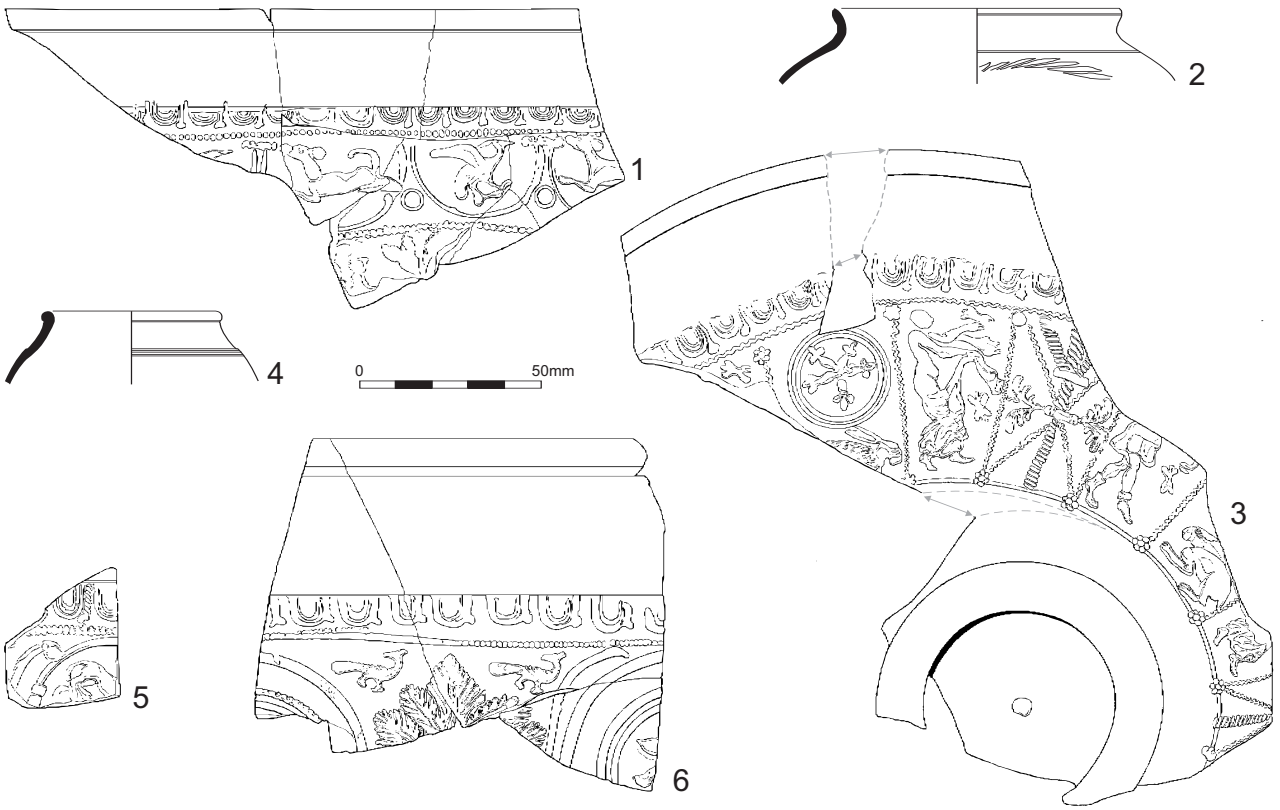


Fig 386
Birdoswald: illustrated samian ware from the Study Centre site.

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

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

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.

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

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

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.

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.

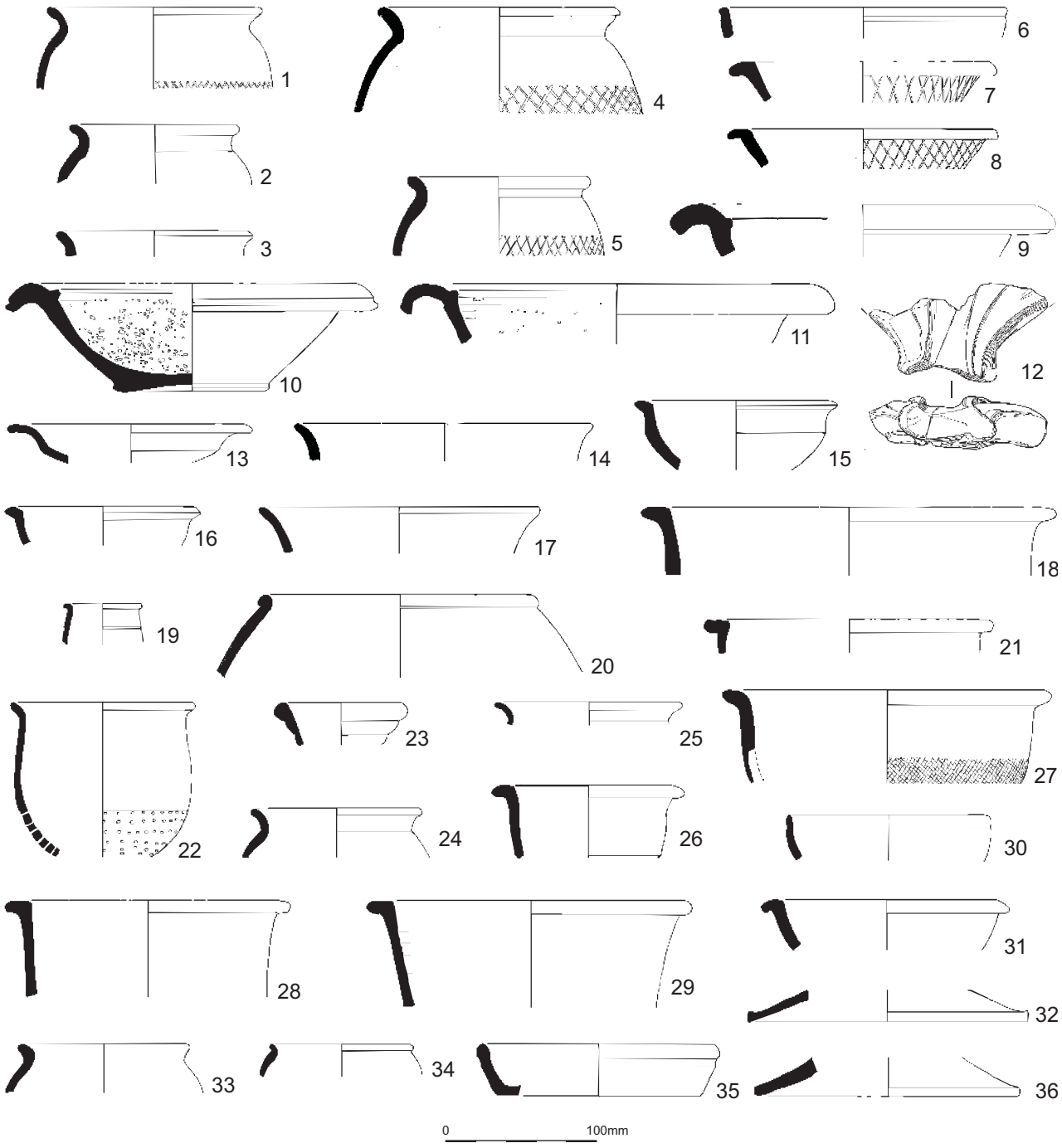


Fig 387
Birdoswald: pottery from the fill of the Vallum Ditch, Spur site, Phase A1, Nos 1–36.

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.

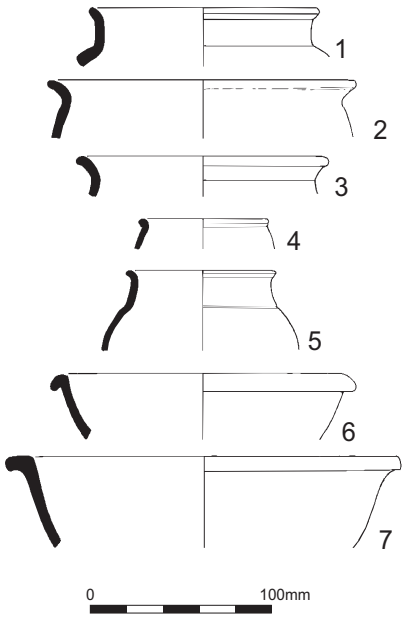


Fig 388
Birdoswald: pottery from the fill of the drain post-dating the Vallum Ditch fill and pre-dating the fort ditches, Spur site, Phase A2.

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

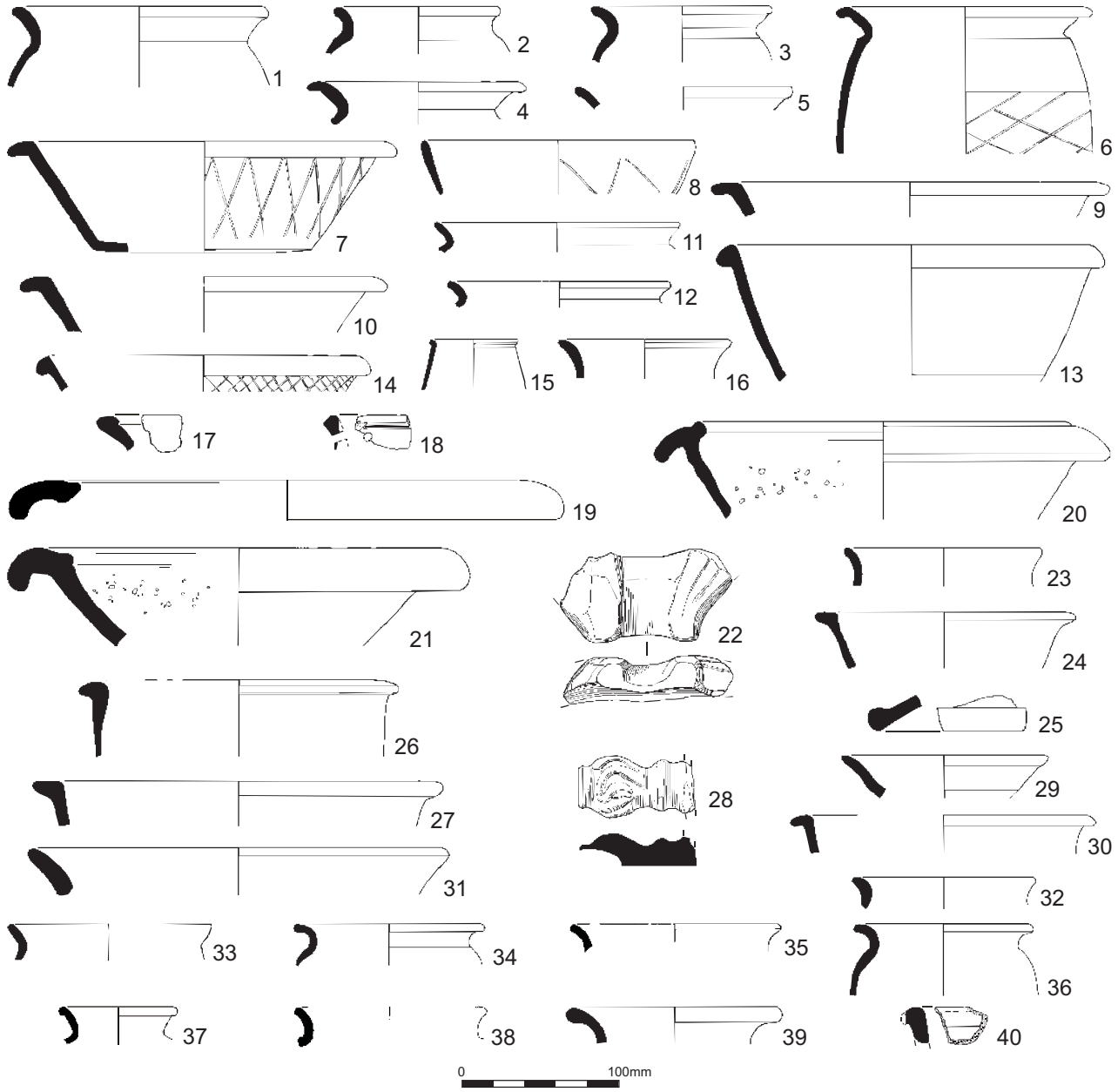


Fig 389
Birdoswald: pottery from the fill of the fort ditches, Spur site, Phase A3, Nos 1–40.

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)

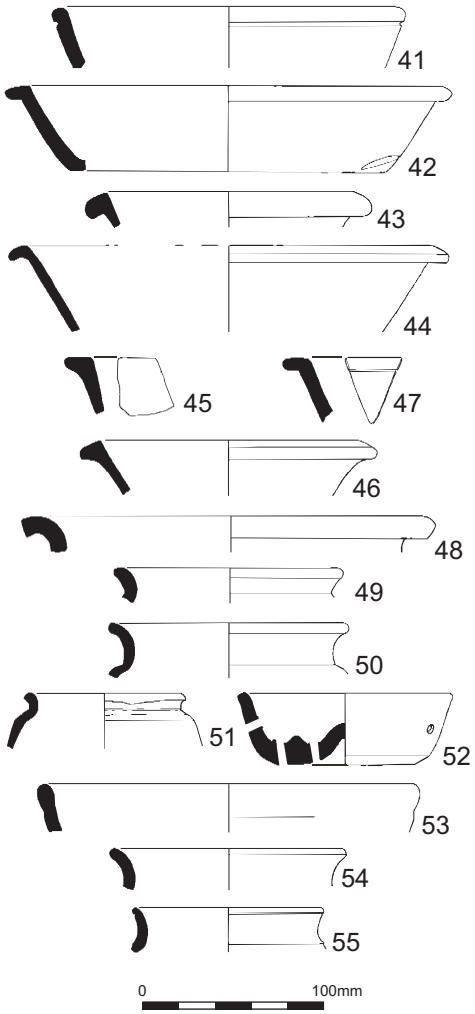


Fig 390
Birdoswald: pottery from the fill of the fort ditches, Spur site, Phase A3, Nos 41–55.

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)

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', p347) 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)

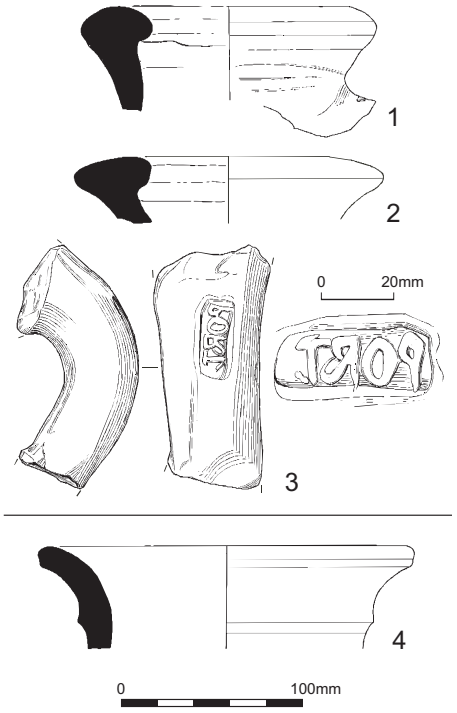


Fig 391
Birdoswald: pottery fabric series: amphorae rims and stamps.

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

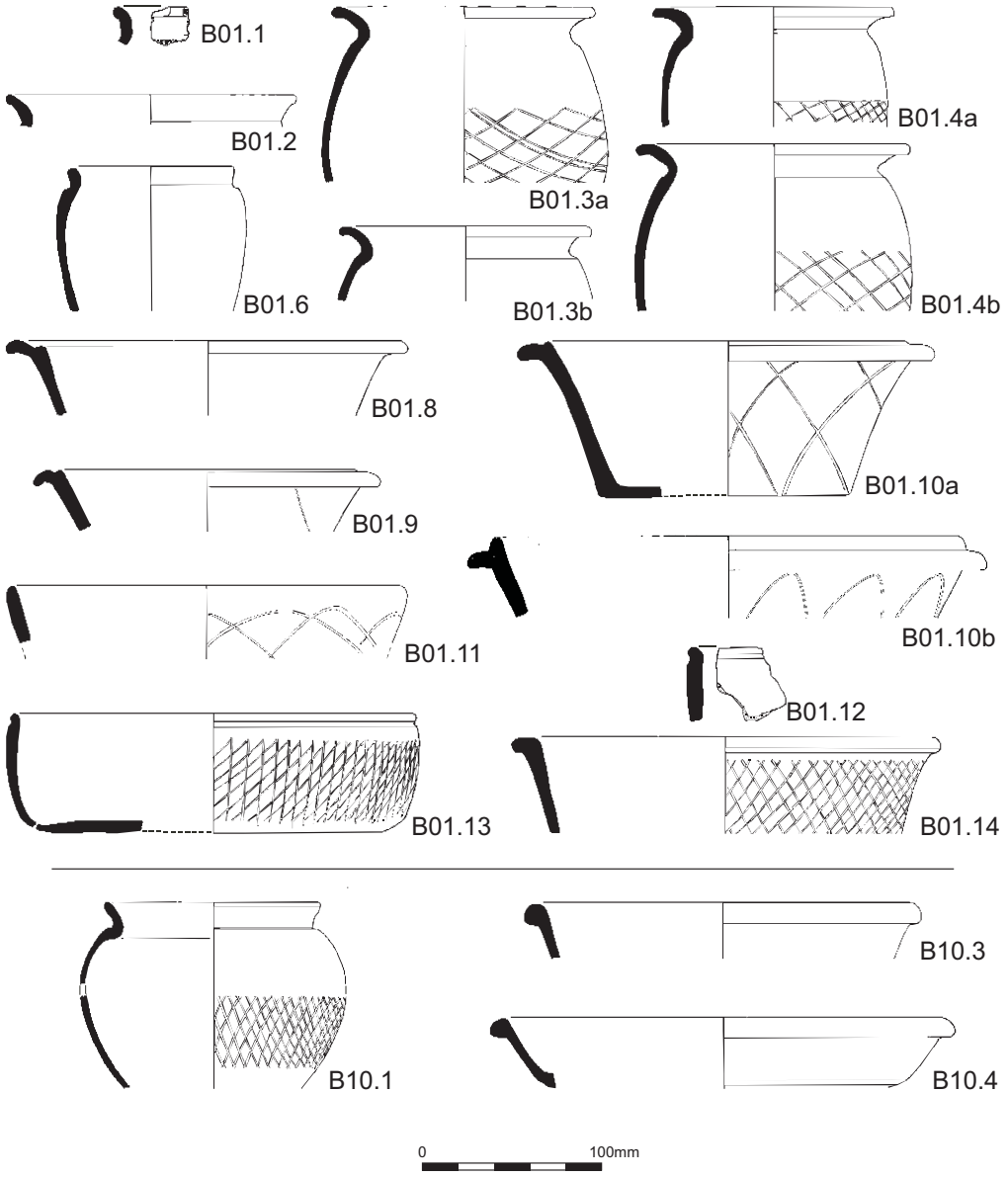


Fig 392
Birdoswald: pottery fabric series: Class B, Black-burnished wares.

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

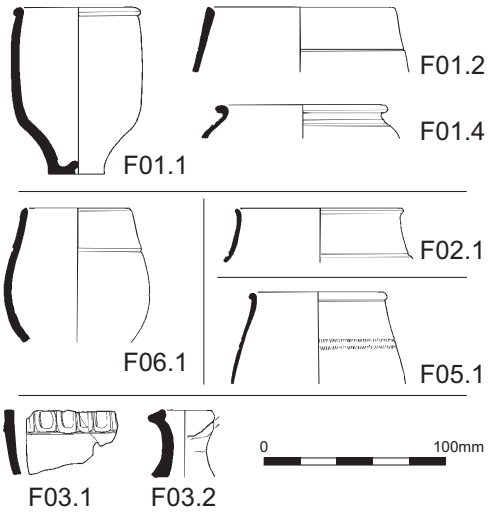


Fig 393
Birdoswald: pottery fabric series: Class F, Colour-coated wares.

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

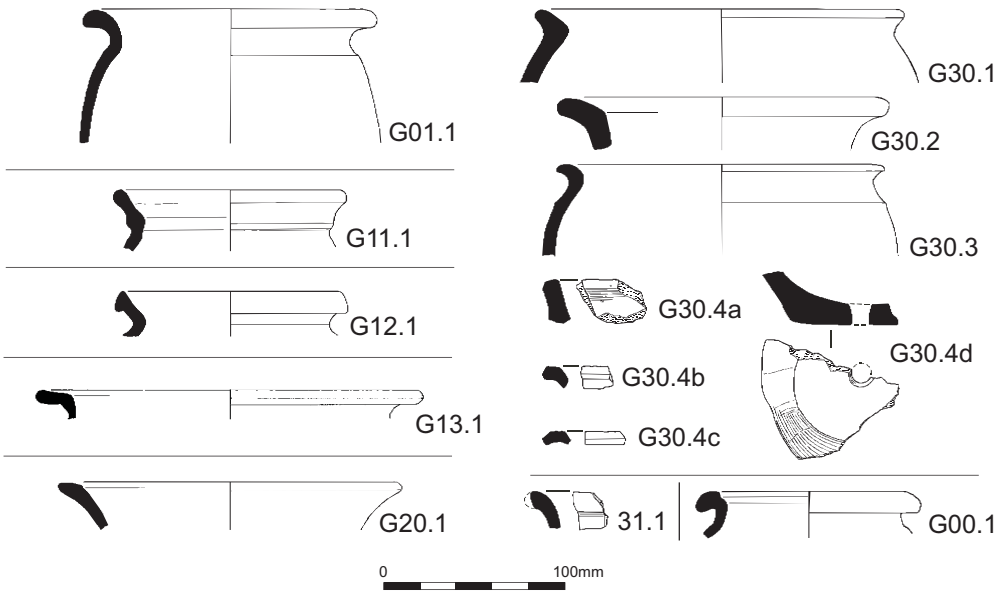


Fig 394
Birdoswald: pottery fabric series: Class G, Gritted wares.

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)

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

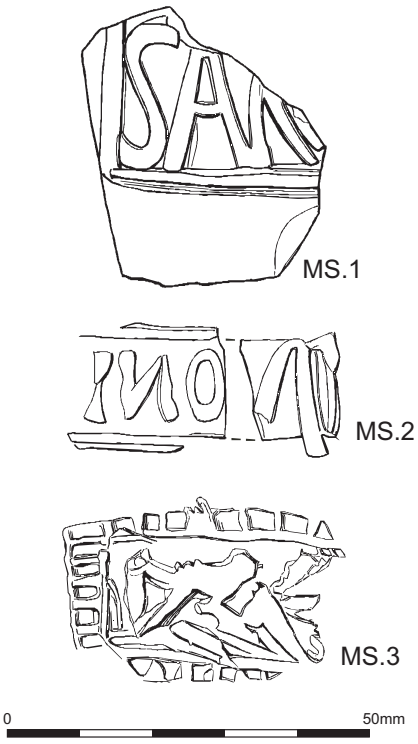


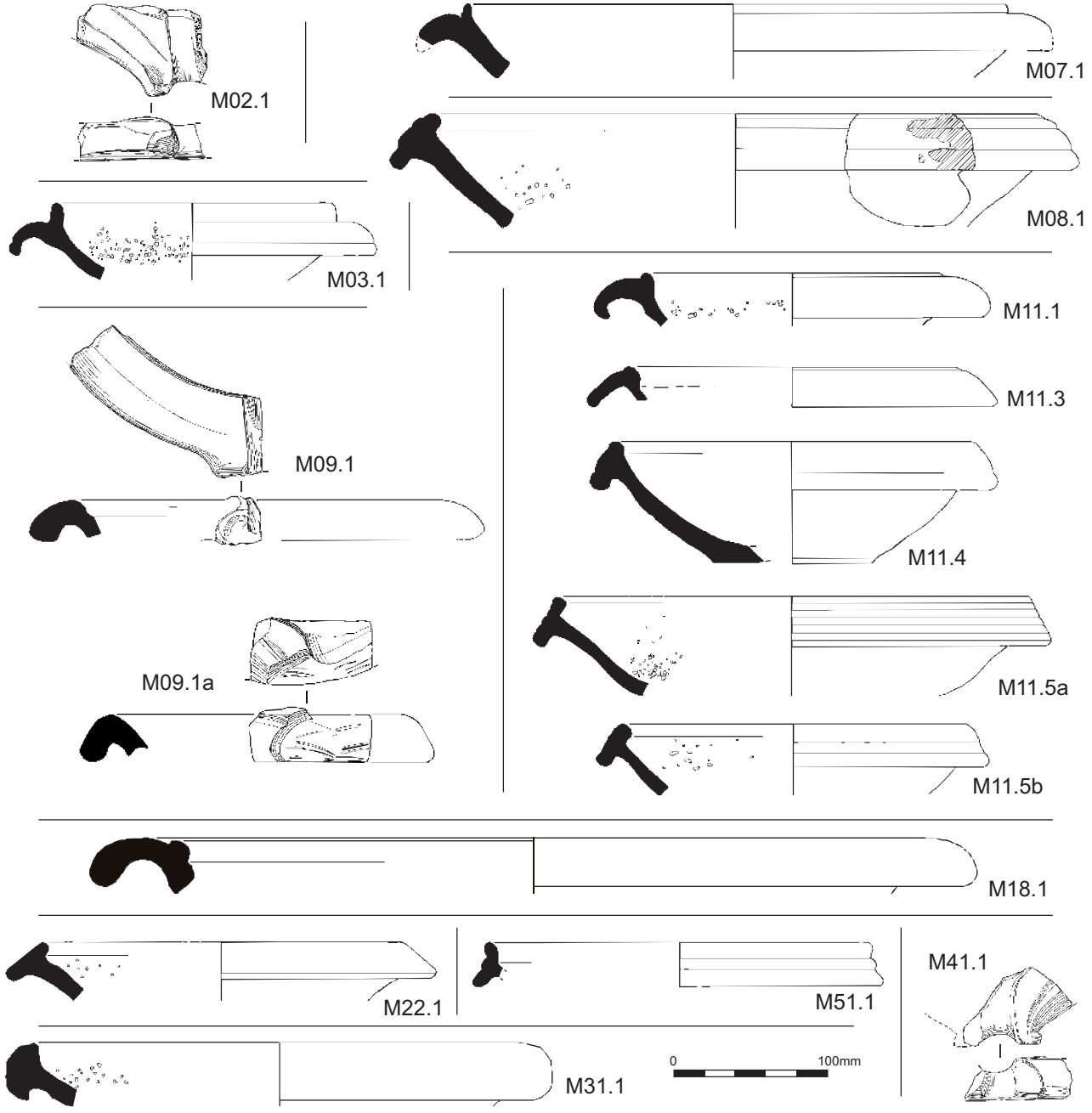
Fig 395
Birdoswald: pottery fabric series: Class M, Mortaria stamps.

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

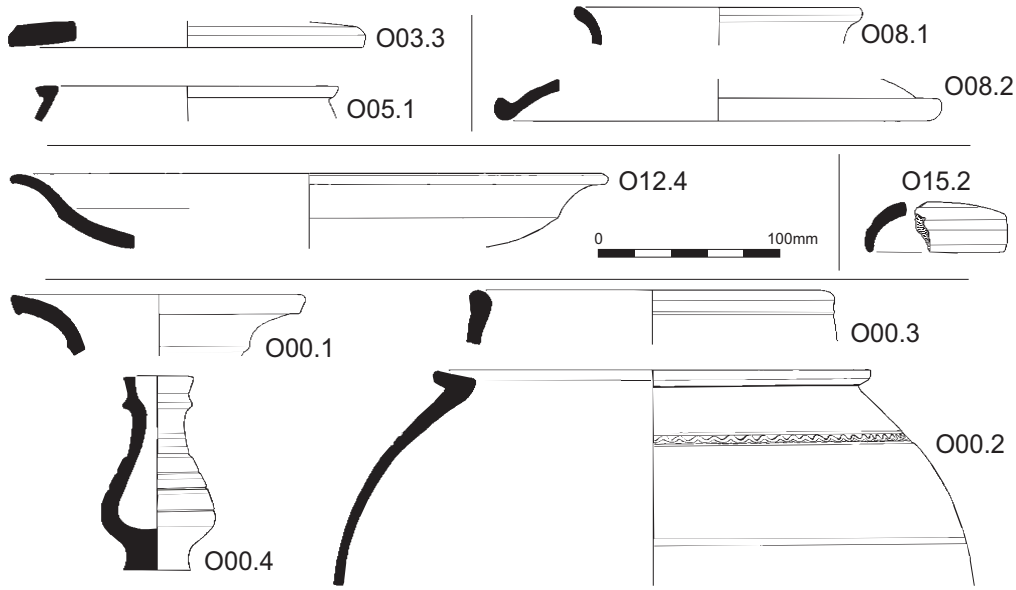


Fig 397
Birdoswald: pottery fabric series: Class O, Oxidised wares.

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

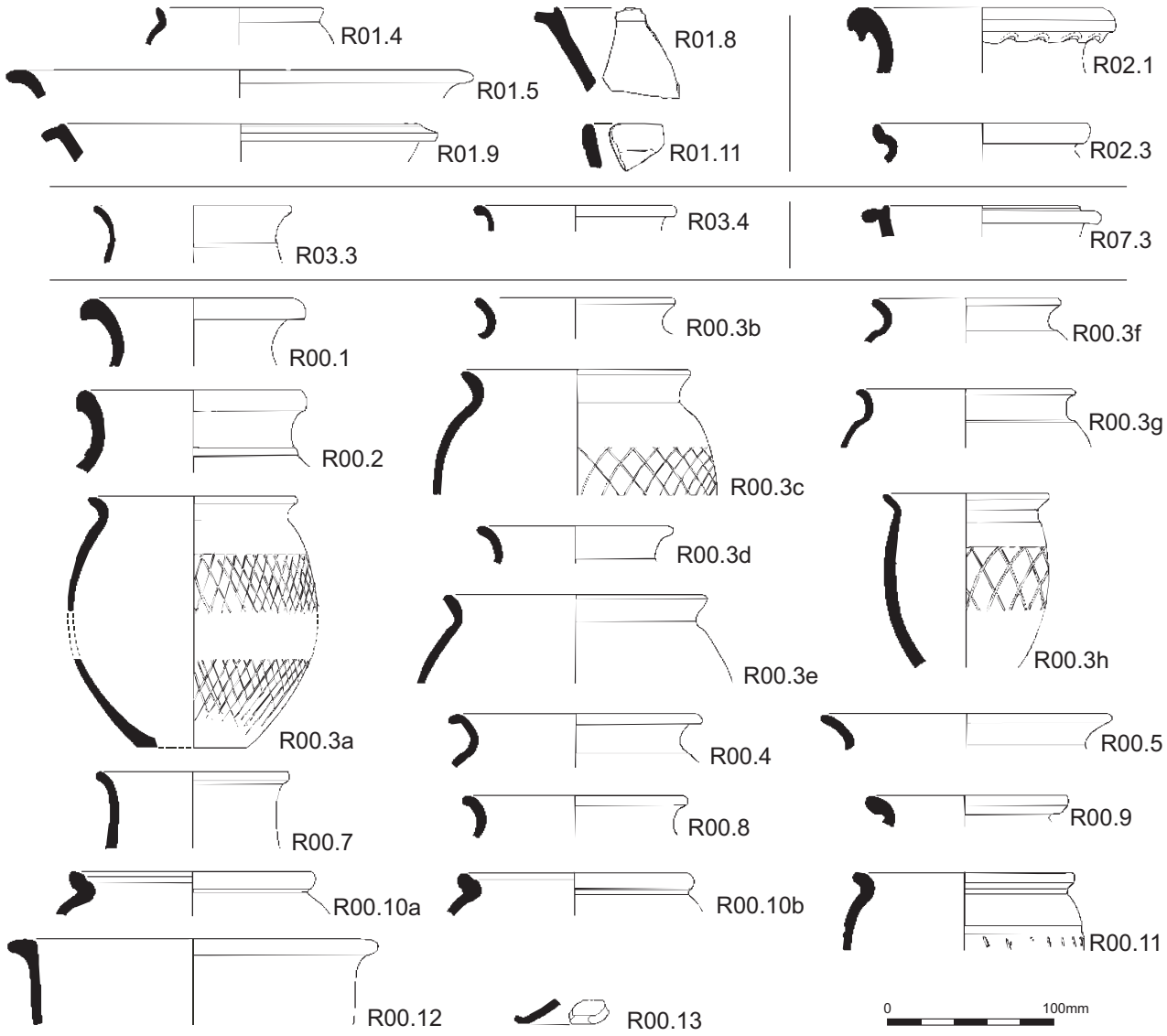


Fig 398 Birdoswald: pottery fabric series: Fabric Class R, Reduced wares.

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

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.

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

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
Birdoswald: plot of the Spur site samian assemblage by date.

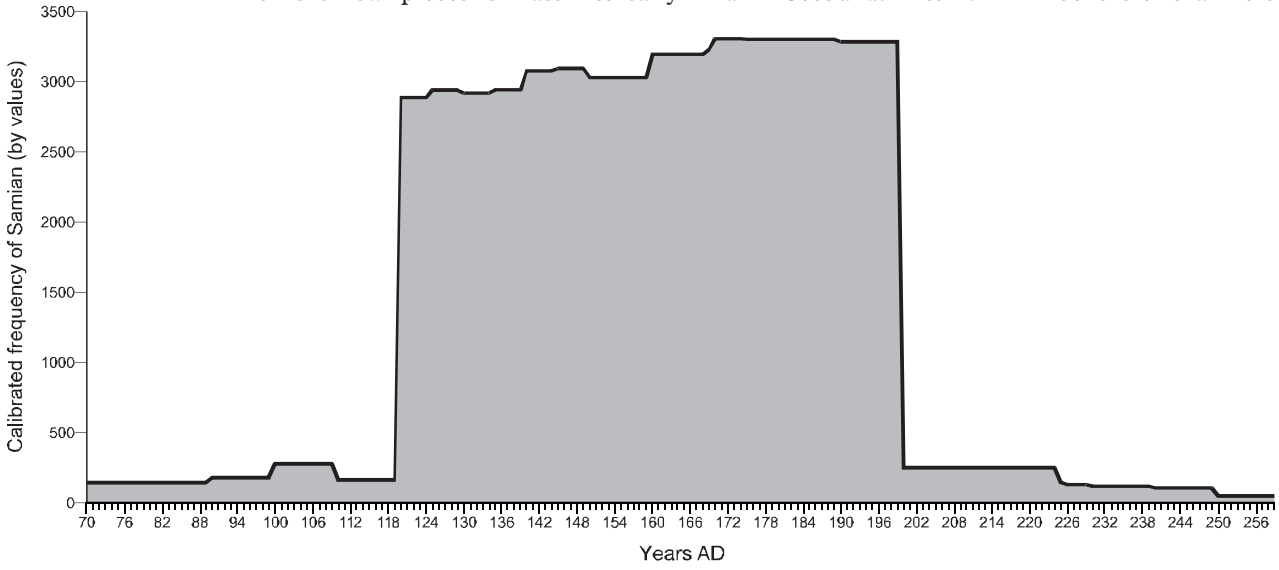


Table 33 Summary of the East Gaulish samian from the Spur site (590).

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)

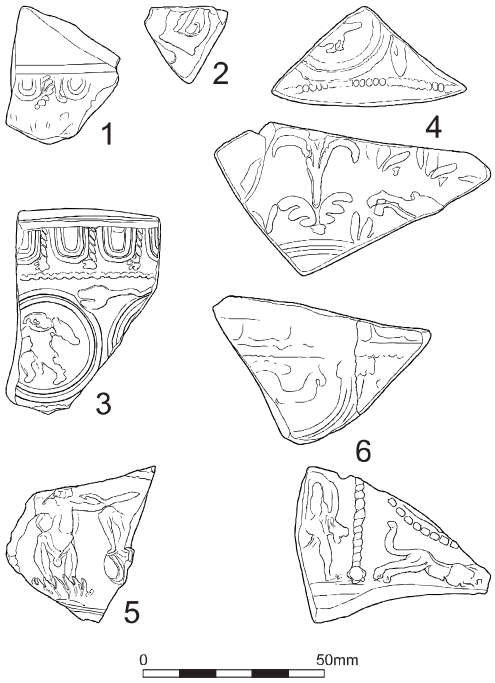


Table 36 The Composition of the samian from the outer fort ditch on the Spur (590) (ie the number of vessels represented attributable to specific form classes).

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),

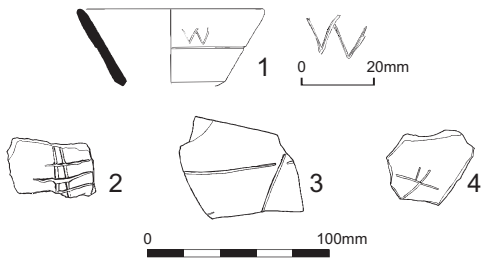


Fig 401
Birdoswald: graffitti on pottery.

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.

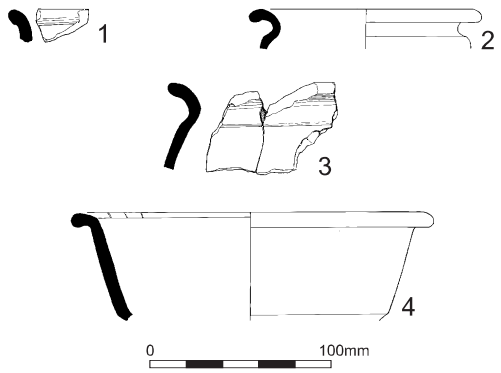


Fig 402
Birdoswald: illustrated pottery from the Time Team excavation on the cemetery and western Vicus.

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 metalwork 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

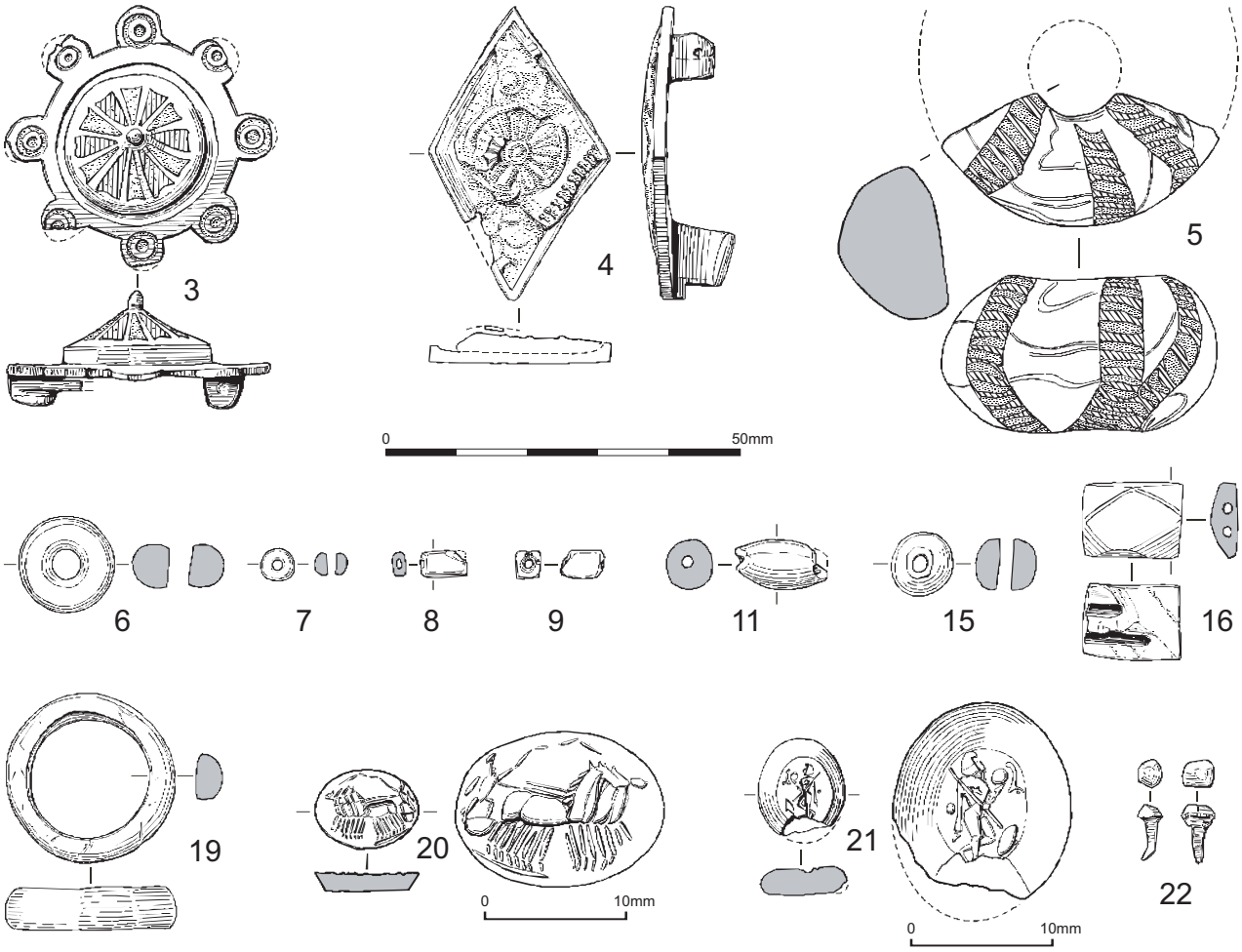


Fig 403
Birdoswald: small finds: personal ornaments.

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

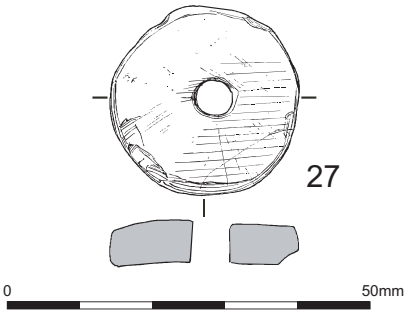


Fig 404
Birdoswald: small finds: textile equipment.

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

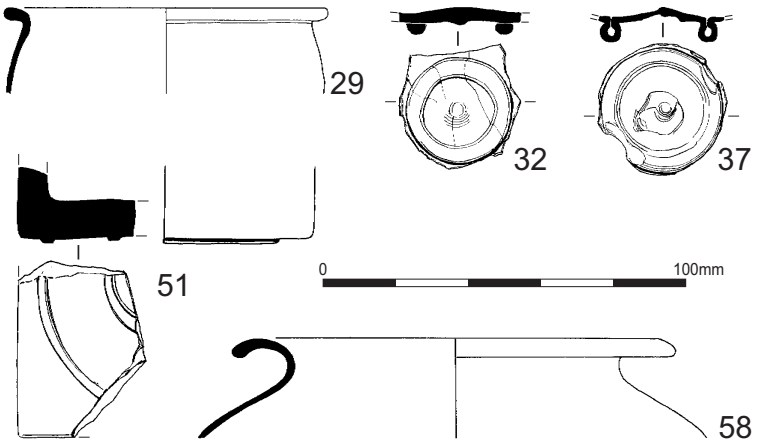


Fig 405
Birdoswald: small finds: vessel glass.

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

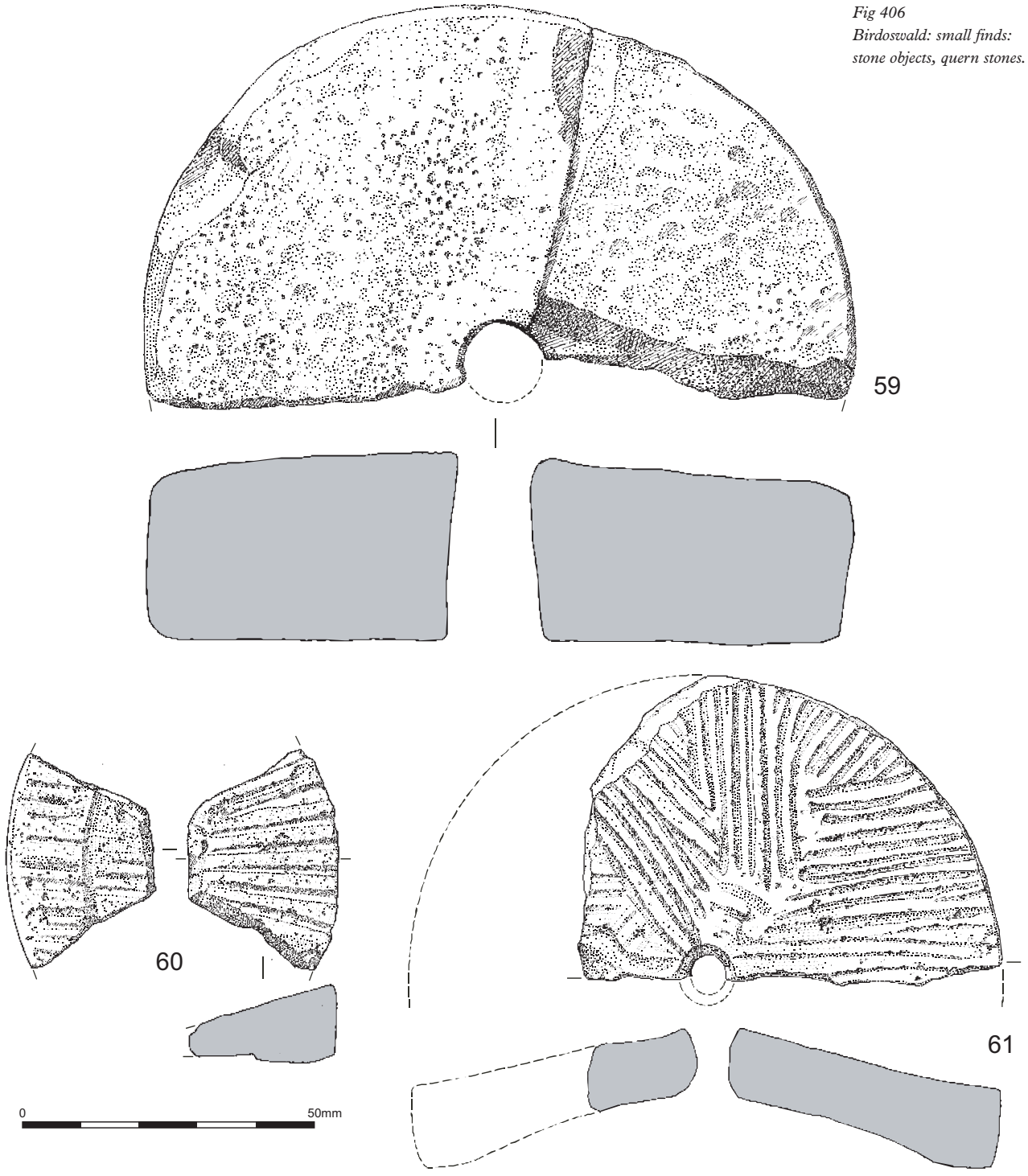


Fig 406
Birdoswald: small finds: stone objects, quern stones.

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

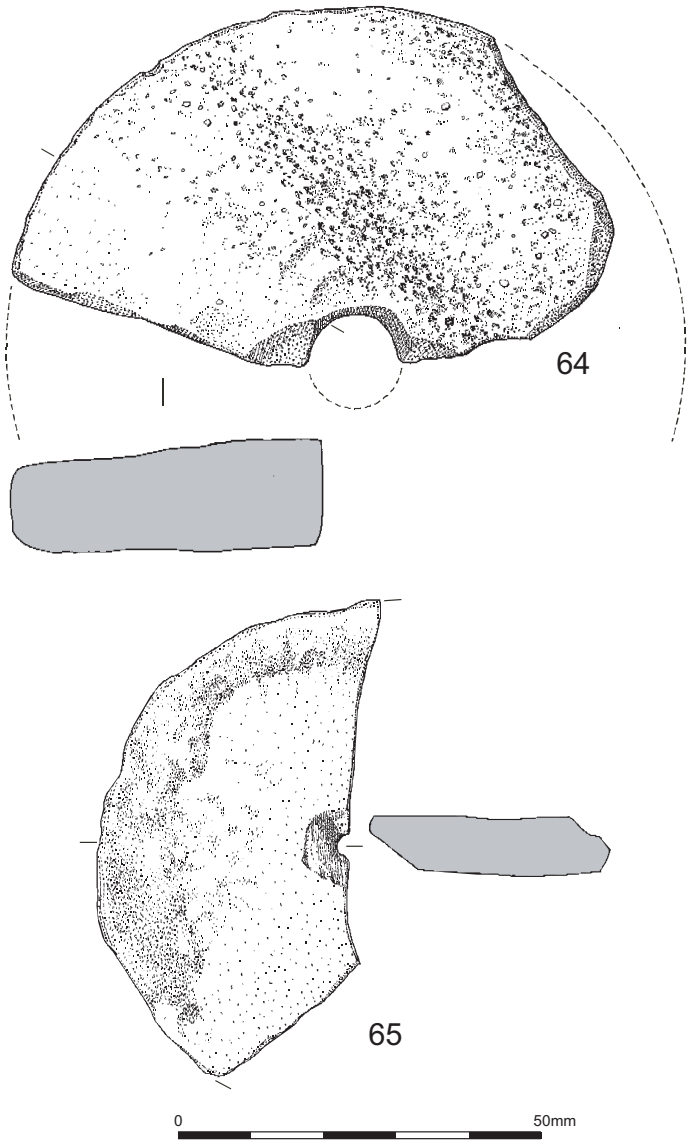


Fig 407
Birdoswald: small finds: stone objects, quern stone (No. 64) and pot lid (No. 65).

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

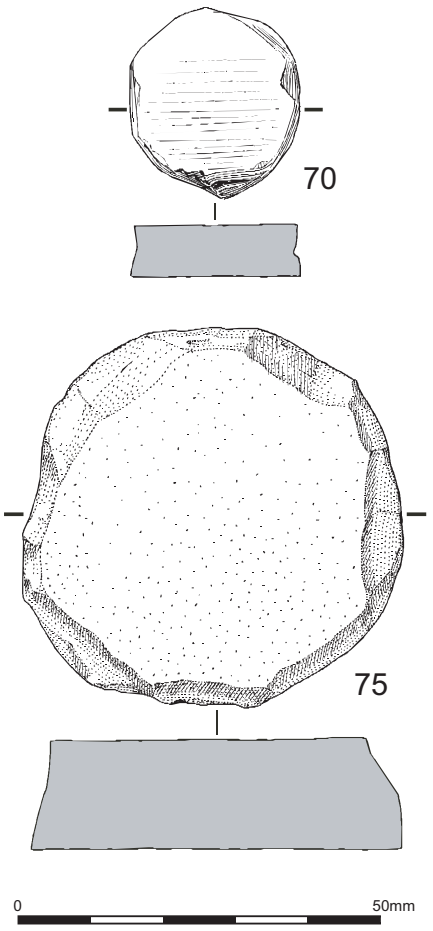


Fig 408
Birdoswald: small finds: recreational objects, counters.

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

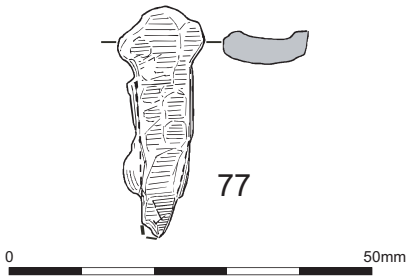
Fig 409 (below) Birdoswald: small find: nail.

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

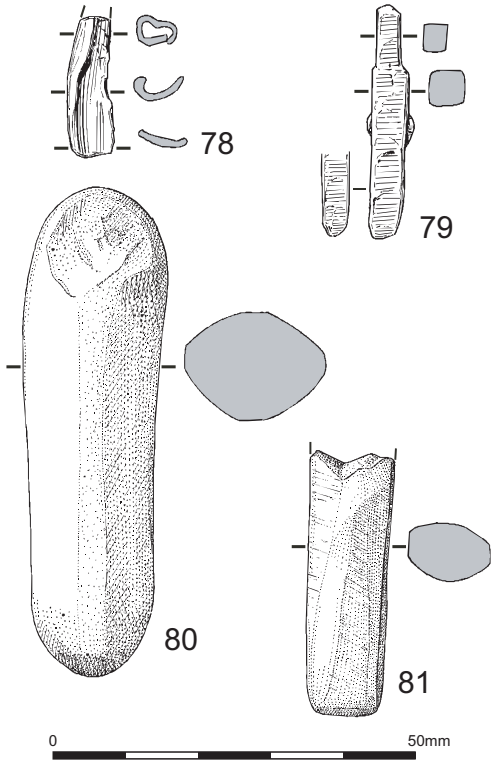
77. Time Team: sf1216: 208 (Fig 409)
Iron nail: rectangular section, diamond-shaped head, twisted out of shape; rectangular-section shank tapering to square section; lower part missing. present length 61mm, head section 22 × 6.5mm



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

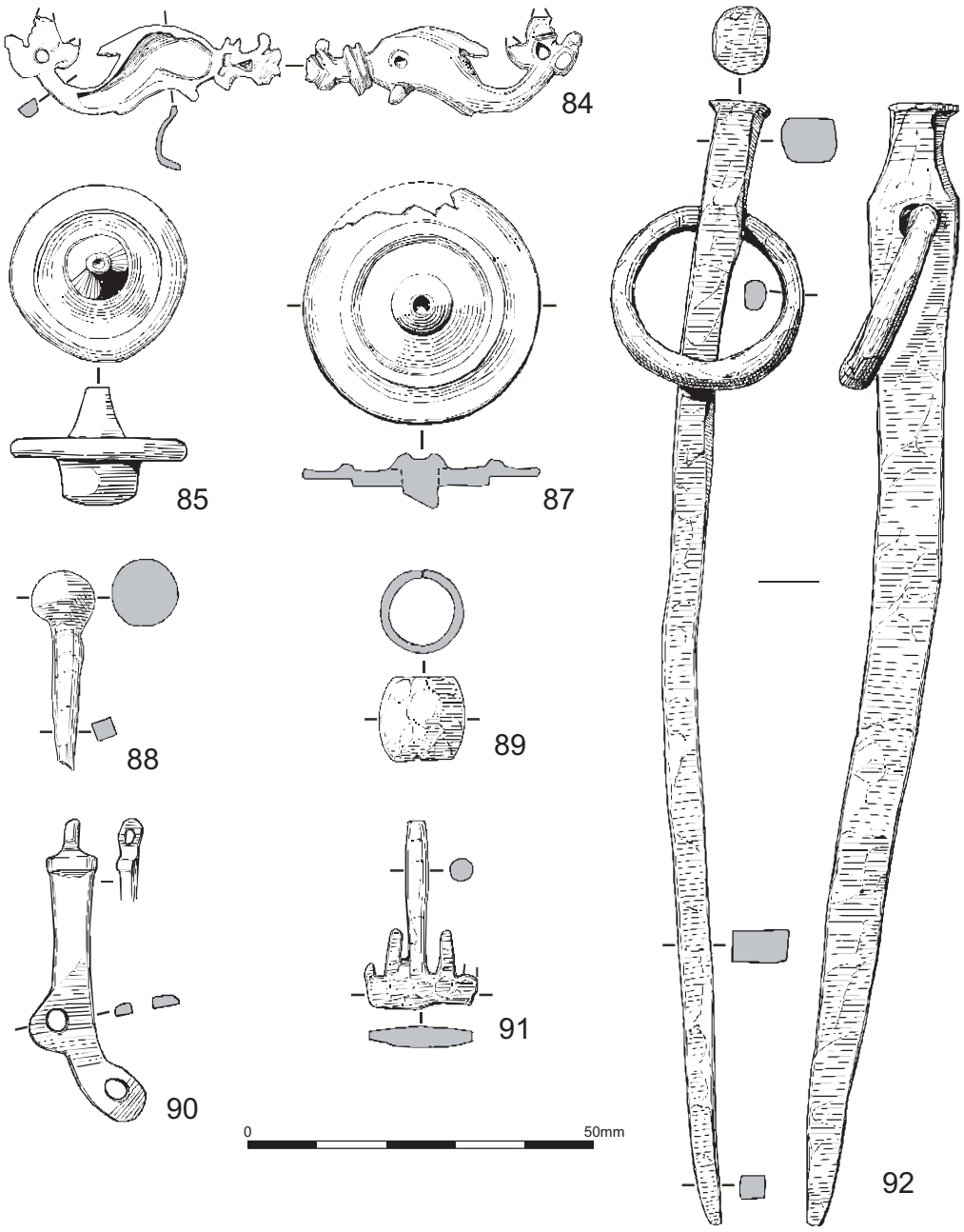


Fig 411
Birdoswald: small finds: fasteners and fittings.

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!

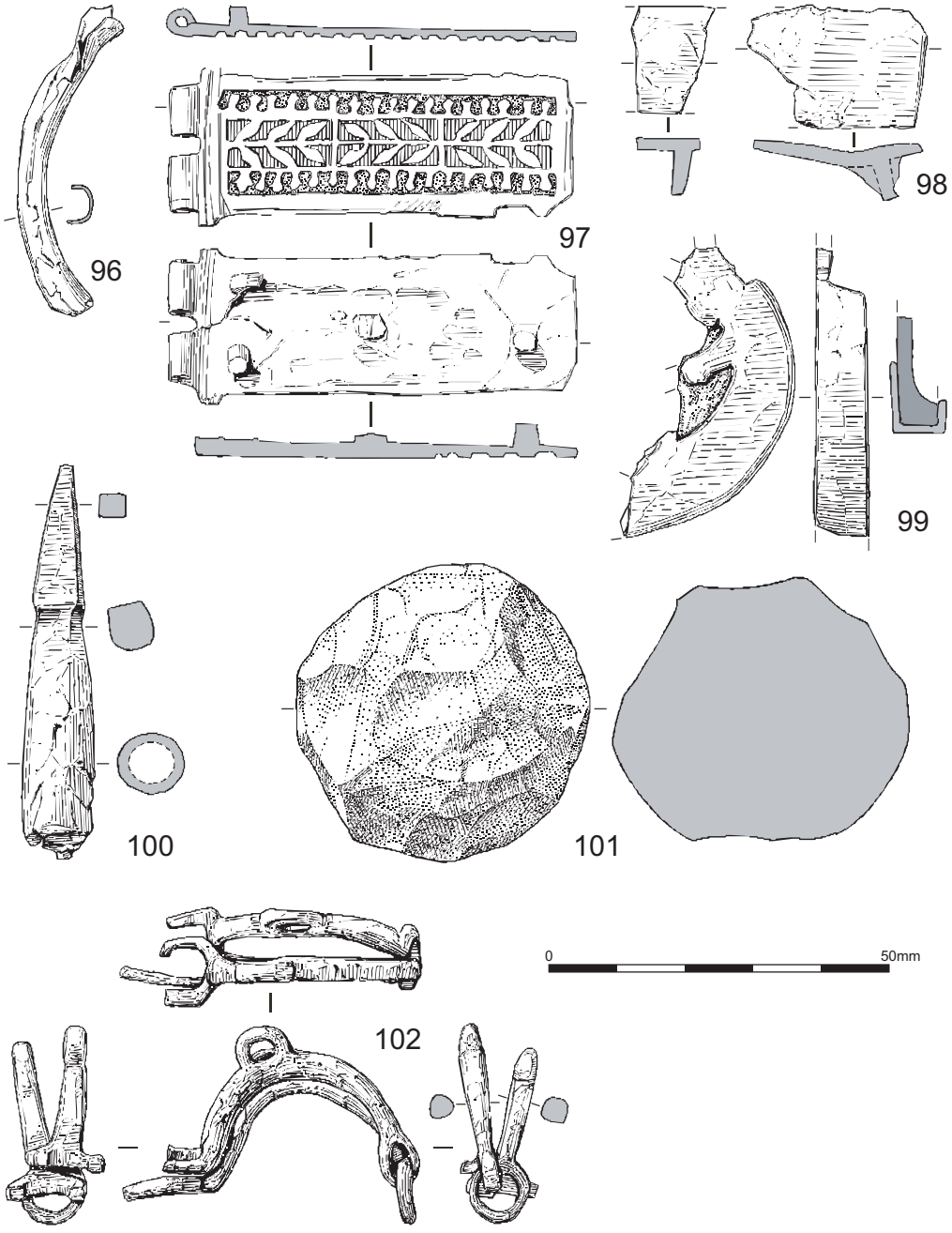


Fig 412
Birdoswald: small finds: military objects.

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

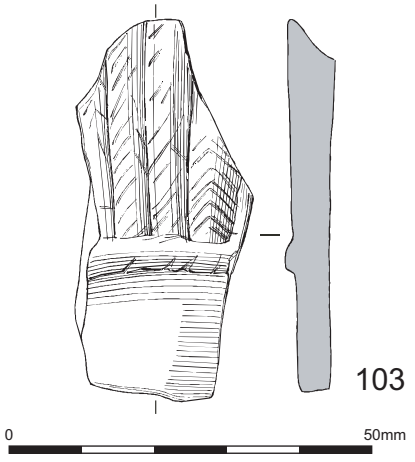


Fig 413
Birdoswald: small finds: religious object, pipeclay figurine.

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

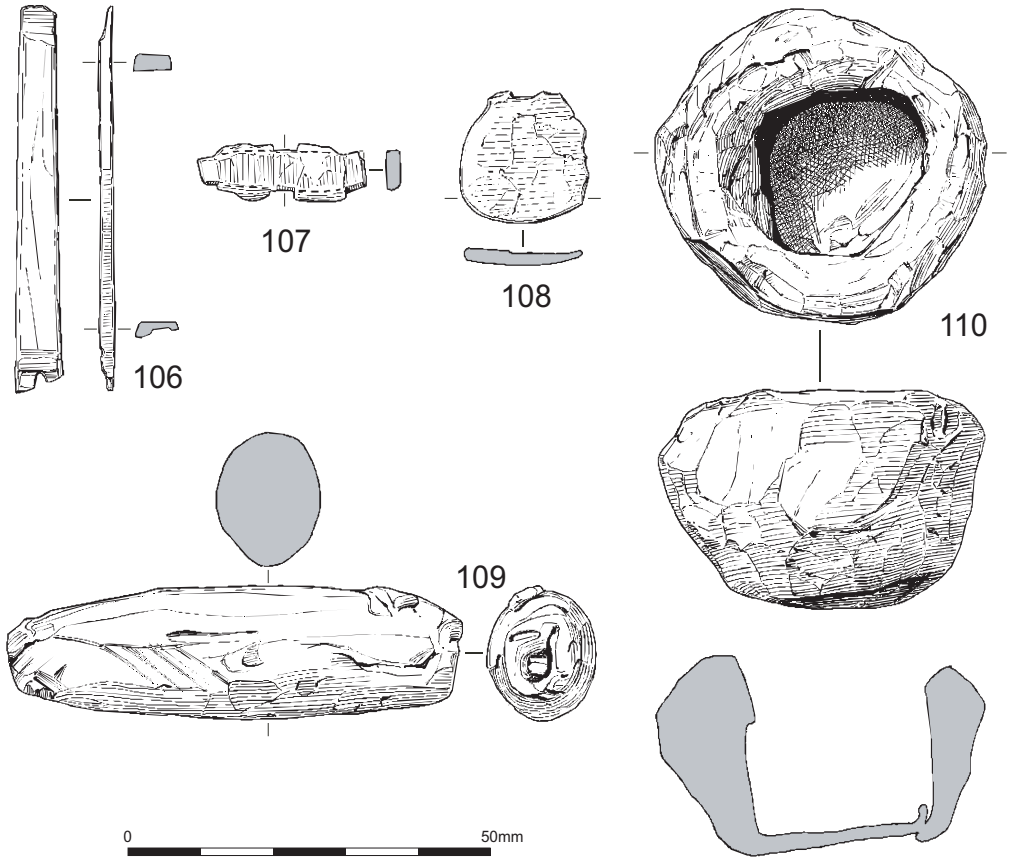


Fig 415
Birdoswald: small finds: miscellaneous objects.

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

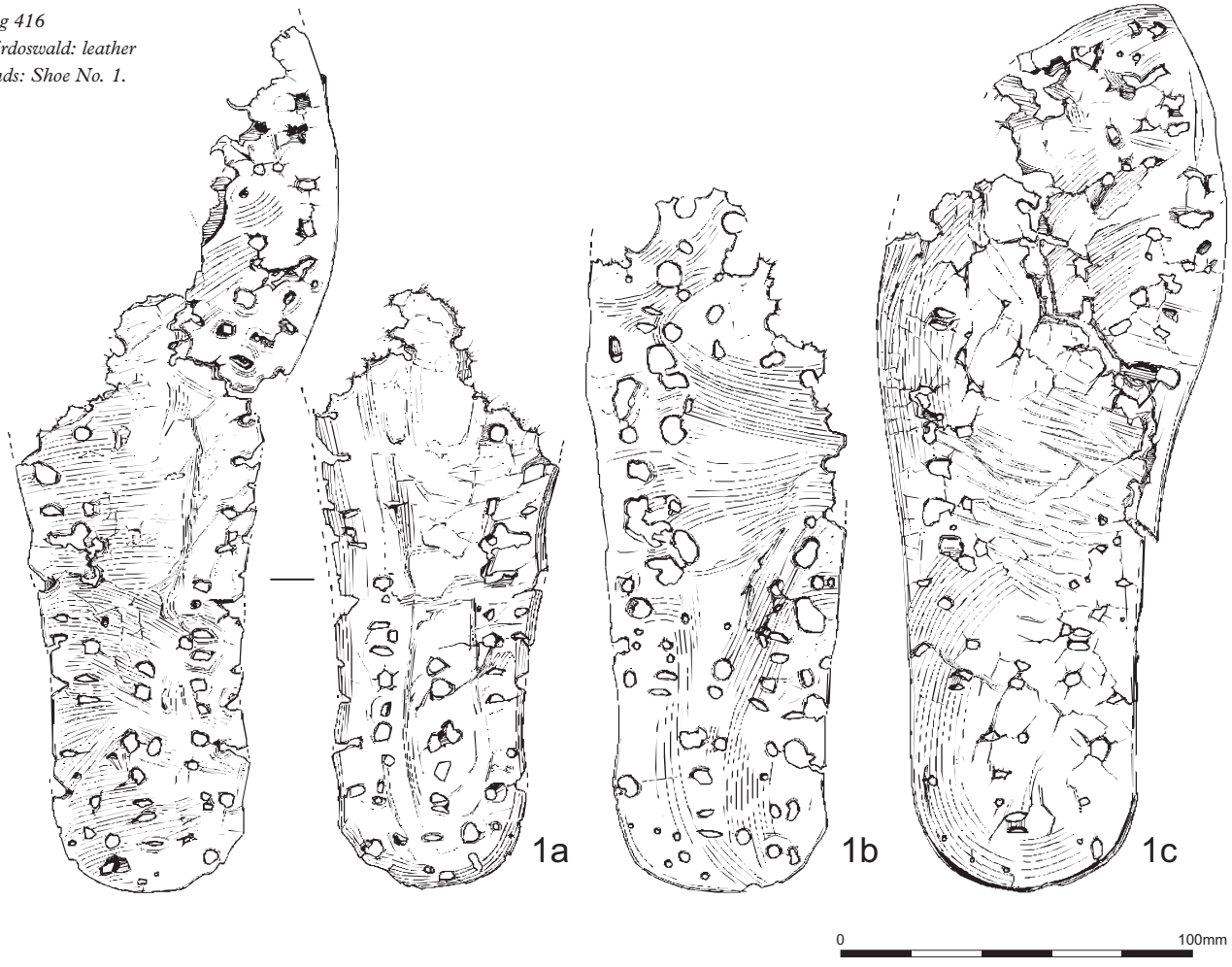


Fig 416
Birdoswald: leather finds: Shoe No. 1.

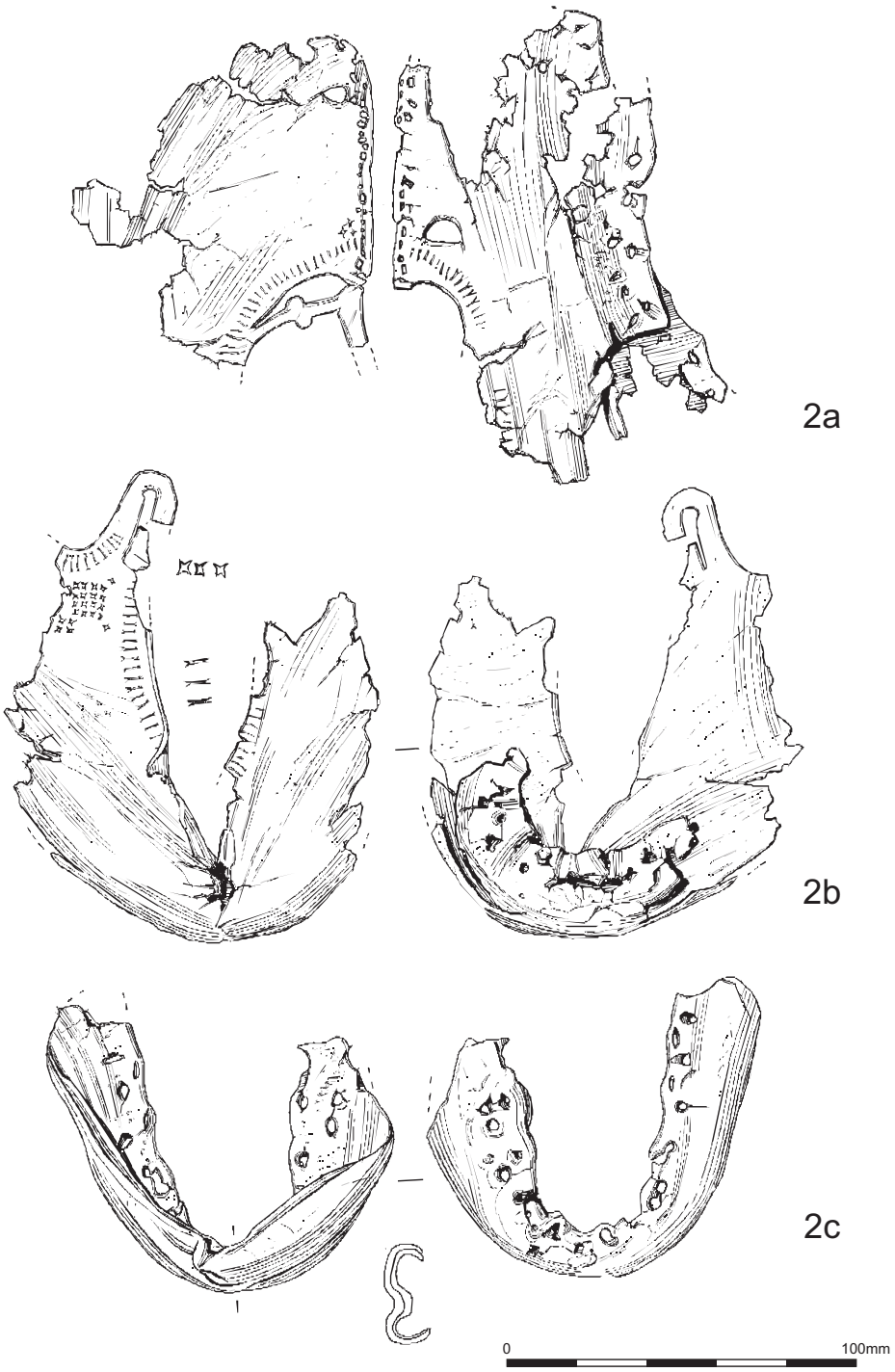


Fig 417
Birdoswald: leather finds: Shoe No. 2, upper fragments.

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

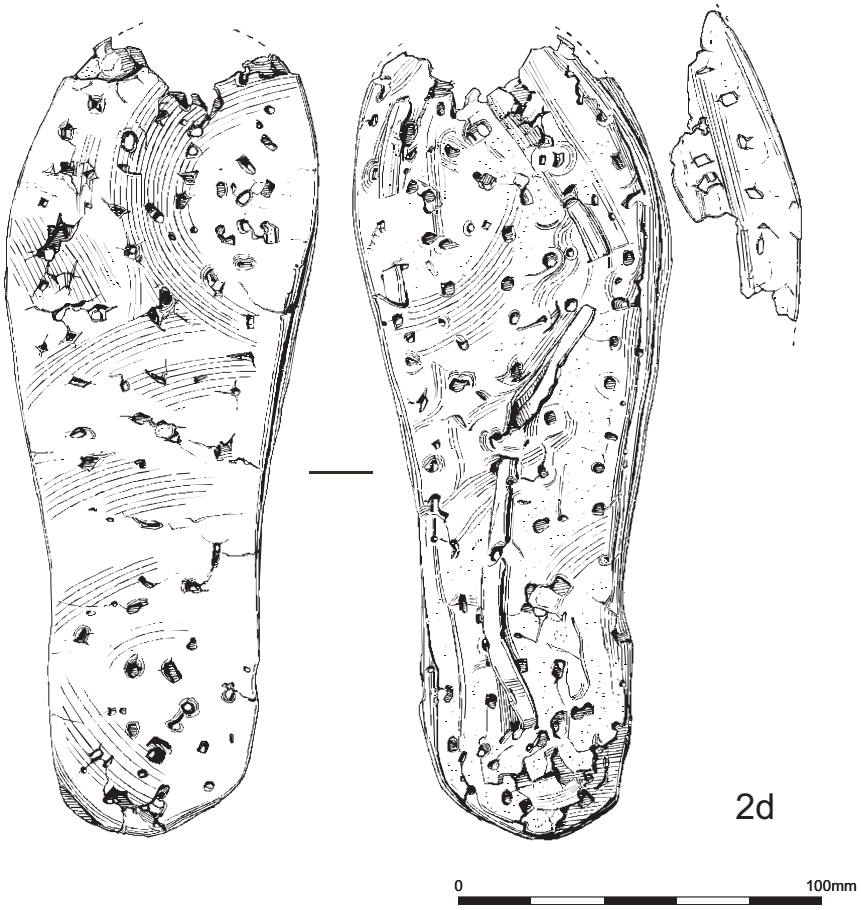


Fig 418
Birdoswald: leather finds: Shoe No. 2, bottom unit.

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

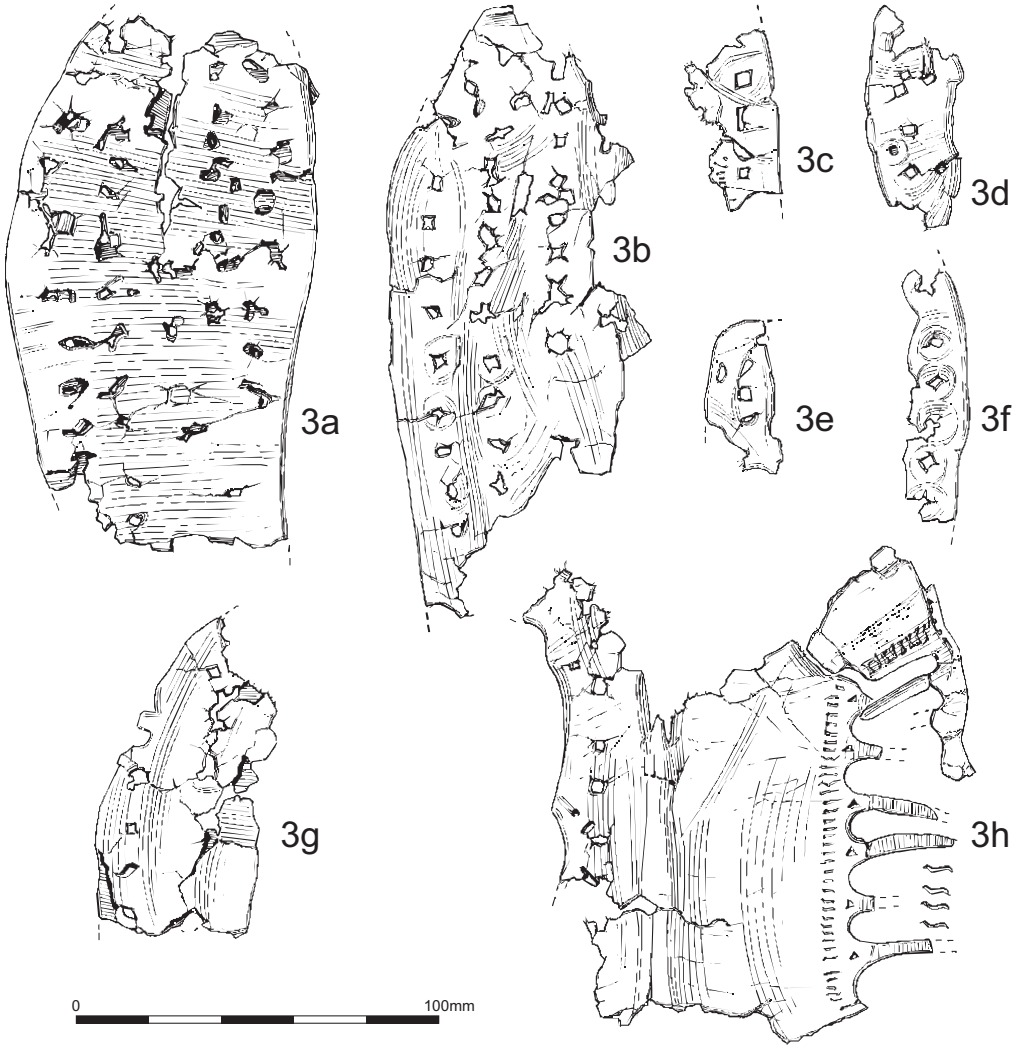


Fig 419
Birdoswald: leather finds: Shoe No. 3.

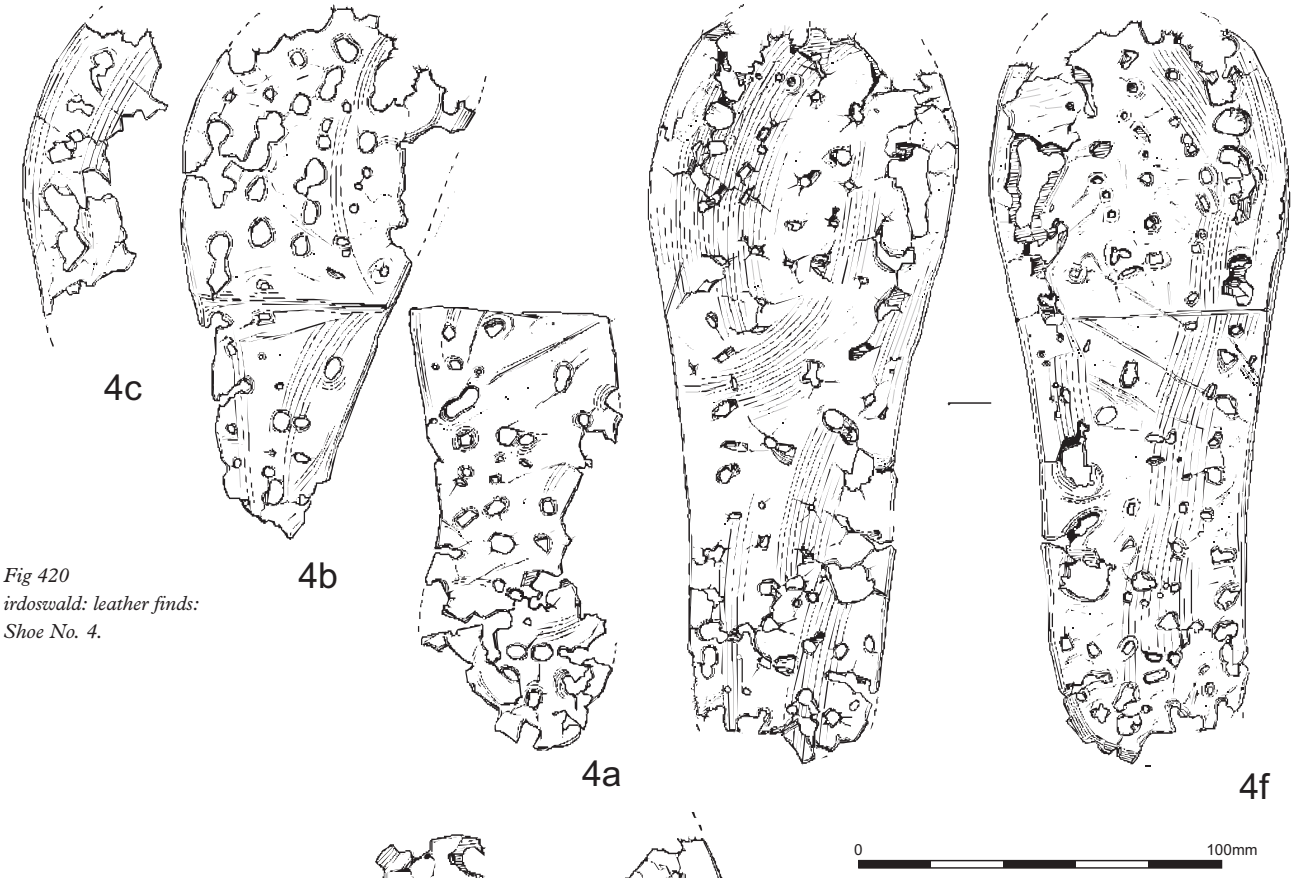


Fig 420
irdoswald: leather finds: Shoe No. 4.

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

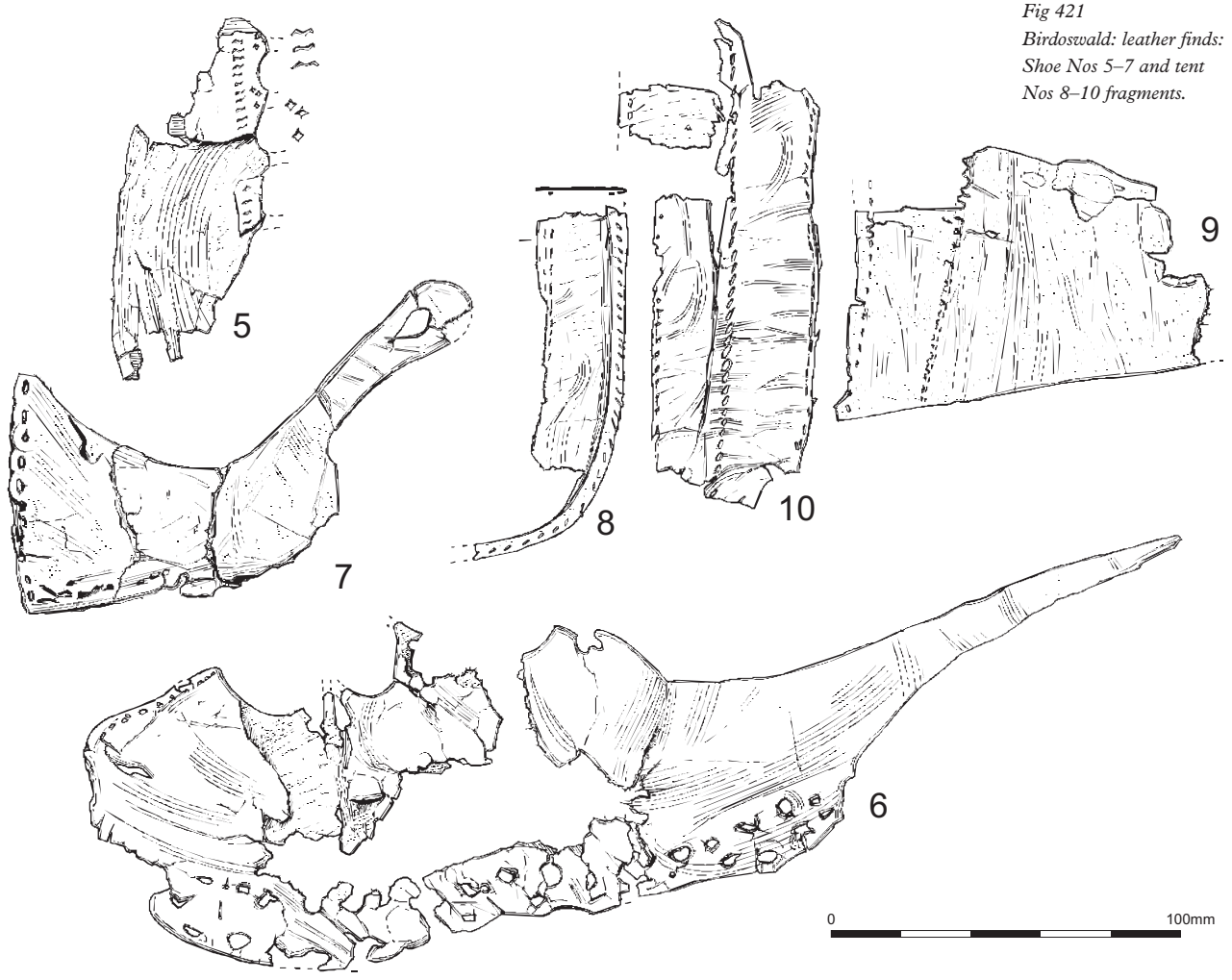


Fig 421
Birdoswald: leather finds: Shoe Nos 5–7 and tent Nos 8–10 fragments.

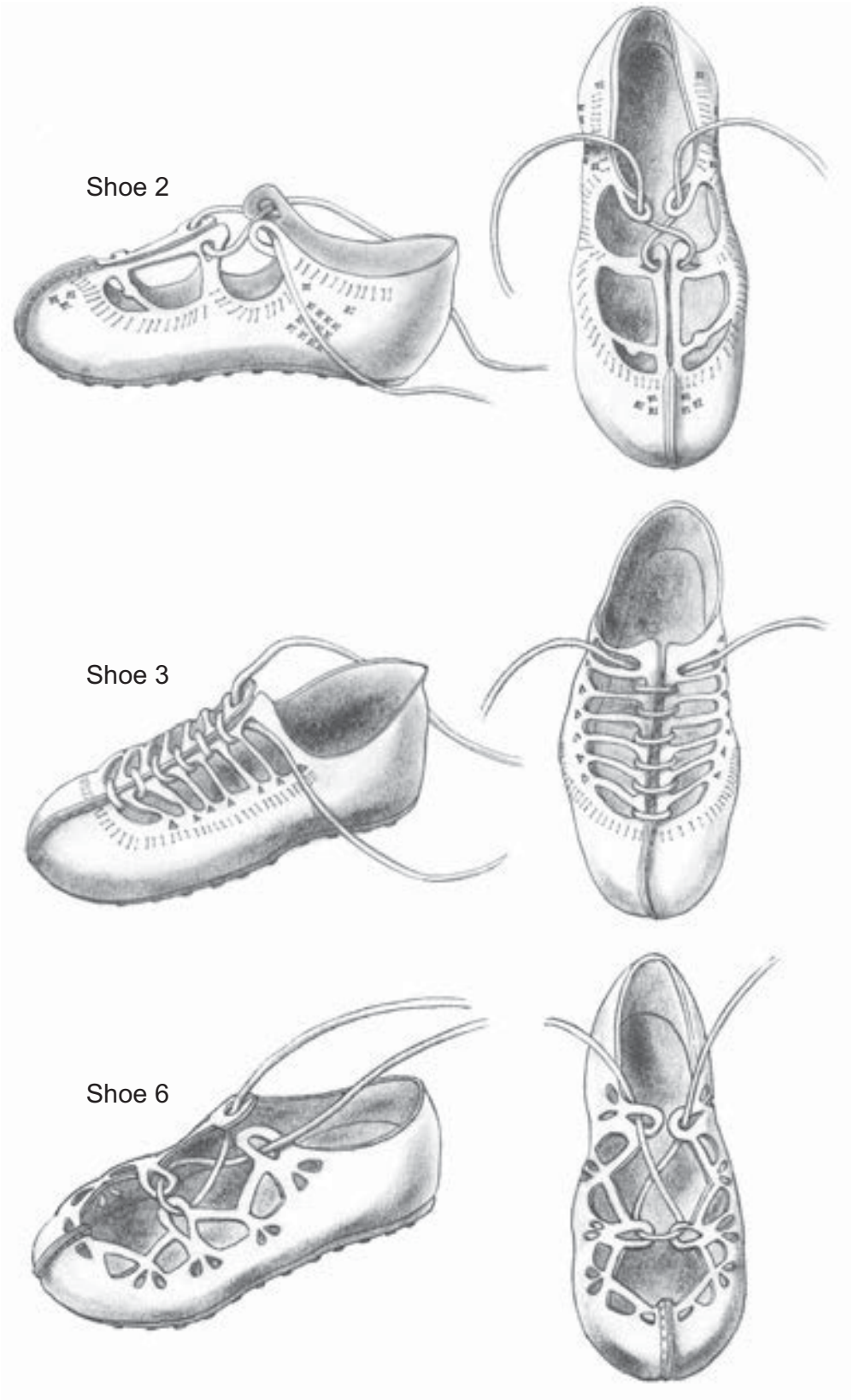


Fig 422
Birdoswald: leather finds: Reconstruction drawings of Shoes 2, 3 and 6.

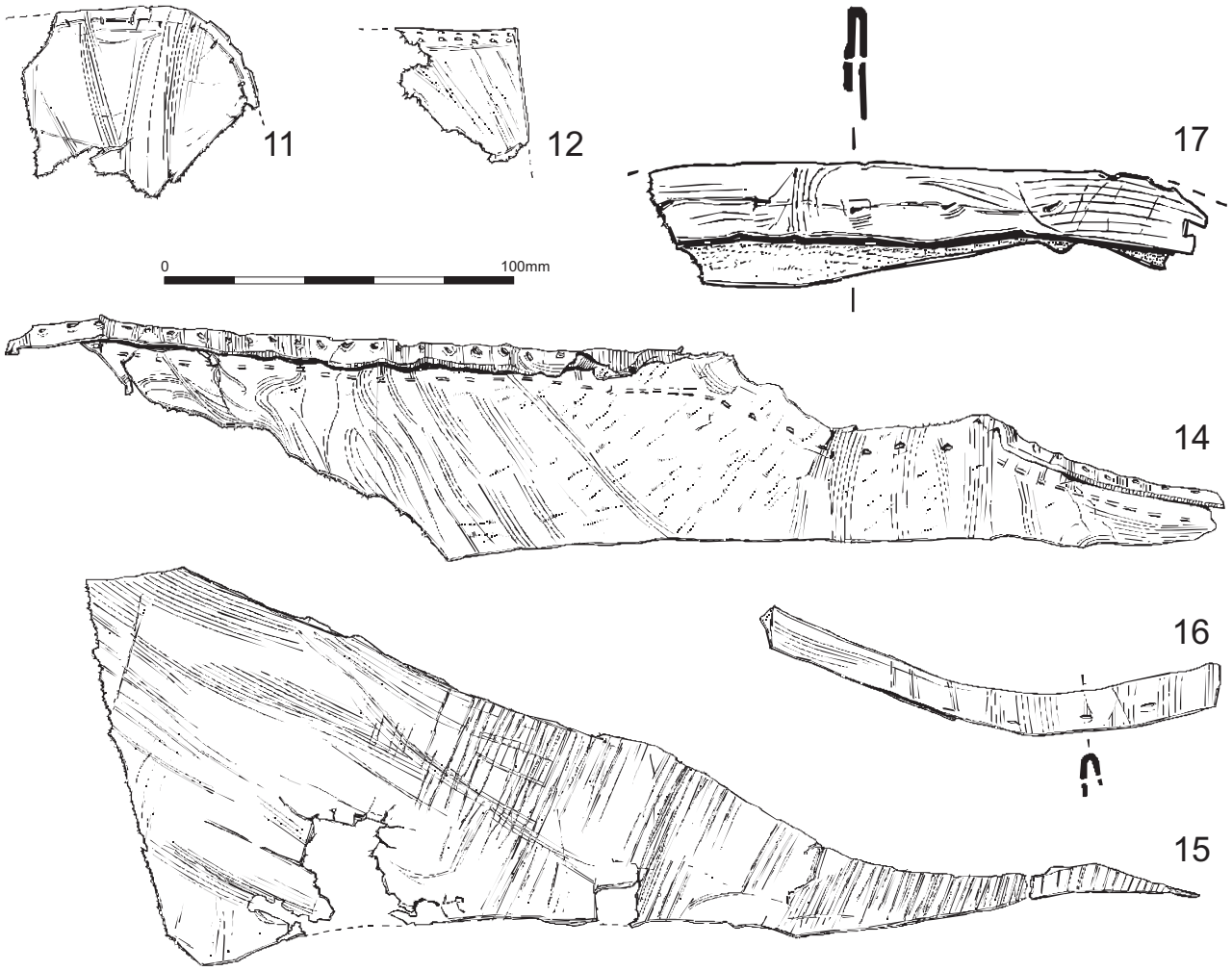


Fig 423
Birdoswald: leather finds: tent fragments.

(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

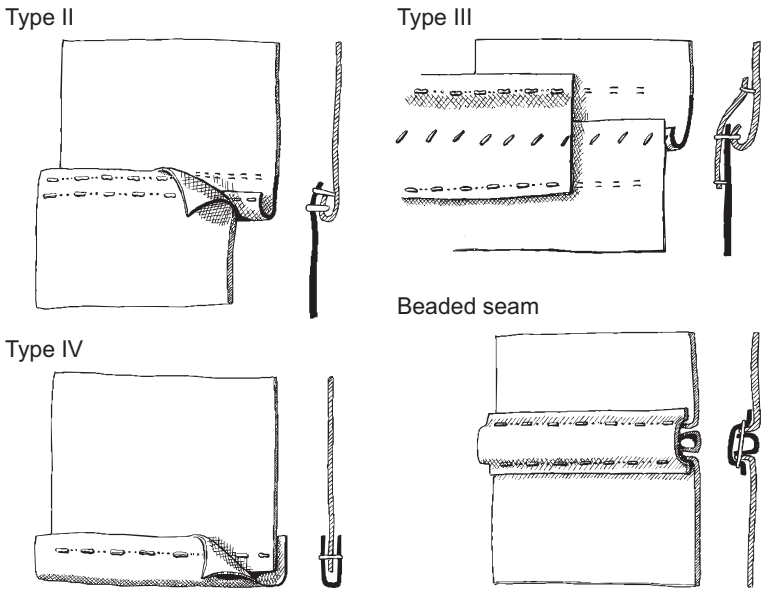
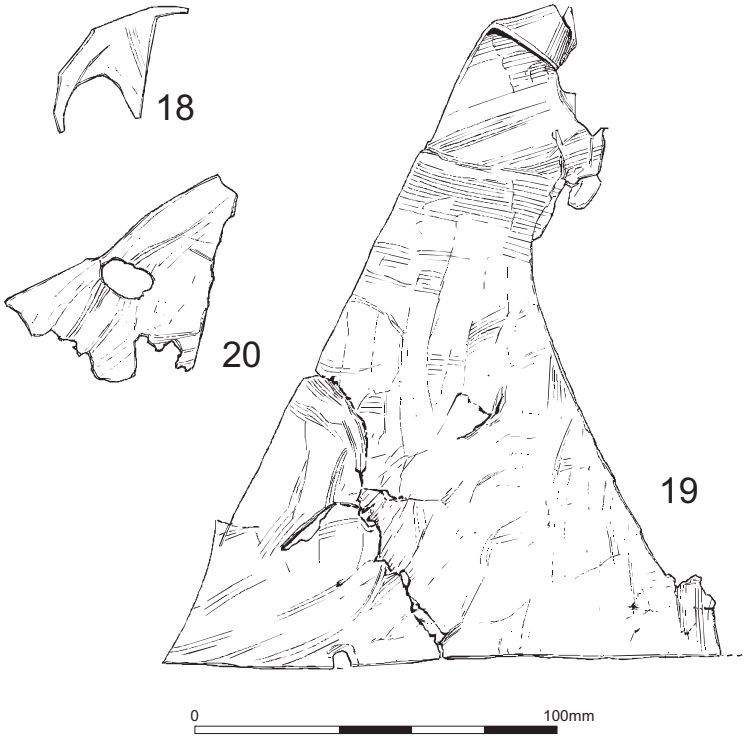


Fig 424
Birdoswald: leather finds: seam types (after Winterbottom 1991, fig 220–1).

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).

Fig 425
Birdoswald: leather finds: leatherworking waste.



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.

7
Excavations at the Hadrian's Wall fort of Bowness-on-Solway (*Maia*), Cumbria: 1988

by Paul Austen
with contributions by John A Davies, Brenda Dickinson, John Humble and David Starley

Introduction

Two housing developments took place in 1988 in the village of Bowness-on-Solway within the supposed area of the Roman fort attached to Hadrian's Wall. In response to these the author carried out excavation of one site and a watching brief at the other for the then Central Excavation Unit. This paper is the report of the results of this work.

Previous survey and excavation

The village of Bowness sits on a clay knoll approximately 15.2m above sea level and is one of the few conspicuous such high points formed geologically on the south shore of the Solway Firth above the surrounding salt marshes. As such, it formed an obvious location for the westernmost fort on Hadrian's Wall, with the next two forts to the east being similarly sited on higher ground above the tidal flood plain of the Solway marshes at Drumburgh and Burgh-by-Sands.

The position of the fort was recorded by antiquarians, from William Camden onwards, with accounts of the slight traces of the south defences close to the church of St Michael and of the position of the west defences common to all reports. The survey carried out by Henry MacLaughlan for the Duke of Newcastle in 1858 provided a confident calculation of the size of the fort as "about 240 yards [219.46m] by 110 [100.58m], giving an area of 5.5 acres [2.23ha]", although by then much of the east side had been built upon. MacLaughlan's calculation forms the basis of the delineation of the outline of the fort on the Ordnance Survey maps of Bowness (Fig 427).

Most excavation hitherto, with the exception of T Potter's work in 1976, has been concentrated at the western end of the fort. These interventions are shown by date

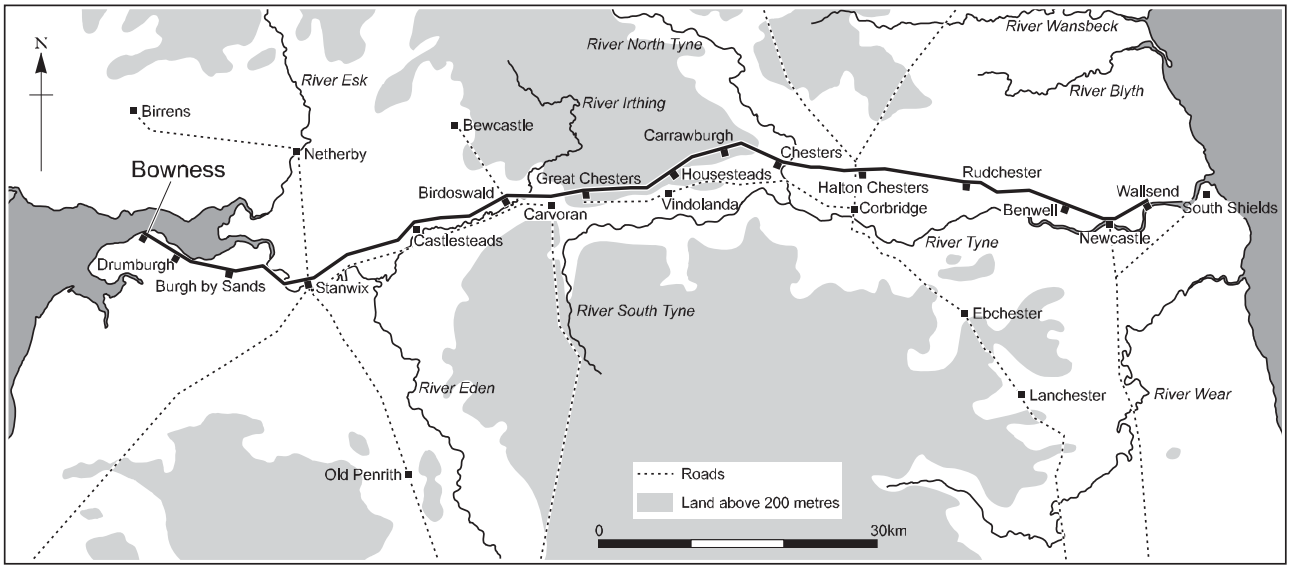


Fig 426
Bowness-on-Solway: location of Bowness on Hadrian's Wall.

in Fig 427. In 1930 Eric Birley carried out excavations on the west and south defences. He established the position of the north guard chamber of the west gate, and discovered that the width of the fort was greater than MacLaughlan's estimation (Birley 1931). The south wall lay a little to the south of where MacLaughlan had calculated its position, and he also disproved MacLaughlan's supposed line of the north defences. The west wall continued north towards the Solway and disappeared at the top of the present scarp, indicating that the Solway had eroded the north side of the fort's defences. By locating the south wall and the west gate in the centre of the west side, Birley was able to calculate accurately the width of the fort as 410ft (124.97m).

In 1955 Charles Daniels carried out trial trenching to the west of the fort in advance of the building of two bungalows, but found no evidence associated with an associated civil settlement or *vicus* on that side of the fort (Daniels 1960). Twelve years later further excavations were undertaken by J D Mohamed in Mill Field, associated with the building of 'Maia' west of the fort. These excavations encountered the footings of the west wall, as cobbles set in red clay separated from the inner ditch by a berm of 3m. The ditch was 6m wide and 2m deep and contained fallen facing stones, and Roman and medieval pottery. Beyond this was a further ditch 15.2m wide, which appeared to be wholly medieval in date. Mohamed also found the *intervallum* road 4.74m wide 4.5m from the fort wall, together with traces of buildings bounded by it (Mohamed 1968).

The building of another house, 'The Fort', at the west end of Bowness led to excavations by Tim Potter in 1973. Potter re-examined the north guard chamber of the west gate discovered by Birley, as well as the *intervallum* road and a succession of buildings bounded by it (Potter1979). These excavations established that the west gate was initially a timber structure and that the primary fort defences consisted of a turf rampart. The stone gateway and stone fort wall were secondary features, probably contemporary with the rebuilding of the western half of Hadrian's Wall in stone.

Potter conducted further excavations in 1976 within the interior of the fort in the field on the west side of the Post Office, again in advance of building development. This revealed a sequence of buildings constructed in timber, with evidence of quarrying for clay.

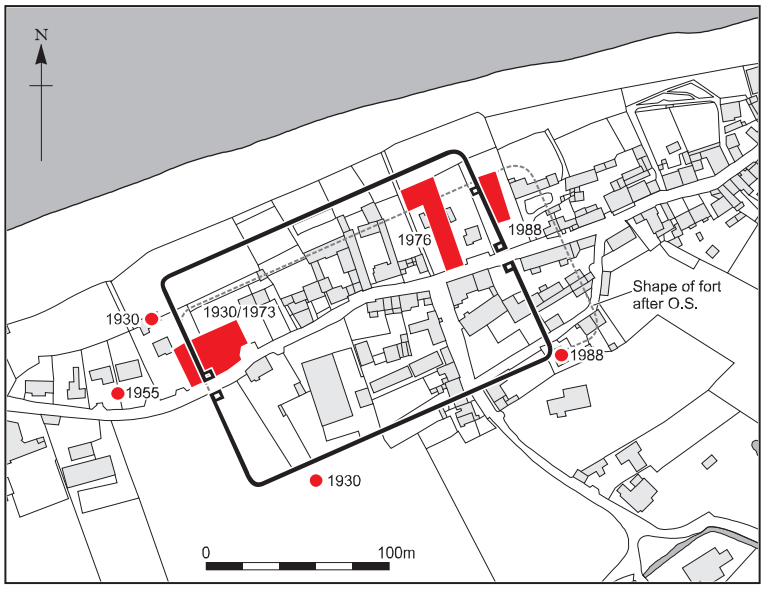


Fig 427
Bowness-on-Solway: plan of the site of the fort, showing locations and dates of previous excavations, and of the 1988 work.

The size and orientation of the fort

The limited extent of previous excavation at Bowness had not permitted hitherto the full extent of the fort to be determined beyond doubt. It has always been known that the fort's long axis was east–west, parallel to the line of Hadrian's Wall, in common with Housesteads and Great Chesters. Birley's and Potter's excavations established the width of the fort, but the precise location of the east defences had not been confirmed by either excavation or by survey of visible indications, and MacLaughlan's estimated length of 720ft (219.46m) had not been hitherto questioned (thus Bellhouse 1988, 38). The size of the fort, based on the work of MacLaughlan, Birley and Potter, was thought to be 7 acres (2.83ha). It has also always been presumed that the fort faced west (Daniels 1978, 55).

Even before the present excavations there were a number of indicators that suggested that these two assumptions were incorrect and that the actual dimensions of the fort could be more accurately calculated. The first indicator is the usual ratio of the length to width of most auxiliary forts of 3:2. In relation to the established width of 124.97m, a length of *c* 187.45m might have been expected rather than 220m (720ft). If there was any consistency in planning when the Wall forts were constructed, the fort might be expected to face east, as did the two other forts – Great Chesters and Housesteads – which were turned parallel to the Wall for topographical

reasons. Although little is known of its internal layout, it is probable that the fort at Stanwix also faced east.

At Bowness the position of the south gate is indicated by the surviving *agger* of a road in the field opposite the parish church. If the fort faced east rather than west, the south gate would have been the *porta principalis dextra*, and its distance from the west defences would be approximately two thirds of the total length of the fort. The distance between the position of this gate and the west defences is approximately 122m, which again would suggest the overall length of the fort as closer to 183m than 220m.

An eastward-facing orientation is also suggested by the successive buildings discovered in Potter's 1976 excavations. If the fort had faced west, these buildings, situated east of the supposed line of the *via principalis* leading to the south gate, would have been within the area of the central range of buildings. However, their minimum length of 57m (the north end lay beyond the eroded sea cliff), nearly half the width of the fort, is difficult to reconcile with their interpretation as buildings of the central range. Their length and form was more indicative of buildings within the *praetentura*, such as barrack blocks, stretching between the *intervallum* road and the *via praetoria*.

A further pointer to an eastward-facing orientation follows from Birley's location of the west gate and the south defences, from which the centre line of the long axis of the fort was known. The north guard chamber was found immediately north of the road, but the implication that the line of the modern road coincides exactly with the Roman entrance into the fort through the west gate has not previously been noted. This suggests that the Roman defences, including the gateway, must have stood to a significant height for a considerable time after the Roman period, and thus influenced the course of the modern road.

By contrast within the fort, the modern road clearly runs at varying angles to the orientation of the fort rather than following the line of the Roman streets within the fort. This raised the question as to whether the modern road would similarly coincide with the Roman gateway and road into the fort at the east end. The point where the modern road crossed the MacLaughlan position of the eastern defences was some 15m south of the centre point of the east defences (Bellhouse 1988, fig 2). However, the modern road and the central axial line of the fort intersect approximately 30m west of the MacLaughlan position of the east defences. This is also approximately 183m from the west gate.

Two inscriptions at Bowness (RIB 2057 and RIB 2058), dedicated by Sulpicius Secundianus, who is titled as *trib(unus) coh(ortis)*, are both dated by internal reference to AD 251–3. This demonstrates that the unit here was a milliary cohort, assuming that the distinction between the rank of a commanding officer as *tribunus* or *praefectus* was still valid in the 3rd century. The other known milliary forts on Hadrian's Wall (excluding Stanwix) – namely, Birdoswald and Housesteads – provide interesting comparisons. Housesteads is particularly narrow owing to the sloping topography, but is 186m long, while Birdoswald is 122m wide and 177m long. The size of the fort at Bowness might be expected to be roughly comparable.

A remarkable revelation appeared when the plan of Housesteads fort was superimposed over the modern village of Bowness, using the known position of the west gate and the axis of the fort as fixed points. Ignoring the difference in width, the east gate of Housesteads occurs almost exactly at the same point where the modern road through Bowness crosses the central axis of the fort. The same occurs when the plan of Birdoswald, turned through 90°, is similarly overlaid. What also became apparent from this exercise is that the irregular course of the modern road between the east and west gateways was determined by an obstacle near the centre. In relation to the overlaid plan of Housesteads fort, it runs exactly between the headquarters building and the granaries (Austen 1991).

The combined evidence of the line of the road and the position of the south gate strongly suggest that the *principia* at Bowness, which was likely to have been a stone structure, was located to the south west of the modern T-junction in the centre of the village. In the absence of locally available building stone, only the most significant structures, such as the defences and the headquarters building, and possibly also the granaries and Commanding Officer's House, would have been constructed in stone on

account of the requirement to import stone either from across the Solway or from the Eden valley. The humbler structures, on the other hand, including the barrack blocks, would have been timber structures. It is therefore significant that the successive buildings found in Potter's 1976 excavations west of the Post Office were constructed in timber throughout the history of the fort and were never replaced in stone.

On the other hand Potter found that the west gate, initially a rampart and timber gate structure, was replaced by a stone wall and gateway. The stone buildings within the fort would have lent themselves to being adapted for secondary occupation for some considerable time after the Roman period until they became unstable, as was found at Birdoswald, where the west gate and granaries were adapted for continued use after Roman abandonment of the fort. Birdoswald's west fort gate continued to be used until the 14th century, when its final dereliction and collapse necessitated breaching the fort wall to the north (Wilmott 1997, 396).

These combined arguments suggested that the Roman fort at Bowness had faced east and that it was smaller in size than traditionally determined before the 1988 excavations. Circumstances presented two opportunities to test this hypothesis through excavation in advance of development in 1988.

The excavations

Church Lane

This site comprised the location of former outbuildings of a small farm sold for private housing development on the south side of Church Lane, bounded on the south by the churchyard wall. A watching brief was arranged with the developer during the excavation of the foundation trenches in April 1988. The design of the house entailed four foundation trenches running north–south as well as two trenches along the north and south sides, respectively. Each of the north–south trenches revealed a substantial ditch 5.3m wide, showing as a dark brown soil fill cut into the red clay subsoil, exactly on the line of the south ditch of the fort established by Birley in 1930. It was excavated mechanically in all four trenches in order to satisfy the requirements of the building inspector, although, owing to health and safety restrictions, it was not possible to gain close access to record the sections in detail.

The profile of this ditch was V-shaped in all four sections, 1.7m deep at the centre, confirming its identification as the fort ditch. The line of the ditch in plan was curving towards the north-east, suggesting this was the south-east corner of the fort. This site was, however, approximately 30m from the conventional location of the south-east corner of the fort and was a further indicator that the fort was indeed smaller than hitherto supposed.

Post Office field

Two months later another housing development provided an opportunity for the author to excavate in the field immediately east of the Post Office. This site was bounded by the main road through Bowness on the south side and the eroded sea cliff to the north. Again, according to the traditional interpretation of the position of the eastern defences, this area would have been within the interior of the fort and buildings similar to those discovered by Potter in 1973 in the field west of the Post Office would be expected. However, this site lay immediately north of the point where the central axis of the fort crossed the modern road, where the arguments above indicate that the line of the eastern defences might actually be.

Earlier, in February, field evaluation under the author's supervision – five mechanically excavated trenches east–west across the site at 10m intervals – had demonstrated the archaeological potential of the area, indicating that the area might contain the eastern defences of the Roman fort.

The main excavation (June and July 1988) consisted of a rectangular area 11.5m 37m occupying the western side of the available field. The initial removal of topsoil and cleaning revealed the east fort wall and part of the ditch defences, and although the depth of stratigraphy was relatively shallow, the excavations revealed a sequence of phases including those that pre-dated the establishment of the Roman fort. It also became clear that modern disturbance resulting from farming had destroyed all but the deepest archaeological features in the southernmost 10m of the area. The excavations were therefore concentrated in the northern two-thirds of the available area.

Fig 428
Bowness-on-Solway: features of Phases 1–5.

Phase 1: pre-Roman features (Fig 428)

The two earliest features on the site were cut into the natural boulder clay and sealed by a clay loam soil layer, on average between 70mm and 100mm deep, varying from greyish to yellow-brown clay loam. This occurred across most of the site except where later features had been cut through it, and appeared to be an old ground surface pre-dating the establishment of the Roman fort.

A short length of a square-cut trench (Fig 428, 55) (north–south, 400mm wide and 260mm deep) was exposed in the area behind the fort wall, approximately midway in the excavation area. It was filled with hard red clay (56), the compacted nature of which suggested that it was deliberate backfill and rammed down as a structural foundation. No traces were found to the north where it was obscured by later structures – in particular the clay and cobble base of the fort wall – which were not removed in the excavations.

A second feature was a shallow sub-circular scoop (101), at least 2m across and 210mm deep, 7m north of the trench above, and filled by a mixed reddish-yellow sandy clay soil, flecked with charcoal (100). The eastern edge lay just east of the later fort wall, but its full extent could not be defined within the excavated area. Its purpose is uncertain. The fill yielded a worked flint (p 406, No. 1). A second flint (p 406, No. 2) was recovered from the overlying old ground surface covering the berm between the fort wall and fort ditch.

The desire to leave later structures intact where possible meant that areas where the features were sealed by the old ground surface were extremely confined. Therefore no coherent plan could be determined or drawn. Interpretation of the individual features was impossible, but their significance is that they demonstrated pre-Roman occupation of the site, possibly Neolithic or Bronze Age in date, based on the characteristics of the two flints.

Phase 2: establishment of the Roman fort (Fig 428)

The earliest features that could be associated with the fort were two isolated patches of turf. The first (62), seen within the later interval tower (64), was a thin layer of smooth greyish turf-like soil, which included a rectangular patch of silver-grey clayey turf-like material approximately 300mm square, most likely a complete turf. The second trace (63: 280mm thick; light silvery grey with horizontal streaks of darker grey) occurred in the confined area between the edge of the excavations and the fort wall

south of the interval tower. It directly overlay the old ground surface (57), and the foundations for the interval tower cut both layers. These turf patches are interpreted as surviving traces of the primary fort turf rampart. Excavations at the west gate in 1973 also noted traces of the primary turf rampart, consisting of turfs and clay, around four substantial timber post settings (Potter 1975, 34).

A berm 3.5m wide separated the rampart from the innermost and largest (30) of the two fort ditches found in the excavation. It was first noted as a relatively stone-free band running down the centre of the site. This V-shaped ditch, between 4.2m and 4.6m wide, and 1.5m deep in the centre, ran north–south through the excavated area. Two sections were excavated across it, separated by a 0.5m baulk. This ditch was traced for 32m within the excavated area. It was slightly narrower than on the west side of the fort, where it was 6.1m wide (Mohamed 1967; Potter 1975). There appeared to be a small step in the profile of the ditch on its inner side, which appeared from the fills to represent widening of the ditch after a small amount of silting had occurred.

Immediately east of this main ditch ran a much smaller V-shaped ditch (33; 2m wide and 600mm deep). Its line was marked initially by a compact deposit of large, mostly rounded, cobble stones (6). It was difficult to assess whether this ditch was contemporary with or earlier than the larger ditch (30), but considering the spacing it seems likely, on balance that they were contemporary.

This outer ditch (33) contained a homogenous clay-loam fill (32) without tip lines, suggesting

deliberate filing, at a time when the inner ditch was still open. There was no dating evidence to place this filling in sequence, but a cobble layer (9) stopped at the outer edge of the larger ditch (30), suggesting that the smaller ditch was filled while the larger ditch was left open, and probably before the accumulation of stone debris over both ditches (see below: Phase 9).

Phase 3: construction of stone fort wall (Fig 428)

The foundations of the fort wall (27) between 1.45m and 1.60m across were exposed over a distance of 23m from the north-west corner of the excavations to where the archaeological deposits had been destroyed by more recent horticultural activity at the south end of the excavations (Fig 429). Its sandstone faces had been almost entirely robbed, but the elaborate foundations, constructed in a shallow construction trench (58) cut into the old ground surface, were well preserved to a height of 450mm. Its construction tallied exactly with the descriptions of its construction on the west side of the fort (Birley 1930; Mohamed 1967; Potter 1975).

Fig 429
Bowness-on-Solway: fort wall and footings of interval tower from the north.

It consisted of three layers of cobbles separated and bonded by alternate layers of red clay. The lowest course of large flattish cobble stones (97; averaging 200–250mm across) was covered by a layer of red clay (96) approximately 80–100mm thick. On top of this was laid the middle course of cobbles (24), mostly smaller in size and more rounded than the base layer. This was covered with a further bonding layer of clay (95; between 150mm and 200mm thick), on which was laid the uppermost layer of cobbles (94), significantly larger than either the bottom or middle course with an average size of 340–500mm. A final bed of red clay (10), by which the fort wall was initially recognised during the course of excavation, supported the first course of yellow and red sandstone facing stones (36) and core, although only six facing stones of the west face survived *in situ* in the whole

length of the fort wall exposed. The surviving facing stones all sloped outwards, indicating settlement and the ultimate collapse of the wall. Subsequent repair of the fort wall was evident at a point immediately south of the interval tower where the foundation consisted entirely of a raft of red clay with no cobble courses. The use of clay rather than mortar as the bonding agent is significant and reflects the absence of suitable lime sources at the western end of Hadrian's Wall.

There was no direct stratigraphic relationship between the stone fort wall and the remains of the turf rampart described above, but it is likely that the stone fort wall was constructed by cutting into the front of the earlier turf rampart as a secondary modification of the fort's defences. There are numerous parallels for this sequence in other Roman forts initially built with turf and timber defences. More significant in this particular fort, the sequence of the replacement of the turf and timber defences by stone walls, and of the gates and towers, was firmly established by the discovery of post holes for the timber west gateway, sealed below the stone structure found in Potter's 1973 excavations (Potter 1975).

Phase 4: modification of defences (Fig 428)

The excavations showed that the area of the defences underwent considerable modification after the building of the perimeter wall in stone.

Immediately behind the fort wall a number of features indicated possible buildings. These overlay the remains of the rampart and were in turn covered by a later layer of what appeared to be a wind-blown sandy accumulation. These remains were difficult to characterise and date within the restricted area available to examine them. A linear, very dark grey-brown feature (65; 260mm across) with sharply defined edges running parallel to and 500mm from the west face of the fort wall may have been the traces of a timber beam. There was also a fine cobble surface (66) extending 700mm from the fort wall and a post hole (67), indicated by four large cobble packing stones around the post void, which appeared to be associated with this cobbling. These features suggested the removal of the rampart backing here to construct new timber buildings, leaving the fort wall freestanding.

Part of an interval tower (64) built onto the rear of the fort wall was found by extending the excavations 2m west to the adjacent property boundary. The tower was *c* 30m north of the supposed position of the east gate. Significantly, this close to a quarter of the previously demonstrated width (124.97m) of the fort ascertained by Birley in 1930. As an interval tower might be expected halfway between the east gate and north-east angle, it is further confirmation of the overall width of the fort, with the northern part eroded by the Solway.

The tower was 5m wide overall. The side walls were traced for up to 1.3m, although the rear wall lay beyond the available area (Figs 429, 430). A patchy floor (42) of sandstone chippings and small cobbles was found inside the tower, although this appeared to have been substantially disturbed in more recent times and may even be a more modern feature. The primary foundations of the side walls butted against the straight face of the fort wall (27). This could reflect that the foundations of the tower were laid out after those of the fort wall within the same overall construction phase. Alternatively it may indicate that the interval tower was added later, after the stone fort wall had been completed.

The foundations for the north wall of the tower (43; 1.50m across) comprised a single course of large rounded cobble boulders, bonded with red clay (Fig 430), with a course of smaller cobbles and broken sandstone chips on top. The primary foundation of the south wall was identical to the north wall (37). However an upper layer of clay and sandstone chippings (103) did not butt against the fort wall but

Fig 430
Bowness-on-Solway: foundation for south wall of interval tower.

merged imperceptible with the clay foundations of the fort wall at this point (99). This indicates later rebuilding of the south wall of the tower and the adjacent length of fort wall. Both walls were constructed within in a foundation trench cut into the underlying earlier rampart material (63). In plan, the tower was not square on to the rear of the fort wall, but was slightly askew.

The berm between the fort wall and the main ditch contained five post holes, all cut into the pre-fort ground surface. The spacing of the three most northern post holes (70, 72, 74) indicates that they were related to the interval tower. The central post hole (70) was directly opposite the centre of the tower, while the other two post holes were respectively 3m to the north (72) and 4m to the south (74). All three were 1.3m away from the outer face of the fort wall (Fig 431).

Each post hole was circular in plan, packed with cobble stones protruding above the surface, between 250mm and 450mm deep, and filled with dark brown clay loam. The central post hole, void was 60mm 70mm between the packing stones. The most likely interpretation is that they supported external scaffolding during the construction of the interval tower.

A isolated post hole (91), 14m south of post hole 74 and of similar dimensions, was found 1.5m from the fort wall. However, disturbance from horticulture south of here had destroyed all archaeological deposits. It is possible that this feature was associated with construction of the east gate, but in the absence of evidence this association must remain supposition. The association of a further post hole (77), nearer the main fort ditch to the south of the tower, is uncertain.

Phase 5: ironworking and pit (Fig 428)

A number of features on the berm post-dated the construction of the stone fort wall and interval tower but pre-dated the later surfacing of the berm with cobbling between the fort wall and the main ditch. The most northerly of these features was a pit (47) 3.40m long and 700mm deep with straight sloping sides, which stretched across almost the entire width of the berm. It was 2.0m wide at the end nearest the fort wall, narrowing to 1.2m at the other end. It was directly opposite the interval tower described above, and was clearly dug after the construction in stone of the interval tower and the fort wall, as it cut the southern half of one of the scaffolding post holes (70).

This pit's precise purpose was not ascertained, although the primary silt fill (59) at the ditch end contained sand, ash and slag, suggesting an industrial process (Fig 432).

A roughly circular deposit of charcoal and burnt clay (54; 61) was found 1.5m north of this pit. It was up to 120mm thick and contained small quantities of slag, and its proximity and identical stratigraphic relationship indicate that it must have originated from the pit. Both the pit and the slag deposit were sealed by a cobbled surface (9) subsequently laid across the berm. The slag indicates ironworking, with fragments of vitrified hearth lining and a small quantity of hammer scale present (p 406). The pit therefore appears to have been associated with iron working, possibly to house a

Fig 431
Bowness-on-Solway: berm to the east of the east wall of the fort. Positions of postholes are indicated by ranging rods.

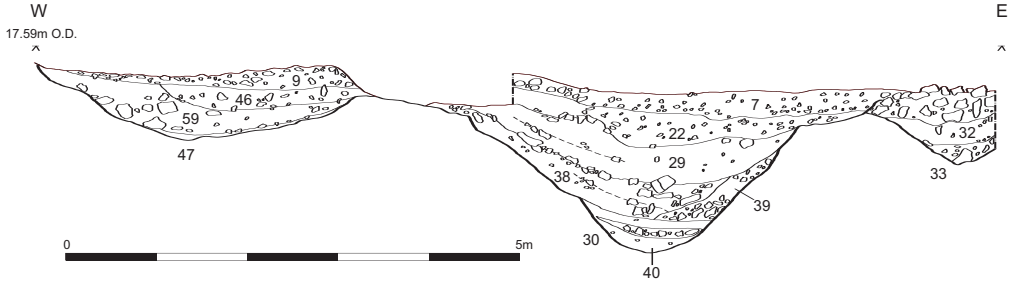


Fig 432
Bowness-on-Solway: section through fill of inner fort ditch (30) and Phase 5 pit (47).

Fig 433
Bowness-on-Solway: features of Phases 6–7.

furnace (although no structural remains survived), possibly for the repair of weapons and equipment. This would presumably have been carried out on the berm to avoid the risk of accidental fire among the predominantly timber fort buildings, in the same way that ovens were usually built into fort ramparts away from buildings.

The pit was subsequently filled with red clay mixed with loam (46) containing cobbles, suggesting that this action was deliberate, before cobbling of the berm, as the outline of the pit was only revealed after removing the cobbles.

Phase 6: cobbling of berm (Fig 433)

The entire area of the berm between the fort wall and the main ditch (30) was covered with a cobbled surface after filling the metalworking pit (47). Several context numbers (9, 11, 21, 23) were used to record slight variations in its nature, but it later became obvious that these represented a single event. An isolated patch of this same cobbling (85) survived farther south in the trench, where the state of preservation was generally less rewarding.

The surface of small- to medium-sized rounded cobblestones and gravel was laid directly onto the redeposited clay of the berm. It covered the infilled post holes (70, 72, 74) associated with the building of the interval tower, and the metalworking pit (47), and was therefore laid after some considerable activity had taken place. The probable reason for cobbling the berm was suggested during the course of excavation: when the ground surface became wet it was slippery, and cobbling might have afforded better footing to the Roman soldiers, as it did to the excavators.

Phase 7: gully (Fig 433)

Just under 2m south of the metalworking pit, a shallow gully (52) emerged from under the fort wall and ran across the berm, feeding into the fort ditch (30). It was 850mm wide and 270mm deep with a rounded profile and fairly straight sides. It was cut from above the old ground surface on the berm. It was presumably originally culverted under the fort wall.

The relationship between this gully and the cobbled surface (9) is unclear. The line of the gully was initially indicated by an area of coarser cobbles (22) laid over its fill, which were distinctly different in character from the cobbling to either side of it. The berm cobbling might have been laid around the open gully or, alternatively, the gully might have been dug later, cutting through the cobbling. The differential cobbling, however, clearly demonstrates that the

gully was open and in use after the berm was cobbled, unlike the metalworking pit described above.

The primary gully fill (53) was a dark, reddish-brown sandy silt, with small cobbles. The sandy silt filling the gully suggests gradual filling by erosion. The presence of small cobbles in the gully fill also suggests gradual filling by erosion along the edges of an open gully. In contrast, the upper gully fill (51) was a dark brown sandy loam containing sandstone fragments, suggesting that it was deposited deliberately to fill the gully simultaneous to the repair of the fort wall opposite (*see below*).

Phase 8: collapse and rebuilding (Fig 434)

The gully described above is presumed to have been culverted under the fort wall immediately south of the interval tower. This coincided with the position of the pre-Roman shallow pit (101) described above. However, while the foundations of the fort wall comprised carefully placed alternate layers of cobbles and red clay, their character was different in this 2m section. Here the foundations consisted entirely of a solid raft of reddish-brown clay (99) 200mm thick, containing patches of soil, charcoal and sandstone fragments. This blocked off the course of the gully beneath the fort wall, and there were no evident structural remains of a culvert.

North of this clay foundation raft the uppermost of the three foundation courses of large cobbles (24) was replaced for a distance of 3.5m, as far as the centre of the interval tower, by a dense layer of much smaller stones and sandstone chippings set in clay. This layer also extended over the south wall of the interval tower, merging imperceptibly into a similar layer of clay and sandstone chippings (103) above the primary south wall foundation of large cobbles (37). In contrast, the north wall of the interval tower was not altered and its foundations abutted the rear of the fort wall.

These alterations to the fort wall and to the south wall of the interval tower suggest simultaneous rebuilding. The position of the gully and the underlying pre-Roman pit might have caused instability, and possibly collapse, in the fort wall and interval tower. The foundations of the north wall of the tower were unaltered.

Fig 434 Bowness-on-Solway: features of Phase 8.

Phase 9: final collapse

The uppermost archaeological deposit consisted of an extensive spread of broken sandstone tumble (31) approximately 500mm deep covering the berm between the fort wall and the ditch, and sealing the cobbled surface (9, 11, 23). There were five distinct clusters of sandstone at approximate

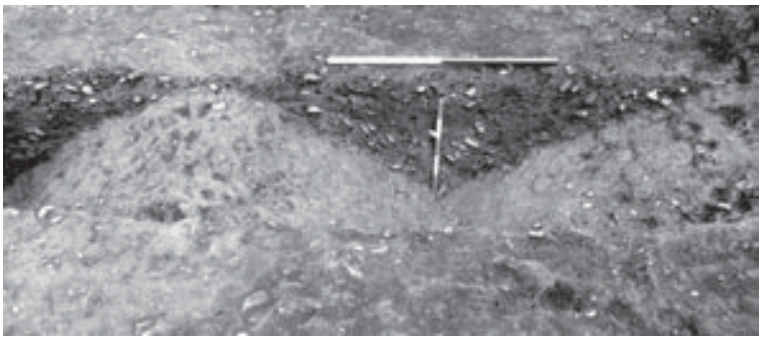


Fig 435
Bowness-on-Solway: fill of fort ditches (30) and (32).

intervals of 1m, among which were facing stones with their broken off (12, 13, 14, 15). When excavated, their distinctiveness was not meaningful. They might reflect episodes of stone collecting from the fort for building in the village. Forty-six facing stones were found in these clusters and in the excavated sections of the fort ditch.

The main fort ditch (30) was also filled mostly with masonry tumble (Figs 432, 435). The primary clayey, silty fill (40) was between 20mm and 45mm deep, probably gradual soil accumulation and minor erosion of the ditch edge. A step in the profile on the inner side of the ditch suggests a re-cutting to widen it after the accumulation of the primary silt. The stony fills (28, 29, 38) were nearly 1m deep and their tip direction lines indicate that they come from the west side of the ditch; also that they form a continuous layer with the tumble on the berm.

This dumping suggests the final outward collapse of the fort wall. Above this rubble there was a layer of stone-free loam (7) running down the centre of the ditch, from which the line of the ditch was first recognised at the start of the excavations. This excavator found no dating evidence to indicate when the dumping had occurred, but Mohamed and Potter both found evidence in their excavations that the inner, larger fort ditch had been re-cut, and that its fill contained masonry tumble and substantial quantities of medieval green-glazed pottery, suggesting that the dumping was medieval. The evidence showing that the smaller, outer ditch was filled while the larger ditch was left open, during Roman occupation, has been discussed above in Phase 2.

The area west of the fort wall was covered by a layer of pale yellow sand (35) with dark, thin horizontal bands approximately 10mm apart. The shallow nature of these horizontal sandy bands and the continuous nature of the dark bands indicate that they represent a gradual accumulation of wind-blown sand against the still upstanding fort wall, interspersed by growing vegetation.

The finds

Flint

by Jon Humble

Two struck flints (not illustrated) of likely Neolithic or Bronze Age date were recovered during the excavation. The nearest chalk outcrops are in eastern Yorkshire, Mull and Northern Ireland, so the raw material was probably from a locally available secondary source of flint, most likely pebbles collected from the Solway Firth. They are of fine-grained, medium brown flint with frequent small cherty inclusions, in uncorticated condition.

1. From fill of Pit 101. A plunging flake (42mm length; 13mm width; 13mm thick) struck from the keel of a keeled core, with the edge of the keel showing signs of preparation prior to striking. Micro-flaking on the dorsal surface at the proximal end of the left hand side is consistent with use-wear.

2. From old ground surface (57) across the berm between the fort wall and inner ditch. A broad flake (42mm length; 32mm width; 5mm thick) struck from a fine-grained medium-grey-brown flint, with occasional cherty inclusions; in fresh, uncorticated condition. The distal end is hinge fractured, and the nicking of the edges appears to be the result of post-depositional damage.

Attribution of the two flints to a particular lithic industry is impossible, but both pieces display characteristics generally consistent with Neolithic or Bronze Age technology of reduction, and attest to earlier prehistoric activity at this location.

Metalworking debris

by David Starley

A small amount of material, totalling about 2kg, derived from the fill of Pit 47 on the berm and an associated deposit 1.5m north of the pit. The material was examined visually and not quantified by type. Most of the material was undiagnostic ironworking slag of a cindery nature, together with a couple of fragments of vitrified hearth lining. An unidentified iron object and a piece of coal were also included in the assemblage. A small quantity of diagnostic material, in the form of hammer scale was found in the soil attached to the debris.

The quantity of the Bowness metalworking slag assemblage is small, and the significance of any metalworking at the site must be regarded as limited. The only truly diagnostic form of slag on the site derived from iron-smithing, and it seems likely that the rest of the assemblage also originated

from iron-smithing. The presence of the piece of coal is of interest as there is some limited evidence for the use of coal for iron-smithing in the late Roman period.

Coins

by John A Davies

Five coins were recovered from the excavations, four Roman and one from the reign of George II. None were from stratified deposits.

Two of the Roman coins were issues of Trajan (AD 98–117): one an illegible *sestertius*, the other an illegible *dupondius* (although the reverse image was an emperor in military dress, striding right).

The other two Roman coins were a Hadrianic *as* (AD 117–38) and a *sestertius* of Antoninus Pius (AD 138–161), both illegible and the latter very worn.

samian pottery

by Brenda Dickinson

The excavation produced 140 sherds of samian, representing a maximum of 129 vessels. The majority of the assemblage was from unstratified deposits.

The material comprises a standard range of vessel types for a British site occupied in the 2nd and 3rd centuries AD, with decorated ware accounting for 21% of it. Approximately 90% of the assemblage is from the Central Gaulish factory of Lezoux and the rest comes from East Gaulish kilns. Only 9 vessels could derive from the Hadrianic occupation of the site. The bulk of the Antonine material is later than AD 160. Nearly all the potters represented by the decorated ware and potters' stamps have been noted in later 2nd century contexts on Hadrian's Wall, and the presence of contemporary plain forms such as 31R, 79, 80 and gritted mortaria adds further evidence of date. The East Gaulish assemblage is consistent with the finds from other Hadrian's Wall and associated forts, both east and west of the Pennines. The bulk of it comes from Rheinzabern (min 6 vessels), with lesser amounts from Trier (3 vessels), the Argonne (2 vessels), La Madeleine (1 vessel) and one unassigned piece.

The Bowness sample, though small, strongly suggests that the fort was either abandoned, or held on a care-and-maintenance basis, during the period of use of the Antonine Wall. Theoretically, a few of the sherds could be early-Antonine, but the scarcity of decorated ware, which should have reached the site in the period *c* AD140–160, and particularly the absence of any bowls by the Cerialis ii – Cinnamus ii group, whose work so strongly features in Scotland (Hartley 1972, 33), suggest that the earliest pieces in this collection are Hadrianic rather than early- to mid-Antonine.

The strategic position of Bowness at one end of the Wall would seem to require continuous occupation throughout the Hadrianic and Antonine periods, but the evidence of the samian suggests otherwise.

Coarse pottery

The excavations produced a small assemblage of coarse pottery, weighing 3.65 kg. Nearly all the material came from either topsoil or unstratified contexts, and the very small amount recovered from stratified contexts was unfortunately entirely lacking in characteristics that could be used to date these contexts. The assemblage as a whole produced no surprises in terms of fabrics and forms, with most cooking pots, dishes and bowls being BB1 vessels. Several of these were characteristically Hadrianic with flat-rimmed bowls and dishes, and bowls with deep, chamfered bases. Nene Valley colour-coated ware made up most of the finer wares. There was a single body sherd of Severn Valley ware.

Notably absent were any vessels that could be dated to the 4th century.

Conclusions

All excavations within the fort at Bowness have been small in scale, necessitated by the buildings of the modern village overlying most of the area of the fort. Four of the five excavations have been driven by development, carried out in advance of new houses infilling the remaining open spaces within the area of the fort. Taken together, the results enable a number of broad conclusions about the fort to be drawn.

In the first place the most recent excavations provide the evidence that the fort was 30m shorter than had hitherto been assumed on the basis of MacLaughlan's survey, and together with the evidence from Birley's 1930 excavations, the precise dimensions of the fort are now known. At 2.38ha Bowness is still by a small margin the second largest fort on Hadrian's Wall, but is closer in size to the forts known to have held milliary units: Housesteads and Birdoswald.

The discovery of an old ground surface beneath the fort remains, together with two distinct features that yielded two struck flint flakes, establishes that the Romans were not the first occupiers of the site. Indeed the nature of the topography would have made Bowness an attractive settlement location at all times, high enough to be safe from flooding yet ideally suited to exploit the resources of the salt marshes both for grazing and fishing. It is likely that the pre-Roman occupiers, possibly Neolithic or Bronze Age in date, were attracted by these features.

Potter;s excavations at the west gate showed that the fort was first built in turf and timber, and although the 1988 excavations produced no direct evidence of this, its results do not contradict it. The probability is the fort defences were converted into stone at the same time as the Turf Wall was replaced in stone at some date in the second half of the 2nd century AD. The samian pottery assemblage strongly suggests that the fort was not occupied while the Antonine Wall was in use in the middle of the 2nd century. After the construction of the stone defences, the excavations demonstrated a sequence of events within the excavated area, including a metalworking pit that was subsequently filled, a cobbled surface laid over the berm, and a localised collapse and rebuilding of a section of the fort wall and the southern part of the adjacent interval tower. The absence of 4th century coarse pottery might be significant, although the small size of the assemblage may be misleading.

The final collapse of the fort's defences provided building material for houses of the modern village. The evidence from these excavations and from earlier ones on the west side of the fort shows that the inner fort ditch had been re-profiled and was still substantially open as a ditch when collapse occurred. On the west side of the fort, this was associated with medieval pottery.

The revision of the understanding of the position of the eastern defences from the present excavation confirms that the course of the modern road through the village was established while the defences and both the east and west gates were still standing and passable. Through comparison with the plan of Housesteads, the main village street appears to run around the position of the *principia* of the fort, which was probably a stone building. The implication is that the defences were sufficiently maintained to provide a defensive enclosure and that the Roman stone buildings were re-used, or survived as standing ruins, probably for a considerable period after the primary use of the Roman fort had ended.

These excavations therefore add to the growing body of evidence for continuity of settlement and post-Roman adaptation of the forts and structures of Hadrian's Wall.

Appendix 1

Archaeological Interventions by CEU, CAS and CfA on Hadrian's Wall, 1976–2000

compiled by Tony Wilmott and Paul Austen

This is a complete list of the archaeological interventions undertaken by the English Heritage Centre for Archaeology (CfA) and its predecessors in the Hadrian's Wall zone, and has been compiled from the CfA 'Caspar' site database. It includes all negative observations as well. Publications cited, including those in this volume are the fullest account of the intervention available. It will be seen that (with the publication of the present volume) most have been fully published. In many cases, however, citation is to the summaries of interventions, which have appeared in the *Roman Britain in [year date]* section of *Britannia* over the years. In these cases, and in those where no publication is cited, no publication beyond the present list entry and the *Britannia* summaries is intended.

The list is in topographic order, running east–west along the Wall. The initial number is the CfA Site Code. Two sites with no code are labeled *.

Tyneside

128 Wallsend, English Industrial Estates site, NZ 2995 6595. Watching brief, 1977

In response to a development threat to 15ha of land immediately west of the fort of *Segedunum*, the area was extensively trial trenched. It was found that the site had been built up in recent times, and structural features were all modern, associated with a colliery. A small quantity of Roman and medieval pottery sherds were recorded in the disturbed deposits (Bennettt 1998, 32).

150 Wallsend, Stotts Road, NZ 2925 6573. Trial trenching, 1978

Trial trenching in advance of housing development to determine the line and preservation state of Hadrian's Wall between Stotts Road and Finchley Crescent. The Wall was found to be built on clay and cobble foundations. A single course of wall facing and core survived, the facing stones having tilted outwards owing to the soft nature of the ground. West of the church the same had happened, but here the Wall foundations were found to the rear of the original line, demonstrating a subsequent rebuilding. There was no dating evidence for this. The Wall, 3.10m, was wider than elsewhere in the Newcastle–Wallsend area (Bennettt 1998, 24).

321 Wallsend, Fossway, NZ 284 65. Watching brief, 1981

Observation of a gas pipeline below the southern pavement of the Fossway, from a point opposite 174 Fossway to the junction with Barret Road. The pipe was laid in a 1.2m deep trench, and the stratigraphy throughout this consisted of modern build-up overlying a dark grey-brown clayey soil containing a number of dressed, squared sandstone blocks with much rubble and mortar flecks. The Fossway was constructed in the late 1920s along the line of the Wall ditch, the Wall itself lying to the south of the road, and running through the front gardens of the houses on this side (Spain *et al* 1930, 495). In view of this, the deep stratigraphy and the rubble located by the pipe trench probably represent the upper levels of the Wall ditch fill, with debris from the collapse and/ or robbing of the Wall itself (Bennettt 1998, 22).

76 Byker, 11–17 Union Road, NZ 273649. Watching brief, 1989

Watching brief for the extension of the Cycle Shop. Masonry 2.44m wide on the estimated line, with intermittent surviving facing stones observed and reported by the proprietor of the shop, both thought to be the remains of Hadrian's Wall. (Frere 1990, 315). Recent evaluations by Tyne and Wear Museums confirms location for the Wall as being to the south of this location, and the masonry previously revealed must therefore be something else entirely (M Collins, pers comm).

187 Byker, 260–282 Shields Road, NZ 2720 6486. Trial trenching 1979

Trenching took place on the probable line of the Wall in advance of the construction of a new supermarket. The trenches on both the west and east side of the site revealed the edge of a mortary spread. It is assumed, from its nature, that this soil spread was the debris from a robbed wall of substantial size, and in view of the earlier evidence, it was concluded that the spread represented debris from the robbing and/or destruction of Hadrian's Wall itself (Bennett 1998, 2).

65 Byker 36–78 Shields Road, NZ 264 648. Trial trenching, 1987

Four north–south trial trenches were excavated between the new west end of the Byker by-pass and the original line of the Shields Road. All four trenches revealed modern demolition debris directly overlying boulder clay, shallow to the east end, slightly deeper (up to 700mm) at the west end. No archaeological indications of either the Wall or the Wall ditch were found.

347 Byker, 4–36 Shields Road, NZ 264646. Trial trenching, 1985

Trial trenching was carried out at the east end of Byker Bridge between the south end of Shields Road and Stephen Street in advance of by-pass construction. The trenches were excavated to a depth of 3m below the present ground surface and encountered only 19th-century dumped waste and building debris. There was no indication of the Roman levels or of the level of the natural subsoil, indicating that there has been considerable dumping and alteration to the original land surface levels (Bennett 1998, 23).

70 Byker, Stepney Bank, NZ 262645. Trial trenching 1989

Two trial trenches, were excavated in an attempt to locate the line of Hadrian's Wall near its crossing of the Ouseburn. The site was heavily disturbed, and no archaeological features were recorded (Frere 1990, 315).

302 Byker, St Dominics Priory, NZ 2585 6445. Trial trenching, 1981
Six trenches were cut in advance of housing development. Substantial remains of the Wall were found in two parallel trenches. The trench-built foundation to the Wall was 2.3–2.65m wide, consisting of a clay-bound rubble core faced with large, roughly shaped, sandstone blocks. There was no trace of mortar. The north face of the single surviving course of superstructure rose vertically from the foundation, but that on the south was offset by 100m, giving a width of 2.2m (Bennett 1989, 22).

140 Newcastle upon Tyne, Jubilee Road, NZ 2560 6427. Trial trenching, 1978
Trial trenching on the line of Hadrian's Wall between Melbourne Street and Jubilee Road in advance of housing development. Masonry of the Wall was found surviving immediately beside Grenville Terrace, where it had been located in 1925, and immediately east of Jubilee Road (Bennett 1998, 22).

79 Newcastle upon Tyne, Dean Street, NZ251640. Watching brief, 1988
Watching brief during the excavation of pits across the site for the foundations of a new multi-storey carpark. The proposed line of Hadrian's Wall resulted from the supposed observation of the Wall ditch to the south of the site in 1928–9, implying the Wall and ditch ran diagonally across the site. Observation of the pits revealed no indication of either surviving stratigraphy above the natural clay (all material having been levelled in recent times) or of the Wall ditch cut into the clay. Excavation by Miket on this site in 1973 (Wilson 1974, 410) had failed to find evidence for the Wall ditch in the south-west corner of the carpark area (Frere 1990, 315).

330 Newcastle upon Tyne, Elswick Row, NZ 236641. Trial trenching, 1985
Trial trenching was carried out within the area bounded by Elswick Row, Back Elswick Street and West Road in advance of redevelopment. The area was of particular potential interest because the Vallum had not been located east of here. Two trenches, 3m deep, were attempted across the projected line of the Vallum, but in each only deep deposits of 19th-century industrial waste were found and it was concluded that quarrying had destroyed all evidence within the area for the course of the Vallum (Bennett 1998, 32).

300 Newcastle upon Tyne, Nurses home, Westgate Road, NZ 2275 6445. Trial trenching, 1982
Trial trenching, in advance of building development west of the Nurses Home opposite the Newcastle General Hospital, bounded on the north and west by Westgate Road and Grainger Park Road, was undertaken in an attempt to define the precise line of Hadrian's Wall. Three trenches were excavated, running north–south. No remains were found of the Wall, and the south trench did not extend far enough to reach the supposed line of the Vallum. There had been extensive quarrying across the site in the 19th century (Bennett 1998, 32).

86 Benwell, Condercum House, NZ 21764. Watching brief, 1986
Preliminary excavation for a concrete disabled persons ramp on the north side of Condercum House, Benwell was observed. The preparatory excavation of a small trench to a depth of approximately 0.5m was watched; this lies within the bounds of the Roman fort at Benwell, but the excavation was entirely within made-up ground (brown garden soil) and no indication of the underlying Roman levels were observed in the bottom of the trench.

139 Benwell, Pendower School, NZ 214647. Trial trenching, 1978
Trial trenches in advance of a new sports hall to the east the School. The conventional line of the ditch and south mound of the Vallum lay within the north end of the development area. Four trial trenches found no traces of the Vallum ditch. The plotting on the OS map of Hadrian's Wall places the line of the Vallum ditch just beyond the north end of the easternmost trenches, and the results of the present work would seem to support this (Goodburn 1978, 280).

64 Denton, Methodist Chapel, NZ 2036 6533. Watching brief, 1990
Watching brief carried out during the excavation by contractors preparatory to a replacement for an existing but defective drain between two existing manholes opposite the east and west ends of the frontage. The drain runs approximately east–west and crosses the line of Hadrian's Wall very obliquely in the gardens in front of the Chapel. The facing stones of the south side had mostly been removed when the drain was initially inserted at the west end of the trench, but one facing stone was seen *in situ* indicating that the south face was 2.5m north of the front of the chapel. The north face was probably 5m from the front of the chapel (Frere 1991 234).

54 Denton Burn Thorntree Farm, NZ 202654. Watching brief, 1976
A watching brief was held to observe the construction between Charlie Brown Car Part Centre, Denton and the A69 road, which crossed the line of Hadrian's Wall immediately to the west of Thorntree Cottage. The consolidated remains of Hadrian's Wall lie approx 20m to the west, but no remains of the Wall were observed during the contractors' working. It appeared that the remains of the Wall had previously been destroyed here.

55 Denton Burn Library car park, NZ 2012654. Watching brief, 1976
Watching brief during levelling operations and excavation of service trenches for new Public Conveniences in the car park to the east of Denton Library. The site lies approx 10m south of the line of Hadrian's Wall, of which a short length is consolidated a little to the east. No archaeological material was found.

196 Denton, 717 West Road, NZ 1998 6548. Excavation, 1980
Two trenches were excavated either side of 717 West Road, which lies on the line of Hadrian's Wall. In the western trench the Broad Wall was found, consisting of slabs, at a depth of 400mm beneath the modern ground level, packed with a sandy brown clay, in a construction trench 3.2m wide and 100mm deep. The width across the faces of the wall was 3m. On either side of the wall there were clay spreads, which had undoubtedly originally been piled up against either face of the Wall, and which might well represent construction debris associated with the building of a clay-bonded Curtain Wall (cf Bennett 1983, 44–5). Ard marks scored into the surface of the natural boulder clay were sealed by a pre-Wall buried soil, which was cut by the foundation trench for the Wall itself (Bennett 1989, 19, 27)

653 Blucher, Mc9 (Chapel House), NZ 1785 6627. Evaluation, 2000
A 'T'-shaped trench was excavated on the site of this milecastle as part of the Milecastles Project. The heavily robbed east wall and south-east corner and the well preserved wall of an internal building were identified. Stone surfacing was revealed outside the south east corner, and a ditch was located to the east of the milecastle. There was some evidence to suggest prehistoric occupation on the site (Wilmott, this vol, 144–52).

653 Walbottle, Mc10 (Walbottle Dene), NZ 1648 6675. Evaluation, 1999
Two trenches were excavated on the site of this milecastle as part of the Milecastles Project. The heavily robbed east and west walls of the milecastle were identified, together with a possible corner oven. An analytical survey was made of the standing masonry of the north gate (Wilmott, this vol, 152–9).

653 Walbottle, the Vallum near Mc 10, NZ 1664 6662. Evaluation, 2000
Two small trenches excavated into the Vallum mounds in order to test survival where the mound appeared ploughed out. Some element of the earthwork and a buried soil deposit survived. (Wilmott, this vol, 78–80).

188 Throckley, T10b, NZ 1603 6683. Excavation, 1980
Work in advance of a new sewer scheme on the south side of Hexham Road, B6528 involved excavation of the turret, which was first examined in 1929. The earliest features were a sealed plough soil below the turret and traces of cross-ploughing scored into the natural clay. Within the turret a number of successive clay floors and at least four successive hearths were found. The Wall was excavated at three points. It stood in a shallow foundation trench filled with clay and stone chippings, on which the irregular sandstone foundation slabs were laid. It was of standard A construction, and Broad Wall, although the south face was entirely destroyed by a water main parallel to it. The Vallum ditch was also sectioned (Bennett 1983).

322 Throckley, Bank Top, NZ 1490 6685. Watching brief, 1983
A watching brief on trenching for telephone cables failed to find evidence for Mc11 (Bennett 1998, 29).

Northumberland

63 Heddon-on-the-Wall, Town Farm, near Mc 12, NZ 1350 6690. Watching Brief 1977
Observation of work carried out by contractors to extend garage premises. The site was near to, or overlying the supposed line of the north bank of the Vallum, and close to the measured site of Mc12. No evidence for survival of the bank or milecastle was found, topsoil levels peeling directly off bedrock (Bennett 1989, 30).

343 Rudchester, near Mc13, NZ 123673. Watching brief, 1979
Watching brief on a mains connecting water pipe on the north side of the B6318, 80m east of the site of Mc13. Alhough the site coincided with the line of the Wall ditch, massive disturbance had been caused by a large-diameter water pipe, which had been inserted in 1972 (North Circular Pipeline). No archaeological remains were observed.

653 Rudchester, Mc14 (March Burn), NZ 1068 6768. Evaluation, 2000
Two trenches were excavated on the site of this milecastle as part of the Milecastles Project. The heavily robbed west and south walls of the milecastle and of an internal building were identified. A post-medieval structure had been built after robbing had taken place (Wilmott, this vol, 159–64).

74 Whitchester, Site of T14b, NZ 097677. Excavation, 1977
Excavation was undertaken for the erection of an electricity supply pole immediately south of the B6318 road to supply electricity to Whitchester Farm, in close proximity to the measured position of T14b. No indication of the turret or the Wall was found, but stones from the Wall had been re-used in the 18th century to construct a culvert for a small stream under the Military Road (Goodburn 1978, 420).

60 Whittledean, Reservoirs, NZ 0661 6825. Trial trenching and watching brief 1990–1
The remains of Hadrian's Wall had been destroyed beneath the B6318 road during the building of the reservoirs in the mid-19th century. However, the northern edge of the Wall ditch was observed on its expected line, and the Vallum ditch was also seen, with a clay and loam fill, slightly wetter than the surrounding clay subsoil. The Vallum ditch was on its known line, visible on either side as a surface depression in the fields to the east and west (Frere 1991, 234).

653 Whittledean, Mc17, (Welton), NZ 0630 6823. Evaluation, 1999
Two evaluation trenches were excavated in 1999 as part of the Milecastles Project. The milecastle was deeply buried under hill-wash, which had accentuated the profile of its platform. Some Roman features were identified outside the milecastle, and a post-medieval structure had been constructed upon the platform (Wilmott, this vol, 164–7).

157 East Wallhouses, Vallum Farm, NZ 047684. Trial trenching, 1978
Trial trenching 20m west of Mc18 between the Vallum and the line of Hadrian's Wall in advance of creation of new entrance to the farm from the B6318 road; 11m south of the hedge line there was a scatter of rounded cobbles and sandstone set in clay, which might represent the plough-disturbed remains of the Military Way. No other archaeological material was encountered.

189 Wallhouses, NZ 043684. Excavation 1980–1
Excavation across the Vallum in advance of a gas pipeline, a few metres west of T18a. Pre-Vallum plough marks were recorded sealed by the north bank. The north mound of the Vallum was revetted in stone and turf. The ditch had partly silted up, a crossing was inserted and the north mound partly levelled. The Military Way was identified as a 10ft [3.05m] wide spread of small, medium and large sandstone slabs immediately adjacent to the north side of the north mound. Later the road had become covered with collapsed material from the mound and a replacement road, also 10ft wide was constructed immediately to the north of its predecessor (Bennett and Turner 1983).

653 Matfen, Mc19 (Matfen Piers), NZ 0335 6854. Evaluation, 1999
Two trenches were excavated on the site of this milecastle as part of the Milecastles Project. The milecastle was shallowly buried, and heavily robbed. The robber trench for the east wall, the wall of an internal building, and stone surfaces were identified (Wilmott, this vol, 167–70).

** Halton Shields, Sunny Brae, Mc20 (Halton Shields), NZ 018686. Excavation, 1992*
A small excavation in advance of an extension revealed the eastern length of the south wall of the milecastle standing up to five courses high. The core was dry-stone with clay-bonded faces (Esmonde-Cleary 1993, 284: Bidwell 1999a, 111).

85 Stagshaw, NY 986687. Watching brief and trial trench, 1990
Watching brief for telephone cabling along the south verge of the B6318 for 300m from the roundabout at the intersection of the A68 and B6318 roads. A north–south trial trench exposed the south face and core of Hadrian's Wall where the new and old roads diverge. Footings and two courses of Standard A construction was exposed on the south face. The face and core were clay-bonded, and the Wall width was 3.10m. These facts show that this length was constructed as Broad Wall, and demonstrated the anticipated survival of at least three courses of wall below the former road where it had not been affected by the realignment (Frere 1991, 234).

340 Humshaugh, near Mc 26, NY 930697. Watching brief, 1985
Work by British Telecom to insert new equipment involving digging at several locations on the north verge of the B6318, crossing the line of Hadrian's Wall at the site of Mc 26 and crossing the line of the Vallum. The three trenches necessary were no more than 1m deep, and at each location were excavated into previously disturbed ground, through which a number of other utilities already run. No archaeological remains were encountered.

138 Chesters Fort, Lucullus Larder, NY 912706. Watching brief, 1978
Watching brief during the excavation of service trenches to the cafe. No archaeological features or material observed.

69 Chesters Fort, new entrance building, NY 912706. Watching brief, 1976
Service trenches for electricity and water supply to the new entrance building 600mm deep all within made-up or disturbed ground. No archaeological material observed.

162 Chesters Fort. NY 913699. Chance discovery, 1978
Chance discovery of a Roman altar in the west bank of the river North Tyne 150m to south of the fort, which had been carried along with other stone to strengthen the river bank at some time. The text reads *DISCIPVLINAE IMP[ERATORIS] HAD[RIANI] AVG[GUSTI] ALA AVG[VSTA] OB VIRT[VTE[APPEL[LATA*]. The altar was repaired by DOE and a wooden base provided before being placed on display in Chesters Museum (Austen and Breeze 1979).

51 Walwick, Little Walwick Cottage, NY 902706. Watching Brief, 1976
Watching brief on conversion work and landscaping on the property, which lies just to the south of the line of Hadrian's Wall. No archaeological material was observed.

83 Black Carts Farm, NY 885713. Watching brief, 1976
Levelling of area for new farm barn to north of farm complex, 150m north of Hadrian's Wall. No archaeological material was found. Mr R Hunter, owner of Black Carts Farm, pointed out an inscribed stone built into the south wall of the farmhouse – third course immediately to right to porch, at present covered by creeper. Previously unrecorded: reads *COHC] : >PONTIC]* (Hassall and Tomlin 1977, 431).

623 Black Carts, Wall and Vallum, NY 884715. Excavation, 1997
Excavation of two trenches to establish the state of preservation and morphology of the earthworks of Hadrian's Wall. The Wall, ditch and counterscarp where sampled in a trench next to T29b. The ditch was shallow and rock cut, accentuated by a built counterscarp. The Wall was robbed to its foundations. The Vallum, sampled opposite T29a, was rock cut, and the south and marginal mounds sealed ard marks (Wilmott, this vol, 80–102).

92 Carrawburgh Fort, vicus*, NY 858711. Watching brief, 1977*
Observation of a drainage trench dug southeast from the Mithraeum revealed no evidence of buildings within the *vicus* near the stream flowing from Coventina's Well. A road 3.5m, paved with large square flags, including re-used material, led from the stream to a building, the platform of which is clearly visible higher up the slope 50m south-east of the Mithraeum (Goodburn 1978, 421).

345 Vallum Lodge, NY 747668. Watching brief, 1986
A watching brief was conducted following excavation of the trench for the outfall pipe to a new septic tank to the immediate north-east of the house across the line of the Vallum. There is considerable backfilling of the ditch at this point to accommodate a recent farm access road, and a small plantation of trees covers the site of the Vallum. The trench was approximately 300mm wide and up to 500mm deep, and appeared to be wholly within the dumped soils and therefore caused no archaeological disturbance. There was no indication seen of the north mound of the Vallum.

67 Twice Brewed, Vallum Lodge Guest House, NY 747668. Watching brief, 1977
Watching brief during the excavation of foundation trenches for building extension on the west end, to provide additional bedrooms. The development lies on the line of the south bank of the Vallum but the land has been landscaped as domestic garden and no surface remains were to be seen here. The foundation trenches were the only disturbance, to the depth of 600mm; these were examined after excavation but no archaeological material was seen.

62 Great Chesters Fort, NY70356685. Watching brief, 1984
Just less than 8m of the north face of the north wall of the fort was exposed by excavation preparatory to the widening of the cattle unit. There was no opportunity to examine more than the face of the wall, which had been used as a foundation for the north end of a stone barn. The surviving fort wall here stood five courses high, including the foundations; the courses were regular, consisting in order upward of a single course of rounded cobble foundation, a course of flags on average 80mm thick, and three

courses of facing stones which were on average 200, 180 and 150mm high, respectively. The Roman masonry did not survive westward beyond the end wall of the barn. The remains were drawn at 1:10 and photographed before being covered. The remains are preserved *in situ* but not visible.

352 Great Chesters Fort, Aqueduct, NY 7178 6879. Excavation, 1986
A trench 1.5m wide and 4m long was excavated at right angles to the line of the aqueduct. The channel, 560mm wide and 280mm deep, was cut into natural boulder clay subsoil and was straight-sided and flat-bottomed with no special lining. Spoil from the channel formed a retaining bank 300mm high and 1.6m wide on the downhill (south) side of the channel. The fill of the aqueduct consisted of a homogeneous peat accumulation above a grey silt 120mm. deep. There was no indication of a buried soil below the bank, suggesting that the line of the aqueduct was de-turfed before construction (Mackay 1990, 288–9).

75 Haltwhistle Common Burnhead Cottage, NY 711666. Watching brief 1989
A watching brief during the excavation of the foundations for extensions to the existing building found only shallow topsoil above a 1m deposit of gravel, which appeared to be a naturally occurring deposit. No indication at all of Hadrian's Wall was observed (Frere 1990, 316).

319 Haltwhistle Common, Sunnyrigg Camp, NY 695667. Trial trenching, 1981
Four sections through the camp's ramparts showed no indications of a ditch and only a slight surviving bank (Rankov 1982, 343).

87 Longbyre, Holmhead Farm, NY 660660. Watching brief, 1976
Watching brief during renovation of Holmhead Farmhouse, including the excavation of new service trench north-west of the house. The site is immediately north of T46a. The house contains RIB 1844, recording building work by tribesmen of the Dumnonii. No archaeological observations were made, but a new inscription was found, built into the north wall of ruined byre immediately to the east of the farmhouse – sixth course up to right of doorway; reads > IVL. IANAL (Hassall and Tomlin 1977, 432).

127 Thirlwall, Castle Farm, NY 659661. Watching brief, 1977
Watching brief for excavation of site of new cattle barn on north side of farm complex. Inspection of the excavated area after the contractor's excavation revealed no archaeological material associated either with the Castle or Hadrian's Wall, which runs 150m to south.

Cumbria

420 Birdoswald fort, NY 616662. Excavation, 1987–91
Major research excavation for Cumbria County Council. The area immediately south of the farmhouse was excavated, as was an area of the north wall of the fort. Evidence for the pre-Roman environment was found beneath the Turf Wall, and it seemed likely that there had been an early turf and timber fort. Structures excavated within the fort included an interval tower on the north wall, later turned into a bakehouse, a basilica and store building/workshop in the *praetentura*, and a pair of *horrea* in the *latera praetorii*. The *porta principalis sinistra* was fully excavated, revealing a complex sequence of roads, ditches and gate blocking. The sequence in the *horrea* continued through a series of sub-Roman timber buildings. Evidence for continued occupation from the 13th century to the present was also recovered (Wilmott 1997a).

473 Birdoswald fort, NY 616662. Excavation, 1992
Excavations undertaken on the *porta quintana dextra* for the English Heritage regional inspector in order to complete excavation and consolidation of the fort defences. The gate, which had previously been excavated, was revealed, together with a portion of the fort curtain wall which had collapsed *in situ* (Wilmott 1997a).

590 Birdoswald fort, NY 616662. Excavation, 1996
Excavations undertaken to the south of the fort of Birdoswald to examine the survival of previously excavated archaeology in an area under medium-long term threat from cliff erosion. Three trenches were opened. A possible Neolithic burial was found. The Vallum and the three fort ditches were examined, as were a series of pits, ditches, wells and timber structures (Wilmott *et al*, this vol, 203–395).

585 Birdoswald fort, NY 616662. Excavation, 1997–8
Excavations undertaken for Cumbria County Council in the NW *praetentura* of the fort in advance of the construction of the Hadrian's Wall Study Centre. Floors and yards of the former Birdoswald farm were removed. Parts of two barrack blocks, a rampart building and the basilica located in earlier work were excavated (Wilmott *et al*, this vol, 203–395).

656 Birdoswald fort, NY 616662. Excavation, 2002
Small-scale excavation to re-examine previous findings from the 1930s, and to establish a context for discoveries of Housesteads ware (Wilmott *et al*, this vol, 203–395).

648 Appletree, Turf Wall and Vallum, NY 597656. Excavation 1999 (also 1979, 1989)
Appletree section of the Turf Wall, traditionally sampled for the decennial Wall Pilgrimage. The section was recorded by the Unit in 1979, 1989, and 1999, when a section was cut through the Wall, Vallum and Wall ditch and counterscarp (Whitworth 1992; Wilmott 1997a and this vol, 102–20).

61 Banks, Stonegarth, NY 572645. Watching brief, 1977
Watching brief on the construction of a new septic tank at 'Stonegarth', Banks, south of the Vallum. The drainage trench, 2m deep, was examined where it crossed the Vallum ditch. The north edge of the ditch was located close to its estimated line. The fills observed were a layer of peaty soil 100mm thick overlying a yellow plastic clay. The south lip of the ditch was not located, and no indication of the mounds were seen in the sides of the trench (Goodburn 1978, 421).

98 Banks, Picts Rigg, NY 571645. Watching brief, 1977
Watching brief on extension to existing house, which would lie across the Vallum. The foundation trench cut through the north

side of the Vallum ditch, the fills of which consisted of layers of yellow and grey clay with two thin layers of peaty material. The Vallum ditch was again observed to be on the line plotted by OS.

306 Brampton Old Church Fort, NY 50906150.
Observation of erosion, 1981
Erosion and soil slip was observed at the north-west corner of the fort revealing the core and cobble base of the rampart. No further archaeological material was observed (Rankov 1982, 343).

192 Irthington, Mc58 (Newtown of Irthington), NY 4980 6258.
Geophysics, 1981
It was considered that Mc58 was located in the north-west corner of field behind the Wall line. The geophysical survey located a strong anomaly crossing the area diagonally, presumably the well preserved footings of the Wall, a weaker anomaly immediately to the north representing the filled-in ditch. A line of weak anomalies behind the Wall might represent the original line of the Turf Wall or its levelled substance, but there was no clear evidence for the conjectured Milecastle, neither its structure nor any concentrated spread of debris from robbing or ploughing that might indicate its former position (Gater 1981).

192 Irthington, Mc59 (Old Wall), NY 4858 6178. Geophysics, 1981
The site of Mc59 was traditionally identified with a platform in the north-west corner of a field behind the Wall alignment. Three linear traverses behind the conjectured line of the Wall suggested the presence of buried stonework, probably a spread of debris rather than the Wall structure itself. An area survey located a strong anomaly which probably represents the milecastle, but to the east and slightly off the platform. Variations in the plots suggests that the side walls of the milecastle have been robbed- or ploughed-out, although the south wall might survive in much better condition, stronger gradients in the centre perhaps reflecting the large foundations of the south gateway (Gater 1981).

191 Bleatarn, Highfield Moor, White Moss, NY 462609.
Watching brief, 1981
Proposed drainage scheme in field 1183, south of the Vallum, but with a single main drain as an outlet across the Vallum. The drainage was inspected during progress but due to narrowness of the trench it was not possible to verify the course of the Vallum ditch or banks. Four parallel banks form the Vallum in this boggy area (Rankov 1982, 343).

192 Bleatarn, White Moss, NY 458609. Geophysics, 1981
At White Moss, the Military Way can be seen as a slight *agger* mid-way between the conjectured line of the Wall and the visible remains of the Vallum. Five traverses located a strong anomaly representing the road, with a weaker one indicating a ditch on the north side, and confirmed the visible evidence for the road curving south towards the Vallum. A further seven traverses in the next field west located the continuation of the road, and demonstrated that here it ran parallel and quite close to the projected line of the North Vallum Mound. Two traverses were extended across the projected line of the Vallum itself, but neither showed a uniform response. The absence of any geophysical indication for the Ditch might result from a combination of sands and gravels and a high water table in this particular field (Gater 1981).

88 Crosby-on-Eden, Stanegate near High Crosby, NY 458599.
Trial trenching, 1978
Removal of water pipe laid without authority in a sunken way west of the cross roads on B6264 at High Crosby. This was thought to be a section of the Stanegate, on the basis of excavation in 1925. Reopening of the trench for the water pipe across the supposed line of the road across the bottom of the hollow revealed that the water pipe had been laid at a depth of 1m below the modern ground surface. Examination of the sides of the trench revealed no suggestion of a surviving road surface and a total absence of cobbles, and suggests that the 1925 interpretation may be invalid.

192 Crosby-on-Eden, Mc61 (Wallhead), NY 4559 6087.
Geophysics, 1981
Milecastle 61 was thought to lie in the western half of a field south of the Walby–Wallhead road, which itself was though to seal the remains of the Wall. An area survey at this traditional position located an anomaly of high resistance, which might indicate the milecastle's south wall, while a localised area of higher resistance at the centre could well indicate the *in situ* remains of its south gateway.

192 Crosby-on-Eden, Wall and Vallum, NY 4460 6063.
Excavation, 1981/84
The Wall, Wall Ditch, counterscarp and Vallum were sectioned in advance of the laying of a gas pipe. Elements of all frontier works were examined (Bennett, this vol, 120–8).

189 Crosby-on-Eden, High Crosby Farm, NY 453597.
Trial trenching, 1985
In advance of a new barn immediately north of the existing farm complex, trial trenching was carried out. Owing to the identification of the hollow-way to the south of the road as the Stanegate and finds of small quantities of pottery, High Crosby has been estimated as the site of a small fort between Carlisle and Old Church Brampton associated with the Stanegate, on the occurrence further east of alternating small forts between larger ones. The shallow topsoil was removed by JCB under archaeological direction in three trial trenches onto the sandy subsoil, but no archaeological features were found (Frere 1986, 383).

653 Walby, Mc62, (Walby East), NY 4429 6051.
Geophysics and evaluation, 1981, 1999
Ten geophysical traverses were undertaken as part of the Crosby-on-Eden project, apparently finding the south wall of the milecastle. The site of the milecastle was confirmed and the plan and dimensions partially elucidated through trial pitting in 1999 as part of the Milecastles Project. (Gater 1981; Wilmott, this vol, 170–4).

653 Walby, Mc63, (Walby West), NY 4316 5975.
Geophysics and evaluation, 1981, 2000
A survey of the measured position of the milecastle located located both Wall and Ditch. A series of strong anomalies south of and perpendicular to the Wall coincided with the measured position. Trenching in 2000 as part of the Milecastles Project showed that the Wall coincided with the southern boundary of the field in which the survey took place, and that these anomalies could not, therefore have been the milecastle, which was not located precisely (Gater 1981; Wilmott, this vol, 174–7).

52 Tarraby, opposite 'Near Boot' public house, NY 412580. Watching brief, 1976
A watching brief mounted to observe a trench excavated by Post Office Telephones crossing the B6264 road slightly east of the Near Boot Inn. Observation showed a grey-brown soil that contrasted with the undisturbed red boulder clay at the north end of the trench, and may indicate the course of the Vallum ditch (Frere 1977, 376).

57 Tarraby, Clydesdale Stud NY 410581. Watching brief, 1978
Proposal to insert a new septic tank with a 50m long drainway, which would cross the line of the Wall. The work was carried out without prior notice and so was not observed.

4 Tarraby, Mc65, NY 4085 5793. Geophysics, 1976
Mc65 was located in geophysical survey, slightly to the west of the expected position. Trial excavation on the south-west corner confirmed the results of the geophysical survey (Smith 1978, 35).

4 Tarraby, Tarraby Lane, NY 405573. Excavation, 1976
Rescue excavation in advance of housing development. Traces were found of a pre-Wall field system, and a minor Roman road to the south of the Vallum. A Roman boundary of post settings was found between, and at right angles to, the Wall and Vallum; 2nd-century ditches suggested meadows outside the *vicus* of the fort of Stanwix (Smith 1978).

56 Stanwix, Crown and Thistle Inn, NY 401571. Watching brief, 1976
Intermittent observation during the construction of an extension at the rear of the premises, including the insertion of new drains, was carried out. Clay subsoil was seen very close to the ground surface, which here is lower than in the neighbouring school playground. Any Roman levels had been removed when the inn was built (Frere 1977, 373).

72 Stanwix Bowling Green, NY 401569. Watching brief, 1977
Examination of a small trench 3m square at the rear of the building for a new lavatory for Boys Brigade HQ. The proximity of the fort suggested that there could be civil activity here but no evidence was recovered from this small area.

94 Carlisle Cricket Club, Edenside, NY 398567. Watching brief, 1977
Watching briefs during extensions to buildings belonging to Carlisle Cricket Club and Carlisle Bowling Club on the line of the Vallum on the north bank of the River Eden. No archaeological remains found.

11 Fisher St, Carlisle, NY 400560. Excavation, 1977
Emergency excavations were carried out by the Central Excavation Unit, in advance of the construction of new premises for the Cumberland Building Society, Fisher Street/Castle Street, Carlisle. A major public building and street within the Roman town were identified as well as the potential for organic survival in Carlisle. Evidence of medieval destruction of buildings by fire was found (Goodburn 1978, 423).

81 Carlisle, Willowholme Sewage Works, NY389565. Watching brief, 1978
Development of the Effluent Treatment Works on the line of Hadrian's Wall, the remains of which were thought to have been previously destroyed. No traces of the Wall were found, but a Victorian commemorative plaque marking the line of the Wall in 1886 was found re-used as a drain cover. This was be re-erected by NWWA.

653 Grinsdale, Mc69 (Sourmilk Bridge), NY 3655 5810. Geophysics and evaluation, 1998, 2000
The two alternative sites of this milecastle were surveyed by Stratascan and Timescape Archaeological Surveys, without success in 1998 and 2000, and the measured site trenched in 2000 as part of the Milecastles Project. The two trial trenches succeded only in establishing the line of Hadrian's Wall. The milecastle was not located (Robinson and Biggins 2000a; Wilmott, this vol, 177–82).

653 Beaumont, Mc70 (Braelees), NY 351 590. Geophysics, 2000
An inconclusive geophysical survey was carried out by Timescape Archaeological Surveys on the supposed site of this milecastle as part of the Milecastles Project. No positive results were forthcoming (Robinson and Biggins 2000b; Wilmott, this vol, 182).

653 Burgh-by-Sands, Mc71 (Wormanby), NY3381 5921. Evaluation, 2000
Five evaluation trenches were excavated in order to locate and evaluate Hadrian's Wall and the east side of this milecastle as part of the Milecastles Project. The robbed east wall was located, as was Hadrian's Wall. There was some survival of the Turf Wall and milecastle on the site (Wilmott, this vol, 182–6).

** Burgh-by-Sands, area east of fort, NY 330 590. Geophysical Survey, 1991*
Survey of the field immediately east of the graveyard by the EH AML located the eastern defences of the fort and the line of Hadrian's Wall. A strong feature running to the NE corner of the fort appeared to be a re-alignment of the Wall to the north so that the fort was wholly behind the Wall as at Birdoswald. There were indications of *vicus* buildings in the area behind this re-alignment of the Wall.

7 Burgh-by-Sands, Field 0120, NY 329591. Watching brief, 1976
Watching brief on cable laying around the east side of Burgh-by-Sands fort, 20m east of the supposed line of the defences. No structural remains were found; only dispersed masonry, which may have derived from the Wall, was found immediately north of the road. A statuette of a *genius* was found in topsoil near the north-east corner of the fort and is now displayed in Tullie House Museum, Carlisle (Phillips 1979, Frere 1977, 376).

134 Burgh by Sands, Vallum, NY 327 591. Trial trenching, 1979
Undertaken to locate the course of the Vallum to the west of the fort, in anticipation of a planning application to build a house. The ditch was located either side of the hedge in the two fields immediately to the west of the unclassified road running south from Burgh Head. Only the north edge was located and a full profile could not be obtained (Austen 1994).

82 Burgh by Sands, Mc72 (Fauld Farm), NY 3242 5903. Excavation 1989
Excavation carried out in advance of a new access road and services trench running north–south up the farm track

immediately west of Fulwood House. Excavation found the east and north walls of the Turf Wall milecastle constructed on a raft of cobbles 6.2m wide, identical to that for Hadrian's Wall itself found at West End. The sandstone walls of the stone Wall milecastle were also found, although the date of the replacement was not established. The Wall Ditch was located in a machine excavated trench 8.5m north of the north wall (Austen 1994).

336 Burgh-by-Sands, Fauld Farm, NY 324590.
Watching brief 1985
A watching brief was held during under-drainage of field number 2693 to east and south of the Greyhound Inn. Nowhere were any traces of the Vallum ditch observed, although the OS depict it crossing this field (Frere 1986, 387).

349 Burgh-by-Sands, West End, NY 320591. Excavation 1986
Excavation was carried out in advance of two new sewer pipes laid by the North West Water Authority in field number 0008 to the east of West End House. Excavation consisted of two north–south trenches on the line of the proposed sewers. The profile of the Wall ditch was recorded. The eastern trench contained a cobble foundation for the Turf Wall, recorded previously elsewhere but misinterpreted as foundations for the later Stone Wall. This cobble foundation was identified only in the eastern trench; in the western trench the Turf Wall had been built of turfs from land that had at one time been cultivated on top of stripped natural subsoil. The measured position of Turret 72a lies between the two trenches. The foundations of the replacement Stone Wall survived patchily on top of the remains of the Turf Wall. The Wall and Ditch ran slightly north of the OS line to the east (*see* Site 82, Mc 72, above). The upper fill of the Vallum ditch was examined, and metalling noted on the north berm (Austen 1994).

84 Fourstones, Drumburgh, NY 264598. Watching brief 1989
In advance of the erection of a bungalow in land to the east of Fourstones. No indications of archaeological deposits or features in the area of the development were visible, although a few animal bones were seen. This is despite the site lying 10m south of the established line of the defences of the fort, where extra-mural activity would have been expected (Frere 1990, 318).

50 Glasson, east of 'the Lookout', NY 258605. Watching brief 1976
Watching brief held during excavation of foundation trenches for two new houses to east of the 'The Look-Out', on the line of the Vallum. The ditch underlies the road and the site was thus either on the south berm or on the site of the now disappeared south bank. No archaeological features were observed.

151 Port Carlisle, Westfield House, NY 251613.
Watching brief, 1978
Examination of the foundations for the uprights of a frame-constructed barn across the line of Hadrian's Wall immediately to the east of the farm complex. No indications of the Wall or Ditch were exposed.

59 Port Carlisle, The Saltings, NY 249613. Watching brief 1978
Observation of foundation and service trenches for three new bungalows to the north of the expected line of Hadrian's Wall. No archaeological material was found.

653 Port Carlisle, Mc 78 (Kirkland), NY 2455 6134.
Evaluation, 2000
Three evaluation trenches were excavated into the site of this milecastle as part of the Milecastles Project. The robbed east, west and south walls were located, and the dimensions of the milecastle established (Wilmott, this vol, 187–93).

177 Port Carlisle, Seaholme, NY 241621. Trial trenching, 1979
Two trial trenches excavated in advance of new garage. Possibly on line of Wall ditch or slightly to north: no archaeological features observed in shallow trenches.

71 Port Carlisle, Hawthorn Cottage, NY 239623.
Watching brief 1977
Examination of the foundations for a garage and access, 25–30m south of the line of Hadrian's Wall and 350m east of the site of Mc79. No archaeological features observed.

653 Bowness-on-Solway, Mc79 (Solway House), NY 2369 6224.
Evaluation, 1999
Two evaluation trenches were dug into the previously excavated milecastle as part of the Milecastles Project. Elements of both the turf and stone milecastles were recovered, and previously excavated hearths and internal features re-examined (Wilmott, this vol, 193–7).

77 Bowness-on-Solway, Acremire Lane (NY 231623).
Watching brief, 1990
Clearing and widening of existing water courses running northeast from Acremire Lane to the line of the Wall near the site of T79a. Where the drain turned south towards Acremire Lane, scattered sandstones and cobbles may have derived from the Wall, although no structure was observed. A band of dark soil may have been the top of the Vallum ditch (Frere 1990, 235).

346 Bowness-on-Solway, Vicarage, NY 224626.
Watching brief, 1990
Watching brief of trial pits in advance of a proposed new vicarage located deposits thought to be the fill of the Vallum ditch. The Vallum had hitherto been thought to have turned southward east of this point (Austen, this vol, 396–408).

111 Bowness-on-Solway, Bowderhead Farm, NY 222626.
Watching brief 1978
A watching brief was conducted during excavation of foundations for a barn within the farm complex and thus the fort. Results were negative.

68 Bowness-on-Solway Roman Fort, NY 223627.
Excavation, 1988
Area excavation in advance of construction of housing in the field north of the main street between the Post Office and 'High Bank' found the east defences of the fort. Prehistoric features were found, sealed by a layer of grey clay upon which the fort was built. The first fort had a clay and turf rampart, a portion of which survived behind the later stone fort wall. An interval tower lay slightly north of midway between the estimated positions of the east gate and north-east corner. Three stone packed post holes, just over 1m beyond the fort wall, 4m apart

and directly opposite the interval tower formed a row parallel to the fort wall. They were perhaps associated with the construction of the upper part of the interval tower, possibly for scaffolding. Two ditches were identified (Austen, this vol, 396–408).

339 Bowness-on-Solway, Church Lane, NY 22356255. Watching brief 1988
Watching brief in advance of a proposal to erect a detached house on land which had been a yard and agricultural outbuildings of Church House Farm. A ditch was excavated, and a profile was observed in each trench. The line of the ditch suggested that it rounded the south-east corner of the fort (Austen, this vol, 396–408).

Cumberland coast

178 Skinburness, NY 122555. Trial trenching, 1979
Trial trenching across fields 2005 and 2460 followed geophysical survey by R A Clark of Leeds University Department of Earth Sciences of the area of a proposed housing development. The field contained the suggested site of Tower 9b, but the trial trenches found only a series of naturally formed raised beaches with no evidence for the tower or associated linear features.

190 Moresby, Parton SY983298. Watching brief, 1980
Watching brief on drainage channels to the south-east of the fort. Hollows, U-sectioned gullies and V-sectioned ditches were found containing predominantly pottery of the 2nd–3rd centuries (Bennett *et al*, 1987).

Outpost / Hinterland forts

Northumberland

171 High Rochester, NY832 984. Watching brief, 1978
Watching brief during construction of extension to the east of Green Cottage, High Rochester. The area of the extension overlies the area excavated in the 1850s but no archaeological data was recovered from the shallow foundation trenches.

Cumbria

78 Bewcastle fort, NY 5645 7470. Excavation, 1977–8
Excavations in advance of a new cattle unit shed in the north-west corner of the hexagonal fort. The excavations demonstrated that the fort was primarily hexagonal initially, with a turf rampart, later replaced by a stone fort wall. Three successive buildings were a Hadrianic timber building, an Antonine store building bounded by the intervallum street, and a 3rd-century barrack, which extended across the intervallum and rampart. A wide wall directly across the site may have been a rebuilt fort wall or a post-Roman structure. The excavations enabled reconsideration of previous excavations, and suggested that the fort was abandoned *c* AD 310 (Austen 1991).

131 Old Penrith, NY 493 384. Excavations, 1977–8
The excavations were undertaken by the Central Unit between September 1977 and September 1978 within the area immediately south of the fort in advance of new agricultural buildings. Parts of the area had been stripped by contractors, removing 2nd-century and later remains. The excavations demonstrated there was a fort at Old Penrith established possible *c* AD 90, with a number of identifiable changes up to the reign of Hadrian. One large stone building may have been the headquarters building. The visible fort was probably re-established on the return from the Antonine Wall fort in the mid-2nd century: two ditches cut through the earlier levels may represent a construction camp south of the fort.

There were four ditches on the south side of the fort, beyond which several strip-house type *vicus* buildings were found. These were mostly replaced wholesale in the early 3rd century in a single style of construction characterised by foundation courses of sandstone blocks up to 1m long. Among these a possible corn-drying building was examined. The *vicus* appeared to decline towards the end of the 3rd century, after which the fort defences were remodelled with a broad single ditch on the south side. Pottery and coin finds showed that the fort continued to be occupied up to the end of the 4th century (Austen 1991).

Appendix 2

The Vallum at Limestone Corner

by Brenda Heywood

In June 1952 two weeks were devoted to the excavation of a complete section across the Vallum west of Limestone Corner. The aim of the excavation was to investigate particularly the composition of the marginal mound, the nature of the subsoil into which the ditch had been dug and the kind of upcast in the south mound; in addition, it was to discover whether the mounds and ditch were revetted in any way, and whether a patrol track existed on the south berm; and finally to discover the nature of the Military Way, which here crowns the north mound of the Vallum.

The single trench (Fig 437) was planned to cut through the Vallum in a sector ostensibly free from rock, free from the complications of a crossing and at a point where the ditch was of the re-cut type similar to the Cawfields section. The trench was to cut through the south mound, to expose the south berm, to cut through the marginal mound and ditch, and to uncover the north berm, north mound and Military Way.

The old surface level was clear only beneath the south mound, where it was distinguishable as a dark grey band of clayey material. Above this level was the clean upcast of the mound, a soft, rusty-red gravel. Above the gravel, which, as the excavation of the ditch showed, had clearly come from the ditch, was another thick layer of light-coloured stoney gravel rather different from the gravel beneath it. Many small stones were present in this second layer. The presence of such material is odd, as the ditch did not cut through a layer of subsoil of a similar nature. It looks almost as though the small stones and relatively loose soil have come from elsewhere to add to the height of the south mound, which still stands to the height of 1.82m (6ft) just west of the section. Above this layer the topsoil and turf were quite distinct. There were no signs of any kind of mound revetment. The mound was 6.1m (20ft) wide.

The subsoil of the south berm, a sandy loam, was uncovered. 1.37m (4?ft) north of the limit of the mound and stretching for roughly 1.82m (6ft) northwards on the berm, were a number of flat whin boulders were embedded in the subsoil. Whether these were placed there by nature or by human agency was difficult to determine, but in either case they might have served as a patrol track. No attempt was made to discover whether they were a continuous feature.

The marginal mound proved to be of amazingly small stature when stripped of its turf and topsoil. But its material was quite different in character from the rusty-red gravel of the south mound, or even of the light-coloured stony gravel above it. One large freestone came from it and many fragments of whin boulders. Apart from these, the mound was composed of loose dark soil resembling loose topsoil. The mound clearly was not composed of material gained from digging the ditch anew. Otherwise, the mound would be composed of rusty gravel material.

The rust-coloured sandy subsoil was traced down the south ditch slope and soon seemed to become fine gravel. The topsoil did not differ greatly in colour and consistency, and therefore it was difficult to discover the exact line of the ditch. It did not appear to be flat-bottomed, but rather had a fairly narrow, slightly rounded bottom. The north slope was also cut through rusty-red gravel though on the north lip rock reached the surface. There was no black silty filling common to a ditch cut in clay. The ditch was quite dry and the filling was compressed sandy topsoil and an occasional stone.

The north berm was also clearly traceable, with neither marginal mound nor cobbles. But approaching the north there was a spill of stones, presumably from the top of the mound. No attempt was made to cut through the north mound because of its huge dimensions, but the Roman profile of the mound was uncovered. The surface of the Military Way proved disappointingly poor and was merely a layer of loose gravel and angular stones set immediately above the lighter gravel of the mound. The spill of stones over the north berm near the mound was clearly from the road. No edging existed to the Military Way at this point. It is noteworthy too, that although the north mound is of great height, it is rather narrow. This is doubtless why a bank of solid dark brown soil was added to the southern limit of the north mound in an attempt at least to support the mound in its new purpose, if not to widen its effective crest. The material is quite unlike the subsoil or mound upcast. When part of this bank and the spread of stones were removed, the north berm proceeded below it as flat as the south berm.

The section across the Vallum proved to be of great interest for a variety of reasons and quite justified the attention devoted to it. In particular the nature of the marginal mound was more closely determined, and an interesting point was raised in connection with the composition of the south mound. A probable patrol track came to light, and evidence for the nature of the Military Way and the extra bank of soil added to the north mound to support it.

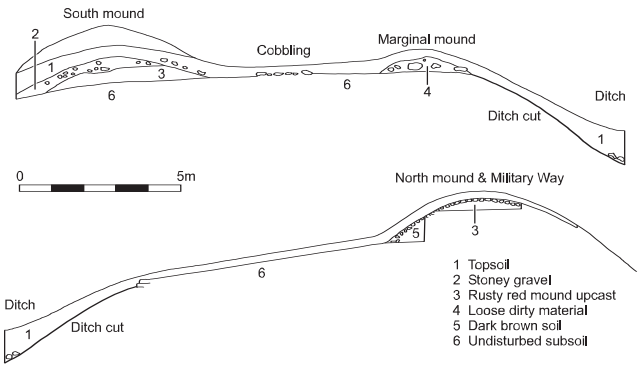


Fig 436
Limestone Corner: section across the Vallum recorded in 1952.

Appendix 3

Pollen and plant remains: data tables

Appendix 3 Table 1 Black Carts pollen data: raw pollen counts and percentages of total land pollen.

Under Vallum mound: Monolith 838								Under Counterscarp Bank: Monolith 818					
sample		*14*		*16*		*17*				*5 to 6*		*11 to 12*	
		count	*%*	*count*	*%*	*count*	*%*			*count*	*%*	*count*	*%*
Alnus	Alder	15	3.1	5	2.8	35	6.5	Alnus	Alder	23	3.5	25	4.9
Betula	Birch	–	–	–	–	–	–	Betula	Birch	–	–	1	0.2
Fagus	Beech	–	–	–	–	–	–	Fagus	Beech	–	–	1	0.2
Pinus	Pine	–	–	–	–	–	–	Pinus	Pine	–	–	1	0.2
Quercus	Oak	12	2.5	3	1.7	1	0.2	Quercus	Oak	15	2.3	20	3.9
total tree		*27*	*5.6*	*8*	*4.5*	*36*	*6.7*	*total tree*		*38*	*5.8*	*48*	*9.4*
Coryloid	Hazel	16	3.3	7	3.9	38	7.0	Coryloid	Hazel	169	25.5	178	35.0
Ilex	Holly	1	0.2	–	–	–	–	Ilex	Holly	–	–	–	–
Juniperus	Juniper	–	–	–	–	–	–	Juniperus	Juniper	–	–	–	–
Salix	Willow	–	–	–	–	1	0.2	Salix	Willow	–	–	–	–
total shrub		*17*	*3.5*	*7*	*3.9*	*39*	*7.2*	*total shrub*		*169*	*25.5*	*178*	*35.0*
Calluna	Heather	3	0.6	–	–	2	0.4	Calluna	Heather	78	11.8	30	5.9
Ericaceae	Heather family	2	0.4	1	0.6	–	–	Ericaceae	Heather family	–	–	1	0.2
total dwarf shrub		*5*	*1.0*	*1*	*0.6*	*2*	*0.4*	*total dwarf shrub*		*78*	*11.8*	*31*	*6.1*
Poaceae	Grasses	194	40.2	81	45.5	227	42.0	Poaceae	Grasses	248	37.4	163	32.0
Cerealia?	Cereals?	–	–	–	–	1	0.2	Cerealia?	Cereals?	–	–	1	0.2
Cyperaceae	Sedges	20	4.1	5	2.8	16	3.0	Cyperaceae	Sedges	39	5.9	32	6.3
Apiaceae	Carrot family	1	0.2	–	–	4	0.7	Apiaceae	Carrot family	3	0.5	1	0.2
Asteraceae	Daisy family	1	0.2	2	1.1	2	0.4	Asteraceae	Daisy family	2	0.3	–	–
Aster	Daisy type	–	–	–	–	–	–	Aster	Daisy type	1	0.2	2	0.4
Artemisia	Mugwort	1	0.2	–	–	–	–	Artemisia	Mugwort	–	–	–	–
Brassicaceae	Cabbage family	–	–	–	–	–	–	Brassicaceae	Cabbage family	1	0.2	–	–
Caryophyllaceae	Pink family	16	3.2	4	2.2	14	2.6	Caryophyllaceae	Pink family	1	0.2	5	1.0
Chenopodiaceae	Goosefoot family	–	–	–	–	–	–	Chenopodiaceae	Goosefoot family	–	–	1	0.2
Lamiaceae	Dead-nettle family	–	–	–	–	–	–	Lamiaceae	Dead-nettle family	–	–	3	0.6
Lactuca	Lettuce type	–	–	7	3.9	12	2.2	Lactuca	Lettuce type	7	1.1	4	0.8
Lotus	Bird's foot trefoil	1	0.2	1	0.6	–	–	Lotus	Bird's foot trefoil	–	–	–	–
P. lanceolata	Ribwort plantain	156	32.3	48	27.0	156	28.9	P. lanceolata	Ribwort plantain	60	9.0	21	4.1
P. major/media	Great/Hoary plantain	22	4.6	4	2.2	–	–	P. major/media	Great/Hoary plantain	–	–	1	0.2
Ranunculaceae	Buttercup family	2	0.4	3	1.7	7	1.3	Ranunculaceae	Buttercup family	–	–	2	0.4
Rosaceae	Rose family	13	2.7	4	2.2	10	1.9	Rosaceae	Rose family	10	1.5	4	0.8
Filipendula	Meadowsweet	–	–	1	0.6	–	–	Filipendula	Meadowsweet	–	–	1	0.2
Rubiaceae	Bedstraw family	–	–	–	–	1	0.2	Rubiaceae	Bedstraw family	1	0.2	2	0.4
Rumex sp.	Dock	2	0.4	–	–	–	–	Rumex sp.	Dock	1	0.2	2	0.4
Rumex acetosella	Sheep's sorrel	–	–	1	0.6	3	0.6	Rumex acetosella	Sheep's sorrel	1	0.2	3	0.6
Cannabis/Urtica	Hemp/Nettle	5	1.0	1	0.6	1	0.2	Cannabis/Urtica	Hemp/Nettle	–	–	1	0.2
Scabiosa	Scabious	–	–	–	–	6	1.1	Scabiosa	Scabious	1	0.2	3	0.5
Stachys T	Hemp nettle	–	–	–	–	–	–	Stachys T	Hemp nettle	2	0.3	–	–
total herbs excl Poaceae *and* Plantago		*434*	*17.4*	*162*	*18.5*	*460*	*14.8*	*total herbs excl* Poaceae *and* Plantago		*378*	*10.5*	*252*	*12.9*
total land pollen								*total land pollen*					
Drosera	Sundew	–	–	1	0.6	–	–	Drosera	Sundew	–	–	–	–
Filicales	Ferns	29	6.0	3	1.7	11	2.0	Filicales	Ferns	133	20.1	87	17.1
Polypodium	Polypody	20	4.1	3	1.7	9	1.7	Polypodium	Polypody	18	2.7	49	9.6
Pteridium	Bracken	8	1.7	1	0.6	1	0.2	Pteridium	Bracken	6	0.9	2	0.4
Sphagnum	Bog moss	4	0.8	–	–	2	0.4	Sphagnum	Bog moss	1	0.2	–	–
Botrychium (& cf)	Moonwort	3	0.6	–	–	1	0.2	Botrychium (& cf)	Moonwort	7	1.1	1	0.2
Cryptogamma (cf)	Parsely fern	–	–	–	–	–	–	Cryptogamma (cf)	Parsely fern	–	–	1	0.2
totals		*64*	*13.3*	*8*	*3.9*	*24*	*4.4*	*totals*		*165*	*24.9*	*140*	*27.5*
unidentified		4	–	1	–	–	–	unidentified		1	–	5	–
broken		87	–	32	–	71	–	broken		53	–	60	–
corroded		237	–	58	–	372	–	corroded		213	–	174	–
crumpled		86	–	43	–	186	–	crumpled		142	–	67	–
obscured		17	–	52	–	66	–	obscured		13	–	12	–
total indeterminate		*431*	–	*186*	–	*695*	–	*total indeterminate*		*422*	–	*318*	–
traverses counted		22	–	11	–	21	–	traverses counted		16	–	18	–
range		21–42	–	22–42	–	22–43	–	range		2–42	–	23–43	–
exotic count		388	388.0	257	257.0	490	490.0	exotic count		215	215.0	417	417.0

Appendix 3 Table 2 Appletree: summary pollen data table.

section no.	*924*	*925*	*926*	*926*	*926*	*926*	*926*	*926*	*919*	*921*	*927*	*927*
depth (mm)	*95*	*65*	*150*	*40*	*95*	*130*	*1.5*	*205*	*50*	*45*	*45*	*375*
Betula	–	–	–	–	–	–	–	–	5	1	–	–
Pinus	–	–	–	–	–	–	–	–	–	–	–	1
Ulmus	–	–	–	–	–	–	–	–	–	–	1	–
Quercus	2	1	–	4	2	–	2	3	2	1	1	6
Alnus	24	21	9	9	20	14	28	13	10	39	96	33
Coryloid	39	15	9	10	20	42	48	15	70	33	1	42
Salix	–	–	–	–	–	–	–	–	–	–	–	1
Calluna	11	47	52	54	38	17	4	41	3	3	1	1
Ericaceae	–	2	1	4	–	1	–	–	–	–	–	–
Poaceae	20	13	20	44	16	21	14	23	13	19	1	7
Cerealia type	–	–	–	–	–	–	–	–	–	–	–	1
Cyperaceae	–	–	3	2	–	1	–	–	–	1	–	7
Chenopodeaceae	–	–	–	–	–	–	–	–	–	1	–	–
Caryophyllaceae	1	–	–	–	1	–	–	–	–	–	–	–
Spergularia-type	–	–	–	–	2	–	–	–	–	–	–	–
Brassicaceae	2	–	–	–	–	1	1	–	–	–	–	–
P.lanceolata	2	3	8	1	2	3	2	6	–	3	–	1
Galium-type	–	–	–	–	–	–	–	–	–	–	–	1
Lactuceae	–	–	–	–	1	–	–	–	–	–	–	–
Lamiaceae	–	–	–	1	–	–	–	–	–	–	–	–
Ranunculaceae	–	–	–	–	–	–	1	1	–	–	–	
Rosaceae	–	–	–	–	–	–	1	–	1	–	–	–
Potentilla	–	–	–	–	–	–	–	–	–	–	–	1
Scrophulariaceae	–	–	–	1	–	–	–	–	–	–	–	–
total land pollen	101	102	102	130	102	100	101	102	104	101	101	102
Pteridopsida(mono) undet	–	1	1	1	–	1	1	–	–	–	1	2
Polypodium	6	1	–	1	2	2	2	–	4	–	–	1
Sphagnum	5	1	1	1–	–	–	–	–	–	–	–	–
Pteridium	10	1	5	1	2	2	1	3	1	1	–	1
unidentified	2	3	0	2	0	3	0	0	2	1	0	3
Lycopodium (exotic)	01	2	0	2	0	3	0	0	2	1	2	3
traverses	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<3

Appendix 3 Table 3 Appletree: plant remains and other components in the samples

Context 45, Sample 902

taxon	*parts*	*ab*	*notes*
Pteridium aguilinum (L.) Kuhn (bracken)	pinnule fragment(s)	1	very decayed
cf *Alnus glutinosa* (L.) Gaertner (?alder)	charcoal	1	max size 10mm
cf *Quercus* sp(p). (?oaks)	charcoal	1	max size 10mm
Rumex sp(p). (docks)	perianth(s)/perianth segment(s)	1	
Caltha palustris L. (marsh marigold	seed(s)	1	
Ranunculus Section *Ranunculus* (meadow/creeping/bulbous buttercup)	achene(s)	1	rather worn
R. flammula L. (lesser spearwort)	achene(s)	1	
Rubus cf idaeus L. (?raspberry)	seed(s)	1	a single fragment
Potentilla cf erecta (L.) Rauschel (?tormentil)	achene(s)	2	
Viola sp(p). (violets/pansies, etc)	seed(s)	1	a single fragment
Erica tetralix L. (crossleaved heath)	charred leaf/leaves	1	a single specimen
Calluna vulgaris (L.) Hull (heather, ling)	lower(s)	1	very worn
	shoot tips	1	
cf *Calluna vulgaris*	charred root and/or	1	
	basal twig fragments	1	
cf *Veronica* sp(p). (?speedwells, etc)	seed(s)	1	
Juncus bufonius L. (toad rush)	seed(s)	1	rather worn
cf *Luzula* sp(p). (?woodrushes)	seed(s)	1	very decayed
Danthonia decumbens (L.) DC. in Lam. & DC. (heath grass)	caryopsis/es	1	
Gramineae (grasses)	leaf fragment(s)	1	modern
	uncharred caryopsis/es	1	
	uncharred culm fragment(s)	1	modern
Scirpus setaceus L. (bristle clubrush)	nutlet(s)	1	fragments only
cf *Eleocharis* sp(p). (?spikerushes)	nutlet(s)	1	very decayed
Carex sp(p). (sedges)	nutlet(s)	3	
Mosses			
Polytrichum sp(p).	leaves/leafbases and/or shoot fragments)	1	
Ceratodon purpureus (Hedw.) Brid.	leaves and/or shoot fragments	2	
Aulacomnium palustre (Hedw.) Schwaegr.	leaves and/or shoot fragments	1	
Thuidium tamariscinum (Hedw.) Br. Eur.	leaves and/or shoot fragments	1	
Hylocomium splendens (Hedw.) Br. Eur.	leaves and/or shoot fragments	1	

Context 53, Sample 903

taxon	*parts*	*ab*	*notes*
cf *Corylus avellana* L. (?hazel)	charcoal	1	max size 10mm
cf *Calluna vulgaris* (?heather, ling)	charred root and/or basal twig fragment(s)	1	max size 5mm
Juncus bufonius (toad rush)	seed(s)	1	very worn
Gramineae (grasses)	uncharred caryopsis/es	1	?modern
Carex sp(p). (sedges)	charred nutlet(s)	1	a single fragment

Contexts 53 and 52, Sample 906

taxon	*parts*	*ab*	*notes*
cf *Alnus glutinosa* (L) Gaertner (?alder)	charcoal	1	max size 10mm
Quercus sp(p) (oak)	charcoal	1	max size 10mm
cf Pomoideae (?*Crataegus/Malus/Pryus/Sorbus)*	charcoal	1	max size 10mm
Gramineae (grasses)	waterlogged caryopsis/es	1	modern

Other remains recorded in the samples

sample	*902*		*90*		*90*	
item	*ab*	*notes*	*ab*	*notes*	*ab*	*notes*
Cenococum (sclerotia)	1		2	mostly <1mm	2	
Pre-Quaternary spores	1		–		–	
beetles	2		1		–	
charcoal	1	max size 10mm	2	max size 10mm	2	max size 15mm
charred moss	1		1		1	
coal	1	max size 10mm	1	max size 10mm	–	
earthworm egg capsules	1		–		1	
?earthworm egg capsules	–		2		2	
fly puparia	1		1		–	
gravel	1	max size 25mm	1	max size 5mm	–	
herbaceous detritus	1		–		–	
mites	–		1		–	
moss (leafless stems)	1		–		–	
part-burnt wood	–		1	max size 5mm	–	
root bark/epidermis frags	1		–		–	
root moulds (min)	–		1		1	
root/rhizome fragments	1		–		–	
root/rootlet fragments	2		1		1	?modern
sand	2		2		2	
twig fragments (charred)	1	max size 5mm	–		–	
woody root fragments	2	max size 30mm	1		–	

All material was uncharred unless otherwise indicated ab – abundance score

Appendix 4

Charles Anderson: data tables

Table 68 Hadrian's Wall mortar mixes.

site	*consolidation date*	*bedding mix OPC: sand*	*pointing mix OPC: lime: sand*
Walton	?	?	?
Hare Hill	1973	1:5	?: 1 & ?: 4
Banks East	?	?	?
Banks Hill	1973	1:5	?: 2: 5
Lea Hill	1969	1:4	?: 2: 7
Piper Sike	1970	1:4	?: 2: 7
Birdoswald	1950–8	1:4	1:2 hydraulic lime
Harrow's Scar	1959–60	1:4	1:2 hydraulic lime
Willowford & Bridge Abutment	1950	?	?
Milvain E & W	1970	1:4	?
Gilsland Vicarage	?	?	?
Poltross Burn	?	?	?
Walltown Crags	1957–9	1:4	–: 1: 2 hydraulic lime
Cawfields West	1960–73	1:6	–: 1: 2 hydraulic lime
Cawfields West	1960–73	1:6	?: 2: 5 hydraulic lime
Winshields	?	?	?
Steel Rigg	pre-1939	1:4 & 1:5	1: 2: 5 hydraulic lime
Housesteads			
latrines	1963	1:4	–: 1: 2 hydraulic lime
commanders house	1968	1:4	–: 2: 5 hydraulic lime
barracks & hospital	1972	1:5	1: 2: 5 hydraulic lime
Knag Burn Wall	1976, 1981	1:5	1: 2: 7 hydraulic lime
Sewingshields	1958	1:5	–: 1: 2 hydraulic lime
Sewingshields	1977	1:5	1: 2: 6 hydraulic lime
Carrawburgh	1955	1:4	–: 1: 2 hydraulic lime
Black Carts	1971	1:4	1: 2: 5 hydraulic lime
Chesters Fort	1956–62	1:5	–: 1: 2 hydraulic lime
Chesters Bridge	1982	1:4	1: 2: 5 hydraulic lime
Brunton Turret	1947	1:4	–: 1: 2 hydraulic lime
Planetrees	1948	1:4	–: 1: 2 hydraulic lime
Corbridge	pre-1939	?	?
Heddon	pre-1939	?	?
Denton East/West	pre-1939	?	?
Benwell Temple	pre-1939	?	?
Benwell Crossing	pre-1939	?	?
Vindolanda	1972	1:4	?: 2: 5 hydraulic lime

(OPC = Ordinary Portland Cement). The hydraulic lime pointing mix contained a 'trowel full' of ordinary Portland cement to each bucket of lime.
Details from R Humbleby, Area Works Office, Carlisle Castle, *c* 1985 (Johnston and Wright 1985, 13).

Table 69 List of Anderson photograph albums.

Benwell Vallum Crossing, West Denton, Heddon-on-the-Wall
Runton and Planetrees
Chesters
Black Carts
Sewingshields
Housesteads vol 1: fort walls and gates
Housesteads vol 2: internal buildings
Housesteads vol 3: hospital and commandants house
Hot Bank, Winshield crags, Castle Nick Mc39
Vindolnda
Cawfields vol 1
Cawfields vol 2: Mc 42 and area
Great Chesters, Binchester, Ebchester, Corbridge, Carrawburgh
Walltown vol 1
Walltown vol 2, additional prints
Gilsland, PoltrossBurn and Milvain
Willowford, Harrow's Scar vol 1
Willowford, Harrow's Scar vol 2, additional prints
Birdoswald
Birdoswald to Banks
Banks to Walton, Hare Hill, Lanercost Bridge

Table 70 Inscriptions discovered by Anderson during consolidation.

Black Carts
Britannia **3**, 12: COH I >POM.RUFI PRIN PRIMI
Britannia **4**, 8: COH VI >.GELLI P ILIPPI
9: COH.I NAS.BA
Britannia **5**, 7: CRE > LABRI
Sewingshields
Britannia **2**, 10: LEG VI VICTRIX PIA FID
11: > GRAN
Chesters fort
JRS **52**, 14: VAR.PATERNI P.VAL
Harrow`S Scar to Birdoswald
JRS **47**, 16a: > TIIRTI
16b: > PP
16c: COH. III
JRS **48**, 10a: COH VI > FENI ALEX
10b: COH VI > EPPI CONST
10c: VIIS
10d: > PP
10e: > SECUND NI VERVLLI P XXX
10f: COH VIII > IVL PRIMI
10g: COH VIII > FLN BASI
10h: > VLP PAVLLI
JRS **49**, 5a: > POMPEI AEMILIANI PXXX
5b: > MARCI RVFI
5c: > MARC RUF
5d: < CARI SCIPIO
5e: COH VII > ATILI NATALIS
Housesteads fort
JRS **57**, 17: AE VIT PRA EGA
Sewingshields
JRS **49**, 4a: C.X.> MV.MAXIMI
4b: CANIONDICATUS
Walltown
JRS **50**, 11a: LEG XX VV COH X > FL.NOR ICI
11b: COH VI CALEDO SECUNDI
JRS **51**, 11a: COH.I > LIBONIS
11b: VIII
11c: COH III > MAX TERN
11d: COH III > O
11e: > MARI DEXT
11f: > VAL VERI
11g: COH II > LAETIANI
Willowford and Milvain
JRS **52**, 19a: > VLPI VOLVSIINI
19b: C CALEDON SECVNDI
19c: COH.III > MAXIMI
20: > PP SERENI
JRS **53**, 8a: COH III
8b: > REGVLI
JRS **14**, 5a: COH II > OBC LIBO
5b: COH.I > VLS BINI
5c: COH III > SOCELLI
JRS **57** 18: CO V AN
19: > IVLI.VALENI
JRS **42**, 6: COH VI > LOVSI SVAVIS
7: >. COCCEI REGULI
20: > PP SERENI
JRS **43**, 8a: COH III
8b: > REGULI
8c: PETTA > DIDA
Willowford Bridge
JRS **53**, 8c: PETTA > DIDA
JRS **54**, 5a: COH II > OBC LIBO
5b: COH.I > VAL SABINI
5c: COH III > SOCELLI

Three phalli were found *in situ* in the Harrow`s Scar-Birdoswald sector built into the south face of the Wall. CSIR 458: 193m west of Mc49. CSIR 459: 375m west of Mc49. Unrecorded: 12m west of T49b.
NB References refer to the *'Roman Britain in 19xx'* sections in volumes of *Britannia* and the *Journal of Roman Studies (JRS)*.

Appendix 5

Birdoswald pottery form occurrence table and samian catalogue

Pottery form occurence

Figures in round brackets, thus (x nnn) indicate minimum numbers of rims in each form, and figures in square brackets, thus [nnn] represent the RE values of each vessel.

Table 71 Site 585 form occurrence table

Phase 1	
fabric	*forms*
B01	B01.14 [8]
O00	O00.2 [24]
R00	R00.3 [24]
S20	Dr37 [25]; Dr42 [3]
Phase 4	
B01	B01.1 [2]; B01.2 [6]
F01	F01.1 [12]
M03	M03.1 [11]
M11	M11.1 [12]
M49	mort [3]
R00	R00.3 [20]; R00.13 [2]
S20	Dr37 [15]; Dr33 [16]; Dr42 [19]; Dech72 [7]
S21	Cu11 [20]
Phase 5	
R00	R00.3 [23]
S20	Dr33 [5]
S21	Dr37 [6]; dish [2]
S32	Dr18/31R/31R [6]
Phase 6a	
fabric	*forms*
B01	B01.2 (X3) [7, 7, 3]; B01.3 [2]; B01.4 [39]; B01.9 [10]; B01.10 (X2) [9, 7]; B01.13 [3]
F05	F05.1 [15]
O00	O00.3 [4]; jar [13]
R00	R00.1 [15]; R00.2 [8]; R00.3 (X3) [17, 10, 15]; R00.4 [17]; R00.5 [7] ; R00.7 [19]; R00.8 [9]; R00.9 [7]; R00.10 [13]
S20	bowl (X2) [5, 7]; Dr31R [5]; Dr37 [2]; R33 (X2) [30, 8]; dish [7]; Cu15 [5]; Dr36 [8]; Walt79 [4]; Dech72 [16]
S30	Cu15 [8]
Phase 6b	
B01	B01.6 [15]; B01.10 [11]; B01.11 (X3) [7, 7, 7]
F02	F02.1 (X2) [1, 6]
F06	F06.1 [22]
G01	G01.1 (X2) [15, 15]
G11	G11.1 [12]
R00	R00.3 (X6) [39, 9, 14, 16, 9, 44]; R00.10 [20]; R00.12 (X2) [5, 7]
S20	Dr37 (X3) [7, 11, 1]
S21	Dr37 [18]; Dr18/31 (X2) [4, 4]

Site 590 form occurrence table

Phase A1	
fabric	*forms*
B01	B01.1 (X4) [55, 18, 13, 24]; B01.5 [19]; B01.12 [6]; B01.14 (X4) [6, 5, 3, 7]
M01	mort [7]
M15	M15.1 [38]
M41	M41.2 [32]
M45	mort [11]; M45.1 (X2) [22, 13]
M46	M46.1 [20]
O03	O03.2 [8]
O04	O04.1 [5]
O05	O05.2 (X2) [15, 12]; O05.3 [6]; O05.4 [4]; jar (X2) [6, 5]
O06	O06.1 [21]
O12	O12.1 [9]; O12.2 [6]
O13	flagon [28]
O19	O19.1 [27]
Q02	Q02.1 [18]
R01	R01.1 (X2) [16, 13]; R01.7 [17]; dish [1]; R01.12 [6]; R01.13 (X2) [7, 2]; R01.14 (X3) [23, 11, 31]; R01.15 [9]
R03	R03.2 [23]; R03.5 [16]; R03.7 [12]; R03.8 [7]
S20	bowl (X2) [2, 6]; Dr30/37 (X2) [8, 3]; Dr37 (X3) [7, 21, 8]; Dr31R [7]; bowl/dish (X8) [1, 4, 5, 3, 2, 1, 2, 5]; Dr35 [12]; Dr18/31/31 [8]; Dr18/31R [5]
S22	Dr18/31/31 [7]
S32	bowl/dish [3]
Phase A2	
B01	jar [6]; B01.1 [2]; B01.2 (X2) [3, 9]
F01	F01.1 [12]; F01.3 [12]
R01	R01.13 [5]; R01.14 [11]
S20	bowl/dish [2]; Dr36 [3]
Phase A3	
B01	B01.1 [26]; B01.2 (X4) [15, 8, 5, 16]; B01.3 (X3) [25, 5, 6]; B01.7 [54]; B01.9 [4]; B01.11 (X2) [13, 14]; B01.14 (X2) [9, 8]
B10	B10.1 [11]; B10.2 [6]; bowl [24]
F01	F01.1 [10]
F06	F06.2 [9]
G12	G12.1 [4]
G14	G14.1 [15]
G30	jar [4]
M01	mort (X2) [3, 3]; M01.1 [8]
M07	mort [3]
M11	mort [4]; M11.2 [11]
M46	mort [12]; M46.1 [12]
O01	O01.1 [10]; O01.2 [8]; O01.3 [5]
O03	O03.1 [11]
O05	O05.4 [7]
O11	O11.1 [10]
O12	O12.3 [10]
O15	O15.1 [5]
R01	R01.1 (X3) [10, 12, 25]; R01.2 (X4) [21, 1, 21, 4]; R01.3 [18]; R01.6 [3]; R01.10 [12]; simple rim dish [5]; R01.14 (X8) [6, 3, 9, 3, 10, 2, 5 , 1]
R02	R02.2 [5]; R02.4 [12]
R03	jar [6]; R03.1 (X2) [11, 1]; beaker [16]; R03.6 [25]; R03.9 [29]
R06	R06.1 [7]
R07	R07.1 [8]; R07.2 [8]
R10	jar [3]
S20	bowl (X2) [3,6]; Dr31 [4]; Dr30 [8]; Dr31/31R [3]; Dr37 (X4) [6, 3, 2, 7]; dish/bowl (X2) [5, 5]; Dr33 [9]; Dr36 [6]; Dr36/Cu23 [2]
S31	dish/bowl [2]
S32	Dr33 [4]
Phase B2	
G30	G30.1 [10]
M11	hammerhead mort [3]
R01	R01.1 [7]
R07	R07.3 [6]
S20	Dr30 [11]
Phase C2	
B01	B01.3 [15]; B01.7 [8]; B01.12 [4]
F01	F01.2 [15]
G30	jar (X2) [2, 5]; G30.2 [6]; G30.3 [9]
M11	M11.5 [5]
O18	O18.1 [14]
R01	R01.1 (X2) [4, 5]; R01.2 (X2) [7, 24]; R01.5 [8]; R01.9 [6]; R01.11 [1]; jar [6]
R03	R03.4 [10]
S20	Dr37? [3]; dish/bowl (X2) [3, 4]; Dr33 [8]
S30	Ludou [6]; dish/bowl [6]
Phase Cist Robbing	
B01	B01.8 [5]; B01.10 [11]
G13	G13.1 [9]
G20	G20.1 [7]
R01	R01.8 [2]; R01.11 [4]; R01.14 [9]
R02	R02.3 [14]

Samian catalogue

This comprises a list of all samian sherds from the excavations, with identification and dating. Entries are by context and relate to individual vessels.

Sherds are ordered by phase and context, followed by these data: number of sherds; their type (ie from vessel rim, base/footring or body); form (where identifiable); source (SG = South Gaulish, CG = Central Gaulish, EG = East Gaulish); weight in grams; percentage of any extant rim (ie RE, where 1.00 = a complete circumference) or base (ie BE); rim/base diameter; estimate of date in calendar years (ie the date range of deposits with which like pieces are normally associated).

Any decoration is described.

References to Oswald's figure types (Oswald 1936–7) follow standard convention (eg O.1926a = Oswald type 1926a).

Rogers' (1974) decorative detail types are as 'Rogers B105' without further bibliographic reference.

Other features – such as burning, wear and repair – are also recorded.

Table 72 Birdoswald Study Centre (Site 585)

Phase 1	
Context 1145	Condition: good Base, from a bowl, specific form not identifiable, CG Lezoux, 51g, BE: 0.16, diam 100mm, *c* AD 120–200. Not stamped.
Context 1146	Condition: large sherd, mildly abraded/weathered. Base, Drag 37, CG Lezoux, 88g, BE: 0.62, diam 70mm. Dec: vestige of decoration but indistinct, *c* AD 120–200. Not stamped.
Context 1280	Condition: 7 adjoining sherds, average size, mildly abraded/weathered; 2 small sherds, mildly abraded/weathered. Rim, Drag 42 dish with trailed leaf and 'T' rim, CG Lezoux, 4g, RE: 0.03, diam 250mm; from same vessel as sherds from context 1279; see under 1279; *c* AD 120–140. Body, Drag 18/31, CG Lezoux, 4g, *c* AD 120–150. 3 rim sherds and 4 body sherds (all conjoining), Drag 37, 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 125–150.
Context 1289	Condition: tiny sherd, not abraded/weathered.Body, form not identifiable with confidence but possibly Drag 36, CG Les Martres-de-Veyre, 1g, *c* AD 100–130.
Phase 4	
Context 1055	Recorded Find 3118. Condition: abraded/weathered sherd. Body, Drag 37, CG Lezoux, 9g. Dec: the acanthus and five lobed fan (partially extant) that occur here appear also on the work of the Trajanic production of Ioenalis, but both types subsequently appear on vessels of later producers; *c* AD 120–200. One drilled hole is present, presumably for repair.
Context 1092	Condition: a tiny sherd. Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200.
Context 1208	Condition: good. 3 rim sherds and 1 body sherd conjoining, Curle 11, CG Les Martres, 137g, RE: 0.20, , diam 170mm, *c* AD 100–130.
Context 1279	Condition: good. 4 rim sherds from the same vessel (3 conjoining), Drag 42 dish with trailed leaf and 'T' rim (cf Webster 1996, 52, type A), a further sherd comes from context 1280, CG Lezoux, 40g, RE: 0.19, diam 250mm, *c* AD 120–140. Rim, Drag 33, CG Lezoux, 16g, RE: 0.16, diam 100mm, *c* AD 120–200. A graffito occurs on this item and this is reported upon separately below. Base, Drag 33 (from different vessel to the rim), CG Lezoux, 13g, BE: 0.05, diam 110mm, *c* AD 120–200. Rim, Déch. 72, CG Lezoux, 4g, RE: 0.07, diam 80mm, *c* AD 150–200. Burnt. This item is illustrated. Rim, Drag 37, CG Lezoux, 61g, RE: 0.15, diam 210mm. Dec: the only decoration represented is the ovolo and tongue; the style of the latter, being straight and plain, indicates that an Antonine date is most likely; *c* AD 150–200.
Phase 5	
Context 491	Condition: both sherds are small and mildly abraded/weathered. Rim, from bead rimmed vessel, probably Drag 30 or 37, CG Les Martres, 9g, RE: 0.06, diam 180mm, *c* AD 100–130. Rim, small Drag 33, CG Lezoux, 2g, RE: 0.05, diam 110mm, *c* AD 120–200.
Context 874	Condition: average size; mildly abraded/weathered. Rim, Drag 18/31R, or 31R, EG Rheinzabern, 8g, RE: 0.06, diam 280mm, *c* AD 150–220.
Context 1128	Condition: one very large sherd, the other smallish, neither abraded/weathered. 1 base, Drag 37, CG Les Martres, 148g, BE: 0.59, diam 90mm; from the same vessel as sherds from 1116, see under 1116; not stamped; *c* AD 100–125. The sherds from this vessel are illustrated. Body, form not identifiable, CG Lezoux, 6g, *c* AD 120–200.
Context 1226	Condition: small sherd mildly abraded/weathered. Rim, from bead rimmed vessel, form not identifiable, CG Les Martres, 2g, RE: 0.02, diam uncertain, *c* AD 100–130.
Context 1303	Condition: the sherds are small and there has been recent breakage with not all sherds recovered; variable abrasion. Rim, Drag 18/31, CG Lezoux, 10g, RE: 0.08, diam 190mm, *c* AD 120–150. Body, from a bowl, specific form not identifiable, CG Lezoux, 5g, *c* AD 120–200. Body, Drag 37, CG Lezoux, 4g. Dec: part of a small, abraded palmate leaf; *c* AD 120–200. 4 rim sherds and 3 body sherds, (all bar 1 sherd conjoining), from large bead rimmed bowl, probably Drag 37, CG Lezoux, 50g, RE: 0.18, diam 190mm; *c* AD 120–200. Body, Drag 31, CG Lezoux, 6g, *c* AD 150–200. 2 conjoining body sherds, Drag 31R, CG Lezoux, 10g, *c* AD 160–200.
Phase 6a	
Context 41	Condition: the sherds are on the small side; the Curle 15 sherd is abraded/weathered Rim, Curle 15, CG Lezoux, 4g, RE: 0.05, diam *c* 200mm, *c* AD 120–200, more likely to be *c* AD 120–140. Burnt. Body, from a bowl or dish of uncertain form, CG Lezoux, 9g, *c* AD 120–200.
Context 393	Condition: the sherds are mildly abraded/weathered. Body, Drag 18/31R or 31R, CG Lezoux, 8g, *c* AD 120–200. Burnt. Rim, from bead rimmed bowl, specific form not identifiable, CG Lezoux, 2g, RE: 0.05, diam 120mm, *c* AD 120–200.
Context 414	Condition: 1 sherd is small, both are abraded/weathered. Body, from a dish or bowl, specific form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Body, Drag 31, CG Lezoux, 12g, *c* AD 150–200. Part of a cleat hole is present, presumably for repair.
Context 418	Condition: sherds are of various sizes, on the whole only slightly abraded/weathered. Body, probably Drag 27, CG Lezoux, 5g, *c* AD 120–165. 2 adjoining rim sherds, Drag 33, CG Lezoux, 22g, RE: 0.30, diam 120mm, *c* AD 120–200. Rim, large Drag 36, CG Lezoux, 41g, RE: 0.08, diam 260mm, *c* AD 120–200. Body, from dish or bowl, specific form not identifiable, CG Lezoux, 18g, *c* AD 120–200. Body, from another dish or bowl, specific form not identifiable, CG Lezoux, 12g, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Body (a flake), form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Burnt. Body, Drag 37, CG Lezoux, 6g. Dec: only the ovolo is clear; this is double bordered with a straight corded tongue with a somewhat pointed terminal; this type is not chronologically diagnostic as it occurs on the work of various Lezoux producers throughout the main *floruit* of production; this may be a bowl of Cinnamus ii; *c* AD 120–200. Body, Drag 37, CG Lezoux, 15g. Dec: panelled, only a large rosette is extant, *c* AD 130–200. Rim and 1 body sherd, Curle 15, EG probably an Argonne or La Madeleine product, 43g, RE: 0.08, diam 180mm, *c* AD 130–260. Body, Drag 37, CG Lezoux, 5g. Dec: there is little represented, save to demonstrate that the design was arranged in bead bordered panels and medallions, *c* AD 140–200. Rim, small Déch. 72, CG Lezoux, 2g, RE: 0.16, diam 50mm, *c* AD 150–200. Body, closed form with incised decoration, CG Lezoux, 3g, *c* AD 160–200. Body, Drag 31R, CG Lezoux, 6g, *c* AD 160–200. Body, Walters 79 or Ludowici Tg, CG Lezoux, 3g, *c* AD 160–200.
Context 420	Condition: 1 sherd is large; both are only slightly abraded/weathered. 1 rim and 1 body sherd from the same vessel, Drag 37, CG Lezoux, 41g, RE: 0.02, diam 190mm; the sherds conjoin the sherd from 317; see 317 below. Dec: this is in the style of Laxtucissa and Paternus, and is perhaps more likely the work of the latter particularly 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* AD 145–190.

Context 422 Condition: the sherds are all mildly abraded/weathered. Rim, Drag 33, CG Lezoux, 3g, RE: 0.08, diam 90mm, *c* AD 120–200. Body, from different Drag 33, CG Lezoux, 2g, *c* AD 120–200. Body, probably from a bowl, specific form not identifiable, CG Lezoux, 8g, *c* AD 120–200. Body, specific form not identifiable, CG Lezoux, 3g, *c* AD 120–200. One drilled hole is present, presumably for repair. Base, probably Drag 38, EG Trier, 12g, BE: 0.13, diam 80mm, *c* AD 140–220. Rim, Drag 31R, CG Lezoux, 9g, RE: 0.05, diam 260mm, *c* AD 160–200.

Context 467 Condition: good. Rim, from bead rimmed plain ware bowl or dish, probably Drag 31, CG Lezoux, 7g, RE: 0.07, diam 170mm, *c* AD 150–200. Rim, Walters 79, CG Lezoux, 2g, RE: *c* 0.04, diam uncertain, *c* AD 160–200.

Context 528 Condition: both sherds are small and abraded/weathered. Body, form unidentifiable, CG Lezoux, 2g, *c* AD 120–200. Body, form unidentifiable, EG, 6g, *c* AD 220–260.

Context 1086 Condition: 1 large and 1 small sherd, neither abraded/weathered. Base, Drag 18/31R, CG Lezoux, 40g, BE: 0.16, diam 110mm, *c* AD 120–160. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200.

Context 1192 Condition: good. Body, form not identifiable, CG Lezoux, 8g, *c* AD 120–200.

Context 1215 Condition: the sherds are of above average size; all are abraded/weathered. Body, Drag 37, CG Lezoux, 18g. Dec: severely abraded, panel arrangement, including one panel with inverted chevrons; basal wreath, *c* AD 120–200. Rim, from bead rimmed vessel, form not identifiable, perhaps Drag 37, CG Lezoux, 21g, RE: 0.07, diam 200mm, *c* AD 120–200. Body, probably Drag 31R, EG Trier, 14g, *c* AD 160–220.

Context 1298 Condition: above average sized sherd, mildly abraded/weathered. Body, Drag 37, CG Lezoux, 19g; conjoining sherd from context 1304. Dec: (with sherd from 1304), the bases of two columns and the lower parts of two storks with bud terminals are represented together with the lower part of a large ?palmate leaf, *c* AD 150–200.

Context 1304 Condition: the sherds are mildly abraded/weathered. Body, Drag 37, CG Lezoux, 10g. Dec: this item seems 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* AD 135–175. This item is illustrated. Body, Drag 37, CG Lezoux, 23g; conjoining sherd from 1298; see under 1298; *c* AD 150–200.

Phase 6b

Context 400 Condition: the sherd is fairly large but mildly abraded/weathered. Body, Drag 37, CG Lezoux, 24g. Dec: the ovolo, freestyle design and figure types distinguish this piece as belonging to a group of four Antonine potters: Albucius, Lastvca, Paternus and Servus i. The ovolo is associated with the group (eg. Stanfield and Simpson 1958, 194, ovolo No.1), being Rogers type B105, as are the two hounds, O.1926a and O.1984, and the cigar shaped twist (Stanfield and Simpson 1958, Pl. 100 No. 3, Pl. 106 Nos 21 and 25 and Pl. 123 Nos 36 and 42); *c* AD 145/160–200. This item is illustrated.

Context 419 Condition: the fracture is a fresh one; both sherds are abraded/weathered. 2 conjoining body sherds, Drag 37, CG Lezoux, 7g. Dec: set within a double ringed medallion (cf Rogers E26) is the cupid O.444; the medallion and motif occur on a Drag 37 from the 1987–92 excavations (Dickinson 1997, Fig 179 No. 39) while the design is closely similar to that of a 37 in Paternus v style from 1005, though these sherds from 419 are clearly from a different vessel; *c* AD 140–200. These sherds are illustrated.

Context 421 Condition: variable size range; only slightly abraded/weathered. Rim, Drag 37, CG Lezoux, 3g, RE: 0.01, diam uncertain. No decoration represented, *c* AD 120–200. Body, Drag 37, CG Lezoux, 16g. Dec: the only extant decoration is the ovolo which is blurred; *c* AD 120–200. Body, Drag 37, CG Lezoux, 4g. Dec: the head, arms and upper torso of Jupiter are depicted, being O.3, together with a trifid motif and an astragalus. The figure, motifs and design are identical to that appearing on a bowl from Alcester attributable to the Quintilianus i group, probably Quintilianus himself (Hartley et al. 1994, 98, Fig 47 No. 140); *c* AD 125–150. This item is illustrated. 2 conjoining base sherds (fresh break), Drag 31R, CG Lezoux, 75g, BE: 0.43, diam 110mm; *c* AD 160–200.

Context 455 Condition: the sherd is small and abraded/weathered. Body, Drag 37, CG Les Martres, 6g. Dec: a horse's head and shoulders are depicted similar to O.1903; *c* AD 100–130.

Context 518 Condition: large sherd, mildly abraded/weathered. Body, Drag 31R, CG Lezoux, 27g, *c* AD 160–200.

Context 1116 Condition: good. 2 rim sherds and 1 body sherd (all conjoining), Drag 37, CG Les Martres, 113g, RE: 0.18, diam 180mm; another sherd from 1128 is from the same vessel. Dec: (including sherd from 1128) this vessel is of the 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; *c* AD 100–125. These sherds are illustrated. Rim, small Drag 18/31, CG Les Martres, 3g, RE: *c* 0.04, diam uncertain, *c* AD 100–130. Rim, Drag 37, CG Lezoux, 16g, RE: 0.07, diam 180mm. Dec: badly blurred ovolo; *c* AD 120–175. 2 conjoining base sherds, form not identifiable, CG Lezoux, 20g, BE: 0.17, diam 130mm, *c* AD 120–200.

Context 1206 Condition: sizeable sherd, mildly abraded/weathered. Rim, small Drag 37, CG Lezoux, 19g, RE: 0.11, diam 170mm. Dec: ovolo, blurred, *c* AD 120–200.

Phase 8 Post-medieval and modern contexts, together with unstratified material

Context 2 Condition: the sherd is abraded/weathered. Body, Drag 18/31R or 31R, CG Lezoux, 14g, *c* AD 120–200.

Context 9 Condition: the sherd is highly abraded/weathered. Base, Drag 31, CG Lezoux, 7g, BE: 0.15, diam 90mm, *c* AD 150–200.

Context 14 Condition: the sherds are mildly abraded/weathered. 4 conjoining body sherds, Drag 31, CG Lezoux, 12g, *c* AD 150–200. Body, Drag 37, CG Lezoux, 17g. Dec: a scroll is represented containing a large 7 lobed leaf, plus isolated rosettes in the style of Do(v)eccus i (cf Stanfield and Simpson 1958, Pl. 150 No. 43); *c* AD 160–200. This item is illustrated.

Context 26 Condition: abraded/weathered. Rim, probably from a Drag 18/31, 31 or 31R, CG Lezoux, 5g, RE: *c* 0.03, diam uncertain, *c* AD 120–200.

Context 46 Condition: good. Body, Drag 37, CG Lezoux, 12g. Dec: a distinctive broad double bordered ovolo with a thick twisted tongue ending in a blurred rosette turned to the left identify this piece as the work of Potter X-6 (cf Stanfield and Simpson 1958, 148, ovolo type 1, Pl. 74); tongue and ovolo are above a bead border, below which are the hind quarters of a hound which is O.1989a recorded on a Drag 37 of Potter X-6 from Carlisle (Stanfield and Simpson 1958, 151, Pl. 76 No. 24); *c* AD 125–150.

Context 58 Condition: the sherd is small but not abraded/weathered. Body, Drag 37, CG Lezoux, 3g. Dec: panelled; probably *c* AD 120–150.

Context 317 Condition: 1 large sherd, not abraded/weathered; 2 small sherds both abraded/weathered, 1 severely. Rim, Drag 37, CG Lezoux, 8g, RE: 0.05, diam 150mm. Dec: ovolo, severely abraded; *c* AD 120–200. Body, Drag 37, CG Lezoux, 3g. Dec: vestigial and not certain; a booted foot of the type associated with Diana appears to be represented, within a panel; *c* AD 120–200. Rim, Drag 37, CG Lezoux, 64g, RE: 0.13, diam 190mm; conjoins 2 sherds from context 420; see 420 above; *c* AD 145–190.

Context 334 Condition: both sherds small and abraded/weathered. Body, from a bowl or dish, specific form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Body, from a bowl or dish, specific form not identifiable, CG Lezoux, 3g, *c* AD 120–200.

Context 335 Condition: mildly abraded/weathered. Base, pad like footring from Drag 30 or 37, CG Lezoux, 20g, BE: 0.15, diam 90mm, *c* AD 120–200.

Context 339 Condition: sherds are small and abraded/weathered. Rim, essentially a flake, from a bowl, specific form unidentifiable, CG Lezoux, 4g, RE: 0.02, diam uncertain, *c* AD 120–200. Body, Drag 38, CG Lezoux, 3g, *c* AD 130–200. Body, Drag 31R, CG Lezoux, 11g, *c* AD 160–200.

Context 349 Condition: sherds are small and mildly abraded/weathered. 2 conjoining body sherds, Drag 18/31R or 31R, CG Lezoux, 6g, *c* AD 120–200.

Context 360 Condition: sherds are excoriated and severely abraded/weathered. 2 conjoining body sherds, probably Drag 37, CG Lezoux, 24g, *c* AD 120–200.

Context 388 Condition: the sherds are abraded/weathered. Body, Drag 18/31R, CG Lezoux, 15g, *c* AD 120–160. Body, from a bowl or dish, specific form not identifiable, CG Lezoux, 15g, *c* AD 120–200. Body, from another bowl or dish, specific form not identifiable, CG Lezoux, 13g, *c* AD 120–200. Body, from a further bowl or dish, specific form not identifiable, CG Lezoux, 11g, *c* AD 120–200. Body, Drag 37, CG Lezoux, 21g. Dec: the ovolo and tongue are uncommon, and there is no close parallel amongst the Rogers typology (Rogers 1974); the tongue is contiguous with the ovolo border on its left side and the motifs are spaced; the tongue is turned to the right. Below is an alternating arcade effect which (on extant evidence) is formed by half medallions over a column of acanthus style leaves, separated by long straight trifid buds under which is a further acanthus motif. The acanthus leaf (cf Rogers K21) is similar to that appearing on vessels of the so-called Medetus-Ranto style dating to the early second century (Stanfield and Simpson 1958, Fig 9 No. 5 and Pl. 30), as well as that associated with

Do(v)eccus i of the later Antonine period (Stanfield and Simpson 1958, Fig 44 No. 13 and Pl. 147 No. 11 and Pl. 151 No. 62); all told the design is not sophisticated, and is probably the work of a less well characterized producer; *c* AD 120–200. Rim, from bead rimmed bowl or dish, specific form uncertain, EG probably an Argonne or La Madeleine product, 8g, RE: *c* 0.03, diam uncertain, *c* AD 130–250. Body, Drag 37, CG Lezoux, 8g. Dec: part of the ovolo band is present, indicating a large double bordered ovolo with a straight twisted tongue with a terminal perhaps slightly turned to the left; this ovolo type resembles one employed by Cinnamus ii and others (cf Stanfield and Simpson 1958, Fig 47 No.1); the ovolo band is defined by a thin border below which is part of a lion's head; this item may well be the product of Cinnamus ii or an associated workshop; *c* AD 140–180. Base, from a cup, specific form not identifiable, probably CG Lezoux, 6g, BE: 0.26, diam 44mm, *c* AD 150–200.

Context 398 Condition: the sherds are very small and are abraded/weathered. Body, from dish or bowl, specific form not identifiable, CG Lezoux, 3g, *c* AD 120–200. Body, from a different dish or bowl, specific form not identifiable, CG Lezoux, 3g, *c* AD 120–200.

Context 852 Condition: 2 sherds are small and mildly abraded/weathered, other sherd is larger and abraded/weathered. Body, Drag 18/31R or 31R, CG Lezoux, 16g, *c* AD 120–200. Burnt. Rim, Drag 33, CG Lezoux, 3g, RE: 0.01, diam uncertain, *c* AD 120–200. Rim, from bead rimmed vessel, probably Drag 37, CG Lezoux, 7g, RE: 0.05, diam 180mm, *c* AD 120–200.

Context 877 Condition: average size; abraded/weathered. Body, from bowl or dish, specific form not identifiable, CG Lezoux, 12g, *c* AD 120–200.

Context 882 Condition: small sherd; abraded/weathered. Rim, from bead rimmed vessel, probably Drag 37, CG Lezoux, 5g, RE: 0.06, diam 160mm, *c* AD 120–200.

Context 889 Condition: 2 sherds are small, the other is of above average size; all are abraded/weathered. Rim, probably Drag 18/31 or 18/31R, CG Lezoux, 3g, RE: *c* 0.03, diam uncertain, *c* AD 120–160. Body, Drag 37, CG Lezoux, 5g. No decoration represented, *c* AD 160–200. Body, Drag 45, CG Lezoux, 23g, *c* AD 165/170–200.

Context 1004 Condition: a small flake mildly abraded/weathered. Rim sherd, Drag 18/31R, 31 or 31R, CG Lezoux, 4g, RE: 0.06, diam 180mm, *c* AD 120–200.

Context 1005 Condition: generally small and abraded/weathered. 1 rim sherd and 2 body sherds, the latter conjoining, Drag 37, CG Les Martres, 59g, RE: 0.13, diam *c* 200mm. A further 6 sherds from 1007 are from the same vessel. Dec: (including the sherds from 1007) this bowl is in the style of Ioenalis; the ovolo is Stanfield and Simpson's ovolo type 2 of this manufacturer (Stanfield and Simpson 1958, 36 & Fig 10 No. 2); the design is panelled with the male figure O.688 appearing in a lower panel, his right foot protruding out of the panel as it does in the vessel attributed to Ioenalis published by Stanfield and Simpson (1958, Pl. 40, 462); the Neptune type O.13 is also present, and is likewise present on a vessel attributed to Ioenalis published by Stanfield and Simpson (1958, Pl. 38, 438); a further panel contains a rather improvised urn and plant arrangement, *c* AD 100–120/130. Body, probably 18/31R, CG Lezoux, 4g, *c* AD 120–160. Rim, Drag 27, CG Lezoux, 3g, RE: 0.11, diam 80mm, *c* AD 120–165. Body, from bowl or dish, specific form not identifiable, CG Lezoux, 18g, *c* AD 120–200. Body, from small closed form, specific form not identifiable, CG Lezoux, 4g, *c* AD 120–200. Burnt. Rim, from bead rimmed vessel, specific form unidentifiable, CG Lezoux, 2g, RE: 0.03, diam uncertain, *c* AD 120–200. 5 rim sherds (2 joins), Drag 37, CG Lezoux, 46g, RE: 0.20, diam 190mm. No decoration represented; *c* AD 120–200. One sherd has been drilled for repair. Base, cup, probably Drag 27 or 35, CG Lezoux, 8g, BE: 0.04, diam 46mm, *c* AD 120–200. Body, Drag 31, CG Lezoux, 4g. Stamped "GENIA[LISF]". *Brenda Dickinson writes:* the stamp is that of Genialis iv of Lezoux, Die 6a. The stamp is known from Benwell, Carrawburgh and Housesteads and this, combined with its use on later second century forms such as 79 and 80 or Tx, is evidence of this producers activity in the late second century, *c* AD 160–190. Rim, Ludowici Tg, CG Lezoux, 35g, RE: 0.10, diam 200mm, *c* AD 160–200. Rim, Drag 37, CG Lezoux, 75g, RE: 0.12, diam 190mm. Dec: this vessel is in the style of Paternus v being similar to a Drag 37 from the 1987–92 excavations (Dickinson 1997, 263, Fig 179, No. 39); as with that vessel the ovolo is Rogers B106; the same cupid O.444, is present (though in a plain medallion) as is the sphinx approx. O.857; *c* AD 160–200. Rim, Walters 79, EG probably an Argonne or La Madeleine product, 4g, RE: 0.03, diam uncertain, *c* AD 160–240. 1 base sherd and 1 body sherd, mortarium, probably Drag 45, CG Lezoux, 51g, BE: 0.20, diam 120mm, *c* AD 165/170–200.

Context 1006 Condition: on the whole sherds are small and abraded/weathered; there are quite a number of sets of conjoining sherds indicating the probability of breakage of larger fragments *in situ* subsequent to their deposition.

Drag 27: Rim, CG Lezoux, 5g, RE: 0.12, diam 100mm, *c* AD 120–165.

Drag 18/31R: 2 rim sherds (conjoining), CG Les Martres, 14g, RE: 0.06, diam 260mm, *c* AD 100–130.

Drag 18/31R, 31 or 31R: Rim, CG Lezoux, 5g, RE: *c* 0.04, diam uncertain, *c* AD 120–200. Rim, (different), CG Lezoux, 3g, RE: *c* 0.03, diam uncertain, *c* AD 120–200. Rim, (different), CG Lezoux, 1g, RE: *c* 0.02, diam uncertain, *c* AD 120–200. Rim, (different), CG Lezoux, 1g, RE: *c* 0.03, diam uncertain, *c* AD 120–200. Rim, (different), CG Lezoux, 2g, RE: *c* 0.03, diam uncertain, *c* AD 120–200.

Drag 31: Base, CG Lezoux, 58g, BE: 0.43, diam 80mm; the sherd represents, a half of a base; a fragment of a stamp occurs reading "]NI", *c* AD 150–200. *Brenda Dickinson writes:* the stamp cannot be identified but a mid- to late-Antonine date is certain. Rim, CG Lezoux, 5g, RE: 0.08, diam 170mm, *c* AD 150–200. Burnt. Rim, (different) CG Lezoux, 6g, RE: 0.08, diam 170mm, *c* AD 150–200.Base, (different), CG Lezoux, 40g, BE: 0.27, diam 90mm, *c* AD 150–200. Burnt. Trimmed round at junction of vessel wall and floor. Base, (different), CG Lezoux, 25g, BE: 0.18, diam 100mm, *c* AD 150–200. Body (different), CG Lezoux, 3g, *c* AD 150–200. 3 body sherds, conjoining, (different), CG Lezoux, 16g, *c* AD 150–200. Body, CG Lezoux, 5g, *c* AD 150–200.

Drag 31 or 31R: Rim, CG Lezoux, 11g, RE: 0.07, diam 190mm, *c* AD 150–200. Rim, (different), CG Lezoux, 5g, RE: 0.06, diam *c* 190mm, *c* AD 150–200.

Drag 31R: Body, CG Lezoux, 12g, *c* AD 160–200. Rim, (different), CG Lezoux, 10g, RE: 0.05, diam 230mm, *c* AD 160–200. Base, (different), CG Lezoux, 19g, BE: 0.17, diam 100mm, *c* AD 160–200. Base, (different), CG Lezoux, 45g, BE: 0.25, diam 100mm, *c* AD 160–200. Rim, (different), CG Lezoux, 52g, RE: 0.06, diam 260mm, *c* AD 160–200. Rim, (different), CG Lezoux, 82g, RE: 0.17, diam 220mm, *c* AD 160–200. 5 rim sherds and 4 body sherds (7 sherds conjoining), Drag 31R, EG, 74g, RE: 0.21, diam 270mm, *c* AD 160–260.

Drag 31R variant: Rim, Drag 31R, the rim has no bead, but is plain bar a groove on the interior just below the rim, as with the forms 27 and 33, CG Lezoux, 14g, RE: 0.05, diam 230mm, *c* AD 160–200.

Drag 33: Rim, Drag 33, CG Lezoux, 6g, RE: 0.07, diam 120mm, *c* AD 120–200. Rim, (different), CG Lezoux, 4g, RE: *c* 0.04, diam uncertain, *c* AD 120–200. Rim, (different), CG Lezoux, 27g, RE: 0.15, diam 140mm, *c* AD 120–200. Rim, (different), CG Lezoux, 3g, RE: 0.06, diam 120mm, *c* AD 120–200. Rim, (different), CG Lezoux, 13g, RE: 0.10, diam 120mm, *c* AD 120–200. Rim, (different), CG Lezoux, 32g, RE: 0.15, diam 130mm, *c* AD 120–200. Rim, (different), CG Lezoux, 4g, RE: 0.06, diam 140mm, *c* AD 120–200. Body, (different), CG Lezoux, 3g, *c* AD 120–200. Body, (different), CG Lezoux, 5g, *c* AD 120–200. Base, from a cup, probably Drag 33, CG Lezoux, 20g, BE: 1.00, diam 36mm. Stamped. This item has been trimmed round, at, approximately, the junction of the vessel wall and floor. *Brenda Dickinson writes:* the stamp is that of Gracchus iv of Lezoux, Die 1a. The stamp is known to have been used on forms 31R and 79 or Tg, both made in the late second century. It has been recorded from Chesterholm and a stamp from one of his dies is known from Carrawburgh; *c* AD 160–190.

Drag 36: Rim, EG Trier, 40g, RE: 0.09, diam 200mm, *c* AD 175–260.

Drag 38: Body, CG Lezoux, 7g, *c* AD 130–200: Body, (different) Drag 38, CG Lezoux, 36g, *c* AD 130–200.

Curle 11 or Drag 38: Body, CG Lezoux, 3g, *c* AD 130–200.

Curle 23: 2 rim sherds, conjoin, CG Les Martres, 37g, RE: 0.08, diam 180mm, *c* AD 100–130.

Probably Curle 23: Body, CG Lezoux, 17g, *c* AD 120–200.

Drag 45: 3 body sherds, probably from the same vessel, CG Lezoux, 25g, *c* AD 165/170–200. 2 body sherds, (different) CG Lezoux, 45g, *c* AD 165/170–200

Beaded rim vessels: Rim, specific form not identifiable, EG, 3g, RE: *c* 0.02, diam uncertain, *c* AD 140–260.

Beaded rim vessels, probably Drag 37: 3 rim sherds, from same bead rimmed vessel, CG Lezoux, 14g, RE: 0.12, diam 180mm, *c* AD 120–200. Rim, from (different) bead-rimmed vessel, CG Lezoux, 14g, RE: 0.09, diam 160mm, *c* AD 120–200. Rim, (different), CG Lezoux, 17g, RE: 0.08, diam 160mm, *c* AD 120–200. Rim, EG Rheinzabern, 17g, RE: 0.07, diam 230mm, *c* AD 150–260.

Drag 37: (1) 3 rim sherds and 7 body sherds all conjoining, CG Lezoux, 107g, RE: 0.16, diam 130mm. Dec: severely abraded, but the tree Rogers N8 is discernible; this type occurs on the work of Cinnamus ii (eg. Stanfield and Simpson 1958, Pl. 159, No. 27 and Pl.163 No. 72); *c* AD 135–175. (2) Body, CG Lezoux, 1g. Dec: tiny vestige of ovolo; *c* AD 120–200.(3) 1 rim and 1 body sherd,CG Lezoux, 23g, RE: 0.07, diam 190mm. Dec: ovolo, severely abraded; *c* AD 120–200. (4) Body, CG Lezoux, 6g. Dec: a broad ovolo, but otherwise not sufficiently distinct; *c* AD 120–200. (5) Body, CG Lezoux, 11g. Dec: ovolo, abraded, slightly squared with double border and straight plain tongue ending in a swollen tip, perhaps with a central hole; large leaf (also abraded) in medallion or scroll similar to leaves used by Paternus and associated manufacturers; *c* AD 150–200. (6) 1 rim and 1 body sherd (conjoining) CG Lezoux, 13g, RE: 0.06, diam 150mm. Dec: a part of a festoon and a segment of the ovolo band, both abraded, are represented; the ovolo this similar to one used by Advocisus and Divixtus (Stanfield and Simpson 1958, 204, Fig 33 No.1); *c* AD 160–190. (7) 1 base and 1 body sherd, CG Lezoux, 69g, BE: 0.27, diam 86mm. Dec: the decoration is panelled, and represented are a large ivy leaf (Rogers J56), the base of a repeated figure type, being Venus O.339, and a distinctive leaf; the

design, figure and motifs identify this bowl as the work of Casurius (Stanfield and Simpson 1958, 234–8, Pls 132–7); *c* AD 160–200. (8) Body, EG probably an Argonne or La Madeleine product, 11g. Dec: very heavily abraded; *c* AD 160–240. (9) 2 rim sherds and 1 body sherd (conjoining), CG Lezoux, 29g, RE: 0.09, diam 190mm. Dec: only the ovolo is represented, this has a double border and a twisted tongue, thickened to the left at the terminal, there is no match for this type amongst the Rogers series; there is a distinct possibility though that this is a product of the Cinnamus ii workshop; *c* AD 120–200. (10) Rim, CG Lezoux, 10g, RE: 0.03, diam uncertain. Dec: none represented; *c* AD 120–200. (11) Body, CG Lezoux, 10g. Dec: there is only sufficient to discern that this vessel had a panel and medallion design; one rosette occurs; *c* AD 120–200. (12) Body, CG Lezoux, 3g. Dec: a vestige of the ovolo band is represented, this is Rogers B105; *c* AD 140–200. (13) Body, CG Les Martres, 22g. Dec: this is rather abraded but sufficient is discernible to indicate the style of Ioenalis or Donnavcus, the tripod is Rogers Q21, which occurs on their work; *c* AD 100–130. (14) 2 body sherds, probably same vessel, CG Lezoux, 8g. Dec: the ovolo, which is small, has a double border, a central projection and is rather rounded with a tongue apparently in the form of a twist with a rosette at the terminal; *c* AD 120–150. (15) Body, CG Lezoux, 14g. Dec: panel and medallion design with the satyr O.599 present, attested on the work of Docilis, Libertus and Casurius; *c* AD 130–200. (16) Base, CG Lezoux, 36g, BE: 0.10, diam 90mm. Dec: part of a large vine motif is all that is extant; *c* AD 120–150. (17) Body, CG Lezoux, 10g. Dec: 2 buds (Rogers G94) are present; the ovolo is rather abraded; *c* AD 120–200..(18) Base, CG Lezoux, 42g, BE: 0.35, diam 70mm. Dec: none represented; *c* AD 120–200.(19) Body, EG, 5g. Dec: the ovolo is double bordered and rather square, the tongue is corded and straight seemingly ending in a bevelled terminal; a leaf is also represented; *c* AD 150–230. (20) Body, CG Lezoux, 8g. Dec: severely abraded, a large rosette occupies a festoon; *c* AD 120–200. (21) Body, CG probably Les Martres, 8g, *c* AD 100–150. (22) Body, CG Lezoux, 10g. Dec: the leaf Rogers J4 is depicted; *c* AD 130–160. (23) Body, CG Lezoux, 7g. Dec: abraded, the leaf Rogers H71 is present though this motif is not chronologically specific; *c* AD 120–200. (24) Body, CG Lezoux, 3g. Dec: vestigial; *c* AD 120–200. (25) Body, Drag 37, CG Lezoux, 2g. Dec: vestigial; *c* AD 120–200. (26) Body, Drag 37, CG Lezoux, 2g. Dec: vestigial; *c* AD 120–200. (27) Body, Drag 37, CG Lezoux, 1g. Dec: vestigial; *c* AD 120–200. (28) Body, Drag 37, CG Lezoux, 1g. Dec: vestigial; *c* AD 120–200. (29) Body, Drag 37, CG Lezoux, 1g. Dec: vestigial; *c* AD 120–200.

Unidentifiable forms: Body, CG Les Martres, 6g, *c* AD 100–130. Base, from cup, CG Lezoux, 8g, BE: 0.15, diam 50mm, *c* AD 120–200. Body, from bowl or dish, CG Lezoux, 7g, *c* AD 120–200. Body, from (different) bowl or dish, CG Lezoux, 9g, *c* AD 120–200. Burnt. Base, from bowl, CG Lezoux, 38g, BE: 0.32, diam 70mm, *c* AD 120–200. Body, from dish or bowl, CG Lezoux, 7g, *c* AD 120–200. 25 body sherds from different vessels, CG Lezoux, 83g, *c* AD 120–200. 2 base sherds, conjoining, from a bowl form, CG Lezoux, 9g, BE: 0.15, diam 106mm, *c* AD 120–200. Base, CG Lezoux, 6g, BE: 0.12, diam 110mm, *c* AD 120–200. Base, from different vessel, CG Lezoux, 4g, BE: 0.04, diam uncertain, *c* AD 120–200. Base, from cup, CG Lezoux, 32g, BE: 1.00, diam 46mm; not stamped; *c* AD 120–200. Trimmed round. 5 body sherds from different vessels, EG, 21g, *c* AD 130–260. 2 sherds burnt. Base, from a dish or large cup, specific form not identifiable, possibly Drag 33, CG Lezoux, 54g, BE: 0.48, diam 60mm. Stamped: "CASINOR" (?), retrograde. This vessel has been trimmed round at its floor; *c* AD 160–200. *Brenda Dickinson writes:* The reading of the stamp is tentative, but the first five letters seem certain; late second century.

Context 1007 Condition: as 1005, generally small and abraded/ weathered. 3 rim sherds and 3 body sherds, all conjoining, Drag 37, CG Les Martres, 58g, RE: 0.15, diam *c* 200mm; from the same vessel as the sherds from 1005 in the style of Ioenalis; see under 1005; *c* AD 100–120/130. This item is illustrated. Rim, from bead rimmed bowl or dish, specific form unidentifiable, CG Les Martres, 6g, RE: 0.04. Diam uncertain, *c* AD 100–130. Body, Drag 18/31R, CG Les Martres, 2g, *c* AD 100–130. Body, Drag 18/31 or 18/31R, CG Lezoux, 7g, *c* AD 120–160. 2 conjoining body sherds, Drag 27, CG Lezoux, 10g, *c* AD 120–160. Rim, from bead-rimmed bowl, CG Lezoux, 11g, RE: 0.07, diam *c* 150mm, *c* AD 120–200. Rim, from bead rimmed bowl, probably Drag 37, CG Lezoux, 19g, RE: 0.15, diam 180mm, *c* AD 120–200.

Body, Drag 37, CG Lezoux, 3g. Dec: vestigial; *c* AD 120–200, perhaps *c* AD 120–150. One drilled hole, for repair.

Context 1025 Condition: average sized sherd, mildly abraded/weathered. Rim, Drag 31R, EG Rheinzabern, 8g, RE: *c* 0.03, diam uncertain, *c* AD 160–220.

Context 1038 Condition: average sized sherds, 1 abraded/weathered the other not. Body, Drag 37, CG Les Martres, 15g. Dec: this is rather indistinct due to poor moulding and abrasion; the ovolo has a double border and thin straight tongue with an apparently rounded terminal; below this is a bead border and a band of alternating rosettes and double rings, underneath which is a human figure, perhaps Venus; *c* AD 100–120/130. This item is illustrated. Rim, Drag 18/31, CG Lezoux, 6g, RE: 0.03, diam uncertain, *c* AD 120–150.

Context 1060 Condition: 2 very small abraded/weathered sherds. Base, from small cup, CG Lezoux, 1g, BE: 0.15, diam 40mm, *c* AD 120–200. Body, Drag 37, CG Lezoux, 2g. Dec: only a tiny vestige is present, *c* AD 120–200.

Context 1075 Condition: very small abraded/weathered sherd. Body, Drag 37, CG Lezoux, 2g. Dec: vestigial; *c* AD 120–150.

Context 1099 Condition: 2 small sherds, 1 abraded/weathered, 1 not. Rim, Drag 33, CG Lezoux, 5g, RE.: *c* 0.04, diam uncertain, *c* AD 120–150/170. Rim, (different) Drag 33, CG Lezoux, 2g, RE: 0.06, diam 110mm, *c* AD 120–200.

Context 1101 Condition: average size, abraded/weathered. Body, Drag 37, CG Lezoux, 8g. Dec: cupid O.440 within a double plain-ringed medallion; *c* AD 150–200.

Context 1147 Condition: 2 average and 2 small sized sherds, mildly abraded/weathered. 4 body sherds (3 conjoining), Drag 37, CG Lezoux, 36g. Dec: this bowl is almost certainly attributable to Laxtucissa, the design is panelled, the right leg of a figure is represented which is likely to be from the widely employed cupid O.450, there is a bordered column of rosettes and two pedestalled bird types, one approximating to O.2295, most diagnostic however are the two examples of a leaf motif which is especially associated with this producer (Rogers K37; Stanfield and Simpson 1958, 186, Fig 27 No. 12); *c* AD 150–180. One sherd has been drilled for repair.

Context 1165 Condition: most of the sherds are small; all, bar 1, are considerably abraded/weathered. Rim, Drag 37, CG Les Martres, 16g, RE: 0.07, diam *c*160mm. No decoration represented; *c* AD 100–130. Body, Drag 18/31, CG Lezoux, 3g, *c* AD 120–150. Rim, bead rimmed vessel, possibly Drag 18/31, CG Lezoux, 5g, RE: 0.04, diam uncertain, *c* AD 120–200. Body, Drag 33, CG Lezoux, 3g, *c* AD 120–200. Burnt. Body, Drag 37, CG Lezoux, 9g. No extant decoration; from different vessel to the sherd with the figure; *c* AD 120–200. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Body, from plain bowl, specific form uncertain, EG probably an Argonne or La Madeleine product, 3g, *c* AD 130–250. Base, Drag 31, CG Lezoux, 31g, BE: 0.22, diam 90mm, *c* AD 150–200. Body, probably Déch. 72, CG Lezoux, 4g, *c* AD 150–200. Body, Drag 37, CG Lezoux, 10g. Dec: lower half of a warrior figure O.177, a type which appears on the work of the Trajanic Potter X.2, and which was subsequently copied by later producers (such as Do(v)eccus i and Albucius) as is the case with this particular item. A date any when between *c* AD 120–200 is possible but perhaps a later dating is more probable; *c* AD 150–200.

Context 1255 Condition: small abraded/weathered sherd. Body, from flange of Curle 11 or Drag 38, CG Lezoux, 3g, *c* AD 120–200.

Unstratified Area B, 1997, Rim, Drag 27, CG Lezoux, 5g, RE: 0.10, diam 120mm, *c* AD 120–160.

Unphased contexts

Context 410 Condition: the sherds are very small and are abraded/weathered. Body, from bowl, specific form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Body, from a dish or bowl, specific form not identifiable, CG Lezoux, 3g, *c* AD 120–200.

Context 477 Condition: average sized sherd, not abraded/weathered. Body, Drag 37, CG Lezoux, 6g. No decoration represented; *c* AD 120–180.

Context 478 Condition: fairly small sherd, highly abraded/weathered. Rim, probably Drag 37, CG Lezoux, 5g, RE: *c* 0.04, diam uncertain, *c* AD 120–200.

Sherd from Environmental Sample Phase 4

Context 1030 Body from detoriated form, probably a bowl, CG Lezoux, 1g, *c* AD 120–200. Frome sample 255.

Potters' Stamps represented amongst the samian from Site 585

Casinorus ?, CG Lezoux fabric, on a dish or large cup, context 1006; see catalogue.
Genialis iv of Lezoux, Die 6a, on Drag 31, context 1005; see catalogue.
Gracchus iv of Lezoux, Die 1a, on probable Drag 33, context 1006; see catalogue.
Unidentified section of a stamp, CG Lezoux fabric, on Drag 31, context 1006; see catalogue.

Potters, and their dated vessels, represented or probably represented amongst the samian from Site 585 (see Catalogue)

Les Martres-de-Veyre.
Ioenalis, Drag 37, CG Les Martres, *c* AD 100–120/130, (contexts 1005 and 1007).
Ioenalis or Donnavcus, Drag 37, CG Les Martres, *c* AD 100–130, (context 1006).
Medetus–Ranto style, Drag 37, CG Les Martres, *c* AD 100–125, (contexts 1116 and 1128).

Lezoux
? Advocisus and Divixtus, small Drag 37, CG Lezoux, *c* AD 160–190, (context 1006).
Albucius, Lastvca, Paternus and Servus i group, Drag 37, CG Lezoux, *c* AD 145/160–200, (context 400).
Casinorus ?, dish or large cup, possibly Drag 33, CG Lezoux, stamped, *c* AD 160–200, (context 1006).
Casurius, Drag 37, CG Lezoux, *c* AD 160–200, (context 1006).
Cinnamus ii, Drag 37, CG Lezoux, *c* AD 135–175, (context 1304).
Probably Cinnamus ii, small Drag 37, CG Lezoux, *c* AD 135–175, (context 1006).
Probably Cinnamus ii or an associated workshop, Drag 37, CG Lezoux, *c* AD 140–180, (context 388).
?? Cinnamus ii, Drag 37, CG Lezoux, *c* AD 120–200, (context 418).
?? Cinnamus ii, Drag 37, CG Lezoux, *c* AD 120–200, (context 1006).
Doeccus, Drag 37, CG Lezoux, *c* AD 160–200, (context 14).
Genialis iv, Drag 31, CG Lezoux, stamped: Die 6a, *c* AD 160–190, (context 1005).
Gracchus iv, probable Drag 33, CG Lezoux, stamped: Die 1a, *c* AD 160–190, (context 1006).
Laxtucissa, Drag 37, CG Lezoux, *c* AD 150–180, (context 1147).
Paternus v, Drag 37, CG Lezoux, *c* AD 160–200, (context 1005).
? Paternus v, Drag 37, CG Lezoux, *c* AD 140–200, (context 419).
Paternus or Laxtucissa, Drag 37, CG Lezoux, *c* AD 145–190, (context 317 and 420).
? Paternus group, Drag 37, CG Lezoux, *c* AD 150–200, (context 1006).
Potter X-6, Drag 37, CG Lezoux, *c* AD 125–150, (context 46).
Quintilianus i group, Drag 37, CG Lezoux, *c* AD 125–150, (context 421).

Birdoswald Spur (Site 590)

Phase 1: Vallum Fill

Context 6

Condition: the sherds are almost all small or very small and abraded. Base, Déch 67 with footring, CG Lezoux, 7g, BE: 0.10, diam 60mm, Dec: the small extant area of decoration is abraded and indistinct, *c* AD 70–120. Rim, Drag 18 or 18/31, CG Lezoux, 6g, RE: 0.07, diam 180mm, *c* AD 90–120 Different vessel to sherd from context 4. Body, from a bowl or dish specific form not certain, probably Drag 18/31, CG Les Martres-des-Veyre, 15g, *c* AD 100–130. 3 rim sherds and 2 body sherds from the same vessel, Drag 35, CG Lezoux, 8g, RE: 0.12, diam 110mm, *c* AD 120–150. Base, Drag 18/31, CG Lezoux, 37g, BE: 0.17, diam 100mm, *c* AD 120–150. Body, (different) Drag 18/31, CG Lezoux, 12g, *c* AD 120–150. Body, Drag 37, CG Lezoux, 9g, Dec: the decoration is badly damaged but sufficient survives to demonstrate that in the case of this vessel the ovolo band has been replaced by a band of roundels; these comprised 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; the roundels are closely reminiscent of those employed in the designs of the Quintilianus, Bassus, Ianuaris i and Paterclus group (Stanfield and Simpson 1958; 1990, Fig17 No.5), *c* AD 120–150. Base, Drag 27, CG Lezoux, 36g, BE: 0.40, diam 50mm, *c* AD 120–160. Worn interior. Body, Drag 27, CG Lezoux, 3g, *c* AD 120–160. Rim, Drag 18/31R, CG Lezoux, 7g, RE: 0.05, diam 220mm, *c* AD 120–160. Rim, Drag 18/31, 31 or 31R, CG Lezoux, 10g, RE: 0.08, diam 190mm, *c* AD 120–200. Rim, Drag 30 or 37, CG Lezoux, 19g, RE: 0.08, diam 180mm, no decoration, *c* AD 120–200. Rim, (different) Drag 30 or 37, CG Lezoux, 7g, RE: *c* 0.03, diam uncertain, no decoration, *c* AD 120–200. Base, from a bowl, specific form not certain, CG Lezoux, 47g, BE: 0.15, diam 90mm, *c* AD 120–200. Base, from a (different) bowl, specific form not certain, CG Lezoux, 4g, BE: *c* 0.02, diam uncertain, *c* AD 120–200. Body, Drag 37, CG Lezoux, 4g, Dec: part of the ovolo band is represented but it is not distinct; a wavy line border underlies the ovolo, *c* AD 120–200. Rim, from bead rimmed bowl, CG Lezoux, 6g, RE: 0.06, diam 210mm, *c* AD 120–200. Rim, Drag 37, CG Lezoux, 10g, RE: 0.07, diam 210mm, no decoration represented, *c* AD 120–200. Base, from a bowl, specific form not certain, CG Lezoux, 58g, BE: 0.31, diam 90mm, *c* AD 120–200. Base, from a (different) bowl, specific form not certain, CG Lezoux, 32g, BE: 0.10, diam 110mm, *c* AD 120–200. Base, from a (different) bowl, specific form not certain, CG Lezoux, 16g, BE: 0.10, diam 110mm, *c* AD 120–200. Body, from a bowl, specific form not certain, CG Lezoux, 5g, *c* AD 120–200. Body, from a dish, Drag 18/31, 18/31R or 31, CG Lezoux, 1g, AD 120–200. Base, being a splayed footring, from a small vessel, specific form not certain, CG Lezoux, 1g, BE: 0.07, diam 90mm, *c* AD 120–200. Body, Drag 37, CG Lezoux, 4g, Dec: abraded, vestigial medallion and panel decoration? *c* AD 120–200. Body, Drag 37, CG Lezoux, 16g, Dec: badly abraded, includes a probable St Andrews cross type motif, ovolo not distinct, *c* AD 120–200, probably *c* AD 160–200. Body, Drag 37, CG Lezoux, 3g, Dec: vestigial; an abraded astragalus occurs, *c* AD 120–200. Body, from decorated vessel, specific form not certain, probably Drag 37, CG Lezoux, 2g, Dec: there is nothing represented that is identifiable, *c* AD 120–200. Body, from decorated vessel, specific form not certain, CG Lezoux, 2g, Dec: abraded palm leaf similar to Rogers J119, *c* AD 120–200. Body, Drag 37, CG Lezoux, 4g, Dec: part of the ovolo band is represented but it is not distinct, *c* AD 120–200. Body, Drag 30 or 37, CG Lezoux, 2g, Dec: fully abraded, *c* AD 120–200. *[*Rim, from bead rimmed bowl, CG Lezoux, 1g, RE: *c* 0.02, diam uncertain, *c* AD 120–200. Burnt. 2 body sherds from the same vessel, form not identifiable, CG Lezoux, 1g, *c* AD 120–200].

CARE: These are from environmental samples and should be specified as such. Please place these in a seperate section at the end of the catalogue in phase/context order, as they used to be - see below.

Body sherds, forms not identifiable: CG Lezoux, 3g, *c* AD 120–200. CG Lezoux, 2g, *c* AD 120–200. CG Lezoux, 4g, *c* AD 120–200. CG Lezoux, 1g, *c* AD 120–200. CG Lezoux, 1g, *c* AD 120–200.

Rims, from bead-rimmed vessel: CG Lezoux, 3g, RE: *c* 0.01, diam uncertain, *c* AD 120–200. CG Lezoux, 1g, RE: *c* 0.04, diam uncertain, *c* AD 120–200. CG Lezoux, 6g, RE: 0.05, diam 190mm, *c* AD 120–200. CG Lezoux, 3g, RE: *c* 0.03, diam uncertain, *c* AD 120–200. CG Lezoux, 2g, RE: *c* 0.02, diam uncertain, *c* AD 120–200.

Body, Drag 31, CG Lezoux, 5g, *c* AD 150–200. Body, possibly from a small Drag 31, CG Lezoux, 1g, *c* AD 150–200. Rim, from bead-rimmed vessel, EG Rheinzabern, 2g, RE: c0.03, diam uncertain, *c* AD 150–225. Rim, Drag 31R, CG Lezoux, 27g, RE: 0.07, diam 240mm, *c* AD 160–200.

Context 49

Condition: average sized sherd, severely abraded. Body, Drag 37, CG Lezoux, 7g, Dec: completely damaged; areas of extant slip finish suggest an early date within the main *floruit* of Lezoux, *c* AD 120–150.

Context 80

Condition: average and small sherds, somewhat abraded. Body, Drag 37, CG Lezoux, 9g, Dec: basal wreath of chevrons to the right, formed by a slimmer version of Rogers G361, a motif which is associated with Quintilianus, *c* AD 120–150. Body, Drag 37, perhaps from the same vessel as the above, CG Lezoux, 3g, Dec: a lyre is represented and part of a knee; the figure is Apollo and this is Oswald's type 83, which is previously recorded from Birdoswald (Deonna 1925–8, No. 107), *c* AD 120–150. Rim, small Drag 37, CG Lezoux, 13g, RE: 0.08, diam 140mm, Dec: completely damaged, probably *c* AD 120–160. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Burnt.

Context 92

Condition: average sized sherds, abraded. 2 rim sherds, 1 base sherd and 4 body sherds all from the same vessel, Drag 37, CG Lezoux, 89g, RE: 0.21, diam 160mm, BE: 0.40, diam 80mm, Dec: abraded and indiscernible, but the character of the vessel, including the slip indicate an early date within the main *floruit* of Lezoux, *c* AD 120–150. A further body sherd from this vessel occurs in context 1. Two, possibly three, cleat holes are present indicating repair. Rim, from bead rimmed vessel, CG Lezoux, 3g, RE: 0.05, diam 170mm, *c* AD 120–200.

Context 728

Condition: 1 average sized sherd and 2 tiny sherds, mildly abraded. Body, Drag 37, CG Lezoux, 22g, Dec: the ovolo is broad and doubled bordered, with a twisted tongue on the right hand side, with a rosette terminal turned slightly to the left; below a wavy line border the upper frieze contains small medallions, formed by two plain circles, the only medallion interior represented contains a pygmy warrior, O.691; between the two medallions present is a goose; the design has an affinity with the work of Avitus and Vegetus, *c* AD 120–150. Rim, from bead rimmed vessel, CG Lezoux, 2g, RE: *c* 0.01, diam uncertain, *c* AD 120–200. Rim, from (different) bead rimmed vessel, CG Lezoux, 1g, RE: *c* 0.02, diam uncertain, *c* AD 120–200.

Context 739

Condition: 2 average sized sherds and 3 tiny/small sherds, somewhat abraded. Body, Drag 27, CG Lezoux, 12g, *c* AD 120–160. Worn lower interior. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Body, probably Drag 37, CG Lezoux, 1g, Dec: tiny vestige of ovolo, *c* AD 120–200. Body, small Drag 37, CG Lezoux, 2g, Dec: the decoration is excoriated, though part of the ovolo band is discernible, *c* AD 120–200. Base (footring), form not identifiable, EG Rheinzabern, 9g, BE: 0.30, diam 80mm, *c* AD 150–240.

Phase 2 Associated with the drain features

Context 53 — Condition: very small sherds, severely abraded. Body, from decorated form, CG Lezoux, 1g, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 1g, *c* AD 160–200.

Context 79 — Condition: small sherds, severely abraded. Rim, from bead rimmed vessel, specific form not identifiable, CG Lezoux, 1g, RE: *c* 0.02, diam uncertain, *c* AD 120–200. Excoriated. Rim, Drag 36, CG Lezoux, 9g, RE: *c* 0.03 Diam uncertain, *c* AD 120–200. Body, form not identifiable, EG Rheinzabern, 1g, *c* AD 150–225.

Context 722 — Condition: small sherd, not abraded. Body, Drag 31, CG Lezoux, 3g, *c* AD 150–200.

Phase 3 Outer fort ditch

Context 13 — Condition: the sherds are generally either small or very small and abraded. Body, Drag 37, SG La Graufesenque, 7g, no decoration, *c* AD 70–110. Base, probably Drag 27 (faint groove as 27g), CG Les Martres-des-Veyre, 8g, BE: 0.43, diam 40mm, *c* AD 100–130. Body, Drag 18/31, CG Lezoux, 6g, *c* AD 120–150. Body, Drag 27, CG Lezoux, 1g, *c* AD 120–160. Rim, from bead rimmed vessel, CG Lezoux, 1g., RE: 0.05, diam *c* 150mm, *c* AD 120–200. Rim, Drag 33, CG Lezoux, 7g, RE: 0.09, diam 130mm, *c* AD 120–200. Burnt. Body, Drag 18/31R or 31R, CG Lezoux, 17g, *c* AD 120–200. 2 drilled holes for repair. Body, from a cup, specific form not identifiable, CG Lezoux, 1g, *c* AD 120–200. 3 Body sherds, from separate vessels in each case the form is not identifiable, all CG Lezoux, 1g, each, all *c* AD 120–200. Body form not identifiable, CG Lezoux, 5g, *c* AD 120–200. Rim, from bead rimmed vessel, perhaps Drag 37, CG Lezoux, 7g, RE: *c* 0.03, diam uncertain, *c* AD 120–200. Burnt. Base, from bowl, specific form not identifiable, CG Lezoux, 14g, BE: 0.16, diam 90mm, *c* AD 120–200. Body, Drag 37, CG Lezoux, 9g, Dec: abraded vestigial leaf design, *c* AD 145–200. Rim, bead rimmed vessel, specific form not identifiable but perhaps Drag 37, EG Trier, 2g, RE: *c* 0.02, diam uncertain, *c* AD 200–260.

Context 52 — Condition: small sherd, abraded. Body, Drag 37, CG Lezoux, 5g, no decoration, *c* AD 150–200.

Context 67 — Condition: small sherds, severely abraded. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Excoriated. Body, either Drag 30, Drag 37 or Curle 23, CG Lezoux, 2g, *c* AD 120–200. Body, Drag 37, CG Lezoux, 3g, Dec: abraded, *c* AD 140–160.

Context 91 — Condition: large sherd, mildly abraded. Rim, Drag 31 or 31R, CG Lezoux, 16g, RE: *c* 0.04, diam *c* 190mm, *c* AD 150–200.

Phase 3 Middle fort ditch

Context 22 — Condition: the sherds are very small and severely abraded. Body, from decorated vessel, CG Lezoux, 1g, *c* AD 120–200. Rim and 3 body sherds, all same vessel, Drag 37, CG Lezoux, 21g, RE: 0.06, diam 170mm, Dec: severely abraded and indistinct, *c* AD 150–200. 1 sherd prepared for repair with a cleat cut. Body, form not identifiable, EG Rheinzabern, 1g, *c* AD 150–225.

Context 36 — Condition: average sized sherds mildly abraded. Body, from near base, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. 3 body sherds, 2 conjoining, Drag 37, CG Lezoux, 30g, Dec: abraded; in the style of Sacer; the lower zone appears to be a continuous freestyle design with plant motifs including Rogers K20, ? Rogers G54 and the three leaf motif present on a bowl illustrated by Stanfield and Simpson (1958, Pl. 82 No.8); the hind quarters of an animal running to the right are represented and this could be the deer type which appears on the latter item; above, the upper band is divided from the lower band by a fine bead line and takes the form of a festoon containing a bird (O.2298), again potentially identical to the item illustrated by Stanfield and Simpson, *c* AD 125–150.

Context 40 — Condition: very small sized sherds, bar 1 larger piece, all abraded, some severely. Base, Drag 18/31R or 31R, CG Lezoux, 25g, BE: 0.22, diam 100mm, *c* AD 120–200. More probably from a Drag 18/31R than a 31R. Body, from decorated form, CG Lezoux, 1g, Dec: vestigial, *c* AD 120–200. 3 body sherds, from separate vessels, in each case the form is not identifiable, all CG Lezoux, 1g each, and all *c* AD 120–200, one with deep cherry slip.

Context 44 — Condition: 2 average sized sherds, 1 large piece, 1 tiny sherd, mildly abraded. 2 conjoining rim sherds, Drag 30, CG Lezoux, 16g, RE: 0.08, diam 190mm, *c* AD 120–200. Rim, Drag 36 or Curle 23, CG Lezoux, 1g, RE: *c* 0.02, diam uncertain, *c* AD 120–200. Rim, Drag 37, CG Lezoux, 24g, RE: *c* 0.03, diam uncertain, Dec: pitted through weathering and abrasion, what can be discerned of the ovolo suggests Cinnamus ii; *c* AD 135–175.

Context 45 — Condition: small sherd, mildly abraded. Body, (plain sherd) from closed decorated form, probably Déch. 67, SG La Graufesenque, 2g, *c* AD 70–110.

Context 122 — Condition: small and very small sherds, abraded. Body, from dish or bowl, CG Lezoux, 9g, *c* 120–200. Rim, Drag 36, CG Lezoux, 7g, RE: 0.06, diam 280mm, *c* AD 150–200. Rim, Drag 33, EG Rheinzabern, 4g, RE: 0.04, diam *c* 130mm, *c* AD 150–225.

Context 159 — Condition: average and small sized sherds, in variable condition. Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Burnt. Rim, from bead rimmed vessel, CG Lezoux, 5g, RE: 0.05, diam 160mm, *c* AD 120–200. Rim and conjoining body sherd, Drag 37, CG Lezoux, 6g, RE: *c* 0.02, diam uncertain, no decoration extant, *c* AD 140–200. Burnt. Body, Drag 31R, CG Lezoux, 10g, *c* AD 160–200. Body, probably Drag 37, CG Lezoux, 11g, *c* AD 160–200.

Context 161 — Condition: large sherd, not abraded. Base, Drag 31R, CG Lezoux, 32g, BE: 0.13, diam 110mm, *c* AD 160–200.

Context 164 — Condition: average and small sized sherds, not abraded. Body, from small decorated form, CG Lezoux, 1g, *c* AD 120–200. Rim, Drag 31 or 31R, CG Lezoux, 11g, RE: *c* 0.03, diam uncertain, *c* AD 150–200. Body, Drag 31R, CG Lezoux, 4g, *c* AD 160–200. Different vessel from the 31R in context 161.

Context 166 — Condition: average or large sized sherds, not abraded. Body, Drag 37, CG Lezoux, 11g, Dec: the torso, upper legs and left arm of a male figure are represented; this is almost certainly Perseus; the design is close to O.235 but the legs are together in this case, *c* AD 120–140. Rim, from bead rimmed vessel, CG Lezoux, 3g, RE: 0.06, diam 180mm, *c* AD 120–200. Rim, probably Drag 37, CG Lezoux, 25g, RE: 0.07, diam 200mm, *c* AD 140–200. Body, from dish or bowl, form not identifiable, CG Lezoux, 10g, *c* AD 160–200.

Pits in Areas A, B, and C, cist and enclosure fills: later 3rd century or later

Context 2 — Fill of Pit 3. Condition: all pieces are small and abraded, bar 1 sherd (31R rim) that is large and unabraded and another moderately sized item. Body, Drag 37, CG Lezoux, 4g, Dec: severely abraded, ?leaf, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 3g, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 3g, *c* AD 120–200. Possibly trimmed to form a crude counter. Body with part of a footring, from a bowl, specific form not certain, CG Lezoux, 16g, *c* AD 120–200, probably 140–200. Body, from a bowl either plain or decorated, unusually has internal grooving, CG Lezoux, 7g, *c* AD 120–200. Body, Drag 38, EG, probably La Madeleine or Argonne, 1g, *c* AD 130–260. Body, form not identifiable, probably CG Lezoux, 5g, *c* AD 140–200. Excoriated. Rim, Drag 31R, CG Lezoux, 60g, RE: *c*0.04, diam uncertain, *c* AD 160–200. Body, form not identifiable, EG Trier, 3g, *c* AD 160–225.

Context 35 — A fill of Pit 39. Condition: small sherds somewhat abraded. Rim, Drag 33, CG Lezoux, 7g, RE: 0.14, diam 130mm, *c* AD 120–200. 3 body sherds, each from separate vessels, in each case the form is not identifiable, CG Lezoux, two are 1g each, one is 10g, all dated to *c* AD 120–200. Body, apparently from decorated vessel, Drag 30 or 37, CG Lezoux, 3g, *c* AD 120–200. Body, from near base, form not identifiable, CG Lezoux, 13g, *c* AD 120–200. Rim, from bead rimmed vessel, form not identifiable, probably CG Lezoux, 4g, RE: *c* 0.03, diam uncertain, *c* AD 120–200. Rim, from small bead rimmed vessel, form not identifiable, CG Lezoux, 1g, RE: *c* 0.02, diam uncertain, *c* AD 120–200. Body, form not identifiable, ?EG, 1g, *c* AD 130–250. Body, Drag 31R, CG Lezoux, 30g, *c* AD 160–200. Body, (different) Drag 31R, CG Lezoux, 3g, *c* AD 160–200.

Context 38 — A fill of Pit 39. Condition: average to very small sized sherds, all abraded, some severely abraded. Body, Drag 18/31, CG Lezoux, 5g, *c* AD 120–150. Body, form not identifiable, CG Lezoux, 4g, *c* AD 120–200. Largely excoriated. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Excoriated. Base, form not identifiable, CG Lezoux, 3g, BE: *c* 0.01, diam uncertain, *c* AD 120–200 Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Body, Drag 31R, CG Lezoux, 12g, *c* AD 160–200. Body, (different) Drag 31R, CG Lezoux, 10g, *c* AD 160–200. Body, Drag 45 (or possibly Drag 43), CG Lezoux, 1g, *c* AD 170–200.

Context 84 — Condition: small sherds, abraded. Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Body, Drag 33 with external groove, EG, probably an Argonne or La Madeleine product, 4g, *c* AD 130–260.

Context 135 — Condition: small sherd, not abraded. Rim, small Drag 30, CG Lezoux, 6g, RE: 0.11, diam 120mm, *c* AD 120–140.

Context 150 — Condition: average sized sherds, heavily fractured. Body, Drag 18/31R, CG Lezoux, 10g, *c* AD 120–150/160. Base, from a bowl, CG Lezoux, 33g, BE: 0.21, diam, 120mm, *c* AD 120–200.

Context 201 — Fill of Pit 206. Condition: 1 sherd of large size, others tiny, all severely abraded. Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Body, (different vessel) form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Body, form not identifiable, EG Argonne or La Madeleine, 1g, *c* AD 130–260. Base, Drag 31, EG Rheinzabern, 28g, BE: 0.31, diam 80mm, *c* AD 150–225. Rim, Drag 33, EG Rheinzabern, 4g, RE: 0.09, diam 100mm, *c* AD 150–225.

Context 204 — Recorded Find 358. Fill of Pit 206. Condition: complete small base, severely abraded Base, probably Drag 33, CG Lezoux, 19g, BE: 1.00, diam 46mm, Stamped "MASCIILLIO". *Brenda Dickinson writes:* the stamp is that of Mascellio i of Lezoux, Die 4a. There is little site dating for this stamp, apart from one example

from excavations at Bainbridge, which is Antonine. However, it appears on the rims of two decorated bowls which are stylistically mid- to late-Antonine (Stanfield and Simpson 1958, Pl.146, Nos 11 and 13). One of his other stamps, used on forms 31R and 79R, is relatively common on Hadrian's Wall. A range *c* AD 169–190 is likely, therefore.

Context 205 Condition: small sherds, severely abraded. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Body, form not identifiable, EG, 1g, *c* AD 130–250. Body, Drag 30 or 37, CG Lezoux, 3g, Dec: part of a blurred ovolo above a wavy line border *c* AD 175–200.

Context 207 Condition: 3 sherds are large, 2 are about average size and the majority are very small; all are abraded. Body, Drag 37, CG Lezoux, 9g, Dec: vestigial, *c* AD 120–200. Body, Drag 37, CG Lezoux, 4g, Dec: indistinct, *c* AD 120–200. Base, form not identifiable, CG Lezoux, 4g, BE: 0.10, diam 90mm, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 4g, *c* AD 120–200. Burnt. Rim, from bead rimmed vessel, CG Lezoux, 5g, RE: *c* 0.04, diam uncertain, *c* AD 120–200. 10 body sherds, all from separate vessels, the forms are not identifiable, all CG Lezoux, in five cases sherds are 1g, in two they are 2g, in a further two they are 3g, and a final case is 4g, all *c* AD 120–200. Body, probably Drag 38, CG Lezoux, 1g, *c* AD 130–200. Base, form not identified, EG, probably an Argonne or La Madeleine product, 3g, BE: *c* 0.03, diam uncertain, *c* AD 130–250. Rim, from bead rimmed vessel, EG, possibly an Argonne or La Madeleine product, 4g, RE: 0.06, diam 230mm, *c* AD 130–250. Body, Drag 30 or 37, CG Lezoux, 1g, Dec: abraded ovolo, *c* AD 140–200. Rim, from bead rimmed vessel, CG Lezoux, 4g, RE: *c* 0.03, diam uncertain, *c* AD 140–200. Possibly a crude counter. Body, small Drag 37, CG Lezoux, 4g, Dec: part of a leaf, probably Rogers H18; this may be the work of Doeccus, *c* AD 160–200. Body, Drag 37, CG Lezoux, 4g, Dec: vestigial, *c* AD 160–200. Body, Drag 31R, CG Lezoux, 86g, *c* AD 160–200. Body, (different) Drag 31R, CG Lezoux, 12g, *c* AD 160–200. Rim, from bead rimmed vessel, possibly the Drag 37 of Doeccus with the figure O.673 from this context, CG Lezoux, 3g, RE: *c* 0.03, diam uncertain, *c* AD 160–200. 3 body sherds, 2 conjoining, from the same Drag 37, CG Lezoux, 34g, Dec: almost certainly a product of Doeccus; the design is panelled, with the male figure O.673, divided by a heavy vertical bead line, ending in a large bead, from a medallion which is Rogers E8 (for the border and medallion see Stanfield and Simpson 1958, Pl. 148 No. 19), below the latter is a dog running to the right; the figure O.673 appears on a bowl from Corbridge assigned to Doeccus (Stanfield and Simpson 1958, Pl.150 No.44); ovolo fully abraded, below is a festoon containing an eroded figure, *c* AD 160–200. Body, Drag 45, CG Lezoux, 45g, *c* AD 170–200. Rim, Ludowici SMc, EG, 3g, RE: 0.06 Diam 160mm, *c* AD 190–250.

Context 212 Condition: small sherd, severely abraded. Base (footring), form not identifiable, CG Lezoux, 4g, BE: 0.12, diam 90mm, *c* AD 120–200.

Context 223 Condition: small sherd. Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–175.

Context 226 Condition: small sherd, severely abraded. Body, Drag 37, CG Lezoux, 3g, Dec: vestigial, *c* AD 120–200.

Context 229 Condition: tiny sherd, mildly abraded. Body, form not identifiable, CG Lezoux, 1g, *c* AD 150–200.

Post-medieval, modern and unstratified

Context 1 Topsoil. Condition: sherds are small and considerably abraded. Rim, Drag 27, SG La Graufesenque, 4g, RE: 0.08, diam 100mm, *c* AD 70–110. Base, from a bowl, SG La Graufesenque, 22g, BE: 0.07, diam *c* 100mm, *c* AD 70–110. Body, Drag 37, CG Lezoux, 5g, *c* AD 120–150. From the same vessel as sherds in context 92 (cf above). Body, Drag 27, CG Lezoux, 5g, *c* AD 120–160. Worn interior. Body, Drag 37, CG Lezoux, 9g, *c* AD 120–200. Body, Drag 37, CG Lezoux, 5g, *c* AD 120–200. Base, from a bowl, CG Lezoux, 10g, BE: 0.20, diam 80mm, *c* AD 120–200. Base, from a bowl, CG Lezoux, 3g, BE: 0.15, diam 90mm, *c* AD 120–200. Rim, from a bead rimmed vessel, CG Lezoux, 2g, RE: *c* 0.03, diam uncertain, *c* AD 120–200. Rim, from small bead rimmed vessel, CG Lezoux, 1g, RE: *c* 0.03, diam uncertain, *c* AD 120–200. Rim, form not identifiable, CG Lezoux, 2g, RE: *c* 0.01, diam uncertain, *c* AD 120–200. Rim, form not identifiable, CG Lezoux, 1g, RE: *c* 0.03, diam uncertain, *c* AD 120–200. Base, form not identifiable, CG Lezoux, 2g, BE: *c* 0.05, diam uncertain, *c* AD 120–200. Body, probably from a decorated form, CG Lezoux, 2g, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 3g, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. 7 body sherds, all from separate vessels, forms not identifiable, all CG Lezoux, each 1g, all *c* AD 120–200. Body, Drag 31, CG Lezoux, 14g, *c* AD 150–200. Body, probably Drag 31, CG Lezoux, 3g, *c* AD 150–200. Rim, from a beaker of form Ludowici Vd or Drag 54, CG Lezoux, 1g, RE: 0.10, diam 60mm, *c* AD 150–200. 3 body sherds from the same vessel, Drag 45, EG probably Trier, 27g, *c* AD 170–260. Excoriated.

Context 4 Condition: all pieces are small and severely abraded. Rim, probably Drag 18/31, CG Lezoux, 1g, RE: 0.05, diam 150mm, *c* AD 120–150. Burnt. Rim, Drag 18/31 or 18/31R, CG Lezoux, 4g, RE: 0.06, diam 210mm, *c* AD 120–160. Body, probably Drag 27, CG Lezoux, 1g, *c* AD 120–160. Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Severely weathered. Body, form not identifiable, CG Lezoux, 3g, *c* AD 120–200. Severely weathered. Body, form not identifiable, CG Lezoux, 4g, *c* AD 120–200. Severely weathered. Body, Drag 37, CG Lezoux, 5g, Dec: abraded, vestigial medallion, festoon or scroll, *c* AD 140–200.

Context 12 Condition: mildly abraded. Body, probably Drag 18/31R, CG Les Martres-de-Veyre, 14g, *c* AD 100–130. Body, probably Drag 18/31, CG Lezoux, 3g, *c* AD 120–150 .

Context 14 Unstratified. Condition: the sherds are either small or very small and are severely abraded. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Fully excoriated. Body, (different vessel) form not identifiable, CG Lezoux, 3g, *c* AD 120–200. Fully excoriated. 3 body, sherds all from separate vessels, forms not identifiable, all CG Lezoux, two are 1g, one is 2g, all *c* AD 120–200. Base, form not identifiable, CG Lezoux, 2g, BE: *c* 0.01, diam uncertain, *c* AD 120–200. Excoriated. Body, from closed, probably decorated, form, CG Lezoux, 7g, *c* AD 120–200. Body, probably Drag 37, CG Lezoux, 4g, *c* AD 120–200. Rim, from bead rimmed form, CG Lezoux, 1g, RE: 0.03, diam uncertain, *c* AD 120–200. Base, from cup, CG Lezoux, 1g, BE: 0.12, diam 40mm, *c* AD 120–200. Body, Drag 37, CG Lezoux, 3g, Dec: abraded, indistinct ovolo, *c* AD 120–200. Body, small Drag 37, CG Lezoux, 8g, Dec: all decoration bar the ovolo is heavily abraded and indistinct; the (not entirely distinct) ovolo is small with a tongue turning to the left with a rounded or star/rosette terminal; this is closely similar to an ovolo used by Potter X-6 (eg. Stanfield and Simpson 1958, Pl. 75 Nos 13 and 19) as well as the so-called small bowl ovolo of Cinnamus ii (Stanfield and Simpson 1958, 264); unfortunately there is nothing else diagnostic in this case to discriminate between these two prolific producers; the slip is cherry red and matt; *c* AD 125–200. 2 body sherds, from the same vessel, form not identifiable, EG, probably an Argonne or La Madeleine product, 2g, *c* AD 130–250. Rim, Drag 37, CG Lezoux, 15g, RE: 0.09, diam 160mm, Dec: abraded, ovolo similar to Rogers B55; *c* AD 140–200. Body, form not identifiable, EG Rheinzabern, 5g, *c* AD 150–225.

Context 95 Topsoil. Condition: small sherds, abraded. 3 body sherds probably from the same vessel, form not identifiable, CG Lezoux, 4g, *c* AD 120–200.

Context 100 Topsoil. Condition: the sherds are small and abraded. Body, probably Drag 33, CG Lezoux, 5g, *c* AD 120–200. Body, Drag 37, CG Lezoux, 7g, *c* AD 120–200. Body, Drag 37, CG Lezoux, 2g, *c* AD 120–200.

Context 101 Topsoil. Condition: the sherds are small and abraded. Rim, from bead rimmed vessel, CG Lezoux, 2g, RE: *c* 0.02 Diam uncertain, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Body, Drag 37, CG Lezoux, 24g, Dec: abraded, arranged in panels and medallions, within a medallion is the erotic figure type O.C or similar, *c* AD 140–200. Body, Drag 30 or 37, CG Lezoux, 3g, Dec: a 'T' junction of a heavy bead border occurs, *c* AD 150–200. Body, form not identifiable, EG Rheinzabern, 3g, *c* AD 150–225.

Context 116 Topsoil. Condition: very small sherds, severely abraded. Body, form not identifiable, SG Montans, 2g, *c* AD 110–200. Body, form not identifiable, CG Lezoux, 4g, *c* AD 120–200. Excoriated. Body, Drag 37, CG Lezoux, 3g, Dec: ovolo: only one complete motif is represented and this resembles a distinctive ovolo type used by Stanfield and Simpson's 'Small S Potter' now known as Cettus (Stanfield and Simpson 1958, 244, ovolo 2, Pl. 141 No. 9; 1990), *c* AD 160–200

Context 126 Condition: small sherd, abraded. Body, form not identifiable, CG Lezoux, 5g, *c* AD 120–200.

Context 200 Topsoil. Condition: sherds are of medium to small size and are abraded. 2 conjoining body sherds, Drag 37, CG Lezoux, 34g, no decoration extant, *c* AD 120–200. Body, Drag 37 (different vessel from the above item), CG Lezoux, 15g, no decoration extant, *c* AD 120–200. 2 conjoining rim sherds, probably Drag 37, CG Lezoux, 11g, RE: 0.08, diam 190mm, no decoration, *c* AD 120–200. May be from the above item. Body, possibly from a cup, CG Lezoux, 2g, *c* AD 120–200. Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Body, from globular beaker, probably Déch. 72, CG Lezoux, 3g, vestigial 'cut glass' decoration, *c* AD 150–200.

Context 209 Condition: small sherds, severely abraded. Rim, Drag 33, CG Lezoux, 3g, RE: 0.08, diam 130mm, *c* AD 120–200. Excoriated. Body, form not identifiable, CG Lezoux, 4g, *c* AD 160–200.

Context 705 Condition: 1 large sherd and 1 average sized sherd, severely abraded. Rim and 1 body sherd, Drag 37, CG Lezoux, 30g, RE: 0.13, diam 190mm, Dec: indistinct, *c* AD 120–200.

Context 707 Condition: small sherds, abraded. 2 body sherds from the same small Drag 37, Could be CG Lezoux or EG, 7g, Dec: indeterminate, *c* AD 150–230.

Context 724 — Condition: 2 average sized sherds and 1 small sherd, mildly abraded. Body, from a cup, SG La Graufesenque, 1g, *c* AD 70–110. 2 conjoining body sherds, Drag 37, CG Lezoux, 29g, Dec: the design evidently comprises a continuous band of large leaf motifs (in a scroll?) resembling Rogers H58; a small circle is also depicted; this may be the work of Criciro, or more likely Attianus, *c* AD 140–160.

Samiam sherds recovered from the Environmental Samples

Phase 1 — Vallum fill. Contect 6
Rim from bead rimmed bowl, CG Lezoux, 1g, RE: c. 0.02, diam. uncertain, *c* AD 120–200. Burnt. From E sample 437.
2 body sherds from the same vessel, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. From E sample 437.

Phase 3 — Middle Fort Ditch fill. Context 48
Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. From E sample 422.
Outer Fort Ditch fill. Context 13
Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Burnt. From E sample 400.
Outer Fort Ditch fill. Context 52
Body, form not identifiable, CG Lezoux, 2g, *c* AD 120–200. Burnt. From E sample 423.
Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Burnt. From E sample 423.

Pit fill — Later 3rd Century or later. Context 38
Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Excoriated; from E sample 404.
Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Excoriated; from E sample 404. From different vessel to above item.

Ditch fill — Context 207
Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. Excoriated; from E sample 409.

'Cist' fill — Context 223
Body, probably from Drag 30 or 37, EG Rheinzabern, 1g, *c* AD 150–220. Excoriated. From E sample 439.

Context 82 — Body, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. From E sample 443.
Body, from small decorated vessel, form not identifiable, CG Lezoux, 1g, *c* AD 120–200. From E sample 443.

Potters, and their dated vessels, represented or probably represented among samian from The Spur, site 590 (see Catalogue)

Attianus or possibly Criciro, Drag 37, CG Lezoux, *c* AD 140–160, (context 724).
Avitus and Vegetus, Drag 37, CG Lezoux, *c* AD 120–150, (context 728).
Cettus (the 'Small S Potter'), Drag 37, CG Lezoux, *c* AD 160–200, (context 116).
Cinnamus ii, Drag 37, CG Lezoux, *c* AD 135–175, (context 44).
Doeccus, small Drag 37, CG Lezoux, *c* AD 160–200, (context 207).
Doeccus, Drag 37, CG Lezoux, *c* AD 160–200, (also context 207).
Mascellio i, probable Drag 33, CG Lezoux, stamped: Die 4a, *c* AD 169–190, (context 204).
Quintilianus, Bassus, Ianuaris i and Paterclus group, Drag 37, CG Lezoux, *c* AD 120–150 (context 6).
Quintilianus, Drag 37, CG Lezoux, *c* AD 120–150, (context 80).
Sacer, Drag 37, CG Lezoux, *c* AD 125–150, (context 36).
Potter X-6 or Cinnamus ii, small Drag 37, CG Lezoux, *c* AD 125–200, (context 14).

Time Team excavation in the Vicus and cemetery

Context 101 — Rim, CG Lezoux, probably Drag 18/31, 3g, RE: 0.05, diam *c* 180mm, *c* AD 120–150; virtually excoriated; burnt or stained. Body, CG Lezoux, Drag 37, 7g, *c* AD 120–200; virtually excoriated; no decorative detail survives bar the 'ghosts' (ie. simply undulations in the excoriated and weathered surface of the pot) of the ovolo band and part of the border of a festoon with astragalus terminal mask. Body, CG Lezoux, form not identifiable, 2g, *c* AD 140–200. Body, CG Lezoux, probably Déch. 72, 2g, *c* AD 150–200; virtually excoriated; no decoration survives.

Context 103 — Body, CG Les Martres-de-Veyre, form not identifiable, 1g, *c* AD 120–140; fully excoriated. Body, CG Lezoux, Drag 37, 3g, *c* AD 120–200; fully excoriated. Body, CG Lezoux, Drag 37, different vessel from above item, 1g, *c* AD 120–200; fully excoriated.Body, CG Lezoux, from a Bowl or Dish, 5g, *c* AD 120–200; fully excoriated. Body, CG Lezoux, form not identifiable, 1g, *c* AD 120–200; fully excoriated; burnt or stained. Body, CG Lezoux, form not identifiable, different vessel from above item, 1g, *c* AD 120–200; fully excoriated; stained.

Context 107 — Body, CG Lezoux, Drag 37, 16g, *c* AD 120–200; virtually excoriated; no decorative detail survives bar the ghost of a medallion motif. Body, CG Lezoux, form not identifiable, 2g, *c* AD 120–200; fully excoriated.

Context 201 — Body, CG Lezoux, probably Drag 37, 5g, *c* AD 120–200; virtually excoriated. Body, CG Lezoux, Drag 30 or 37, 1g, *c* AD 120–200; fully excoriated; inner original surface apparently missing. Body, CG Lezoux, Plain Bowl, 9g, *c* AD 120–200; weathered and abraded; stained or burnt. Body, CG Lezoux, from a Bowl or Dish, 3g, *c* AD 120–200. Body, CG Lezoux, form not identifiable, 4g, *c* AD 120–200; virtually excoriated. Body, CG Lezoux, form not identifiable, 5g, *c* AD 120–200. Body, CG Lezoux, form not identifiable, 1g, *c* AD 120–200; fully excoriated. 2 conjoining body sherds, CG Lezoux, Drag 31 or 31R, 5g, *c* AD 150–200; weathered and abraded; inner original surface missing. Body, CG Lezoux, Drag 31, 1g, *c* AD 150–200; outer original surface missing.

Context 202 — Base, SG Montans, Cup, 4g, BE: 0.07, diam *c* 60mm, *c* AD 60–200. Rim, CG Lezoux, Drag 18/31, 8g, RE: 0.05, diam *c* 200mm, *c* AD 120–150. Body, CG Lezoux, Drag 37, 12g, *c* AD 120–200; no decoration is represented. Body, CG Lezoux, from Bowl or Dish, 9g, *c* AD 120–200; abraded; inner surface missing. Body, CG Lezoux, from Bowl or Mortarium, 7g, *c* AD 120–200; virtually excoriated. Body, CG Lezoux, form not identifiable, 3g, *c* AD 120–200; virtually excoriated; burnt or stained. Body, CG Lezoux, form not identifiable, 1g, *c* AD 120–200; outer surface missing. Body, CG Lezoux, form not identifiable, 1g, *c* AD 120–200. Rim, CG Lezoux, Drag 31 or 31R, 4g, RE: *c* 0.03, diam uncertain, *c* AD 150–200. 2 conjoining base sherds, CG Lezoux, Drag 31R, 30g, BE: 0.25, diam *c* 110mm, *c* AD 160–200.

Context 205 — Body, CG Les Martres-de-Veyre, Drag 18/31, 9g, *c* AD 100–130. Body, CG Lezoux, form not identifiable, 3g, *c* AD 120–200. Body, CG Lezoux, Drag 30, 4g, *c* AD 135–170. Part of the ovolo band is represented, though it is abraded; the ovolo is large, double-bordered and rather square; a central projection may occur; the tongue is large, probably twisted, and turned to the left; below the ovolo is a bead border. This type is associated with Cinnamus ii, being Stanfield and Simpson's Cinnamus ii ovolo 1 (1990, 303–10), though a closely similar type is also employed by his Lezoux contemporaries, Pugnus ii and Cintusmus i, both of whose work is well attested on Hadrian's Wall. The quality of the (rather orange) slip and finish is good. On balance this piece is likely to be from a bowl of Cinnamus ii. Rim, EG Rheinzabern, probably Drag 30 or 37, 8g, RE: 0.06, diam *c* 180mm, *c* AD 150–250/260.

Context 208 — Rim, CG Lezoux, from a Bowl or Dish, 1g, RE: *c* 0.02, diam uncertain, *c* AD 120–200. Rim, CG Lezoux, Drag 35, 8g, RE: 0.12, diam 70mm, *c* AD 120–200. Body, CG Lezoux, Drag 37, 13g, *c* AD 125–150; 1 drilled hole, presumably for repair via riveting is present. An area of decoration in the style of the Quintilianus i group survives; the decoration is arranged in panels which are divided by characteristically very fine wavy line borders; on the left is a small running dog O.2007; the main figure type represented here is the lower part of O.232 (Déchelette 1904, Vol. 2, 30, No. 130) being two warriors in combat; the panel to the right contains a deer, cf O.1795 or 1797 and part of the head and front legs of what is probably a lion; two examples of the palm branch, Rogers J160 occur, this being a widely employed motif; the vessel wall is noticeably thin; the quality of the (orange-red) slip and execution of the decoration is high which are typical of Quintilianus and his associates. O.232 is an uncommon motif and it is perhaps noteworthy that it appears on another bowl of the group from Birdoswald from the 1920s (Stanfield and Simpson 1958, 146, Pl. 70 No. 19; 1990, 189, Pl. 70 No. 19). Body, CG Lezoux, Drag 30 or 37, 1g, *c* AD 140–200. A tiny abraded and undiagnostic area of decoration is present. Body, CG Lezoux, Drag 31, 8g, *c* AD 150–200.

Context 210 — Body, CG Lezoux, form not identifiable, 2g, *c* AD 120–200; fully excoriated.

Context 301 — Body, CG Lezoux, probably Drag 27, 1g, *c* AD 120–145. Body, CG Lezoux, Drag 18/31R or 31R, 2g, *c* AD 120–200. Body, CG Lezoux, form not identifiable, different vessel from the below 2 items, 1g, *c* AD 120–200; fully excoriated. Body, CG Lezoux, form not identifiable, different vessel from the above and below items, 1g, *c* AD 120–200. Body, CG Lezoux, form not identifiable, different vessel from the above 2 items, 1g, *c* AD 120–200; fully excoriated. 3 conjoining

body sherds, CG Lezoux, Drag 38, 50g, *c* AD 140–200; partially burnt. Rim, CG Lezoux, probably Drag 30 or 37, 3g, RE: *c* 0.03, diam uncertain, *c* AD 140–200. Rim, CG Lezoux, Drag 31, 12g, RE: 0.06, diam 180mm, *c* AD 150–200.

Context 302 — Body, CG Lezoux, from a Bowl or Dish, 3g, probably *c* AD 120–140. Body, CG Lezoux, Drag 37, 2g, *c* AD 120–140/145. This item is a small fragment from a bowl of Attianus ii of Lezoux. Part of a leafy scroll is depicted; the leaf appears to be Rogers H58; a short section of a tendril with part of an astragalus binding mask is present. The style, leaf and binding are paralleled by a Attianus bowl from Colchester (Stanfield and Simpson 1958, Pl. 86 No.18; 1990, Pl. 86 No.18); the slip finish is high quality. Other bowls of Attianus are recorded from Birdoswald and Corbridge. Body, CG Lezoux, probably Drag 18/31, 2g, *c* AD 120–150. Rim, CG Lezoux, Drag 18/31R, 7g, RE: *c* 0.03, diam uncertain, *c* AD 120–150. 2 rim sherds, CG Lezoux, Drag 27, 2g, RE: 0.07, diam 130mm, *c* AD 120–160. Rim, CG Lezoux, Drag 37, 22g, RE: 0.07, diam 190mm, *c* AD 120–200. No decoration is represented. Body, CG Lezoux, Beaker, 1g, *c* AD 120–200. Body, CG Lezoux, form not identifiable, 1g, *c* AD 120–200. Body, CG Lezoux, Drag 31, 15g, *c* AD 150–200.

Context 501 — Rim, SG Montans, Déch. 67, 1g, RE: 0.10, diam 100mm, *c* AD 60–135/140. No decoration represented. Body, CG Les Martres-de-Veyre, form not identifiable, 2g, *c* AD 100–130. Body, CG Lezoux, probably Drag 33, 1g, *c* AD 120–200; partially burnt. Body, CG Lezoux, from Bowl or Dish, 11g, *c* AD 120–200; virtually excoriated. Probably trimmed round to form a large disc, but subsequently broken. Base, CG Lezoux, from a Bowl, 6g, BE: 0.16, diam 70mm, *c* AD 120–200. Body, CG Lezoux, form not identifiable, 1g, *c* AD 120–200. Body, CG Lezoux, form not identifiable, 3g, *c* AD 120–200; fully excoriated. Body, CG Lezoux, Drag 37, 15g, *c* AD 130–165. Although the decoration appearing on this piece is clear its attribution is uncertain as the figure type, O.B (Pl. XC), was used by several potters, as was the double plain ring medallion type represented; similarly the slip and finish are weathered and constitute an unhelpful guide to date; Butrio (*c* AD 120–145) used both the figure and this medallion type (Oswald 1936, 152; Stanfield and Simpson 1958, Pl. 59 No. 664); Divixtus (*c* AD 140–160) employed the figure type and medallion together (Stanfield and Simpson 1958, Pl. 116 Nos 8 and 10), but his bowls have rarely been recovered from Wall contexts (Stanfield and Simpson 1990, 249–50). Cinnamus ii, Cintusmus i and Cricirus also used the figure type O.B. Body, EG Rheinzabern, from Plain Bowl, 11g, *c* AD 150–225. Body, EG Rheinzabern, form not identifiable, different vessel from the above item, 3g, *c* AD 150–225.

Context 503 — Body, CG Lezoux, Drag 37, 12g, *c* AD 120–150. An area of decoration is extant but is considerably abraded; the lower part of a human figure walking to the left is present, this resembles the lower part (below the waist) of O.638, but without the drape. Base, CG Lezoux, Curle 23, 60g, BE: 0.17 Diam 70mm, *c* AD 120–200; 1 drilled hole, presumably for repair via riveting, is present. Rim and conjoining body sherd, EG Rheinzabern, Drag 31, different vessel to those from 501, 8g, RE: 0.05 Diam 180mm, *c* AD 150–190; burnt.

Context 701 — Base, CG Lezoux, form not identifiable, 4g, BE: 0.07, diam 90mm, *c* AD 120–200; fully excoriated; burnt or stained. Body, CG Lezoux, Drag 33, 7g, *c* AD 120–200; virtually excoriated. Body, probably CG Lezoux, form not identifiable, different vessel to the items below, 1g, *c* AD 120–200; fully excoriated. Body, CG Lezoux, form not identifiable, different vessel to the items above and below, *c* 1g, *c* AD 120–200; fully excoriated. Body, CG Lezoux, form not identifiable, different vessel to the items above, 1g, *c* AD 120–200; virtually excoriated. 2 conjoining rim sherds, a base sherd and a body sherd, all from the same vessel, EG almost certainly Argonne, Drag 45, 21g, RE: 0.07, diam 170mm, BE: 0.08, diam 80mm, *c* AD 170–260; one sherd is burnt.

Unstratified: — Rim, CG Lezoux, probably Drag 18/31R, 6g, RE: *c* 0.02, diam uncertain, *c* AD 120–150. Body, CG Lezoux, Drag 37, 10g, *c* AD 120–200. Part of the ovolo band is represented but is heavily abraded; the ovolo is large, rather square and seems to have a twisted tongue; this may well be an ovolo of Cinnamus ii (Stanfield and Simpson 1958, 264–5, Fig 47 Nos 1 or 4; 1990) but there is insufficient detail surviving to enable a firm attribution. Body, CG Lezoux, probably from a Bowl or Dish, 4g, *c* AD 120–200. Base, CG Lezoux, form not identifiable, 2g, BE: 0.07, diam 90mm, *c* AD 120–200. Body, CG Lezoux, form not identifiable, 2g, *c* AD 120–200. Rim, CG Lezoux, Drag 18/31 or 31, 1g, RE: *c* 0.01, diam uncertain, *c* AD 120–200; fully excoriated. Body, CG Lezoux, form not identifiable, 1g, *c* AD 120–200; fully excoriated. Base, CG Lezoux, from a Bowl, probably Drag 38 or small 37, 3g, BE: 0.20, diam 60mm, *c* AD 140–200; fully excoriated.

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Note: Bibliographic references to the successive 'Reports of the Cumberland Excavation Committee' in the *Trans Cumberland Westmorland Antiq Archaeol Soc* are divided to recognise the authorship of individual articles within those reports. 'Grey literature' is cited in square brackets [ ]

Abbreviations: AML = Ancient Monuments Laboratory, BAR = British Archaeological Reports, CBA = Council for British Archaeology, CfA = Centre for Archaeology, HBMCE = Historic Buildings and Monuments Commission for England, *RIC* = Mattingly, H *et al* 1923, *LRBC* = Hill, Carson and Kent 1960, *RIBI* = Collingwood and Wright 1995

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Front cover
The Birdoswald sector of Hadrian's wall, looking east from the site of Mc51 (Wall Bowers), showing the junction of the lines of the stone and Turf Walls, with the Vallum to the south.